

## **Readers to the task: engaging children in science communication**

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### **Abstract**

Children have always been in mind during the process of selecting themes, writing texts and preparing illustrations to *Ciência Hoje das Crianças* (CHC), a 28 year-old Brazilian science communication magazine: kids are our target-public and our goal is to prepare something they will really enjoy.

After years interacting with children in letters to the editor and special events where CHC's team was invited to chat with the audience, we were always amazed by how creative and propositional our readers are. Last year (2013) we decided to start engaging them in a new editorial board, in order to participate in all phases of our working process. We established a pilot project in partnership with a local school. Students from 5<sup>th</sup> and 6<sup>th</sup> grades were invited to take part of the board and participate in three phases of the working plan.

The first one was to evaluate already published editions of the CHC and stories from our website, CHC Online. In collaboration with the school's teachers, we prepared a questionnaire regarding visual and content aspects of the publications.

Second step was to evaluate articles before they are published, so we could modify them based on children's suggestions. The third step was to collect theme suggestions from the children.

With this project we expect to engage readers in all phases of our work process, empowering them to deal with journalistic tasks and to create their own science communication initiatives.

## **Introduction**

Ciência Hoje das Crianças (CHC) is the first science magazine aimed on children in Brazil. It was created in 1986 and is a product of the Instituto Ciência Hoje (Science Today Institute), a non-profit Civil Society Organization of Public Interest based in Rio de Janeiro.

Through a partnership with the Brazilian Ministry of Education, CHC is monthly distributed to over 60.000 public schools in all regions of the country. Our goal is to join together all areas of scientific research, in a simple and exciting language capable of engaging children in science education.

To do this, we count on the contribution of hundreds of Brazilian scientists, and we have a staff formed by journalists and scientific editors. In August 2013, we decided to invite our public to the task and include children in a new editorial board.

A pilot project took place in a private school in Rio de Janeiro, chosen because of its long tradition on working with CHC in science classes. The project was well received by teachers and coordinators, and they helped us to adapt the working phases to the school's routine.

After negotiating with them, we decided to schedule three meetings with 5<sup>th</sup> grade students: the first one, to introduce the project and explain its phases, and inviting children to evaluate past editions of CHC; second, to evaluate a non-published edition; third, to collect children's suggestions and to evaluate the whole project.

The 6<sup>th</sup> grade class was invited to evaluate and contribute to our website, the CHC Online. We also did an introduction meeting with them, but after that we decided to work online. This part of the project faced some difficulties that will be discussed later on this article.

### **Step one: Meeting our collaborators**

CHC's team went to the school to introduce itself to the students and to invite them to the new editorial board. We did a small presentation on how our team works to prepare every edition of CHC and on how we expected to include children in this process. Student's response was really good and exceeded our expectations. They were excited about having their ideas put on paper and published in a magazine they knew so well.

Many of them started to pop article suggestions and brought references of other magazines and websites they also use to read.

By the end of the meeting we distributed past editions of CHC and an evaluation questionnaire to the 5<sup>th</sup> grade students. They answered it later on that week, during a school day, with support of their teachers. We got 46 answered questionnaires.

Questions asked their opinions about the cover of that edition, the favorite and the least favorite articles, the size of the texts, the parlance we used, the titles we choose and the illustrations we put together with the texts. They were also asked about specific sections of the magazine: tale, poem, comics, games, experiment.

After that, each student chose an article of that specific edition to evaluate with a little more detail. We suggested a set of questions to guide this evaluation (From 0 to 10, how would you rate this article? Did you understand what is it about? Was it easy to read? Are you interested in this topic? Do you think illustrations helped you to understand the text? What would you change in text or illustrations to make them easier to understand or more interesting to read?).

Most of the comments we got were really positive. Children approved both textual and graphic aspects of the magazine and made positive comments, i.e., “cool”, “interesting”, “great”, and “attractive”. On the other side, some students said that CHC was “too childish” for their age.

Most children said CHC articles in general were “of a good size” (not too long, not too short) and used an ideal parlance (not too easy, not too hard to understand). It is interesting to notice that, out of three options (easy, hard, ideal) three children marked both “hard” and “ideal”, and two children marked “easy” and “ideal”.

About the illustrations, whether most of the participants said they were nice, some of them asked for more realistic figures. A couple of students also said it was important that illustrations vary on styles.

Participants made nice and smart comments, proving to be careful and mindful readers. They valued, for example, that some games were related to the edition’s articles, and asked for more experiments in each magazine. Some suggested to go deeper in the themes we approached and to select easier words in some cases.

In the edition 247 (July 2013) most liked articles were “Travel Diary Of Two Diving Biologists” (about two experts’ adventures diving around the world) and “Why Do Dogs Wag Its Tales When Happy?” Least favorites were “Dark matter and dark energy” and the comic strip (both of them were also pointed as the favorite ones by a couple of students).

Children who chose the dark matter article as a least favorite one thought it was “too long”, “boring”, “confuse”, hard to understand and other similar comments. Regarding the comic strip, they said “it wasn’t funny”.

In the edition 246 (June 2013) most liked texts were “The Lady And The Frogs” (about life and work of Brazilian scientist Bertha Lutz) and “A Walk Through The Evolution Of Computers”. Curiously both were also classified as least favorites, with reasons such as “too long”, “too short” (both for the computers one), “I hate frogs”, “boring”, “childish”.

