

# THE PRODUCTION OF COMIC BOOKS THROUGH FREEWARE FOR TEACHING PURPOSES: EXPRESSING BIOLOGICAL CONCEPTS IN PLAYFUL FORM

Fortaleza, Ceará – April 2015

Laura Helena Pinto de Castro – Ceará State University – E-mail: [laura.castro@uece.br](mailto:laura.castro@uece.br)

Lydia Dayanne Maia Pantoja – Ceará State University – E-mail: [lydia.pantoja@uece.br](mailto:lydia.pantoja@uece.br)

José Nelson Arruda Filho – Ceará State University – E-mail: [nelson.arruda@uece.br](mailto:nelson.arruda@uece.br)

Eloisa Maia Vidal – Ceará State University – E-mail: [eloisamvidal@yahoo.com.br](mailto:eloisamvidal@yahoo.com.br)

Germana Costa Paixão – Ceará State University – E-mail: [germana.paixao@uece.br](mailto:germana.paixao@uece.br)

## **Innovative Experiment: Case Study**

### **Higher Education**

### **Institutional Design**

### **Final Study Report**

## **ABSTRACT**

*The use of comics in distance education is an example of how teachers, mediated by technology, can innovate in their classes, opening a range of possibilities to make teaching more effective, fun and pleasant. This article reports an experiment in using the comic book format in a university distance learning program, describing the paths followed to prepare the teaching material with the use of freeware and evaluation of this ludic teaching resource. The creation of the teaching material in the form of comics was proposed to 90 students in the ecology discipline of the biology teacher training program, offered jointly by Ceará State University (UECE) and Open University of Brazil (UAB). The students were divided into teams of at most four. The analysis of the comic books produced with use of four different free computer programs revealed that the majority of the students used the necessary basic constituent elements and did a good job of exercising their creativity and critical expression in preparing the comics, indicating appropriation of the ecological concepts studied. Overall, the use of comics enhanced the perception of the subjects covered and can be a productive and dynamic way to promote better interaction and contextualization of ideas, in critical and creative form, making this a teaching resource that should be better exploited by institutions of higher learning.*

**Keywords. Teaching resource, higher education, comic books, technological teaching tools techno-pedagogical tools.**

## **1 – Introduction**

The dissemination of new technologies that can be used for educational purposes has induced a redimensioning of the classroom and thus the teaching-learning process. The insertion and attributions of the teacher in this reality enable the development of more innovative learning environments, based on implementation of now techno-pedagogical resources. The use of comic books in distance learning illustrates how teachers, mediated by technology, can innovate in their classes.

According to Marinho (2004), comic books are scripts narrated in successive boxes by means of drawings and texts that use direct discourse, characteristic of spoken language, and present visual elements that complement comprehension. She further states that this text genre is generally found fascinating by readers due to the combination of various communication elements.

Comics are a means of expression with a graphic conceptual code that does not need keys to be interpreted and that “speaks” to students in a form that they understand and identify with. Therefore, learning material in comic book format can be used for students of many age ranges in teaching science in different contexts (Luyten, 2011; Uchoa, Junior and Francisco, 2012).

Due to this proximity with the student, the use of comics is a potentially beneficial strategy in distance learning, because it makes the themes presented simpler, helps defragment the idea of a linear text and has the function of “breaking the ice” between the student and technological apparatus with which he or she needs to interact (SENAC, 2008).

The relevance of using comics as a tool to teach biology is due to the possibility of stimulating students’ pleasure in reading and creativity by expressing their artistic and critical sides, with the overall result of optimizing

their understanding of certain scientific concepts and abstractions (Gomes, 2011).

Therefore, the use of comics as teaching tools opens a range of possibilities for promoting thinking in a more fun and pleasant manner.

## **2 – Objective**

This aim of this article is to report an experiment in the use of comics in a distance learning program for college students, describing the paths followed to prepare the teaching material, through the use of free software, and evaluating the use of this ludic teaching resource. The results show the potential power of this pedagogical tool in the virtual classroom.

## **3 – Theoretical Framework**

The use of comics as an alternative for complementation of teaching material is recognized officially as a legitimate teaching tool in Brazil in the Educational Guidelines and Bases Law and by the National Curriculum Parameters, the latter issued by the Ministry of Education. The idea is that the use of other forms of conveying concepts favors deeper understanding of primary and secondary students (Gomes, 2011). However, this tool can also be extended to higher levels of education, as indicated by Marino (2014):

Although the use of comics has the support of the National Curriculum Parameters for primary and secondary teaching, this application can go beyond the basic cycles and extend to higher learning and distance learning, be it through activities in discussion forums, by sending files or even as elements of research programs to produce theses and course conclusion papers (p. 15)

In response to this official acceptance, the use of comics, including in distance learning, has been growing in the country, mainly because they are composed with unique and informative language and most students are familiar with this type of material, making it readily accepted. According to Oliveira (2007), the use of comics in teaching materials aims to whet creativity and

promote sensitivity, sociability and a critical sense and creative imagination, through simple and short language and colorful illustrations. Therefore, why not also use comics in higher learning, in a course to train primary and secondary teachers?

