

GRAPHICAL SCIENCE

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ABSTRACT

The aim of this project is to make science communication activities more socially inclusive by effective targeting of messages to audiences who do not opt in to involvement in existing initiatives. The approach is to use posters designed to attract and hold the attention of young adults who travel on buses. The main findings were that graphic and text styles made posters audience selective in terms of the effectiveness with which they communicated a specific message to different audiences and also that posters could be used as access points to two way communication media like text messaging and the internet. It is suggested that a similar approach adapted to the tastes of different cultures and age groups could be a successful means of communicating science to young people in both urban and rural areas in many parts of the world and that such initiatives have the advantage of not starting with the assumption that the intended audience is already interested in science.

INDEX TERMS

posters; buses; audience targeting; social inclusion; young adults

INTRODUCTION

The aim of the graphical science project is to take science and technology related messages to young adults [16-25 year olds] living in urban areas. This section of the UK population rarely opt in to involvement in existing science communication initiatives and are therefore underrepresented in the audience profiles of attractions like Science Centres and Science Festivals [Anon, Anon A]. A survey of public attitudes to science and technology carried out in the UK by the Office of Science and Technology and the Wellcome Trust [Anon B] in 2000, identified six groups that could be distinguished from each other on the basis of their attitudes to science and technology. One, given the short hand descriptor of "Not Sure" was characterised by being predominantly young, had low incomes and were often living with children. The objective of Graphical Science was to take science to this attitudinal group using posters on buses, a form of transport used heavily by the group and on which users spend significant periods of time in an environment which lacks strong visual stimuli. The three messages chosen for the campaigns that followed were "Science is

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intriguing”; “Science is central to the quality of everyday life”; and “Your views about the application of science in society matter”.

THE SCIENCE COMMUNICATION PROCESS

The Graphical Science project was created and realised by a team that brought together scientists, science communication professionals, evaluators and graphic designers.

Three major campaigns have been funded. The first, *Science on the Buses*, used posters devised in collaboration with the Millennium Commission, the Royal Society of Chemistry and the Institute of Physics. For the latter two poster sets, the brief from both clients was to point up the centrality of the physical sciences to everyday life. The final key tag lines on the posters were therefore “A little Chemistry makes a big difference” and “Thanks to Physics”. The first set was not a commission and the devisers could therefore choose any theme and message they wished. The outcome was a set of four posters whose objective was to illustrate ideas arising from contemporary biological science, each one carrying text designed to stimulate and intrigue the target audience.

One of the posters created for *Science on the Buses* [1999-2000] can be viewed on the Graphic Science website [Anon C]. Pre-testing of draft graphics with focus groups made up of representatives of the intended target audience showed that a successful poster would need to have the following three characteristics:

1. a graphic style and choice of colours similar to that used to advertise events and goods to young adults
2. a casual, concise and catchy tone for the textual elements
3. a theme that would be seen by the target audience as close to their own interests and concerns

The main campaign featuring a total of 12 posters was funded by the Office of Science and Technology and ran sequentially in London, Bristol, Birmingham, Manchester, Edinburgh and Belfast. Its potential audience was over 8 million people, calculated on the basis of the number of posters displayed and the passenger numbers on the buses fleets selected.

It was the largest science communication campaign of its type ever mounted up to that time and attracted considerable press coverage within the UK, driven by both the intriguing mix of buses and science and the fact that the posters themselves could be reprinted and used to illustrate a newspaper story or television coverage of the launch of posters in a new host city.

The next stage of the project was funded by the European Commission and campaigns ran simultaneously in buses or the metro in all the capitals of the European Union during European Science Week 2002.

This second campaign, *Sci-Bus*, was also targeted at young adults but its objective was to promote discussion amongst young people about issues raised by science and technology for society, rather than simply stimulate their awareness of the role that science was playing in their lives. An example of a poster created for this campaign can be viewed on the Graphic Science website [Anon D]

In addition to the audience targeting strategies used for the *Science on the Buses* campaign, these posters, drafts of which were pre-tested in seven different EU countries, carried a challenging question like for example “More food or better food?” and a second sentence asking “Does science have the answer?”. They also carried both the address of a custom designed *Sci-Bus* web site and a text messaging number. All messages sent to the number were posted, after translation where necessary, on the site which also featured the views of prominent individuals on the question posed. and sources of further information and debate. A total of 8016 posters were printed in 12 different languages.

The most recent campaign *Signposting Sustainability* was the first to use posters on the outsides of buses and was linked to a local government consultation about how to improve air quality in Bristol, UK. It was funded by the Partnerships for Public Awareness grant scheme of the Engineering and Physical Science Research Council and was carried out in partnership with Professor James Longhurst, Director of the Air Quality Management Unit at the University of the West of England and Professor Angela Hull, Director of the Centre for Environment and Planning also at the University of the West of England.

The campaign combined both an opportunity for the public to respond to the question “Cleaning up Bristol. What’s your solution?” by text messaging, with providing access to a questionnaire produced by the Sustainability Unit of Bristol City Council. As for *Sci-Bus* all text messages were posted on a custom built web site <http://www.bristolsays.com/> The poster can also be viewed on this site [Anon E]

Responses to the poster sent to the text number included:

“Build wind farms at sea, harness the power of the tidal turn of the river Severn”
“Suggestion: in Wash'n state usa all buses have easy access cycle racks on the front (rather than just one bus (Cheddar)). Make leaving car running wen stationary illegal. Make centre car free and do trams instead. More speed humps. Subsidize trains & buses untill they fill, then create transport assoc's (like housing). (Sent as 2 text messages)”.

