



Review

The nuts and bolts of evaluating science communication activities



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ABSTRACT

Since 2008 there has been a focus on fostering a culture of public engagement in higher education plus an impact agenda that demands scientists provide evidence of how their work, including their science communication, is making a difference. Good science communication takes a significant amount of time to plan and deliver so how can you improve what you are doing and demonstrate if you are having an impact? The answer is to evaluate. Effective evaluation needs to be planned so this paper takes you step by step through the evaluation process, illustrated using specific examples.

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1. Introduction

Evaluation can be perceived as a daunting task, that it is complicated and demanding but when used correctly, it is an effective tool to reflect on and improve your science communication activities, as well as determining the value and worth of evidenced impact. Or as according to the W G Kellogg Foundation [1] – “to prove that a project worked, but also to improve the way it works”.

Science communication came out of a drive to improve the public's understanding of science. The Royal Society described it in 1985 [2] as a need to develop public awareness of the nature of science to

improve debate and decision-making on how science and technology affects modern life. More recently de Bruin, Bruine and Bostrom have highlighted it as having “to improve people's understanding of the decision-relevant issues, and if needed, promote behaviour change.” [3]. In 2006 the Royal Society [4] surveyed the factors affecting science communication to understand what was encouraging as well as inhibiting scientists from undertaking engagement. This was further developed in a more recent survey conducted by a consortium of UK research funders [5] in 2015. This focus on developing public awareness and the identification of what was needed to support scientists to engage resulted in a fostering of a culture of public engagement in higher education in the UK. It began in 2008 with six Beacon partnerships [6] which were funded by the Higher Education Funding Councils, Research Council UK and the Wellcome Trust to inspire a culture change in how universities engaged

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Table 1

The stages of evaluation planning illustrated using three actual evaluation examples.

	Wriggling Rangoli	From Supermarket to Sewers	Science Spectacular
Aims	<ul style="list-style-type: none"> To share knowledge and raise awareness of parasitic infections and the links to global poverty To gain relevant insights into the experiences of an Asian women community group who lived in areas affected by parasitic infections 	<ul style="list-style-type: none"> To promote healthy eating by explaining how the body digests the food we eat 	<ul style="list-style-type: none"> To contribute to the Manchester Science Festival's mission of creating a place for surprising, meaningful science where everyone can join in and be curious To provide a supported opportunity for researchers to engage families with current science research
Objectives	<ul style="list-style-type: none"> To initiate a workshop to inspire the women and their children to share their experiences and design a creative representation of parasitic infections To create a traditional Rangoli mural during a one-day community festival and on campus at Manchester Museum as part of the Manchester Science Festival 	<ul style="list-style-type: none"> To explain how the human digestive system works To develop an understanding of the importance of eating 5 fruit and vegetables a day To create a fun science show that young people enjoy To run 40 shows for school pupils aged 8–14 years old 	<ul style="list-style-type: none"> To attract over 1500 people to the event To attract family groups from across Greater Manchester To provide fun, interactive table-top activities that brings science alive and makes it meaningful to young people and their families To provide researchers with the logistical support and event organisation to enable them to deliver successful activities
Audiences	<ul style="list-style-type: none"> University immunology researchers; women and children from an Asian community group in Manchester; worker from community partner organisation 	<ul style="list-style-type: none"> School children; school teachers; museum presenters delivering the show 	<ul style="list-style-type: none"> Families from Greater Manchester; University researchers and students; event organisers; science buskers; volunteers; Manchester Science Festival staff/evaluators
Evaluation Questions	<ul style="list-style-type: none"> Has a sustainable two-way partnership been developed with a new audience? What have the researchers gained from working with a community group for the first time? What have the women gained from working with the researchers? Has there been an increase in awareness of the role of the scientist and worm infections and links to global poverty? 	<ul style="list-style-type: none"> How many school pupils attended the shows? Do young people understand how we digest our food? Do young people understand the importance of eating a healthy diet? Did the young people enjoy the show? 	<ul style="list-style-type: none"> How many people attended the event? Where have the people come from? What did visitors to the event think about the day? How many researchers were involved in the event and from which faculties? What was the key highlight for the researchers? <p><i>Additional questions will be asked by the evaluators for the Manchester Science Festival</i></p>

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