Project Deliverable Report

Deliverable nr D2 – Teacher Training Material about the Educational Use of Web Comics & Training Events

**Work Package**

WP2

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**Abstract (for dissemination)**

The scope of this deliverable is to present the approach adopted by the EDUCOMICS projects in Workpackage 2 “Teacher Training Material about the educational use of web comic & training events”, and to report the main output of the project. We will describe the rationale of our approach.

The structure of the deliverable is as follows: Section 1 introduces the EDUCOMICS project and the characteristics of Workpackage 2. Section 2 presents the general approach adopted in this WP, while Sections 3 and 4 provide an overview respectively of the teaching material produced and the training activities and events, also pinpointing the specific contribution of each EDUCOMICS partner involved. Section 5 discusses the results achieved so far and Section 6 outlines our future work.

**Keywords List**

Educational comics, comic books, digital comic books, web comics, teacher training, training material, training activity, teacher requirement, educational requirement
1. About Educomics Project and Workpackage 2

EduComics is an European Union education project under the Life Long Learning Programme Comenius Action. It aims to show how web comics can be used in the classroom in an attempt to enhance learning, engage and motivate students, and use technology in a practical and effective way.

The potential for Web comics to be used in education offers educators a means of using multimedia (text, images, audio and video) with their students in most curricular areas. For example, within science, a student can navigate through a web comic book that shows different characters/actors arguing about a science topic. In languages, characters could be placed in a restaurant where they have to order a meal.

Withing the general scope of the project, the aim of Workpackage 2 (WP2) is to design and implement a proper strategy to support teachers in the effective adoption of web comics in real school contexts. This work requires the analysis of the literature review (as performed in WP1) and the investigation and understanding of the teachers’ needs, in order to define effective scenarios for teacher training in terms of needed material and teaching activities to be performed.

The work in WP2 therefore includes:

i) the elicitation of teachers’ requirements both in terms of their training needs and in terms of conditions for effective adoption of web comics in schools;

ii) the creation of training material for teachers;

iii) the organization of training events (seminars or courses) for teachers in Greece, Cyprus, Italy, UK and Spain.

Learning resources are intended to be developed at increments: based on the evaluation of the material progressively build, the content quality can be improved and areas where improvements and changes can be developed.

Training activities and events are addressed to selected teachers who will later participate to pilot user trials (as envisioned in Workpackage 3) and any other interested teacher, with the purpose of building the fundamental know-how to enable them to use web comics in their schools.
2. General Approach of WP2

Teachers’ training requirements in relationship to the adoption and use of web comics as an educational tool at school can differ depending on the profile of their target students and the cultural profile of teachers themselves. Each EDUCOMICS partner has explored the specific needs of their target teachers, but the project has also identified several general requirements that are largely independent from the above aspects, as discussed in this section.

Our general point of departure assumes that learning to teach/professional development is a complex developmental process that is facilitated by participation in the social practices associated with teaching (Jiménez Raya, 2009). Teachers learn best how to teach when they are taught the way they are expected to teach, they collaborate with peers, they are encouraged to make decisions that reflect current research on teaching and learners.

More recently, teacher education models have begun to acknowledge the importance of practical knowledge in learning to teach. Some teacher educators have suggested that the kind of knowledge teachers use is of a very different nature than that produced by researchers (Kennedy, 1999; Eisner, 1995). This type of knowledge has been referred to by some as “craft” knowledge. Rather than draw from a “storehouse” of knowledge compiled by outside experts, such practical knowledge is created by the teachers themselves (Ayers, 1988), through a continuous process that is based on a critical understanding of the profession. For this and other reasons it would be much more appropriate to view knowledge as heuristic rather than as the roadmap of any real individual’s cognitive structure.

The EDUCOMICS approach in WP2 assumes therefore that teaching teachers does require both theoretical and practical knowledge. Hence, underlying the material developed by WP2 there are some key principles of effective professional development, based on the following concepts:

- Focus on improving classroom practices as a means of increasing student achievement.
- Provide a balance of academic content, the study of curriculum and instructional strategies, and the process of school improvement.
- Engage teachers actively in their own development, rather than "transmitting" knowledge and skills "to" them.
- Relate professional development activities to participants’ work, using classroom experiments and action research as integral parts of training workshops.
- Provide sufficient time for inquiry, reflection, and mentoring on an ongoing basis.
- Support the development of collaborative teams and collegial communities of learners, to help educators be more effective in their roles.
• Foster a deepening of subject-matter knowledge, a greater understanding of the learning process, and a greater appreciation of students’ needs.

