

# FROM DIGITISED COMIC BOOKS TO DIGITAL HYPERMEDIA COMIC BOOKS: THEIR USE IN EDUCATION

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## ABSTRACT

The scope of this paper is to present the concept of hypermedia comic books and their added value in education. Comics were introduced as an educational medium in USA in the middle of 20th century while in Greece, which is our country in focus, fewer efforts have taken place. We believe in the strengths of comics as educational tools and so we go one step forward introducing web comics. Our team of CoSy-LLab, Computer Supported Learning Engineering Lab [<http://cosy.ted.unipi.gr>] has created a tool for presentation and creation of digital-web comic books, having in mind that the use of plurimedia will render teaching, through comics, more effective. Closing we will report the results of experimental teaching using comics in a postgraduate e-learning course of 22 students (the majority of them were teachers of primary or secondary schools) in University of Piraeus.

## KEYWORDS

comic books, hypermedia comic books, web comics, web comic creator

## INTRODUCTION

Our belief is that comic books can be a valuable teaching aid. As Berkowitz & Packer (2001) point out comic books as motivational an educational tool can be used in a variety of teaching and training settings. Their use in education is based on the Clark's & Paivio's (1991) dual coding theory, which supports the importance of imagery in cognitive operations. They believe that recall/recognition is enhanced by presenting information in both visual and verbal form. In addition, Mayer and Moreno (1998) also suggested strategies so as to teach through computers, presenting simultaneously narration and cartoons. Nowadays a new challenge emerges, digitised comics and digital hypermedia comic books.

## COMICS IN EDUCATION

The educational potential of comics is an issue worth researching. From the early 40's many educators in USA such as W. W. D. Sones (1944) and others conducted a series of studies on using comic books in education, providing data for its usefulness. Comics-supported curriculum appeared, while the Journal of Educational Sociology devoted the 1944's Volume 18, Issue 4 to the topic. On the other hand other educational scientists regarded comics harmful for literacy and eventually the impetus of pro-comics educators stopped.

In the 1970's teachers dared to use comic books again such as R. W. Campbell, R. Schoof (Koenke, 1981), B. Brocka (1979). The milestone was set in 1992, when Art Spiegelman's comic book "Maus" about Holocaust experience won a Pulitzer Prize (Sturm, 2001), proving that comics can be artistically mature and literate work. Many educators discussed its educational added value eg, English professor

R. Versaci (2001), Physics professor J. Kakalios (2002), N. Williams of the American Language Institute of New York University (1995). Today, educators at all levels are designing new ways of teaching through comics. Keogh and Naylor (1999) use concept Cartoons to extend the range of pedagogical strategies, presenting a set of alternative ideas about a scientific concept in visual form. They use cartoons in the classroom to support teaching and learning by generating discussion, stimulating investigation and promoting learner involvement and motivation.

### **Greek efforts**

Especially in Greece, comics' thematic may vary from Psychology, Ecology, Music, Chemistry, Economy, Mathematics to History, Literature, Mythology, Classical Studies etc. Several efforts for introducing educational comics were: "Adventures of Asterix" written, in ancient Greek language (Mamuthcomics), Syntax of ancient Greek in comics (Διάυλος, 2004), Aristophanes' comedies, or Sophocles' tragedies in comic format (Metaihmio) etc. European Committee published some series of comics in all official languages of European Union (E.U.), in order to inform students mainly about the E.U. and to fight against discriminations and racism.

