

Universidade das Crianças: Science as a Social Inclusion Vehicle

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Abstract

Science can be as fun as it is beautiful and intriguing. And not only that: it can be palatable to different kinds of public and not only can – as it should – make usage of the curiosity of these publics so that scientific discourse makes sense and be absorbed by them. These are some of the ideas that direct the extension project Universidade das Crianças (UC), from Federal University of Minas Gerais (UFMG), which main goal is to communicate science to children in a playful, interactive and socially inclusive way. Its results go far beyond the good ideas it merges and fosters: the short animated movies produced by the project have earned prizes inside and outside Brazil, being present in several animation festivals in Latin America; the project has also been presented in

scientific meetings in Latin America and Europe – and some of the illustrated texts have been compiled into a book, which is having its final details being taken care of. Universidade das Crianças merges creativity and inter (and multi) disciplinary and condenses the energy resulting from this mix into showing children that science is an appealing and highly attractive endeavor.

On the project

Universidade das Crianças (UC), that had its start in 2006, is an outreach project from the Federal University of Minas Gerais (UFMG). UC counts on a multidisciplinary team composed of professors, researchers, students and ex-students (volunteers or grant holders) in the courses of Fine Arts, Social Sciences, History, Communication, Biological Sciences, Physiotherapy and Medical Sciences – who are mostly members of the academic community of UFMG, though there is also participation of volunteers from other universities.

The main objective of UC is to communicate science to children, mainly on themes that relate to the human body and the environment, as well as to stimulate social inclusion and value idiosyncrasies and differences in the contact of our target public with the scientific universe. An important asset in the project is the stimulation it seeks to give children in order to spur them on route of the building of their own knowledge, thus making them aware that they are active subjects in the communicative process. It is through children curiosity that all the content is defined and discussed.

The project's work consists in the making of workshops with children and pre-teenagers between nine and fourteen years old (mainly in public schools from other cities not including Belo Horizonte, capital of Minas Gerais state), and, from these workshops, short animated films, short radio programs (or also “radio-pills”, as they're called in Portuguese) and illustrated texts are produced.

From 2006 on, UC has expanded and glimpsed new possibilities: in the beginning, its main product were the radio-pills broadcast through UFMG Educativa Radio. Later on, the short animated movies came about. In 2009, UC got its own website – in which all this material was made available, and later, also the original recorded scripts, adapted to the web language – some of them with illustrations. Since the second

half of 2011 the project has its current web address (<http://universidadedascrianças.org>), wholly reformulated, where all produced content keeps on being made available.

How UC works

The initial part of the job – the workshops with children – has an extensive process of preparation, execution and post-production. Everything in the project does results from them: animated films, illustrated texts and audio pills.

Firstly, the team decides in which city the workshop will take place (preferably in cities where access to information, museums and scientific knowledge is meager in relation to Belo Horizonte, but, for logistical reasons, are not too far from this city). The team goes to the chosen school and interacts with children there by dialogue: they share ideas about science and what scientists do, and, also, there is emphasis on the importance of questions as a crucial part of any research. Children are then invited to leave their questions in a closed box – and these questions are the starting point of all activities of the workshop taking place in the following few days.

The team thinks of what activities should be developed, and, as they're crafted and thought about, UC takes some questions to consider, such as: what kind of interaction does the project want to establish with these children, how can they be helped to let their imagination run loose and how can their curiosity for science be fostered?

Such questions are, more often than not, answered with drawing workshops, animated movies exhibitions, games, child's plays... the imagination and a bit of these children lives can be expressed with color pencils, crayons and colored pens over white paper, puzzles, colored books, cardboard sheets, talks over the impression they have when taking part at the 'senses workshop' (in which they are asked about what comes to their mind when they feel a certain smell or texture, contained within a box which is closed to their vision, but not to their olfaction or touch). Younger kids also feel a lot of empathy with rags dolls, while the older ones get impressed by the resin model (which even got a nickname, "Sinfrônio": it has all the human organs in real format and a little reduced size. It can be assembled and dismantled and comes from the Morphology rows at UFMG straight to the looks, sometimes attentive and sometimes skeptical, of children in these workshops). Some children are fascinated while others get somehow disgusted

with the real brain, kept in a container with formalin. Again: since they are away from science centers, museums and probably their scientific education at the school have few resources available, this is a very good opportunity for these children to have direct contact with these themes.

In all times, children are stimulated to leave their questions, to ask about “anything they want to know” and, after that, the team discusses some of these questions (since it’s not possible to answer them all at once, the team works with the most recurrent and/or picturesque ones), which are re-discussed with children. Then we reach a post-production phase, with the writing of radio pill scripts and texts for the web, which are also adapted to the animated movies.

With such work we seek to stimulate the emotion of these children when listening to their own voices in the questions or seeing their names in the texts. We believe it provokes a more efficient content assimilation since it connects with their emotions (and curiosity), thus making the content become much more personal: after all, they are the ones who set the agenda to the script the project develops to each question.

