

Chapter 39

On the Use of Different Presentation Formats in an Exhibit at a Science Center to Communicate Sea Level Rise

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ABSTRACT

This study focused on evaluating the effectiveness of the different presentation formats (text, photographs; video and simulations) used in an exhibit at a science center in Singapore to communicate the message of sea level rise, an important manifestation of climate change. Interviews with visitors were used to obtain their views on the exhibit, the influence the message behind the exhibit had on them, and the implications of sea level rise for the tiny island state. The findings suggest that simulations are more effective in communicating abstract phenomena, provided the objectification is rendered effectively.

INTRODUCTION

Science Centers

Science centers are institutions that help to popularize science and technology to people, in the process sensitizing them to the impact of these on everyday life. They do these through various means – for example, exhibitions, enrichment programs, promotional activities and publication programs. Since the first science center was established in the US in 1969, there has been a mushrooming of science centers in various parts of the world. Numerous themes have been taken up by science centers to propagate their mission objectives – for example, energy, genetics, new materials, mathematics, information technology and the environment.

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The proliferation of science centers in the past few decades can be attributed to a few reasons. With science being regarded as a lever for socio-economic development, it makes sense for people to be exposed in an informal manner to the ways and means in which science can be harnessed for this purpose. The manner in which science centers disseminate science content is very different from what is done in schools – the fun element and non-assessment mode in which they operate are vital ingredients that make schools organize regular visits to science centers for their students. A wealth of research-based evidence is available to show that science centers are major nodes in a country's educational infrastructure and that their programs play a useful role in popularizing science and technology (for example, Davis, 2004)

Several studies in the literature focus on various aspects of science centers – for example, effectiveness of exhibits in science learning (Allen, 2004), visitor studies (Falk & Storksdieck, 2005), efficacy of science enrichment programs (Caleon & Subramaniam 2007), and impact of science centers (Falk & Needham, 2011). A significant number of studies have focused on the use of exhibits for promoting cognitive and affective outcomes of the learning process. In using exhibits to interpret science content, quite a number of issues are at work – for example, design considerations, interactivity elements, color schemes, user interface, layout in gallery, and exhibit labels.

There have hardly been any studies that have explored the use of visuals in communicating science at science centers. Actually, science centers use a lot of visuals, on top of explanatory scripts, to communicate science – for example, photographs, video images, computer-generated images, simulations and animations. The impact of such visuals in the informal environment of science centers to communicate science cannot be under-estimated. Text labels are important but judicious incorporation of visuals, either in the text label or in the exhibit itself, can enhance the overall message of the exhibit. Our interest is more on simulations. It would thus be of interest to explore this aspect of science communication in science centers.

Concept of Visualization and Its Use in Science

The written word is still the dominant mode for communicating science. Owing to the nature of science, which requires precise and concise descriptions as well as the need to eschew ambiguity, text offers tremendous scope to put ideas succinctly and accurately into writing. Increasingly, visuals are also becoming important to add value to the text. This is especially so in popular science, where suitable visual representations can help to communicate the message better with audiences, thereby building more accurate mental models in the minds of people. The visuals can be in the form of photographs (which are static images), video (which is a series of images projected rapidly to give the illusion of motion) or simulation (which is a moving continuum of computer-generated images).

A number of studies reiterate the point that images can be the 'expressive vehicle' for thinking situated in everyday contexts (Devine-Wright & Devine-Wright, 2009; Wagner & Kronberger, 2001). They can aid in interpreting and scaffolding understanding on a science topic (Boholm, 1995; Oring, 1999). The capacity of images to elicit emotions among people and, in the process, promote meaning-making with respect to ambiguous scenarios, have been noted in the literature (Mannali, 2006; Wagner, 2005). For communicating climate change, visual images are especially effective as they can make abstract ideas concrete (Smith & Joffe, 2012). This is especially so as such phenomena are not easy to visualize and also their impact is more in the future (Moser, 2010).

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