EVALUATION

The Graphical Science project has involved three separate campaigns in 1999/2000 [*Science on the Buses*]; 2002/2003 [*Sci-Bus*] and 2003/2004 [*Signposting Sustainability*]. The second and third campaigns built on the findings of the evaluations of previous work and the first campaign was informed by small pilot projects run in Cardiff and Leeds.

The impact of the *Science on the Buses* campaign on bus travellers was evaluated by carrying out 751 face-to face questionnaire prompted interviews with randomly selected bus passengers of all ages.

It was found that young adults accounted for 37% of bus passengers in urban areas targeted by the campaign and that over 70% of bus users travel on buses every day. The posters enjoyed high approval ratings with 75% of the audience finding something positive to say about them and only 30% giving negative reactions. Colours and graphics were the most often cited positive features of the posters, while few passengers were willing to read more than 8 to 12 words of text, a characteristic that is reflected in the copywriting styles used by advertising agencies. When asked “What is the message of this poster?” a clear trend existed for the older age groups to

offer no interpretation or one that did not include science. There was an equally clear tendency for the target age group to engage with the poster content or identify the design brief message that the poster was attempting to convey.

It was concluded that the target audience were well represented amongst bus passengers in the UK and that the use of design motifs and text lengths common in advertising materials targeted at this age group made it more likely that they would receive the message intended by the posters' devisers. It was on this platform that the *Sci-Bus* campaign was built. This campaign was quite different in communication style moving from a one way to a two way model. The objective was to draw young adults into discussion of how they would like to see science and technology applied in their worlds. It was anticipated that this discussion might be with the friends or class mates with whom they were travelling or with a wider group accessed through text messaging and the campaign web-site

A total of 378 structured interviews were conducted in four different countries during the evaluation which used similar prompt questions to those used for *Science on the Buses*.

In response to the question "Is there anything you like about this poster?", some 68% of respondents replied affirmatively with once again the posters' design motifs being most often appreciated by the target audience. Also, as before, approval percents dropped away substantially with increasing age. The highest level of approval (79%) was voiced by the 16-25 year olds in the sample. Conversely, the lowest level of approval (31%) came from the over 65's. There was no significant difference in approval between genders.

Almost a third of the surveyed sample stated that they believed that the purpose of the poster was to promote debate about contemporary science and technology. Younger respondents were very much more likely to identify the promotion of debate as the key message of the poster (47% of under 25's). Once again these results confirm the targeting power of posters and demonstrate the feasibility of using posters to draw the target audience into discussion of issues raised by science for society. However, the number of text messages received was smaller than anticipated, although a high percent of those sent made points directly relevant to the question posed by a particular poster for example 45 responses were received to "More food or better food. Does science have the answer?" including:

"Personally I believe that better controlled food would be the first step into the right direction"

"YES to local and appropriate farming technology. NO to global companies controlling our food and trade"

Outdoor advertising, be it on billboards or public transport is frequently used as the lead element of multi-layered promotional campaigns. For example, they frequently carry the URL for a web site which gives in-depth information needed by the potential customer or in the case of political campaigns highlighting issues that are being elaborated by press briefings and public events. Such "amplification" of the message carried by the outdoor advertising is crucial to the campaign's impact and it was difficult for the *Sci-Bus* project team to generate this type of press interest in the 15 countries in which their posters were being simultaneously displayed.

This key insight informed the design of the *Signposting Sustainability* campaign which used a poster on the outside of buses to target drivers and pedestrians with a

direct call for their input into a local public consultation exercise about how to improve their air quality. The posters on the sides of 75 buses provided an opportunity to reach a large audience and ensured that each member of the audience saw the poster many times. Estimated numbers of individuals seeing the poster used in the campaign were 321,680 based on estimates supplied by Viacom Outdoors, the transport media specialists, and each individual would have had an average of 43 opportunities to see the poster during the campaign.

There was significant coverage of the campaign both on local radio and print press resulting in 1,700 hits on the campaign web site over a two month period during which 25 text messages were also received from members of the public. The great majority of these messages directly linked to issues raised by the campaign.

DISCUSSION

The Graphical Science project has demonstrated that posters on public transport can if carefully devised take specific messages to an audience that is not well represented in attendees of most other science communication initiatives, and additionally that a level of two way communication can be established with those targeted. All the campaigns run during the project to date have been in urban areas but it is very likely that a similar approach would also be effective in rural areas and might usefully complement the activities of regional science centres or outreach activities based around travelling shows and spectacles.

Such initiatives would need to ensure that the posters' messages are concise, presented in formats that attract and hold the attention of their target audience, and importantly that the campaign is multi-layered making the posters an access point to deeper layers of information and engagement carried in whatever format is suitable for the audience [flyers, news sheets, web sites, press coverage, events etc]

Another fascinating area relating to future development of the project is to systematically address how to transfer the project to cultures other than the European one. Such transfer is going to have to be sensitive to the graphical and textual styles used by poster devisers in the cultures wishing to develop their own versions of the graphical science project.

CONCLUSION

This case study describes a method of communicating science to adults that does not start with the assumption that people will come to science which in our view informs many types of science communication initiative. It starts rather from the position that science must find ways of going to people, so that it is encountered as part of their everyday lives, rather than as a specialist subject of which they might have had mixed experiences during formal education.

Our work shows clearly that poster design can exclude as well as attract specific audiences and that it is extremely important to carry out pre-testing of materials with appropriate focus groups before their final form is decided. It could be suggested that it is too often the case that posters are devised that meet the approval of the devisers and funders but fail to interest or engage their intended audience.

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