### **STRENGTHS OF COMICS**

The strengths of comics in education according to Yang Gene (2003) are many such as: a) *Motivating*. Due to human's natural attraction to pictures, comics can capture and maintain the learner's interest; b) *Visual*. Pictures and text mutually tell a story. In this "interplay of the written and visual" comics "put a human face on a given subject" resulting in emotional connection between students and characters of a comic's story, Versaci (2001); c) *Permanent*. Williams (1995) cites comics' "permanent, visual component" in contrast to film and animation, where the medium dictates the pace of the viewing progresses. The text medium is permanent but not "pictorial. So "visual permanence" is unique to comics, while time within a comic book progresses at the pace of a reader; d.) *Intermediary*. Comics can scaffold to difficult disciplines and concepts, can give reluctant readers the non-threatening practice and to experienced ones inspiration and confidence for more challenging texts; e) *Popular*. Hutchinson (1949) stated that "there should be harmony between the child's on-going life activities and his experiences in the school - new learning always is a continuation or expansion of learning already possessed by the learner". In addition, comic books promote media literacy, encouraging students to "become critical consumers of media messages" (Morrison, Bryan, & Chilcoat, 2002). Through comic books about social aspects students may examine "contemporary lifestyles, myths, and values" (Brocka, 1979). f) *development of thinking skills*: Analytical and critical thinking skills can be developed through comics according to Versaci (2001). Answering of deeper questions about the combination of visual and textual force students to get familiarised with these two means of expression, uncovering the deeper meaning of a work and offering a profound insight.

### **DIGITAL COMICS- WEB COMICS**

Apart from comics in printed form a new medium emerges, i.e. the digitised comics. Computer technology has drastically changed teaching. All media such as text, picture, video, sound can be easily created, reproduced and ported. In other words text is no longer the default medium. Using digitised and web comics in classroom is a new challenge, because by its nature is a multimedia medium that is text, and imagery, using the strengths of computer technology and internet. Reading and creating e-comic books will help students analyze different kind of information. First, they will think deeply about every piece of information they communicate - words or pictures- and also about their interplay and relation. Second, internet will render the communication and collaboration among them easy and "will break through barriers of geography, gender, age, language, culture, aesthetics, politics, economics and technology" (Withrow Stephen & Barber John, 2005). Third, computer technology will make the whole process a lot easier, taking advantage of plurimedia. Generally, web comics can be a vital tool in preparing students for a digital future while integrating imagery from photography and video and featuring audio soundtracks, animation, hyperlinks and interactivity.

## **Efforts**

The last decade many companies or educational organisations in Greece, create digital comic books for teaching various subjects through comics or cartoons e.g. Foundation of the Hellenic World, Siem, Intellearn, Cd Media, etc. At the same time, worldwide software industry has developed tools for the presentation and authoring of digital comic books that could be categorised as follows:

Viewers of educational comic books, such as KABAM by Centers for Disease Control and Prevention U.S.A. (U.S. Department of Health and Human Services) which presents stories with dialogues and asks the student to interact with the book, asking for their opinion which may influence the development of the story.

Interactive comic books for self-assessment, such as the aforementioned Concept Cartoons. They show different characters arguing about science topics. The cartoons are designed to provoke discussion and stimulate scientific thinking as students discuss a range of viewpoints, put forward by the cartoon characters. Children having read some pages of the comic book, they are asked to answer to a multiple-choice test which has the form of unfinished dialogues among the cartoon characters.

Comic creators which allow the design of digitised comic books by importing pictures and dialogues and by giving the potential of storage, management, even sharing the produced material. The user friendly Comic Book Creator, is one of these kind of tools.

Finally, electronic communities such as Hyper Comics (<http://www.hypercomics.com/>) and Comic Life (<http://plasq.com/>) give teachers the opportunity of discussing and exchanging opinions relatively with comic books in classroom.

Nevertheless, the aforementioned approaches for creating comic books, even in their digitized form, bare limitations, as they cannot take advantage of the potentials of hypermedia and plurimedia. The dialogue among digital cartoon characters is still via brief messages, which has limitations and gives only a narrow view of the subject. This restriction could be overtaken through texts with hyperlinks to additional sources such as videos, images, sound files, diagrams, photographs, links to web sites, etc.

## **WEB COMIC CREATOR**

The need of making hypermedia comics leads to the use of new educational tools that could support multimedia elements and hyperlinks. Although there are many applications for making comics as it is shown above, none of them can support the creation of plurimedia comics. Web Comic Creator (WCC) is a tool for creating enriched hypermedia web comics developed by Cosy LLab for educative purposes.

WCC gives the ability to add and remove frames from comics and allows authors to setup their pages according to their needs. Authors can resize and move frames along the page in order to support many of the techniques used in comics directing and materialize their stories. WCC also imports well known picture formats for frames background and cliparts (the second can also be resized and flipped horizontally or vertically). Dialogue balloons can be simply dragged and dropped on the page and contain plain or hyperlink text. Its flash based architecture allows WCC to support the use of multimedia elements in web comics. The export of WCC's comic is a zip file packaging that contains comic's materials and xml files with material's, tutor's and web comic's metadata in order to reconstruct comics for viewing or editing.

