Exploring lessons from the implementation of a regional educational program on public communication of science in Mexico

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Abstract

The Universidad Veracruzana launched in 2013 a certificate program focusing on science communication. The purpose was to bring the socio-cultural domain into a highlight position when preparing science communication strategies in order to create not only bridges between scientists and society, but also to ensure to support citizens' needs with available scientific knowledge. The educational menu offered three areas of concentration: science journalism, multimedia production and face-to-face strategies. The curricular design was rooted in the principles of participatory approaches and experiential learning. On the one hand, the objective was to blend theoretical content with practical experience in order to have a direct interaction with different types of audiences. This resulted in the construction of a science communication perspective that took them beyond statistical data and allowed them to appropriate a view of reality and the

characterization of audiences within their projects. Concurrently to this learning process and having such a heterogeneous group, classes were facilitated with participatory approaches to create awareness of their differences and similarities when discussing science communication conceptualizations. As a common identity as science communicators was constructed, students were exposed to a final project where they worked in contexts that were professionally or personally relevant to them. Their science communication strategies captured their learning process when they expressed in them, elements of intellectual, social or emotional engagement.

Introduction

The establishment of science communication training programs all around the world is proving the recognition as well as the necessity of high skilled professionals in the field (Kearns, 2012; Mellor, 2013; S. Miller, Fahy, & The ESConet Team, 2009; Mulder, Longnecker, & Davis, 2008). The variety of pedagogical focus developed within these educational experiences suggest the heterogeneous approaches and perspectives in which science communication is taught (Mulder et al., 2008). Nevertheless, tendencies appear to illustrate a scenario where training programs are concentrating on specific target trainees and the improvement of specific communication skills. On the one hand, scientists have been the focal participants in the majority of the international programs followed by the participation of journalists, museum staff, and practitioners of other sort (Steve Miller, 2008; Silva & Bultitude, 2009). It is then noticed that science communication training has been understood as the development of educational experiences where the focus has been specific communication techniques, such as personal communication skills and/or media understanding (Steve Miller, 2007). These conditions seem to emphasize a one-way communication model, where the prominence perspective is leaned to the delivery of information (Steve Miller, 2007).

The importance of this tendency goes further than just pointing out a specific type of science communication model. It's about rethinking what type of pedagogical models are needed in order to move forward to a dialogue-based science communication process, as well as to generate reflection on how to propose a meaningful educational experience that proposes more than just the knowledge of a specific set of communication skills.

In this sense, the Universidad Veracruzana launched in 2013 a certificate program on science communication where the purpose was to bring the socio-cultural domain into a highlight position when preparing science communication strategies. The educational menu offered three areas of concentration: science journalism, multimedia production and face-to-face strategies. The stated objective of the program was to train different groups in the design of communication strategies that would enhance the socialization of scientific knowledge with a perspective of social commitment and pertinence in order to create not only bridges between scientists and society, but also to ensure to support citizens' needs with available scientific knowledge.

Methods

Our certificate program was open not for just one specific group, it was intended to form a heterogeneous group which would include scientists, students, practitioners and journalists. For this matter, a prior announcement was distributed along with an intense strategy of public relations where the intention was to promote the participation of different groups. Consequently, the program recruited 25 participants who went through a highly selective admission process balancing in this selection, experience, knowledge and professional background.

The curricular experience was rooted in the principles of participatory approaches and experiential learning with the intention of reinforcing an approach sometimes neglected by the traditional instrumental schemes of education: reflexive learning to understand elements of dialogue (Chilvers, 2013). In this sense, the main premise was to prepare participants to not only learn how to engage through dialog with different types of public but also how to engage with the science communication community itself. For this program, participatory approaches were narrowed to its practical methods focusing on the use of didactic strategies that included a mixture of visual and verbal techniques, active listening, effective questioning and facilitating group discussion in order to share perspectives, knowledge and promoting learning from each other (Kindon, Pain, & Kesby, 2007).