About a third of the questionnaires did not answer about a least favorite text or answered something like “none, I like them all”.

Whether we were happy about the positive comments, we think the negative ones will be really useful for helping us to improve our work and to refine CHC according to readers’ perspective.

### **Step two: Evaluating a non-published edition**

In our editorial board’s second meeting we took the CHC 252 (December 2013). While the texts were already written, most of the illustrations of the edition were not ready by the time of our meeting, so we took the opportunity to clarify how the approval of text and figures works.

Children were divided into small groups and each group was responsible to read and evaluate some pages of the upcoming edition, making suggestions when needed. CHC’s staff was there for this whole activity, answering questions when asked to and chatting with the groups about how each text was made.

We also explained to participants that CHC has a wide range of readers, some younger than 5<sup>th</sup> graders, and some living in places where access to cultural products, including magazines, newspapers and even internet access is limited. It was interesting to

notice that information was taken seriously by the participants. Later this idea echoed in their discourse, as they made comments such as “I understand this, but a younger child will not”.

Once more the general evaluation was good. But this time, as the articles had not been published yet, participants had the opportunity to work in details, for example pointing words they thought were “too difficult” or making small observations to improve illustrations. They suggested little information we could add to make the articles more interesting.

It was rewarding to see how seriously participants took this task. Most of them were really engaged in improving that edition not only for them, but also to benefit other children that would read it later.

We strive to incorporate the editorial board’s suggestions to the articles. Two months later, when we brought the published magazine to the students, they were proud to see how their opinions were taken into practice.

### **Step three: Suggestions to the future**

Our last meeting took place in a big empty room where, in a friendly and informal environment, we all sit on the floor to discuss the next step of our work: a brainstorming of themes and science topics that could be addressed by CHC in 2014.

First we talked about how we build our agenda: choosing topics that are relevant to Brazilian children’s reality, listing subjects that are related (but not restricted) to national school curricula, building each edition with articles about different science areas. We divided the participants into small groups and each group had to list at least one suggestion regarding the following scientific areas: biology (as a whole), zoology (a smaller area to what our readers have always shown a special interest), environment, social sciences and humanities, and exact sciences.

After each group had made its suggestions, we sat on a big circle to discuss them all. Participants talked about their curiosities and motivations, and were asked about details of their ideas. During the conversation, students were free to intervene and add new suggestions any time they wanted to. CHC’s professionals also commented the

topics, explaining whether they have already been addressed and inviting children to think of new angles to approach them.

Though this conversation turned a bit chaotic at some points, with several children speaking at the same time, it was fruitful. Most of the group were engaged in the task and participated enthusiastically.

We left the school with a long list of topics, that included, for example: human organs compared to animal ones, camouflage in terrestrial and aquatic species, Earth's formation, world wars, plants evolution, circulatory system, human evolution, water issues, dangerous bugs, Schrödinger's cat, Antarctic research, French revolution, bats, carnivorous plants, history of Africa, alternative energy sources, literature, cancer, HIV/Aids, mathematics, the invention of video games, indigenous culture, Einstein's relativity, history of chemistry, ancient Egypt...

Our team is now working on how to attend these requests and searching for Brazilian scientists willing to write about them. Some of the topics have already been addressed in the first editions of 2014 and in stories published in our website.

### **Limitations**

This project was a first effort to establish a new process into our production routine – to listen to children in all phases of our work. The pilot experience was valuable and brought readers' perspective right into the game. The results were taken excitedly by CHC's team, but we recognize there is still a lot to work on.

First of all, as CHC is read by thousands of children throughout Brazil, the very specific group we brought to work with us cannot be considered representative of our audiences. They belong to a privileged group of upper middle class from a private school located in one of the biggest cities in Brazil, but CHC is also read by poor, public school students in little villages up-country.

Secondly, working inside a school was a privilege in one hand (as we had the support of the school's staff and a proper place to hold our meetings) but brought some difficulties on the other hand. Since we had to fit our meetings in the school calendar, they were separated by several weeks, what made the process longer.

As the 6<sup>th</sup> grade teacher thought it was better to work online with her students that also brought some extra difficulties. It took months for us to get a complete e-mail list of the interested students, and by the time we started to contact them the end of the school year was approaching – as a result we have only a couple of answers to our requests. In the beginning of the project we thought it would be nice to have 6<sup>th</sup> grade students as contributor reporters to our website, but we have not achieved that yet.

Other limitation is that, since CHC has a very small staff, it is hard to find time in a busy routine to incorporate regular meetings with children.

### **Next challenges**

Despite the difficulties we faced, CHC would like to expand this project. To make this a reality, we need to improve our assessment methods and to find a way of including children with different profiles in this task, in order to have a board capable of representing the wide, mixed group of CHC readers.

Our next step will be to repeat the project in a public school also in Rio de Janeiro – our current staff and budget limitations do not allow us to do this project in other regions. We hope to get new perspectives from a different group, what will help us to bring us closer to the reader's view of CHC.

In the future, we hope to expand this project and to turn this children's editorial board project into a regular activity. We believe engaging readers in our work process is the best way to develop a magazine that responds to their needs and desires.