• Enable teachers to develop further experience in subject content, teaching strategies, uses of technologies, and other essential elements in teaching to high standards.

• Promote continuous inquiry and improvement embedded in the daily life of schools.

Furthermore, we believe that teachers need to be convinced, especially in relationship to non conventional educational tools like web comics (and e-learning technologies in general), that the adoption of such tools is consistent, or feasible, with the organizational constraints they have to live with:

• curricular bounds (e.g., “How can the activities that I can carry on using these tools fit the curriculum?” “How can they be integrated within our normal workflow schedule?” “How can I diversify learners’ activities along the time to keep students’ engagement high?”);

• social scalability (e.g., “How can I use these tools both for individual and whole class activities?”)

• resource constraints (e.g., “What are the requirements in terms technology/budget/human resources that need to be met at school to implement the proposed educational approach?”)

Finally, it is important that teachers are provided with means for sharing know-how about experiences undertaken by educators using the same tool, not necessarily in a synchronous way, e.g., being supported by online resources where others’ educational projects are reported. Such resources are designed around not only the outputs of activities (e.g., examples of web comics created by different classes) but also, and above all, in terms of their rationale, their educational goals, their concrete, measured benefits. These materials are a valuable source of inspiration, emulation, and reflection, and can pave the ground towards the creation of a community of practice around the use web comics as education tool. Better than theory, these reported experiences can help teachers to understand the educational goals that can be achieved, which are the benefits for students. They can be fundamental drivers to motivate teachers to adopt a specific educational tool – web comics in our case.

The following sections outline the work performed by EDUCOMICS partners involved in WP2 to meet the above requirements.

3. EDUCOMICS Training Material

EDUCOMICS partners built a common background of knowledge on web comics for education by working together in Workpackage 1 (State of the Art in Wec Comics for education), sharing ideas and discussing each other’s material progressively built by email and during project meetings.
As a consequence, the training material build by the different partners includes a number of common topics. They address to the needs of teachers and practitioners who are looking for effective and efficient ways to incorporate web comics in teaching practices, in order to help students acquire knowledge and skills in a stimulating and fun way, and reflect our shared understanding of the EDUCOMICS domain.

The core of all materials produced by EDUCOMICS partners contains knowledge from various disciplines, i.e. pedagogy, instructional design, human computer interaction and software engineering. It includes a number of topics that aim at helping the audience learn about the progress of the use of comics in education as well as to get informed about the web comics authoring tools, which can enable creators compose comics & comic strips by importing characters, backgrounds, adding balloons, audiovisual elements, etc.

The main topics are:

- Overview of EduComic Project
- Theoretical grounding for comics in education
- Characteristics of web comics as a new digital medium
  - Definitions, History of comics, Strengths of comics, Digital comics- web comics
- Comics in Education
  - Pedagogical strategies for using comics in education, samples of educational comics, case studies from the use of educational web comics in real educational settings
- Authoring tools for creating web comics

At the same time, each partner’s material has also been customized to addresses the specific needs of the target audience, i.e. the different profiles of teachers to whom the training actions have to be addressed in each country, and their different educational goals. In most cases, the material has been built both in English and in the local language.

The rest of this section outline the main aspects that characterize each partner's training material.

All produced training documentation is available in an online repository developed by the project using the BSCW platform:

http://cosytools.ted.unipi.gr/bscw/bscw.cgi/9571
username: educomics
password: educomics123

This repository, made accessible by all participants to EDUCOMICS training initiatives, represents the first step towards the creation of the community of practice around the use web comics as education tool that is one of the ultimate goals of our project. In this online shared space teachers involved in training and experimentation, and future teachers, can not only retrieve
training material but also “present” the outcome of their projects involving web comics, and share experiences and know how. It is intended to become more and more a valuable mean of self-training, and a source of inspiration and emulation.

The rest of this section will discuss how each partners implemented the general requirements discussed so far, and the specific characteristics of the material developed for their local target audience.

3.1 Partner P1: UNIVERSITY OF PIRAEUS RESEARCH CENTER (UPRC)

**Target group**

Teachers at primary and secondary education. The material is also valid for other levels such as pre-service teachers training.

**Language**

Greek & English

**Type of Material.**

Powerpoint slides + scientific papers + video-tutorials with audio

**Peculiar Characteristics of the Material**

The contents produced by P1 include the core contents mentioned at the beginning of this section, and also comprise a number of material addressing challenges for developing educational web comics in schools and exemplar lesson plans for the use of web comics in classroom.