It’s also very interesting to notice how the social context around each school and community UC visits have a great impact over the questions they make and what they want to know. That makes some questions to be recurrent (“why do we have headaches?”, for example, is a very common question), but at the same time it gives place to a wide range of questions, which abridges since “what is a neuron and how does it work?” to “how are babies formed in a woman’s womb?” or “why did Man choose the space to explore?”.



Figure 1 - Children in Cardeal Mota and Sinfrônio in a workshop held in 2008

UC believes that children, when feeling stimulated and able to ask and question, can have their self-esteem and self-knowledge (and also the knowledge of the world around them) improved. Science, this way, becomes much more interesting because it gets closer to them and cease being an entanglement of formulas and concepts that need to be memorized. Stemming from this idea of informal education, the project seeks to pursue a different direction in relation to formal education courses, which

often neglect contemporary issues in Science as well as scientific topics of importance to students' lives. Most courses fail to engage students in the kind of experiences they will encounter in their adult lives such as interpreting persuasive messages, searching for information on the Internet, or finding the answers to everyday science

problems. No wonder so many students complain about the relevance of science courses and report forgetting the material they studied. (LINN, DAVIS & BELL, 2004, p. xv)

A child's mind is not a "tabula rasa", a blank sheet which needs to be filled. On the contrary: learning, as Vygotsky (1998) said, results from the interaction of the social lives of children with those who surround them, and that needs to be taken into account by child educational programs. Children carry their extra-school experiences with them into the classroom and their learning cannot be dissociated of their social context. They need to be actively involved in the construction of their own knowledge so that it becomes part of the children's repertoire.

It is also crucial to give special attention to the kind of language in use: if it raises more questions, if it tries to give closed answers to unsolved questions, if it underestimates the intelligence and capacity of children. UC's concern is to treat language in a way it embraces several worldviews and, though privileging the scientific explanation of things, leave room so children can think there are other versions – and not only the scientific – to the questions they pose.

We also avoid proposing enclosed systems to hand ready answers to questions science can't answer, thus, avoiding the making up of scientific thought as a "magic little box that has the answers to all questions". Instead, we seek to answer what science can answer, leaving some space to other interpretations and, when there's no scientific version or evidence on a certain question, we point towards the actual reach of scientific knowledge on that matter, but making it visible that there's still more to know about it. This way, the team believes children are spurred to think critically not only by the use of science as a vehicle of critical thought, but also questioning science itself, not considering it the ultimate answer to all questions.

Some results

Since 2006, Universidade das Crianças has already held many workshops and, besides the Elementary School of Centro Pedagógico da UFMG (where the test-

workshops were held), the following cities have been visited: Cardeal Mota (2008/2009), Caeté (2010), Morada Nova de Minas (2011) and Diamantina (2011), Martinho Campos (2013). In Diamantina, for example, instead of working with one school alone, as usual, UC received students from eight different schools (one of them with a group of students with special necessities) at the Old Market of Diamantina during the National Week of Science and Technology in October 2011, promoted by the Ministry of Science, Technology and Innovation (MCTI).

From all UC activity, we count more than a thousand questions received, an average of 250 written texts and 200 radio pills – plus more than one hundred illustrated texts and twelve animated films. Besides that, Universidade das Crianças has also received recognition for its animated movies, inside and outside the academic environment: several participations in animation and science festivals are pinpointed in our curriculum, as well as some prizes. Among the festivals UC took part, we can count the III Festival de Cine y Vídeo Científico del Mercosur (CINECIEN) of 2008 in Buenos Aires; the VIII Brazilian Student Animation Festival (Anim!Arte), in São Paulo, 2009; the XVIII International Brazil Animation Festival (Anima Mundi) in 2010, in São Paulo and Rio de Janeiro; the VIII Udigrudi Animation Show (MUMIA), in Belo Horizonte, also in 2010, and the Inconfidentes National Festival of Cinema in Mariana, Minas Gerais, in 2009.

Among the prizes we count the first place at the Festival de Cine y Vídeo Científico del Mercosur (CINECIEN 2010), in the Argentinian capital, for the videos “Where does our voice come from?”, “What does our body do so we grow up and change?” and “What do we have skin for?”. UC has also received an honorable mention in the 2008 edition at the same festival for the video “Why aren’t we born knowing things?”. The project has also received the first place at the Scientific and Cultural Video Contest of UFMG, in 2010, in Belo Horizonte, for the video “What does our body do so we grow up and change?”.

The expectation is that production increases and more prizes be earned – and that more animated movies, texts and radio pills come to a wider range of publics.

Conclusion

With this work, UC intends to keep on experimenting useful tools in the promotion of informal education, always bearing in mind the quality of content and ways to involve children, the school and scientific communities in the learning process the project proposes. There is still a long way to go and many discoveries to be made (as well as many hurdles to overcome), but, in between mistakes and corrections, the objective is to guarantee the project subsists, evolves and develops in order to reach more children and more people interested in science communication and science education.

References

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