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Sustainability on University Campuses: Learning, Skills Building and Best Practices



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Whale HUB: Museum Collections and Contemporary Art to Promote Sustainability Among Higher Education Students



Valeria D'Ambrosio and Stefano Dominici

Abstract The project Whale HUB is dedicated to the recently-created permanent exhibition entitled “Tales of a Whale” at the Museum of Natural History of the University of Florence, centered around a fossilized whale skeleton. The exhibition, balanced between scientific research and dissemination of knowledge for non-expert audiences, deals with the themes of environmental sustainability, cross-cutting different fields of knowledge, such as palaeontology, zoology and ethnography, and promoting pro-environmental concern and behavior. Aiming to develop the Museum public and engage higher education students through new media strategies and non-canonical approaches, Whale HUB involves a selection of creative students from some of the major educational institutions in Florence to conduct an analysis on their perception of the themes dealt with by the exhibition. By means of a competition, the students create a communication prototype which popularizes the fragile stability of marine ecosystems, affected by plastic pollution. The project involves also three young contemporary artists who participate to an expedition in the marine protected area of Pelagos Sanctuary, hosting the largest population of large mammals of the Mediterranean and a problematic environmental site, highly impacted by marine plastic pollution. They produce artistic research in dialogue with scientists and biologists, sharing it with creative students of the university and of other important higher education institutions of Florence, fostering their engagement in sustainability through informal education or free-choice learning.

Keywords Free-choice learning · Marine ecosystems · Contemporary art · Problematic environmental sites · Plastic pollution · Audience development · New media strategies

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1 Introduction

Knowledge and education are among the key personal factors of one's experience that influence pro-environmental concern and behavior, while proximity to problematic environmental sites is among social factors (Gifford and Nilsson 2014). Universities should lead the entire movement of sustainability by imparting related values and beliefs among the students and developing their knowledge, although conventional courses are not always as effective on the students' beliefs and attitudes as expected, and after several years, some institutions are struggling to impact on student engagement (Tilbury 2016; Tang 2018). The University of Florence, in Tuscany, hosts the largest natural history collection of Italy and offers to its community, through museum exhibitions and activities, the means for an informal educational approach to the natural world, better defined as free-choice learning (Falk 2005; Blum 2012, and references therein). Florence university students should be even more concerned, since Tuscany faces a large and problematic environmental site. The Mediterranean marine protected area Pelagos Sanctuary, in front of the Northern coast of the region, hosts one of the largest population of marine mammals of Europe, but is now severely affected by marine plastic pollution, posing a threat to its resident megafauna (Fossi et al. 2014, 2017; Baini et al. 2018). The whole Mediterranean, as a matter of fact, is one of the seas with the highest levels of plastic pollution in the world (Alessi et al. 2018). Urban areas contribute important microplastic contamination to river beds (Hurley et al. 2018), and the Florence area, given its physiographic position at the heart of the Arno river catchment basin, is expected to play an important role in polluting the Pelagos Sanctuary. Bringing these issues to Florence higher education students may significantly raise their pro-environmental attitude. A recently-created permanent exhibition of the Museum of Natural History (MSN) of the University of Florence, entitled "Tales of a Whale", deals with the relationships between species in marine ecosystems and the theme of sustainability, with a focus on the Pelagos Sanctuary and the issue of marine plastic pollution. Two years after its opening, despite the general appreciation for the immersive multimedia aspect of the exhibition, its potential of communication is still under-exploited, as an irrelevant fraction of the Florence university students have visited it. The project Whale HUB, promoted by Fondazione Cassa di Risparmio of Florence, was conceived and curated at the MSN during the second half of 2018. The project aims at improving the physical and digital visibility of "Tales of a Whale", while developing its audience by means of new media strategies. Education for sustainability is at the core of the project, while focus groups carried out with higher education students allow to measure their perception of sustainability and the efficiency of the setting-up of the Hall in terms of democratic dissemination of knowledge on specific scientific topics relating to the health of open marine ecosystems. With these aims in mind, Whale HUB is expected to raise the students' concern and behavior towards a better future for the Pelagos Sanctuary and constitute an example of how, in university campuses, free-choice learning and citizen science can be important allies to conventional courses on sustainability.