**Intended Context of Use**

The material is designed to be used in half-day or full day workshops and seminars. The video tutorial is particularly suited to support remote training via e-learning conventional platforms.

**Partner P2: Center for the Advancement of Research and Development in Educational Technology (CARDET)**

**Target Group**

Teachers at primary (main target) and secondary education teachers (secondary target). The majority of teachers did not have a lot of teaching experience.

**Language**
Greek & English

Type of Material.

Powerpoint slides, teacher handouts

Peculiar Characteristics of the Material

Beside the core contents mentioned at the beginning of this section, the contents produced by P2 comprise material addressing in some depth the comic “language” (types of balloons and their function), the semantic, narrative structure of comics, a wide discussion of case studies, and provocative reflections on the field.

Intended Context of Use

The material is designed to be used in half-day or full day workshops and seminars. It is also possible to use material selectively for brief 1-2 hour meetings to help teachers better understand the use of comics in education. In addition, trainers can use 1 case study and discuss it with teachers in 30-45 minutes. Material developed for the training can be used in individual workshops, or as 1 module in teacher preparation courses at the university.

Partner P4: Politecnico di Milano (Polimi)

Target group

Teachers at primary education.

Language

Italian & English

Type of Material.

Powerpoint slides + scientific papers + examples of comics produced by primary school children

Peculiar Characteristics of the Material

The contents produced by P4 extend the core contents mentioned at the beginning of this section by providing in depth discussion of a case study on the use of digital comics in the primary school that has been carried on by the partner. This case study is based on a contextual study devoted to gain a preliminary understanding of teachers and children requirements in relationship to the use of digital comics in a primary school real setting (see also section 4.2,
where this activity is discussed). The material presents the educational goals of a digital comics project designed by a group of primary school teachers, explains how activities has been organized, provides examples of comics created by children, discusses the narrative paradigms adopted, and highlights the educational benefits pinpointed by the teachers involved.

**Partner P5: University of Cyprus (UCY)**

*Target group*

Pre-service and in-service science teachers of elementary and secondary education.

*Language*

Greek & English

*Type of Material.*


*Intended Context of Use*

The material is designed to be used in half-day or full day workshops and seminars.

*Peculiar Characteristics of the Content Produced*

The contents comprise a wide amount of material explicitly devoted to promote the webcomic format as a medium for engaging students in *explicit epistemological discourse* that draws on authentic stories from the *history of science and technology*.

Emphasis is placed on developing students’ awareness in aspects of the nature of science, such as the importance of creativity and collaborative work in science, the uncertainty of scientific theories, the element of subjectivity in scientific investigations, the role and functions of scientific communities, etc. Therefore the developed teacher training materials draw emphasis on exploring these issues of teaching and learning science as a context for exploiting the affordances of web-comics in science and technology education.

**Partner P5: University of Granada (UGranada)**

*Target group*

EFL teachers at secondary education. The material is also valid for other levels such as primary.

*Language*
English

Type of Material.

Teacher development materials

Intended Context of Use

The material is designed to be used in an ELT teacher training seminar (30 hours).

Peculiar Characteristics of the Content Produced

The contents produced by P5 enriches the core material designed by the project with a variety of elements especially devoted to the development of awareness and practical knowledge of how to use web comics in language education.

It regards web comics as a means to foster creativity in EFL teaching and learning, enhancing educators and students’ involvement and motivation. Beside informative and methodological content, the material includes different types of training activities:

- Input activities: Activities focused on informing about the rationale and research conclusions on the different topics.

- Reflective tasks: Tasks that encourage teacher reflection on different aspects of the use of comics.

- Application activities: Activities that encourage actual hands-on experience. Participants in the seminar explored WCBC and created their own web-comic. Possibilities for the incorporation of webcomics in the teaching of English were explored.

4. EDUCOMICS Training Activities

The training activities performed by the project have been quite intense and articulated, comprising seminars and workshops of different size that overall involved 257 teachers from 4 different countries (Greece, Cyprus, Spain, Italy).

In most cases, activities included presentation of the training material, hands-on of a digital comics authoring tool, discussion with participants focused on a better understanding of teachers’ needs, on pedagogical and pragmatic issues related to the use of digital comics for teaching and learning. The rest of this section outline the actual activities undertaken by each partner.
P1: UNIVERSITY OF PIRAEUS RESEARCH CENTER (UPRC)

Activity 1

Title: "Using Web Comics in Children’s learning practices"

Location and timing: Pan-Hellenic Conference on Educational Technologies, Limassol Cyprus, 26 September 2009,

Format: Half Day workshop

Participants: 28 mostly teachers of primary & secondary education. Few artists, software developers and educational researchers also attended.