Cunha and colleagues (2014) point out that using comics as teaching tools is an excellent way to impart content in various disciplines, such as biology, because besides creating opportunities for ludic, creative and interactive learning, they increase the possibilities for classroom activities, such as reading aloud and interpretation of the subjects covered by the text, besides encouraging the students' literary and artistic creations. Their use can also lead to discussion and reflection on various subjects, stimulating debate on specific matters and/or social and/or scientific themes.

Another characteristic associated with the use of comics as a teaching tool is the freedom given to students to prepare their own materials as writers and designers (Cruz, Mesquita and Soares, 2013).

Despite the findings of the studies mentioned above, the teaching potential of comics in higher learning has been largely overlooked, so descriptive initiatives for the preparation and evaluation of works with comics aims to reduce the existing gaps.

#### **4 – Methodology**

This is a case study with qualitative nature, in which, according to Yin (2001), the focus is on contemporary phenomena inserted in the context of real life, besides being an alternative to answer questions such as “how?” and “why?”.

The preparation of the teaching material in the form of comics was proposed to 90 students of the biology teacher training program offered jointly by Ceará State University (UECE) and Open University of Brazil (UAB), as part of the activities of the distance education class in ecology offered at the learning centers located in the cities of Aracoiaba, Beberibe and Maranguape (Ceará). The students were asked to form groups of up to four members and to prepare a comic book containing 3 to 6 pages, with at least 12 boxes, on the subject of

“Ecological Interactions”. The comic books in the making had to be posted at each student’s educational blog so that they could be visualized by the other students in the group.

To evaluate the results, the program’s multidisciplinary team (professors, tutors and coordinators) formulated assessment guidelines, based on criteria of structure (graphic aspects) and the way the contents were presented (conceptual aspects) (Silva, 2011).

Six free programs were suggested to the students for preparation of their works: HagáQuê®, Pixton®, Gimp®, Inkscape®, Make Beliefs Comix® and Toondoo®.

For assessment of the graphic/structural aspects of the comic books, consideration went to the presence of the basic constituent elements, the insertion of varied graphic elements (background images, scenarios, characters), the quality of the images and adequacy of the typeface (style and size). In turn, to assess the conceptual elements (contents), consideration was given to originality, creativity, pedagogic quality, the didactic approach and accuracy/clarity of the narrative.

## **5 – Presentation and Discussion of the Results**

Twenty-five comic books were created, using four of the suggested programs: 14 with HagáQuê®, 9 with Pixton®, 1 with Toondoo® and 1 with Make Beliefs Comix®. Therefore, 56% of the comics were created using the HagáQuê® software, possibly because it has an interface better adapted to the limitations and needs of users (enabling its use even by young children learning to read) and contains resources that facilitate freedom of expression and allow the creation of different cartoon characters, facts corroborated by Bin (2001).

With respect to the graphic aspects (structure) of the comics, most of the teams used the basic constituent elements, although some stories did not have speech balloons to enclose the characters’ comments, instead having loose text. Also, some did not have text inserts, while others had too much text in the balloons, making reading tiresome, and few used onomatopoeia, one of the most characteristic elements of comics.

We also observed that some of the teams used very few graphic elements, maintaining the same scenario and characters and repeating the same image from the start to finish, only modifying the texts in the balloons. Finally, some of the comics produced contained texts in the balloons with letters having different sizes, indicating a lack of attention to layout aspects.

According to Luyten (2011, p. 25), one of the problems of educational comics is “very loud images, distracting the student, and boxes with too much text in the balloons, hindering reading, and consequently, assimilation of the content.”

On the matter of content, for the most part the concepts chosen by the students were original, even though the basic theme was the same for all, demonstrating they exercised their creativity and critical expression, by correctly working with concepts related to ecological interactions with the proper contextualization, evidencing their appropriation of the contents studied.

Banti (2012) discusses the use of comics in the teaching of biology and other sciences, explaining that this use can improve the comprehension of the terms and concepts, facilitating the introduction of the theme by the teacher.

Santos and Pereira (2007) also point out that it is important to view students as producers of knowledge and that they should be encouraged to go beyond simple memorization of concepts, to enable them to acquire the spirit of research and the ability for autonomous reasoning.

The analysis of the comics produced also revealed that the students understood the proposal and managed to focus the script of their stories on the suggested theme. They addressed various aspects, such as pollination and its ecological and economic importance, harmonious and inharmonious ecological relationships, and the process of decomposition, among others.