2 Tales of a Whale

As its title suggests, the aim of the exhibition “Tales of a Whale” is to link the museum public with the issue of environmental sustainability by means of storytelling. Other cultural institutions have taken whales as icons of the greatness and fragility of marine ecosystems, endangered under the impact of human activities. At the Museum of Natural History in Florence, unconventionally, this iconic role is played by a fossil whale, enriching the message with the deep time perspective: ecological systems shaped during immense stretches of time are facing today a geologically-instantaneous threat, where climate change, acidification, overfishing and pollution put the structure of marine ecosystems at stake. What do we need to do to revert this attitude? This message was first brought to the public of the museum in May 2016, when the exhibition was inaugurated after a ten-year working process, started in 2007 with the excavation of a 3-million-year-old fossilized whale skeleton found in the hills around Orciano Pisano, near Pisa. After much effort spent in transporting, restoring and setting-up the nearly-complete, 10 m-long skeleton, the immersive multimedia exhibition was realized by Lorenzo Greppi, an architect already well known, among other things, for realizing the new Museum of Natural History in Venice. Greppi and his team worked for a few months in collaboration with the museum curators and researchers. The product of this joint effort, the permanent exhibition “Tales of a Whale” (also known as Whale Hall, Fig. 1), balances scientific research and dissemination of knowledge for non-expert audiences, dealing with the themes of environmental sustainability, cross-cutting traditionally separated fields of knowledge, such as palaeontology, zoology, anthropology and sustainability, and promoting in a new way the prestigious centuries-old natural history collections curated at the University of Florence (a video with the same title, available online, addresses all these themes: <https://www.youtube.com/watch?v=IhR2ZIi1Q9c&t=16s>).

However, after two years of experience, an analysis carried out by the museum personnel indicates that visitors are not aware of the existence of the Whale Hall before entering the museum. Comments registered during informal interviews or handwritten in guest books, show appreciation for the modernity of language and the multi-layering of topics, but visitors almost invariably come expecting to find only the historical exhibition realised between the 60s and 80s of the 20th century, unaware of the new proposal. What is worse, the exhibition has had no impact in the flux of university students, notwithstanding they have free access to the museum. Whale HUB has been first conceived to overcome this problem of communication, simultaneously seeking to open the museum to new audiences, particularly higher education students, but it soon grew to create a link between sustainability, citizen science and contemporary art, thanks to a collaboration with the Tethys Research Institute, actively working in the Pelagos Sanctuary.



Fig. 1 The Whale Hall at the Museum of Natural History, University of Florence (photo by Stefano Dominici)

3 Methods and Objectives

Whale HUB was conceived to develop the audiences of the Whale Hall in the brief period of seven months, from May to December 2018. To achieve the best results in such a limited time, several actions have been undertaken in the wider framework of the project, involving the authors (an art curator and a natural history museum curator), the staff of the communication office, and the Green Office of the Florence University. Some of these actions concern the general visibility of the museum and the Whale Hall with its sustainability-related themes, while the bulk of the project concerned the production of a series of cultural activities and events to enhance the value of the permanent collections, simultaneously acting as attractors towards non-expert audiences, and creating an interest-based community. To explain why the museum is little known, cut-out from the national and international touristic circuits, specific weak points in communication have been addressed. Actions have been undertaken to overcome structural problems, such as the lack of an efficient exterior signposting to help visitors to find their way to the museum, and the scarcity, or lack, of appropriate promotional material (flyers, brochures, posters, catalogues, post-cards, gadgets). Solutions to these problems have in fact lagged behind the need to complete the ongoing study of the new university branding. An additional critical point is the limited online visibility, particularly due to an unfocused presence on the web and an inadequate reactivity on social media. This is partly explained by

the fact that the Whale Hall constitutes a minor element of a multifaceted cultural offer, embedded within the general communication of the MSN, a system of smaller museums with different locations in town.