Overview: The goal of this workshop was to identify best practices of using web comics in primary and secondary education in an attempt to promote creativity, literacy, acquisition of knowledge about difficult concepts in science though a distributed tool like the web. We regarded this workshop as a live multidisciplinary forum where attendants (school teachers, artists, software developers, educational researchers) exchanged their know-how and ideas on how to design educational interactive comics for children, how to take benefit of educational web comics and share experiences and findings on how to use web comics as a way for creating usable, stimulation and effective interactive learning environments for young children about various subject areas.

Structure: The workshop had two parts:

Part 1: Presentations about Educational Web comics and Authoring tools: (50 min):
  - Theoretical grounding for comics in education
  - Characteristics of web comics as a new digital medium
  - Case studies from the use of educational web comics
  - Challenges for developing educational web comics in schools
  - Authoring tools for creating web comics
  - Opportunities for collaboration and innovation about web comics

Part 2: Discussion on the development and possibilities of web Comics (30 min)

Part 3: Hands-on activities
  - Use of authoring tools for web comics and discussion about its functionality
Activity 2

Title: “Using Web Comics in Education”

Location and timing: University of Pireaus, Athens, Greece. 10 February 2009

Format: Half Day Tutorial

Participants: 34 adult learners of the MSc programme on elearning (23 teachers of primary & secondary education and 11 computer scientists)

Structure: The tutorial consisted of four parts:
Part 1: Web comics: a new digital medium (30 min)
Part 2: Authoring tools for digital comics presentation, live demonstration with step by step review and comparison (90 min)
Part 3: Exemplary usage scenarios of digital comics in the domain of Education and Art creation (30 min)
Part 4: Discussion for the development and possibilities of Digital Comic Authoring Environments. (30 min)

P2: Center for the Advancement of Research and Development in Educational Technology (CARDET)

A total of seven workshops have been successfully completed. Each workshop has the characteristics discussed below

Title: Web Comics and the educational tool Web Comic Book Creator

Format: Full day workshop

Location: CARDET Nicosia, Cyprus.

Timing and Participants: Teachers at primary and secondary education teachers – see the table below

<table>
<thead>
<tr>
<th>CARDET Workshops</th>
<th>Dates</th>
<th>Workshops</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>06/12/2008</td>
<td>2</td>
<td>25 &amp; 25</td>
</tr>
<tr>
<td></td>
<td>07/12/2008</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>26/03/2009</td>
<td>2</td>
<td>22 &amp; 20</td>
</tr>
<tr>
<td></td>
<td>27/03/2009</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>03/04/2009</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>7</td>
<td>155</td>
</tr>
</tbody>
</table>

Overview: Goal of the workshop(s) is to provide relevant background knowledge on web comics, discuss the use of Web comics in education, its affordances, advantages, and limitations, and learn a specific web comics tool. In each workshop, trainers discussed topics such as definitions of web
comics, types of comics, and explored several examples of web comics. Focus was placed on specific learning strategies that can be used to integrate comics in teaching and learning. Trainers and teachers used the Comic Book Creator tool which allows users to easily compose their web comics. During the last activity of the workshop, teachers worked in groups, experimented with the tool and created their own training scenarios integrating comics in specific lesson plans.

**Structure:** see table below

<table>
<thead>
<tr>
<th>Theoretical Part</th>
<th>Practical Part</th>
<th>Discussion Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st}) part (30 minutes)</td>
<td>PRESENTATIONS</td>
<td>PRESENTATION OF PRODUCED MATERIAL, DISCUSSION AND CONCLUSIONS</td>
</tr>
<tr>
<td>• Presentation of tool “Web Comic Book Creator”</td>
<td>• Group work in order to experiment with the tool</td>
<td>• Presentation and discussion of produced educational scenarios and comics.</td>
</tr>
<tr>
<td>• Presentation of activities that can be used for the comic creation</td>
<td>• Creation of educational scenarios integrating comics in specific lesson plans</td>
<td>• Discussion and export of conclusions on the possibilities of exploitation of comics in the education.</td>
</tr>
</tbody>
</table>

**P3: Politecnico di Milano (Polimi)**

**Title:** “Web Comics in Primary Education”

**Location and timing:** Primary School Nolli- Arquati, Milan, March-April 2009

**Format:** 2 Half Day Seminars + Tutoring of teachers Projects

**Participants:** 9 experienced teachers of different disciplines (science, humanities, and English as a foreign language) from 4 primary school classes (2\(^{o}\) year) + their 89 children aged 6-7-8
Structure:
The training activity was designed both with a training purpose and to gain an initial understanding on two main aspects:

