

Parallel Session 9: Theoretical framework evolution around PCST

DIMENSIONS OF SCIENCE COMMUNICATION

Drs. Ann Van der Auweraert

*Department of science communication, University of Antwerp,
Groenenborgerlaan 171, 2020 antwerpen, Belgium. Tel: 0032 32653484,
email: ann.vanderauweraert@ua.ac.be*

Abstract

Science communication has received considerable attention over the past few years. A number of related terms such as public understanding of science, public awareness of science, public engagement of science and public participation appear in several reports and journal articles. This article analyses these different articulations of science communication and describes a possible framework for science communication.

Key words: science communication, theoretical framework

Text

Introduction

In a survey of the literature we have found that the term science communication has been used in several different ways, from monologue to dialogue. This evolution could be the result of three important shifts in the way of thinking about the communication process between scientists and the public: 1) the introduction of an active receiver, 2) process communication and 3) public participation.

Monologue

In the traditional way of thinking, science communication is the dissemination of scientific results to a generally passive and monolithic public, usually through the formal education system, or through the mass media. In this diffusion model the communication process goes in one-direction, from a sender to a passive receiver. (Logan Robert A., 2001) The aim of the communication is the 'understanding of science' by citizens, in the hope that there will be a greater support for science, and especially for the great amount of money that goes to science. (Lewenstein B.V., 1992) A lot of effort is put into the raising of increasing the scientific literacy of the public, and we see the creation of several 'public understanding of science' programmes (PUS), based on the concept of this 'deficit model'. See for example: (Paisley William J., 1998; Laugksch Rudiger C., 2000; Wynne Brian, 1991)

Shift 1: The active receiver

In the diffusion model, citizens were generally viewed as empty minds to be filled. But in the communication sciences, they have for a long time recognized that the receiver is an active partner in the process. The transmission of knowledge from sender to receiver is more complex than

thought. For example, there are several different audiences, with their own experiences, knowledge, wishes and needs. So, if the sender wants his message get across, then he has to look closely at his audience. One of the consequences for instance is avoiding jargon. The greater attention for the public also means more creativity in the 'packing' of the message. A variety of events arise with the audience in mind. The 'public awareness of science' (PAS) is the aim, not only the public understanding of science. See for example: (Stocklmayer Susan, Gore Michael, & Bryant Chris, 2001; Wynne Brian, 1991; Laugksch Rudiger C., 2000; Clark Fiona & Illman Deborah L., 2001)

The conclusion is a shift from one-way towards a two-way communication process. There is more interaction between sender and receiver, and the receiver is more attentive to his audience. As the public understanding of science is supply driven, the public awareness of science is more demand-driven.

Shift 2: knowledge as a social construct

As in public understanding of science, the public awareness of science tells stories about the results of scientific research. This transmission of knowledge is certainly suitable for basic science. But what if there is a lot of uncertainty or if there are ethical implications?

In social sciences they have found that knowledge isn't a product, but in fact, the result of a very intensive and continuous interaction process.

Communication is then a mutual process between scientific experts and lay-experts. Communication is a transaction process. See for example: (Bucchi Massimiano, 1998; Wynne Brian, 1991; Gibbons Michael, 1996)

In terms of science communication, it means a shift from product to process communication.

Shift 3: open participation

Within the transaction model, there is a tendency to open participation activities, where scientists and lay people are equal partners in the communication process. The driving forces are the improvement of the relationship between scientists and their public, and the knowledge that science isn't the only source of knowledge. In fact it's one part of our understanding of the world and has to find its way between other knowledge's (experiences, intuition, philosophic, ethical). Other properties of this kind of communication are openness and transparency. See for example: (Gibson Ian, 2000; Barbagallo Fiona, 2002; King Suzanne, 2002)

While a real dialogue between equal partners is the ultimate goal, there are other participation forms where the actors in the communication process are less equal, and where the scientist still plays a dominant role in the agenda setting. For instance, this is the case in the 'Public engagement of science' events, like citizen juries or panels. The aim is to consult the public for decision-making. It's still supply driven. It's a communication process between experts and non-experts, two-sided. In contrast, the real dialogue is a multi-direction way of communication. There is no fixed sender or receiver, or there is no expert or layperson, both are senders and receiver at the same time, and partners in dialogue. The communication process is bottom-up, in contrast

to the original content of science communication that is top-down oriented. (The Wellcome Trust, 2001)

Conclusion: a framework for science communication

As mentioned at the beginning, there are several ways to look at the concept of science communication: understanding, awareness, engagement and participation. These differences could be characterised in a scheme with two axes: product versus process, and close versus open communication.