As web comics become more interactive, an obvious request for new viewing tools that could support their enriched abilities appears. A viewing environment that could support the existence of multimedia elements and hyperlinks is Web Comic Viewer, a flash based viewer that gives more capabilities in web comics made by WCC, turning a web comic into a digital hypermedia interactive

book. Because of its flash based multimedia architecture WCV can support animated navigation between pages and it can also support multimedia and hypermedia flexibilities.

## **PILOT RESEARCH**

### **Methodological Approach**

Our first thought is to focus on three specific tasks regarding teaching with comics in order to achieve the maximum of results.

a. Interpretation of comics: Stories should be carefully selected with literary merit in order to regard it as a form of literature, raise interest, discuss meaning, understand basic historical or contemporary issues, interpret the conveyed messages and the use of symbols, reason why, evaluate, speculate, define parameters by which to judge the value of a work, develop analytical and critical thinking, learn about values of life, think deeply etc.

b. Creation of a concept map by themselves but also in groups, focusing on the main ideas of the selected comic book

c. Creation of comics so as students could be activated and engaged in composing their story by giving them a list of topics e.g. for History several historical events. Students should pay attention to the topic, the scope or message, visual symbols, use caption to highlight opinion, show bias or not in case of a debate. Those pictorial representation should also cultivate inter-disciplinary trends e.g. computers, art, reading comprehension, writing and collaborative working, taking advantage of each student's skill, bringing new understanding and attention to comics.

Next, our team set up a lesson plan, incorporating the previous tasks. Specifically, in University of Piraeus in a postgraduate e-learning course of 22 student teachers with a range of experience and science backgrounds (the majority of them were teachers of primary or secondary schools), a series of lessons were conducted in order to teach a law subject that concerns e-learning: the balance between intellectual property and the public domain - material that is free to use without permission or payment. The comic book "Tales from the Public Domain: BOUND BY LAW?" (project of Duke's Center for the Study of the Public Domain Duke University) was selected.

Instructions were given to the students (analysis of narrative works of art, basic bibliography about comic books - Eisner, W. (1995) *Graphic storytelling*, McCloud Scott *Understanding Comics* (1993), *Reinventing Comics* (2000), *Making Comics* (2006) - and the application *Web Comic Creator*. In that research with MSC's, students were asked to create web comics with WCC and were given feedback about its use.

### **Process of the pilot research**

Students were asked a. to interpret the given comic book, trying to decode it (content and visual code) b. to create a concept map, visualising this way its concepts and c. to choose among the given book or any other so as to create collaboratively (in groups of two or three) their own comic book in order to teach a subject (either for primary or for secondary schools). We emphasise on the creation and construction of comic books, since we believe that students' active participation is basic to the proper use of comics as a teaching device.

Through questionnaires and semi-structured interviews with students, our team addressed specific questions in order to make a judgement about the extent to which digital comics might provide a useful tool in education. The questions we addressed were:

- To what extent might the use of digital comics help student-teachers developing an effective lesson plan, providing an innovative tool for teaching and learning in the classroom?
- Did they find difficulties during the process: a. to understand comics b. to create a comic map by themselves and collaboratively and c. to make their own comic book? Do the student-teachers enjoy the process?

- Do the student-teachers think that multimedia and hypermedia-plurimedia in general- in comic books will be useful? Was WCC effective?

### **Data analysis**

Analysis of data resulted in some interesting points of view that encourage us to continue our research.

#### *Comics as lesson plan-innovative tool*

Their feelings about the use of comics as learning tool were more positive. Almost all of them had positive feelings about this approach. Typical comments were that the approach was “interesting”, “easy to understand”, “have quick results” “offers intimacy with the characters”, “creative freedom”, “focusing on key points”. “opportunity for metacognition” “alternative ways to set up lessons” “visualise the concepts”, “retain in memory”, “best results when it used complimentary”, “intermediate step to more complicated concepts”, “identification with hero or heroine”, “experience of vicarious satisfaction”, “raise the interest of reluctant readers”, “learn through playing”, “makes fun out of learning”, “motivating”, “gain attention”. All of them agreed that they can use the strategy in their own teaching in primary and secondary schools in a variety of school subjects.