On the other hand, experiential learning principles were blend with strong theoretical contents, including philosophy and sociology of science as well with general

communication theory and science communication models. This combination of theory and practice has been recognized as an important element in the training of reflexive science communication practitioners (Mellor, 2013). Secondly, experiential learning in the program was envisioned as a practice in which the participant in the training program would learn through the transformation of experience. Experiencing, reflecting, thinking and action are the underlying concepts in experiential learning theory (Kolb & Kolb, 2009), and from this standpoint participants in the training program were exposed to direct interaction with various types of audiences through the participation in several local science communication events. This was intended so as to have an awareness process in which students could experience from first hand what is the meaning of geographical and social differences of local audiences.

Thus, we proposed a pedagogic model based on multidirectional communicational processes, participatory approaches and experiential learning where theory and practice would blend in order to promote science communicators with more reflexive perspective.

Results

The group conformation included professionals and recent graduates in areas such as journalism, biology, marketing, archeology, physics, chemistry, biotechnology, neuroethology, public health, atmospheric sciences and arts. Three main groups were distinguished: 40% were scientists, 36% practitioners and 16% journalists. About 44% of the participants had some type of experience in science communication activities. Also, final applicants represented different social groups: 52% belonged to different departments within the Universidad Veracruzana, 16% to local media, 16% to NGOs, 8% to government offices, and 8% to other local academic institutions.

Learning by doing outcomes

Experiencing directly with local audiences through the interaction in different science communication events resulted in the construction of a perspective that took them beyond statistical data and allowed them to appropriate a view of reality.

One example can be narrated. Participants from the training program attended an inauguration event where in a marginalized community a science terminal was

established. Through a very simple discourse contrast, students could notice how different views were used to refer to one same object. The vision of government authorities expressed the need of finding the future scientists of the country, and they were betting for these science terminals as means to promote science vocations. Nevertheless, it was noticed how local authorities from the community pointed out other type of needs, they wanted to know how the world worked, hoping that the science terminal would explain things to them. Afterwards, in informal interviews, students approached some of the children that were waiting in line to get in the terminal and asked them what were they expecting to see. They were excited because they imagined a museum, they were hoping to see fossils and elements that you can find in a regular museum. It's worth saying that the science terminal counted with numerous science games, microscopes, and other items with the idea that children would learn how to be an engineer, how to be a chemist, how to be a mathematician, but definitely not explaining to them how the world works or displaying fossils.

Exercises like these were encouraged along the training program. Other opportunities of interaction included two more live events (an astronomy fair and a dialogue with another certificate program focused on environmental documentaries). There was also the opportunity to dialogue with more than 30 practitioners and theorists who participated as guest lecturers.

These simple activities enriched with theory and posterior group reflection made clear in students the importance of knowing audiences, understanding their needs and expectations in order to plan science communication strategies that would be pertinent. Also, it was a way to reflect on how science is constructed within different social domains and the importance of questioning science as well.

This exercises allowed participants of the training program to cope with reality and theory translating it to their final project proposal. Their final science communication strategies captured their learning process when they expressed in them, elements of intelectual, social or emotional engagement.

Community building

The heterogeneous blend of participants started with some tensions, since every group would state their position about science communication from their professional perspective. So, how can a sense of community be constructed? Concurrently to the learning process, classes were facilitated with participatory approaches to create awareness of their differences and similarities when discussing their science communication conceptualizations. In addition, a sense of opportunity was captured as differences were viewed as a way to enhance their strategies. At the end the grasped perception was that there were not individuals professions anymore, there was now a science communication community. This is reflected as the training program has ended and some of the students have been in collaboration for further activities.

Conclusion

Thus, this program is an effort to examine new possibilities not only in the sense to propose an educational program with social pertinence, but also to explore creative ways to teach science communication. Expectantly, this will contribute to the disciplinary formation of professionals empowered to feel more as citizens and, in turn, have citizens feeling acknowledged.

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