

***La Canica. A magazine to engage young people in science communication***

Adriana Bravo

Universidad Nacional Autónoma de México (UNAM)

Dirección de Medios

Subdirección de Información

[adrianabravowilliams@gmail.com](mailto:adrianabravowilliams@gmail.com)

Ángel Figueroa

Universidad Nacional Autónoma de México (UNAM)

Dirección de Medios

Subdirección de Información

[afigueroa@universum.unam.mx](mailto:afigueroa@universum.unam.mx)

Alfonso A. Fernández

Universidad Nacional Autónoma de México (UNAM)

Dirección de Medios

Subdirección de Información

[afernandez@universum.unam.mx](mailto:afernandez@universum.unam.mx)

Claudia Juárez

Universidad Nacional Autónoma de México (UNAM)

Dirección de Medios

Subdirección de Información

[clapaju@hotmail.com](mailto:clapaju@hotmail.com)

**Abstract**

*The Dirección General de Divulgación de la Ciencia* (Science Public Communication Department) has developed products and activities in all media communication, to

diverse audiences. Nonetheless, none had incursionated in a science magazine. There wasn't a project like this one in the institution and there are no more than three magazines on science communication for children in market. Considering a gap in education in Mexico, it is a need to expand educative materials, specially those that have to do with public communication of science. The magazines have a great potential to cover that goal, are highly accesibles, can handle a more familiar language, complemented with images and few text, the comprehension on the subject grows. The magazines will be used as didactic material to get more children to read. To initialize the project, many literature was searched about: related experiences (national and international), the profile of the audience we wanted to reach, their interests to cover them on future magazines, and other similar aspects for the editorial line that we are going to show. An evaluation process is being developed with two issues we have been released. We also will approach the pedagogical aspects we considered for the realization of the project, and that may be useful in any other project along the lines of public communication of science for children and adults.

### **Introduction**

La canica magazine, translated as The Marble, is a project whose objective is strengthening public science communication (PSC) aimed at children, a population group which has not been enough attended. We have decided to focus on children aged 8 to 12 since children start their third grade (in Mexico, this is when they start acquiring more reading fluency and start their natural science lessons) after they turn 8. After age 12, children start their middle education, having qualitatively different needs and capacities. In the quest for a product that was easily accessible to our objective population, the magazine format seemed ideal. Firstly, it is a portable format that children can carry everywhere. More importantly, since the magazine format is more suited to a leisure time activity, readers have the liberty to assimilate the material at their own pace and guided by their interest. Also, we have aimed at reaching marginalized populations, and the magazine format is easily distributed without imposing further technological barriers. The project was sponsored by Telmex, one of the largest telecommunications corporations in Mexico, thanks to which it was possible to print the first two numbers,

with a circulation of 15 thousand copies each. These copies were distributed freely in Mexico City through several massive events in public science communication (serving 3000-5000 people), at Metro Stations, and through a tailored program called *Taxis por la ciencia* (Taxis for Science). This program consisted in placing magazine along with other outreach products for direct access by users of this mode of transport. In this first phase, the magazine was developed for the local audience: Mexico city children, with an emphasis on how their daily activities are related to the environment they inhabit.

The magazine has 16 pages divided into 8 sections that provide information on attractions, events and phenomena that occur in the environment, the latter approached from the perspective of the popularization of science. The editorial suggests places in Mexico city related to the content of the issue. We included three themes which address big concerns of society regarding children: physical activity, health and environmental protection. The magazine includes a section in technology. For example, the first issue introduces the Chinampa. These artificial islands serve as an example of a prehispanic technology for aimed at growing crops in lake beds around Mexico city. This technique is still in use. The central pages included a gallery of photographs aimed at reinforcing the content of the other sections. We also featured an interview, in each issue, with a mexican scientist in order to stress the human side of science. In the last part, we propose experiments, activities or recommendations for leisure time.



So that children can identify themselves in their lecture, a pair of (dizygotic or fraternal) twins of different sexes were designed as main characters which accompany the reader through the pages. Twins of different sexes were chosen in order to promote gender equality. A tablet PC is used by these characters; this device promotes use of technology as means to obtain information in a timely manner.

The magazine features additional electronic content to be accessed through a QR code or by means of a dedicated web page. The additional content of the first issue introduces the main characters, while the second issue links to a video of Mexico's National Astronomical Observatory.

Naming this new product was not an easy task. Most of the proposals were

somewhat obvious, or were in use, so we returned to an old concept: the Marble. Although it is not a popular toy nowadays, it is attractive because of its shape, size, variety of colors and even encourages curiosity to discover its properties; we use it as a reference to show children that they have a world of knowledge at their fingertips.

## **The editorial plan of La Canica**

### **How to start?**

To start the project, we considered the great differences that children presents in their development. Children from 4 to 7 are not proficient in their reading and writing but like to observe the graphic elements. Children aged 8 to 9 show markedly different interests to their older peers, some of them are still not proficient in reading and writing and need considerable graphic support. Between 10 and 12 the different sexes show distinct preferences regarding colors, activities, style of characters and others. We also had to take into account the great cultural diversity present in the mexican population.

