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94. Exploring visitors' opinions: formative evaluation for the 'sustainability gallery' at MUSE, the new science museum in Trento, Italy

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Introduction

This research has been carried on during the development of the new Museum of Science (MUSE) of Trento, Italy, whose opening has been scheduled for July 2013, and concerns a public engagement activity for supporting the project team with information on opinions, interests and needs of target audiences. MUSE will be a science centre of the newest conception, residing in a futuristic building in a city area that used to host an industrial site and is now undergoing regeneration as a new town quarter. Its construction is supported by local funding and the massive building works are in progress since quite a few years. Its development has been complemented with an intense public engagement targeted to the community various actors, as feelings, opinions and expectations of MUSE's potential visitors have been regarded as crucial.

Since 2008 thousands of people have been engaged in a variety of events to share information on the museum development and to collect the public's points of view, and from Spring 2011 citizens and stakeholders could also experience the advances in the work during guided visits to the location and in Internet through a web-cam connection.

Present evaluation research is coherent with MUSE's participatory approach to the museum development and was aimed to support MUSE's researchers and science communicators in their planning of the 'sustainability gallery', an area dedicated to major global environmental issues. Although a relatively small part of the whole exhibition area, the gallery is a pivot of MUSE's communication, aiming to foster the responsible and sustainable decision-making of visitors as citizens. Accordingly, the topics are intended to be proposed with an original approach both from narrative and scientific points of view, being based on the 'planetary boundaries' framework (Rockström et al. Nature 2009, 461:472-475), in order to become aware of the complex relationship between human activities and environmental resilience.

Material and Methods

This evaluation research aimed to feed the 'sustainability gallery' development with information on audiences' perception of the gallery's main topics, so as to enable developers to choose a more effective narrative approach. Evaluation key questions were (i) what potential MUSE key audiences know and feel about sustainability and related global environmental issues; (ii) how the proposed stories/explanations/imaginaries regarding sustainability would

be received by key audiences; (iii) if the points of views of MUSE's potential key audiences would suggest other stories/imaginaries to be effectively used by project developers.

Research consisted in two actions:

1. *State-of-the-art-survey on the public perception of sustainability*, aiming to collect existing information on public attitudes and knowledge about sustainability and environmental issues. This was based on international literature on public perception of science and technology, such as the most recent Eurobarometer studies (Special Eurobarometer 295, 'Attitudes of European Citizens toward environment', May 2008; Special Eurobarometer 313, 'European's attitudes towards Climate Changes', July 2009 and Flash Eurobarometer 290, 'Attitudes of Europeans toward the issues of biodiversity', March 2010), academic papers, grey literature from EC-funded projects and other evaluation surveys held by major international science centres and museums. This latter, thanks to the collaboration with the Natural History Museum of London (survey for the development of the biodiversity gallery and the new Darwin centre), the Science Museum of London (survey on the temporary exhibition Prove-it, on climate changes), the Ontario Science Centre of Toronto (survey for the development of the Innovation Centre) and Universcience, la Cité des Sciences et de l'Industrie of Paris (survey for the development of the Gallery of Innovation).

2. *Focus groups with key target audiences*, aiming to explore the information needs of Trento citizens on the chosen topics. Four focus groups (FG) were carried out at the Museo delle Scienze of Trento on June 2011. FGs were specifically targeted to potential audiences of the gallery, i.e. school teachers (12 participants), secondary school pupils (9 participants) and independent adults respectively of 20-30 years-old (8 participants) and over 30 years-old (9 participants). Each FG lasted 2 hours, was managed by a facilitator with two helpers and one of MUSE's curators who presented topics, idea and constraints of the gallery planning, and was recorded. The FG first three steps were held by the facilitator who started using two sets of cards for collecting information and fostering discussion. A first set of 50 'word cards' presented lexicon of the topics and participants had to sort the cards based on their familiarity.

A second set of 50 'fact cards' presented key environmental issues (climate change, ocean acidification, stratospheric ozone depletion, nitrogen and phosphorus cycles, global freshwater use, change in land use, biodiversity loss, overpopulation, atmospheric aerosol loading and chemical pollution). Participants, in pair, had to choose two of the cards to discuss among themselves and to present to the others the results of their discussion. Interests, feelings, personal experiences, desires of knowledge towards the topics were then shared inside the whole group.

In the FG third step, the facilitator supported free discussion on the all issues that emerged previously, whilst in the fourth and last step the scientific and interpretive approach the project team was developing for the gallery was presented and participants' views on the curators' ideas and proposals were collected. A preliminary FG for 30-50 years-old citizens has been held at Trieste for design testing.

Results

We are reporting the FG outcomes, whilst desk-survey helped to interpret them, allowing us to confirm hypotheses and giving strength to conclusions. Accordingly, even over and above the expected differences due to FG participants' age, education and profession, some common results have emerged.

All the participants stated they had sufficient familiarity – however superficial – with most of the topics, although issues related to water (eutrophication and acidification) were less known. All considered the information on environmental issues and sustainability available in media to be incomplete, erratic and unreliable and they would rather have more data. They complained about the dramatic and spectacular approach used by media to deal with environmental topics and the lack of information about possible and concrete solutions. As a consequence, they stated they felt powerless and depressed, so that somebody even affirmed to prefer ignoring the matters.

At the same time, however, they expressed a need for detailed and critical information on impacts of individual and collective choices and on possible solutions. They asked for more honest and clear information because they felt disoriented and they demanded discussions with experts. Participants, accordingly, never questioned the truthfulness of scientific reports presented by curators during the FGs, and were looking forward with the greatest interest to the MUSE's gallery as a tool for collecting information and an arena (thanks to future museum's programmes) to be involved in public governance of environmental problems.

The differences among target audiences were more related to the expectations on specific MUSE offerings. Teenagers seemed to be more interested than adults in knowing 'how science works' and focused their wishes more on nature of the exhibitions, such as interactivity, multimedia and new technologies. Moreover, they would wish to find in MUSE a place for being 'protagonists' of the experiences and for meeting and spending pleasant time together. Teachers' expectations seemed instead to be strongly addressed to didactic support, desiring spaces dedicated to school subjects and programmes. Adults showed as the most interested in knowing the connections of environmental issues with their own personal life and responsibility as citizens.

All these expectations seem to match MUSE's project to offer a space specifically dedicated to Earth's environmental major issues ('sustainability gallery') and to locate it close to a space concerning solutions ('wall of the future') and a space designed for discussion and idea sharing ('science and society café'). Moreover, on the basis of FG results, MUSE's curators working on the 'sustainability gallery' design were supported in their choice to avoid catastrophist approaches, to focus on the interconnections among environment, economy and society for sensitizing about complexity, to increase the information by means of audio-video guide and to maintain a trans-disciplinary approach, even this latter seemed to be not fully appreciated by teachers. Accordingly, the 'sustainability gallery' will include the results of environmental research, the awareness of its methods and limits and will show possible environmental solutions also addressed to the individual, with the support of modern technology and public debates.

In conclusion, with this project we wish to propose an example of how a cultural institution such as a science museum can contribute to the dissemination of scientific knowledge based on respect for visitors' backgrounds and expectations. In fact, with this public engagement

activity, whilst enhancing citizens' awareness of what is already available and what is going to be offered in their own town, citizens could actively participate in the process of planning and establishing a scientific centre of noteworthy cultural significance for the whole community, where they are intended to be central actors and not merely passive users.

We expect that MUSE, with this approach, will play an important role in fostering a process of public participation and science and technology governance in which scientists, citizens, stakeholders and science communicators will all be involved in a continuous dialogue.