In this respect, for the most part the comics had good pedagogical quality, with correct texts, presenting cohesive and correct ideas in a logical sequence, and with rich vocabulary, with insertion of scientific terms specific to the theme, besides deeper exploration of various related subjects.

Regarding the approach of the contents, the questions raised in the comics were presented didactically, demonstrating the students' understanding of the concepts of ecology. Most of the balloon texts presented interesting, at

times humorous, narratives, so as to maintain readers' attention, and adequately covered the ecological subjects chosen.

## 6 – Conclusions and Recommendations

Based on the observations from use of comics in the distance learning activities in the ecology discipline of the biology teacher training program of UECE/UAB, this teaching method can play an important role in the educational process, including in distance learning. However, it is essential for teachers and students to know how to use comics. In this respect, the use of educational software makes the process easier and more productive. The use of comics as teaching tools requires planning, proper theoretical foundation and understanding of the benefits as well as the limits of their use.

When properly formulated, the creation of comics can help make the learning of biological concepts more interesting. It is an activity that can provide a better perception of the subjects covered, through a dynamic experience that allows integration and contextualization of concepts in creative form, making it a teaching instrument that should be more widely employed in higher learning.

## References

- BANTI, R. S. **A utilização das histórias em quadrinhos no ensino de Ciências e Biologia**. Monografia (Licenciatura em Ciências Biológicas) - Centro de Ciências Biológicas e da Saúde, Universidade Presbiteriana Mackenzie, São Paulo, 2012.
- BIN, S. A. **HagaQue**: editor de história em quadrinhos. Dissertação (Mestrado em Ciência da Computação), Programa de Pós-Graduação em Computação, Universidade Estadual de Campinas, SP, 2001.
- CRUZ, T. M. G. dos S.; MESQUITA, N. A. da S.; SOARES, M. H. F.B. H'Química – O uso dos quadrinhos para o Ensino de Radioatividade. **Atas...** IX Encontro Nacional de Pesquisa em Educação em Ciências –IX ENPEC. Águas de Lindóia, SP –10 a 14 de Novembro de 2013.

CUNHA, A. L. R. dos S.; ALVES, J. M.; ALMEIDA, A. C. P. C. de. A motivação discente em aulas de biologia com quadrinhos. **Revista da SBEnBio**, n. 7, out 2014.

DEFFUNE, G. Relato de uma experiência de história em quadrinhos no ensino da geografia. **Bol. geogr.**, Maringá, v. 28, n. 1, p. 157-169, 2010.

GOMES, A. dos S. **História em quadrinhos**: a sua utilização como instrumento pedagógico. Monografia (Pós-Graduação-Curso Mídias Integradas na Educação), Coordenação de Integração de Políticas de Educação a Distância, Universidade Federal do Paraná, SC, 2011.

LUYTEN, S. M. M. Introdução. **Salto para o futuro - História em quadrinhos**: um recurso de aprendizagem, boletim 1, ano XXI, p. 5-9, 2011.

MARINO, D. dos S. D. As aplicações das histórias em quadrinhos em atividades do ensino superior a distância. **Revista Científica de Educação a distância** (PAIDEIA), v.6, n. 10. 2014.

OLIVEIRA, R. C.. **O papel do gibi no processo de aprendizagem, na afetividade e nas emoções**. 2007. Disponível em: <http://www.ucdb.br/gibiteca/experiencia.php>> Acesso em: 18 mar. 2015.

SANTOS, T. C. dos; E. G. C. PEREIRA. **Oficinas de histórias em quadrinhos como instrumento de avaliação no ensino de Ciências**. 2007. Disponível em: <http://www.nutes.ufrj.br/abrapec/viiienpec/resumos/R1159-3.pdf>> Acesso em: 12 abr. 2015.

SENAC. **Histórias em quadrinhos facilitam aprendizagem**. Universo EAD. Senac, São Paulo, maio de 2008. Disponível em: <<http://www.ead.sp.senac.br/newsletter/junho07/ead.asp?nome=mercado>> Acesso em: 19 mar.2015.

SILVA, A. E. V. N. **Um estudo sociolinguístico das Histórias em Quadrinhos na Educação a Distância**. Dissertação (Mestrado em Educação), Universidade Católica de Pernambuco, Recife, 2011.

UCHÔA, A. M.; JUNIOR, W. E. F.; FRANCISCO, W. **Produção e avaliação de uma história em quadrinhos no ensino de Química**. In: Anais do XVI Encontro Nacional de Ensino de Química/X Encontro de Educação Química da Bahia. Salvador, Julho de 2012. Disponível em: <http://www.portalseer.ufba.br/index.php/anaiseneq2012/article/viewFile/7825/5550>. Acesso em: 15 mar. 2015.

YIN, R. K. **Estudo de caso: planejamento e métodos**. 2 ed. Porto Alegre: Bookman, 2001.