Empowering children: crossing the science in society and the social inclusion agendas

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Abstract

The EU funded project "SiS Catalyst – children as change agents for science in society" is analysing the interrelationships between science communication practices and social inclusion, focusing on the children perspective.

If on one hand science is offering opportunities to overcome forms of oppression and exclusion, on the other hand the science education pathways can be implicitly at the origin of a discriminatory process. In fact, a structured form of knowledge such as science can be perceived differently by children with a higher socioeconomic level (for whom science can be an opportunity of success) and those coming from disadvantaged areas or local minorities (for whom science can be mainly an instrument of selection for progression into higher education, reinforcing the divide between a future perceived as "for them", and a future "for me"). A way to break this correlation is through

empowering actions, providing a space and an audience for listening to children in science in society activities involving them. SiS-Catalyst analysed models of interaction between children and science (science festivals, children universities, science museums, media for children, etc.), identifying where and when the children's voice is taken into account. A series of training workshops were developed and are being tested in 7 countries. They propose practical tools on how to empower children in their relationship with science, helping them to progress towards a sense of ownership of scientific knowledge. The aim is to make them see science as a tool to build the world they would like to live in.

Introduction

Science might be seen as a force naturally helping the democratisation of society, and science communication as fostering this change. Indeed, it is often the case. But not always. Even if well intentioned, science communication practices can indeed reinforce exclusion mechanisms. This can happen in many subtle, hard to spot ways. In fact, any science communication or science engagement activity is composed of an explicit message (usually, the scientific content), and of many implicit co-messages that accompany the possible interpretations, uses, framings, and evaluations that the member of the public will associate to the main message. Depending on the language used, the people met, the links with personal or social values, the intrinsic links with the social, family, economical or school environment, etc., a meeting with science can offer new opportunities of choices for the future of a young person, or on the contrary confirm and reinforce experiences of exclusion. It is therefore of uttermost importance that the science in society agenda crosses the social inclusion agenda, so that hidden in science communication activities are identified and possibly removed. This is particularly relevant when dealing with children: they are one of the main target group for science communication, and messages sent to them can strongly impact their future, through opening or closing possibilities of choice.

Reduced in its simpler terms, this means answering the question: How can we avoid science communication activities reinforcing exclusion mechanisms? A first, fundamental answer is that children must be empowered to build their own relationship

with science, and to develop an ownership of the knowledge they encounter (Merzagora and Rodari, 2013). This has several implications.

First of all, science in society activities should ensure that children have an opportunity to express themselves.

Secondly, organisers of science in society activities should be aware that, despite of their best intentions, their message might create a distance rather than a proximity between children and science.

Thirdly, institutions should incorporate the fact that in order to create inclusive spaces and activities, they should stop thinking that they need to change their audience, and rather concentrate on their own change.

In the following, we will develop these three axes according to the work currently carried out within the "SiS-Catalyst - children as change agent for science in society" project. This work focus on science communication activities involving a direct contact with the public, i.e. science centre and museums, festivals, children universities, proximity and community activities, etc. It is leading to the development of a set of training modules aimed at raising awareness of the importance of listening to and empowering young people, targeting scientists, organisers of science communication activities, and facilitators/explainers. The background of the project and the methodology are presented in the Appendix.

The right of the children to have their say

When we talk about science we are talking about the future, thus about something that affects the children. In this context, listening to children and empowering them is not just a choice, but an obligation for all states who signed the UN convention on the rights of the child. Indeed, article 12 states that we "shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child" (United Nation, 1989). Research on children participation provides very useful insights on the complex implication of the declaration, that are not necessarily well known in the science communication community. In analysing them, we identified two approaches as particularly relevant in the science communication context,

and we embedded them in the SiS-Catalyst training scheme and toolkit. Laura Lundy and her collaborators developed a model pointing out four factors ensuring the children's "right to express their view" and the right that those views are "given due weight": Space (safe and inclusive opportunity to form and express a view), Voice (facilitation to express views freely in the medium of choice), Audience (the view must be listened to) and Influence (the view must be acted upon) (Welty and Lundy, 2013; Lundy, 2007) . Gerison Lansdown proposes a set of reflection and tools for promoting, measuring and evaluating children's participation in democratic decision-making. The approach provides a sort of "empowerment continuum", that identifies the characteristics, limitations, opportunities of different level of involvement of children, ranging from simple engaging techniques in adult led activities, to an involvement of children in designing and setting the agendas, such having them participate in the governance of an institution or an activity (Lansdown, 2005).

Both models were developed in contexts very far from science communication and science in society activities, but proved to be very effective in a training context also in our field of interest: in fact, they provide easy to use background reflection, checklists, and evaluation tools, to self assess the capacity to truly listen to children and empower them to develop a sense of ownership of scientific knowledge.

Training to listen and empower

In analysing the science communication landscape with the lens of social inclusion, we identified three main target groups that might influence a shift towards more inclusive actions (we are still confining our analysis to actions involving direct contact with the public). These are 1) organisers of the activities; 2) facilitators, explainers, guides, demonstrators etc. 3) scientists involved in presentations, workshops, lab visits, etc. We developed specific training schemes for each of the three groups, that were tested across Europe. Concerning the first two groups, it was chosen to focus on self-reflection approaches. In fact, organisers and facilitators have a constant, direct interaction with the public, as well as locally meaningful training strategies: additional set of information, training activities or abstract best practices would be neither welcomed nor effective. On the contrary, offering simple activities that help them reflect on what

they already do can have a very high impact on mobilising existing knowledge and raising awareness on inclusion issues. For example, a simple exercise consists in reviewing an activity from design to implementation and possibly evaluation, asking when and where the young participants had a chance to express themselves, and when and where they actually did express themselves in practice. By doing this, both implicit and explicit barriers to listening to children become immediately apparent, and can be removed if there is the willingness to do so.