#### *Enjoyment, understanding comics, creating a concept map, making of comics*

Most of the student-teachers thought that using comics helped them to think differently about the learning situations and to begin the process of restructuring their understanding. It is reported that it provides a context for discussion and identifies starting points for investigation.

Creating of concept map was thought to be demanding by the majority of them. Although the team concept map helped them to define and locate the most important concepts, it was tenuous because of the different opinions and learning styles.

Making of comics: In general terms they believe that the procedure of creating comics demands fantasy, knowledge, inspiration, talent, love, critical thinking, interest and careful design, in order to satisfy educational needs. Although it is considered time consuming it is believed that the effort is worth. Nevertheless most of them agreed that they enjoyed the process. They regarded it as innovative, original, humorous, pleasant and meaningful, while they helped them to feel the joy of creation and inner satisfaction.

#### *Plurimedia in comic books*

Most of them reported that the use of plurimedia renders the process more attractive and interesting. Typical comments were “stimulates the learner to think deeply into it”, “raise interest” “are more attractive”, “break the boundaries of a traditional lesson”, “gives more opportunities for alternative teaching strategies” “helps the successful creation of comic books”, “connects everyday activities of students with life in school” “simulation of experiments in subjects such as Science”, “gives more freedom to choose learning materials”, “realistic”, “promotes interactivity” “helpful, as long as they are carefully designed”. The use of digital plurimedia web comics may offer the possibility of promoting positive attitudes to teaching and learning amongst student-teachers.

In addition, results showed that the application WCC for comic creation was steady and all of its unique functionalities were efficient and easy to use. Nevertheless, WCC is still under development and continuing upgrading, according to the latest user’s needs.

### **CONCLUSIONS, LIMITATIONS AND IMPLICATIONS**

Hopefully our research confirmed what is generally believed about the strengths of comics in education and the added value of digital hypermedia comics. Generally the attitudes of the student teachers to this approach were generally favourable. Nearly all of the student-teachers held positive views about the value of comics as a teaching approach.

Some limitations of the research are evident. No comparisons were made with other learning tools, and this may have influenced the student-teachers' views. The study does not attempt to provide any long-term view of student-teachers' thinking or ideas, nor the extent to which their classroom practice have been modified. Finally, the range of comics used was not enough to give comprehensive coverage of the Greek Curriculum.

The implications for future teaching appear to be that comics have clear value as an innovative tool. They appear to provide valuable starting points for student-teacher professional development. Moreover the use of plurimedia offers the possibility of a new dimension in education. They provide a useful mechanism for setting up lessons in an original way. More data collected will be written up for publication elsewhere.