Cultural activities and events, forming the core of the project, have been subdivided in three phases, the first of which was entitled *Undersea/A Panorama of Endless Change*, in dedication to the ground-breaking work of Rachel Louise Carson, setting the stage for global pro-environmental consciousness (Carson 1937, 1941, 1951). This phase involves the selection of three young contemporary artists and the collaboration with Tethys Research Institute. With headquarters at the Civic Aquarium of Milano, Italy, this is a non-profit research organisation supporting marine conservation through scientific researches and activities. Tethys' main goal is to protect the marine environment through the provision of scientific knowledge to conservation policy and processes at an international level, but also by means of activities to raise public awareness. Of particular importance for the goals of Whale HUB in relation to the themes of the Whale Hall, Tethys was the first to conceive and propose the creation of the Pelagos Sanctuary for the Conservation of Mediterranean Marine Mammals, the first in the world to be established beyond national jurisdiction, stemming from a treaty between France, Monaco and Italy (Notarbartolo di Sciara et al. 2008). In its awareness-rising activity, Tethys produces citizen science programs leading a non-expert audience on expeditions into the Pelagos Sanctuary; hence, it readily qualified as the best partner to connect with.

The second phase aims at building an interest-based community, where members join to exchange information, improve their understanding of a subject, share common passions, and find cooperative solutions to problems (Henri and Pudelko 2003). The main target selected for the project was higher education students, young people between 20 and 25 years-old. A museum with a limited visibility and weak in terms of digital communication, can in fact greatly benefit from approaching a public that can communicate first-hand natural history and sustainability through an extensive diffusion of its contents on the digital channels. Within the chosen category, an interest-based community of creative students was the first choice, constituting a specific subcategory that makes clever use of social networks. By using the social media to spread and give visibility to their artistic work, creative students are on average more influential within their generation and have more followers on their digital social accounts. These students are approached through four different focus groups hosted by curators in the museums, to share their involvement and expectations in the sustainability themes dealt with in the Whale Hall. The third phase is a contest promoted among students that have participated in the second phase, organised in mixed groups to facilitate interactions among people coming from different higher education schools. By using the social media to spread and give visibility to their artistic work, creative students who participate to the second and third phase are on average more influential within their generation and have more followers on their digital social accounts.

The three main phases follow each other on a span of four months. The first phase (September, 3–30) catalyses young creative energies around the theme of marine ecosystems through an ephemeral exhibition entitled *Undersea/A Panorama*

of *Endless Change*. By disseminating knowledge on environmental sustainability, with a focus on the fragile existence of sea mammals, this first phase intends to open the museum to a wider public. *Undersea/A Panorama of Endless Change* starts from an experience of residency that three young contemporary artists carry out during the month of September 2018, in dialogue with scientists and marine biologists of the Tethys Research Institute, during three separate expeditions into the Pelagos Sanctuary, each one-week long. The purpose of this phase is to produce artistic research in three different fields of creativity, namely Visual Arts, Sound Art and Performance Art, aiming at creating personal narratives of the marine ecosystem and its reaction to plastic pollution and other man-made impacts. This phase mainly consists in sending creative people out of the museum to bring new knowledge in through different languages. Hence, it is further developed through a mid-term analysis and studio-visit conducted in the museum (October 24) in collaboration with the actors of the second and third phase of the project, who instead work within the museum to communicate its contents outside (see below). This reciprocal exchange enhances the value of the artistic researches and helps the museum create a network of interest-based visitors. The second phase (October 8–10) includes the participation of four groups made of five students attending four of the major Florentine higher education institutions in the creative field: 1. Department of Architecture of the University of Florence (DIDA), 2. Florence Fine Arts Academy, 3. Superior Institute for Artistic Industries (ISIA), 4. Studio Marangoni Foundation. During the first phase, the five students of each institution visit the Whale Hall on their own, then guided by museum curators. A focus group follows, led by museum curators, to analyse the nature of its current non-audience (the main target of Whale HUB). This phase allows the students to approach in depth the variety of themes dealt with in the Whale Hall. It also allows the museum personnel, actively interacting with the students, to collect data and elaborate information so as to understand what are the needs, desires and expectations of a young public today. The third phase (October 17–December 7) is characterised by the creation of five mixed groups, made of four students who participated in the second phase, each one coming from a different institution. This phase actively involves these students to produce digital contents on sustainability and on the Whale Hall, to be communicated outside the museum. This takes place through the launching of a competition among the five groups, dealing with the creation of a multimedia digital communicative output to be used on the Museum website and social media as a promotional element of the Whale Hall. Each group works under the technical support and the advisory of the Department of Architecture Communication Lab. At the end of some workshop activities taking place during the third week of October, the students are given two weeks to produce a project which is judged by an internal commission, including museum curators and communication staff of the University of Florence. The winning project is implemented on museum funds and also sees the collaboration of the three artists participating to the first phase who introduce the students to their artistic research on the sustainability of the seas conducted in the Pelagos Sanctuary.