For the scientists target group, a specific training module was developed in collaboration with Association *Paris Montagne* in France. In fact, we realized that many training schemes focus on the performance of scientists in being clear, engaging, passionate, rather than on the relationship they are building with their audience. However, the elements determining a sense of inclusion or exclusion are not necessarily linked to performance qualities, but rather to a good understanding of the audiences and an honest auto-analysis of the scientist's own difficulties. Two main activities are at the heart of this training module. A discussion game helps scientists reflect on what is their agenda in communicating to a young audience, and what is the children agenda in participating to the activity and listening to them. The comparison between the two agendas allows to raise many critical reflections on the possible misunderstandings, not concerning the scientific content in itself, but the relevance and the meaning of the scientific content for the children. Even before this, we noticed that in some cases the very fact of recognizing that children have a complex and well-structured agenda for participating in a science communication activity was somehow surprising for the researchers. In fact, there has been a lot of work on children stereotypes of scientist, but quite little work on scientists' stereotypes of children. Despite the great advancements in learning studies, children are often perceived only as stereotypical school student, and therefore "passive learner". On the contrary, when engaged in informal learning activities, children have specific and well thought (at children level) reasons for learning or being interested in learning, that only partially depend on the teachers or presenters. But this remains a highly neglected factor, and we are convinced that a seed of exclusion mechanisms is often contained in these simplifications.

As second key activities, specifically developed with *Paris Montagne*, is the so

called "wall of fear", in which scientists are asked to reflect on their fears and uncomfortable zones in interacting with young audiences (and in general audiences which do not share their same code of conduct). Once again, the very fact of recognising that young people can be a scary audience (for their questions; for their lack of questions; for their behaviours; etc.) allows for a very deep sharing of experiences and advice, which we believe can be very helpful in building an inclusive relationship.

Institutional learning

The most difficult of the three steps outlined above consists in provoking a change in the institutions (Gary and Dworsky, 2013). Except for some rare cases, or thanks to some in-depth research studies (such as the work of Emily Dawson or Andrea Bandelli in the museum field), exclusion mechanisms are hardly visible, since their effects occurs and can be measured only in a different time and in a different place with respect to the cause. For example, a visit of young person to a research centres in which s/he doesn't see anybody belonging to its same ethnic community can still be a very pleasant experience, but have a very negative impact in his or her freedom to chose a potentially interesting career ("I like science, but it's not for me"). This is extremely difficult to measure and, as a consequence, very difficult to be recognized at institutional level.

Moreover, as we developed in a paper presented at PCST in 2012 (Merzagora et al., 2012b), there is a general tendency by scientific and science communication institutions to place all the problems in the public or in the communication, rather than on their own nature.

Conclusions

At this stage, we cannot provide robust proof that these approaches produce a direct impact in promoting inclusive actions. We believe it is too difficult to measure in a general sense, and only analysis of specific cases and a very well delimited contexts can produce research-worth results. However, as already stated, a first essential step is to firmly include social inclusion preoccupations in the agenda of science communication activities and in the thinking of the key actors participating in them. In most cases, we

think that this should already be considered as a key results. In facts, as the mechanism producing exclusion within science communication activities are mostly implicit and hard to spot, a general, cultural dissemination of an attention to these issues is at least as important and effective as specific targeted actions.

Appendix: SiS-catalyst and the "Listening and empowering" activities

Sis catalyst – children as change agents for science in society (www.siscatalyst.eu) is a four-year project supported under the Mobilisation and mutual learning action plan of the FP7 Science in society programme, that will finish at the end of 2014. It is coordinated by the University of Liverpool, and it involves thirty-four partners and advisors from twenty countries.

The project is about the global change in education culture that we need to embrace for our future, through addressing the fundamental question of how we include children in the dialogue between society and the scientific and technological communities.

SiS Catalyst supports science organizations to better engage with young people and to successfully establish strong ties from the earliest age possible - in particular to target those who are currently unlikely to progress to higher education because of their social, cultural or economic background. In this sense, it aims at crossing the science in society and the social inclusion agendas.

One of the work packages of SiS Catalyst specifically addresses the issue of listening to young people. "Listening" is intended as a dialogue between young people and a higher education institution or a science and society activity. It is considered an essential first step to empower young people and drive institutional change. We are exploring it from a very theoretical to a very practical point of view, focusing our attention on the forms of listening that involve an empowerment of the children.

An exploratory work involving eight case studies spanning various types of activities involving children allowed establishing a series of priorities (Merzagora *et al.*, 2012a and 2012b). This preliminary work led to the development of a training scheme, focusing on listening to young people and empowering them in their relationship with science. This part of the project was developed in particular by *TRACES* and Association

Paris Montagne in France, SISSA Medialab in Italy, and Raul Araujo in Brazil and in the UK, with contributions from all SiS Catalyst partners. Between 2011 and 2013, we held a series of pilot training workshops with children in Paris, Liverpool, Ankara and Bucharest (Merzagora et al., 2012a and b), the outcome of which allowed to develop the scheme for a series of training workshop, tested in Paris, Porto, Tuebingen, Innsbruck (Bou-Vinals and Prock, 2013), Vienna, Trieste (Rodari et al., 2013) and Bucharest. This work is now converging in the editing of a training toolkit. The toolkit will be presented at the final SiS catalyst conference (Vienna, September 2014) and will be made available in electronic format by the end of 2014.

Acknowledgments

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