We decided to develop a local product aimed at children aged 8-12 years. In Mexico City there are 664 000 children in this age group and they attend the second stage of primary education. 90% of them attend state schools. To learn more their profile, a survey was conducted in public places. We started with a small sample of 91 children, to which we applied a multiple choice questionnaire with simple questions about what kind of materials they read and what interests they had on some issues. They were showed examples of foreign science popularization magazines for children to have their views on the structure and design. This showed us we were on the right track since the sample showed much interest in these materials.

The results showed that they like to read Comics or cartoons (42), stories (34), online documents (15) and only 5 read a newspapers section. Contrary to what we thought, the five topics they would like to know more were: chemistry (67), technology and robotics (57), science (54) mathematics (51) and physics (42).

The activities that they the most do in their free time were: listening to music (69), watching TV (57) and surf the internet (51). It was important to note that more than a third of them like to watch photographs (37) more than cartoons (31) or illustrations (23). Their favorite colors were blue (43) and purple (21).

To start the delimitation of the themes we considered the information from the poll and the main problems we face as citizens of a city that is growing rapidly and in disorder; where we have adopted habits that do not belong to our culture and that are threatening our health and environment. This led us to think that information presented should promote self-care and the contextualization of children within their environment, through reflection, criticism, doubt, inquiry and challenge, all within a fun atmosphere.

Magazines are materials that are developed with various elements such as: text, photography, artwork, characters, typographic resources, quality of print. (And above all, their composition.) It is therefore important that the editorial design inputs expression and personality of each item to distinguish it from the coherent whole, allowing the reader to find and focus on what interests them. Readers create emotional ties with the magazines, both with the content and the presentation. In reviewing studies that have been conducted on the subject, we found useful suggestions for the design of the magazine. For example, the analysis of Plaza del Castillo Media Users Association (2006): “15 magazines for children” finds that:

- The values of commitment, responsibility, solidarity, spirit of excellence, teamwork, and others, are infrequently promoted.
- The magazines promote the image of an isolated child, doomed to consumption.
- References to parents and families are uncommon.
- In general, they are global products that do not value their own cultural idiosyncrasies with similar content to magazines published in distant nations.

Contents and graphic design of the magazine took into account the target population profile, the results of the poll, and a literature review. These two elements were worked jointly, being reviewed multiple times. In some parts, graphic design reinforces the text. However, we also used graphic design to add information not necessarily contained in the text. Each section contains challenges, games or activities; these were introduced to help the reader focus on parts of the text that we deemed important.

The content of La Canica is structured around activities that a family can engage in during leisure time.

## **Results**

In order to measure the achievement of goals we have made several evaluations of each issue. For example, the activities proposed in the magazine have been addressed in public schools with an excellent reception from both students and teachers. These activities have also been proposed at massive science communication events with the same result, where we received the request to distribute the magazine in other metropolitan areas.

We also found in the polls:

- The magazine is attractive to: children, adolescents, youth, parents, teachers.
- Most students (6-18 years) felt that they liked the format and content.
- Although there are sections which are more appealing when browsing, the majority believes that the texts were simple and that they learned new things.
- The majority would buy the magazine.
- Most people think that content is interesting and have a good opinion about the characters.
- They wanted more information, more themes and more activity pages.

## **Discussion and conclusion**

Although we are lacking an adequate methodology to evaluate to analyze the adequacy and impact of these products. However, with the results of our evaluation we can restructure the magazine following both the advice of experts but, also, the opinion of the polled children.

## **References**

Asociación Plaza del Castillo de Medios de Comunicación. (2006). Revistas para niños y preadolescentes. Análisis crítico de 15 cabeceras. Contenidos y valores. Gobierno de Navarra, España. pdf.

Castillo Barragán, Carmen. 2006. Medios masivos de comunicación y su influencia en la educación. Revista electrónica de Pedagogía Odiseo. Recuperado en Línea el 12 de

abril de 2013: <http://odiseo.com.mx/bitacora-educativa/2006/06/medios-masivos-comunicacion-su-influencia-educacion>

CONACULTA. 2010. Encuesta Nacional de hábitos, prácticas y consumo culturales. Distrito Federal, México.

González Arribas, L.F. (2007). Divulgación de la ciencia para niños a través de revistas producidas en México: aproximación a partir de las estrategias editoriales y discursivas. Tesis. Jalisco, México. ITESO.

Márquez Nerey, E., Tirado Segura, F. (2009). Percepción social de la ciencia y la tecnología de adolescentes mexicanos. Revista Iberoamericana de Ciencia, Tecnología y Sociedad. ISSN:1850-0013. Recuperado en: [www.revistacts](http://www.revistacts.net). Net

Medline Plus. (2011). El tiempo de pantalla y los niños. Recuperado en: <http://www.nlm.nih.gov/medlineplus/spanish/ency/patientinstructions/000355.htm>

Pozo Municio, J.I., Gómez Crespo, M.A. Aprender y enseñar ciencia. Del conocimiento cotidiano al conocimiento científico. Ediciones Morata, S.L. España, Madrid. 12 28004

Sánchez Mora, A.M., Sánchez Mora C., Rico Mansard, L. (2010). Resultados de una evaluación. De Veras: revista de divulgación científica, editada por la Dirección de Financiamiento, Divulgación y Difusión del Consejo Mexiquense de Ciencia y Tecnología. México, D.F. DGDC, UNAM.