

# STEM researchers' practices for public trust enhancement

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**Abstract.** The present study explores the practices employed by STEM researchers when communicating current scientific issues to the general public in order to enhance public trust in science. The study took place in the context of the European project "STAGE". Ten STEM researchers, four STEM education researchers and four science communicators participated in the research. The preliminary results indicate that the predominant practices employed by STEM researchers to enrich their current science communication activities for fostering public trust in science include the use of interactive materials, the integration of authentic scientific practices and the negotiation of the social aspects of science.

## Introduction

Climate change, sustainability, nanomaterials, energy choices are all examples of contemporary socioscientific issues that represent an area of science which is controversial, incorporates issues that usually raise debates among experts, politicians, citizens, etc. and which highlight the need for involvement in the decision-making processes. The inherent uncertainty of such issues as well as the involvement of many actors in the corresponding debates, makes the dissemination of relevant misinformation through public media widespread. Therefore, students' as future citizens need to develop competencies regarding the evaluation of the scientific information and sources as well as to learn to distinguish when to question emerging and uncertain scientific contexts and, in turn, when and why to trust science [1]. Effective communication of contemporary scientific findings to students by STEM researchers and science communicators serves to enhance their trust in science, facilitate their engagement with scientific issues and increases their motivation and enthusiasm about science. However, communicating scientific findings with non-expert audiences such as students is not part of the training that most STEM researchers receive [2] fact that makes responding to students' and general audience's needs and interests more difficult for them. Therefore, the need to equip STEM researchers with knowledge, skills and practices necessary to increase public trust in science and public engagement with science arises.

## Theoretical framework

Studies regarding public trust in science levels are limited, however existing research indicates that the mean value of trust in science of secondary school students when it comes to current socioscientific issues is similar to the mean value of university students, an indication which suggests that trust in science might be fostered to a certain degree during school education [3]. Fostering trust in science in school education entails students' understanding of [1]: (i) the methods that underpin scientific investigations, (ii) the norms and values that scientists employ in their work, (iii) how scientists engage in professional settings, (iv) the social mechanisms through which scientists review, evaluate, and validate scientific knowledge, (v) the underlying financial and political dimensions of science and (vi) the inherent uncertainty of science in-the-making by dismissing the idealized and unrealistic image of an unerring and absolutely certain science. However, the aforementioned aspects and scientists' life experiences are far beyond the aspects of the nature of science that students explore during their school life [4]. From their part, STEM researchers who undertake the role of communicating science seem to be able to contribute to public trust in science enhancement by providing public with opportunities to discuss and/or experience authentic scientific practices and processes. Based on the above the research question

that leads the present study is: *Which practices do STEM researchers employ in order to enhance public trust in science during their science communication activities?*

## **Methods & Findings**

### *Research design*

The present study took place in the context of the European Erasmus+ project “STAGE”. Ten STEM researchers, four STEM education researchers and four science communicators participated in the study. Initially, training material on public trust in science enhancement strategies for STEM researchers was developed. The training material was implemented in three meetings. Firstly, the participants explored common misinformation of current socioscientific issues such as climate change, analysed public media resources from a credibility point of view and implemented practices for debunking misinformation. Subsequently, the participants were focused on the social aspects of science while finally, they were called to redesign their current science communication activities for fostering public trust in science. Data was collected through an open – ended questionnaire focused on the practices STEM researchers employed in order to foster public trust in science during their outreach activities as well as the audio recordings of the meetings during the implementation of the training material. Due to the explorative nature of the study, qualitative methods of content analysis were used.

### *Findings*

The results revealed that STEM researchers gave emphasis on the use of interactive materials such as videos, animations, images etc. during their outreach activities. Additionally, they enriched their activities with experiences for public’s familiarization with authentic scientific practices and methods while they also stressed the negotiation of the social aspects of science. Particularly, during the redesign of their current outreach activities, they focused on aspects of scientists’ professional life that support the validation of scientific knowledge such as collaboration among research teams, peer review, participation in conferences etc.

## **Conclusions**

It seems that STEM researchers recognize their role and contribution in public trust in science enhancement while they seem to willingly enrich their current outreach activities with aspects of the nature of science and the scientists’ professional life. However, it seems necessary to provide STEM researchers with professional development programs in order to familiarize them with effective strategies of how to bridge the gap between science and public’s views on science.

## **References**

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