A conclusive event takes place on December 13 in the University Aula Magna, bringing together all the stakeholders of Whale HUB to share their researches and

final results with the general public participating at the event. During the day, the communication prototype realized by the winning group of students will be presented to the public, in front of their peers, invited for the occasion and already made aware through the social media and previous visits to the Whale Hall. Then, the three resident artists will present their individual artistic projects, carried out also thanks to archival materials made available by Tethys. Finally, invited marine biologists working with Tethys and other research institutions will briefly explain their experience on the health of the Mediterranean marine ecosystem.

Unrolling in just a few months, the project has obvious time limits, in the first place regarding the chance to measure its impact, which would probably require at least one year. The social character at the very base of its conception suggest how to implement this aspect, provided that an extension of the project is guaranteed by the funding agency. When a virtual, interest-based community forms, not just the number of its adherents can be measured, but also the use of sustainability-related jargon can be monitored by digital means. In a sense, Tales of a Whale and Whale HUB are two seeds for a new sustainability-related content strategy for the Museum of Natural History of the University of Florence, to be developed through the years with new permanent exhibitions and social media campaigns.

4 Results

Whale HUB has been the occasion to pursue the realisation of an efficient signposting, ensure visibility, and create a logo for the project, to use during a dedicated campaign carried out on the University web pages and social media, and as a means to overcome the lack of an updated MSN logo. The Whale HUB logo was conceived and realised in July 2018, bringing together people of the University staff, including communicators, graphic designers and museum curators. The logo somehow expresses the fingerprints of the project (Fig. 2), in words (“audience development”, “sustainability”, “contemporary art”), in signs (two circles, one in the background representing art, one at the forefront for science), in colours (orange for marine life, blue for marine water) and font (to represent the rapidity and informality of communication in the digital age). The overlap of the two circles represents the encounter between two worlds, meant as two sides of the same coin, which is Man, namely Art and Science, personified by young contemporary artists and creative students along with marine biologists and palaeontologists.

When it comes to web and social strategies, the progress of all Whale HUB phases and activities is sustained by a highly-structured communication strategy directly addressing the target audience. The first step was indeed the creation of a web page dedicated to Whale HUB on the general Museum website (<https://www.msn.unifi.it/vp-507-whale-hub.html>). This page introduces to the Whale Hall while proposing the project as a means to enhance the value of the permanent exhibition and to develop its audience. From this page, the user is led to the three more pages dedicated to the different phases, each one presenting its own contents along with the



Fig. 2 The Whale HUB logo

actors involved: the three resident artists are introduced through their biographies and personal websites, while the students by means of photographs and personal details concerning their schools, vocations, interests, and favourite authors. These pages, characterised by a coordinated design stemming from the logo, are constantly updated with the results of each phase throughout the development of the project. Starting from August 27 and until December 13, the whole project is shared with a digital community exceeding 70k followers via the Museum social media (FB, Instagram and Twitter). By means of an average of two posts per week, the museum's audience is allowed to follow the phases step by step. The tone-of-voice of published and future posts is that of first-hand involvement, as if followers were directly participating to the sea expeditions in the Pelagos Sanctuary or if they were the winning team realising and presenting the communication prototype to a wide public.