## REFERENCES

- Berkowitz Jay; Packer Todd Heroes in the Classroom: Comic Books in Art Education *Art Education*, Vol. 54, No. 6, Learning to Draw. (Nov., 2001), pp. 12-18.
- Brocka, B. (1979). Comic books: In case you haven't noticed, they've changed. *Media and Methods*, 15 (9), pp. 30-32.
- Clark, J. M. & Paivio, A. (1991). Dual coding theory and education. *Educational Psychology Review*, 3(3), pp. 149-170.
- Comic Book Creator - <http://www.mycomicbookcreator.com/> Retrieved on 15-2-07.
- Concept Cartoon - <http://www.conceptcartoons.com>. Retrieved on 15-2-07
- Dorrell, L., Curtis, D., & Rampal, K. (1995). Book worms without books? Students reading comic books in the school house. *Journal of Popular Culture*, 29, pp. 223-234.
- Duke's Center for the Study of the Public Domain <http://www.law.duke.edu/cspd/index.html>. <http://www.law.duke.edu/cspd/comics/digital.html>, Retrieved on 15-2-07.
- Eisner, W. (1995) *Graphic storytelling*. Tamarac, FL: Poorhouse Press.
- Hutchinson, K. (1949) An experiment in the use of comics as instructional material. *Journal of Educational Sociology*, 23, pp. 236-245.
- KABAM! Comic Creator - [http://www.bam.gov/sub\\_yourlife/yourlife\\_comiccreator.html#](http://www.bam.gov/sub_yourlife/yourlife_comiccreator.html#) Retrieved on 15-2-07.
- Kakalios, J. (2002, October). Adding Pow! to your physics class with comic-book lessons. *Curriculum Review*, 14-15.
- Keogh, B. & Naylor, S. (1997) *Starting Points for Science*. Sandbach, UK: Millgate House.
- Keogh, B. & Naylor, S. (1999) *Concept Cartoons, teaching and learning in science: an evaluation*. *International Journal of Science Education* , 21, 4, 431-446.
- Koenke, K. (1981). The careful use of comic books. *Reading Teacher*, 34, 592-595.
- Mayer, R. E. & Moreno, R. (1998). A split-attention effect in multimedia learning: Evidence for dual processing systems in working memory. *Journal of Educational Psychology*, 90, 312-320.
- McCloud Scott (1993). *Understanding Comics*, Northampton MA Kitchen Sink Press Inc.
- McCloud Scott (2000). *Reinventing Comics*, New York: HarperCollins Publishers Inc.
- McCloud Scott (2006). *Making Comics*, Northampton MA Kitchen Sink Press Inc.
- Morrison, T., Bryan, G., & Chilcoat, G. (2002). Using student-generated comic books in the classroom. *Journal of Adolescent & Adult Literacy*, 45, pp. 758-767.
- Sones, W. (1944). The comics and instructional method. *Journal of Educational Sociology*, 18, pp. 232-240.
- Sturm, James. (2002, April 5). Comics in the classroom. *The Chronicle of Higher Education*, pp. B14-5.
- Versaci Rocco (November, 2001). How Comic Books Can Change the Way Our Students See Literature: One Teacher's Perspective *English Journal*, Volume 91, Number 2, pp. 61-67.
- Williams, N. (1995). The comic book as course book: why and how. Long Beach, CA: Annual Meeting of the Teachers of English to Speakers of Other Languages. (ERIC Document Reproduction Service.
- Wright, B. (2001). *Comic book nation: The transformation of Youth Culture in America*. Baltimore, MD: Johns Hopkins University Press.

Withrow Stephen & Barber John, Webcomics, tools and techniques for digital cartooning Ilex Press limited Cambridge, England 2005.

Yang Gene -Comics in Education 2003 online version of the final project proposal for Masters of Education degree of the author at California State University at Hayward.  
[www.humblecomics.com/comicsedu/index.html](http://www.humblecomics.com/comicsedu/index.html). Retrieved on 15-2-07.

Schmitt (1992) likens comic strips to book illustrations rather than comic books because in strips words and images are more independent of each other than they are in comic books and are thereby read differently from comic books [8]. I mentioned them here briefly because they are related and could legitimately be studied together with comic books; however, I focus this paper specifically on science comic books, which are longer than comic strips and allow a more complex narrative to develop. Perhaps not surprisingly, then, fiction comics can be effectively used in enhancing learning about biochemistry using KEYWORDS comic books, hypermedia comic books, web comics, web comic creator. INTRODUCTION. Our belief is that comic books can be a valuable teaching aid. As Berkowitz & Packer (2001) point out comic books as motivational and educational tool can be used in a variety of teaching and training settings. Nowadays a new challenge emerges, digitised comics and digital hypermedia comic books. Comics in education. The educational potential of comics is an issue worth researching. The strengths of comics in education according to Yang Gene (2003) are many such as: a) Motivating. Due to humans natural attraction to pictures, comics can capture and maintain the learner's interest; b) Visual. Pictures and text mutually tell a story. Marianthi, V., Boloudakis, M., & Retalis, S. ( ). From Digitised Comic Books To Digital Hypermedia Comic Books: Their Use In Education. University of Piraeus. Hal 2. The strengths of comics in education according to Yang Gene (2003) are many such as: a) Motivating. Due to humans natural attraction to pictures, comics can capture and maintain the learners interest; b) Visual. Pictures and text mutually tell a story. In this "interplay of the written and visual" comics "put a human face on a given subject" resulting in emotional connection between students and characters