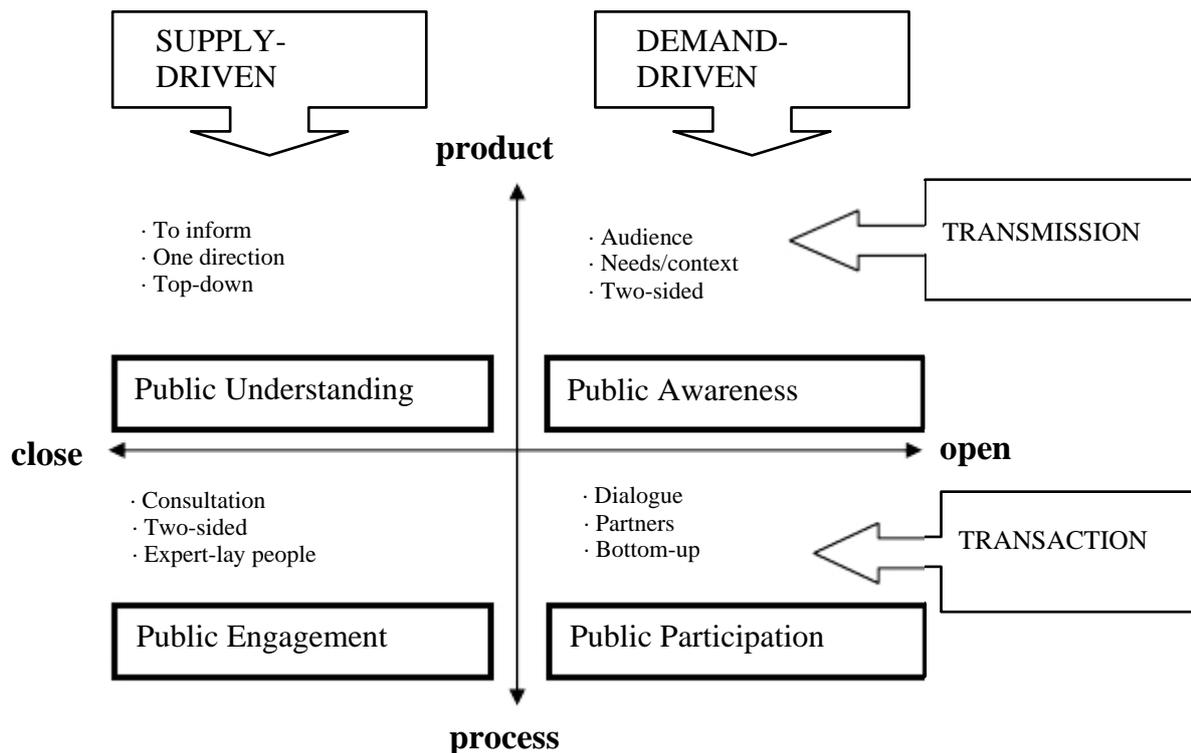


Figure: different Interaction-modes for science communication

All these 4 approaches of science communication are important to build a sustainable relationship between science and society!

References

- Barbagallo Fiona (2002). Should we continue to pursue dialogue? In South-Africa: Conference Public communication of science and technology 7.
- Bucchi Massimiano (1998). Science and the media , alternative routes in scientific communication. Routledge London and New York.
- Clark Fiona and Illman Deborah L. (2001). Dimensions of civic science. Science Communication, 23, 5-27.
- Gibbons Michael (1996). The new production of science and research in contemporary societies. London Sage.
- Gibson Ian (2000). Scientists are citizens too. Fabian Review, 112, 11.
- King Suzanne (2002). Understanding your audience. In South-Africa: Conference Public communication of science and technology 7.
- Laugksch Rudiger C. (2000). Scientific literacy: a conceptual overview. Science Education, 84, 71-94.
- Lewenstein BV (1992). The meaning of "public understanding of science" in the United States after World War II. Public Understanding of science, 1, 46-68.
- Logan Robert A. (2001). Science mass communication, its conceptual history. Science Communication, 23 nr 2, 136-163.
- Paisley William J. (1998). Scientific literacy and the competition for public attention and understanding. Science Communication, 20 nr 1, 70-80.
- Stocklmayer Susan, Gore Michael, & Bryant Chris (2001). Science communication in theory and practice. Kluwer Academic Publishers.
- The Wellcome Trust (2001). Science and the public: a review of science communication and public attitudes toward science in Britain. Public Understanding of science, 10, 315-330.
- Wynne Brian (1991). Knowledges in context. Science, Technology and Human Values, 16, 111-121.