To select the three young contemporary artists who participate to *Undersea/A Panorama of Endless Change*, a number of about 30 artists were invited to visit the exhibition during a period of roughly two months (late May-early July). Visits were conducted either by the art curator, the museum curator, or both, and was the occasion to communicate contents of the Whale Hall to a new public. In late July, the three participants were selected on the basis of their CVs, portfolios and project proposals, and through studio visits conducted with the art curator, while the periods of residency were programmed in collaboration with the Tethys Research Institute. *Undersea* and its participants were presented to the public during an event at the museum, on August 1 and then shared with social media followers.

The period May–July was also the time when contacts with the four institutions dealing with higher education for creative students were undertaken. Directors and teachers reacted positively to the proposal and contracts of collaboration were signed

in early August. Students were selected in early September and their brief presentations and photographs presented to the digital public of the museum in dedicated webpages of the Whale HUB portal.

The present essay deals with the situation of the project as of September 10, 2018, the final outcome to be discussed at the 2nd Symposium on Sustainability in University Campuses [Florence, 10–12 December, 2018].

5 Towards a Wider and More Engaged Audience

When it comes to solutions for global marine litter pollution, the engagement of many actors is required, most studies emphasizing the importance of public awareness, while giving a key role to outreach experiences and citizen science (Löhr et al. 2017). With this scope in mind, the project Whale HUB aims at transforming the Museum of Natural History of the University of Florence from a conventional exhibition space into a collective and educational space, a meeting place for higher education students and professionals of science, art, museography and communication. Hence, the University Museum becomes a cultural hub where artists are welcome to enter and dialogue with scientific collections, stimulating new approaches and food for thought on sustainability, while promoting citizen science thanks to the collaboration with Tethys Research Institute and its marine biologists. The collaboration of the museum with the Pelagos Sanctuary for marine mammals, in the Northwestern Mediterranean Sea, offers a unique way for visitors to learn about the effects of marine plastic pollution and other types of anthropogenic impact on the open marine ecosystem.

In particular, Whale HUB aims at intercepting three macro publics:

- By choice: the creative students who choose to be part of the museum community and become actors of its revitalization.
- By surprise: the generation of the students involved in the project that is currently a non-audience and that is reached through word-of-mouth, social media, etc.
- By habit: we start from a by-choice public to connect with a by-surprise public in order to ultimately improve the experience of the general public.

With its inestimable uniqueness, the Museum of Natural History is presented on the international scene with a new image that merges its historical prestige with outreach activities, allowing its public to have an experience that connects the museum with sustainability, through new and fresh modalities. Art becomes an instrument to disseminate scientific knowledge, a means to make a fossil whale as contemporary and meaningful to everyday life as a living whale, while raising awareness on the environmental crisis that is imposing itself ever more urgently on a global level. The results of these interactions are evident since the inception of Whale HUB: young contemporary artists, educators and students, marine biologists, museum curators and communicators of the Florence University have fruitfully interacted, increasing the visibility of the Whale Hall, widening their knowledge of art and science, and developing a concern for the state of the Pelagos Sanctuary. University museums

and natural history collections hosted in campus are a means to involve students in sustainability and build communities with an interest in nature conservation.

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Stefano Dominici (1962, lives in Florence) Geologist and museum curator specialised in paleoecology, taphonomy and macroecology of marine mollusc communities, he earned a doctorate in Paleontology in 1994. He worked as a high-school teacher from 1996 to 2006 and as a curator of the invertebrate collection at the Museum of Natural History, University of Florence, Italy, from 2006 to the present. Since 2015 he is assistant professor at the Earth Sciences Department of the same university, teaching Paleontology to undergraduates. He is an active researcher with publications in international journals and books. After the excavation of a 3-million-year-old large fossil whale in the hills of Tuscany and the recovery of the associated fauna in 2007, he has carried out researches on whale-fall communities and developed an interest in the state of health of the marine ecosystem of the Pelagos Sanctuary. He organized education and outreach events to promote environmental sustainability, particularly on the topic of marine littering from plastic. Since 2017 he is head of the Green Office of the Florence University.