- what are teachers' needs and educational goals in relationships to web comics, as a prerequisite to design training material that better address these stakeholders' requirements

- what are the prerequisite for adoption of web comics at school, and how they can be effectively and proficiently used by teachers and students as part of curricular educational activities

The work was organized in two main phases, as discussed below:

**PHASE 1:** involved 2 training sessions (2 hours each)

- **Session 1:** presentation of EDUCOMICS project and web comics in general (general concepts and examples); group discussion of i) organizational and educational requirements for adoption of web comics in a real school context; ii) specific requirements on training and support

- **Session 2:** presentation of webcomics book creator tool; further group discussion of requirements, and goal definition and planning of Phase 2

**PHASE 2:** a set of supervised (by our team) activities with children and teachers, which involved the actual use of digital comics as an educational tool.

Annex 3 presents in further detail the workflow of Phase 2.

**P5. University of Cyprus (UCY)**

*Title:* Web Comic Book Creator: an innovative tool for teaching and learning in science

*Location and timing:* University of Cyprus, 30th March 2009; 6th April 2009

*Format:* 2 full days workshop

*Participants:* 14 teachers of elementary and secondary education.

*Overview:* The goal of this workshop was to identify best practices of using web comics in primary and secondary education in an attempt to promote creativity, literacy, acquisition of knowledge about difficult concepts in science though a distributed tool like the web. This workshop was conceived as a *live multidisciplinary forum* where attendants (school teachers, artists, software developers, educational researchers) could exchange their know-how and
ideas on how to design educational interactive comics for children, how to take benefit of educational web comics and share experiences and findings on how to use web comics as a way for creating usable, stimulation and effective interactive learning environments for young children about various subject areas.

Structure:
The workshop was organized in two sessions, in two different days. Before coming to the seminar, attendees are asked to read a theoretical paper that explores issues related to epistemological awareness as a component of science learning (Papadouris & Constantinou, 2008).

Session I was devoted to a theoretical discussion on the use of comics in education and specifically on the potential for using comics as a constructionist medium for developing epistemic understandings. Additionally, some activities were included for familiarizing teachers with existent strategies of implementing epistemological discourse in classroom settings. Emphasis is placed on the need for students to develop awareness about the nature of science and its interrelationships with technology in a modern society.

Session II involved hands-on practice with the WCBC environment and various attempts at developing teaching and learning activities with a specific purpose to promote individual aspects of epistemic awareness such as the role of creativity in science, subjectivity in scientific investigations, the distinction between observation and interpretation, the role of experiments, the dynamic character of science and the credibility of scientific claims. The activities developed by the participants, are presented at the end of the session within an open discussion pertaining to the potentials of web comics towards addressing epistemological learning objectives in science classrooms.

Detailed structure of each session (see also Annex 1)
Session I
1. Presentation and discussion on some of the paper’s critical aspects
2. Existent expertise on teaching the nature of science. Activities concerning known strategies for addressing nature of science issues in the classroom
3. Presentation and discussion on the educational use of digital comics
4. A few words about the research project EduComic

Session II
1. Theoretical presentation concerning tools for creating web comics
2. Practical acquaintance with the Web Comic Book Creator tool
3. On using the historiographic approach and web comics for promoting epistemological understanding
3.1 Study of a given historical episode concerning a socio-scientific issue with respect to aspects of the nature of science that can be implemented through the use of this story in classroom
3.2 Design and development of activities for students by teachers based on the given topic to promote a specific epistemological learning objective
3.3 Presentation of the activities and open discussion concerning the potentials of web comics towards addressing epistemological learning objectives in science classrooms

P6. University of Granada (UGranada)

Title: Creativity in EFL: The potential of web comics as a learning tool

Location and timing: University of Granada - Facultad de Filosofía y Letras. 25-05-09 to 08-06-09

Format: 30 hours Teacher training seminar

Participants: 17 student teachers and secondary school teachers

Overview:
The goal of the seminar was the development of awareness and practical knowledge of how to use webcomics in language education by:
- Uncovering teachers pedagogical beliefs, values, priorities, dilemmas, concerns...
- Helping them become aware of the potential of webcomics in fostering the learning of English as a foreign language (Multimodality, learning by doing, ICT, motivation, learner autonomy...)
- Document practice and reflect on its conceptual, practical and social justifications
- Helping teachers to question the implications of their practice
- Encouraging teachers to look at pedagogical problems as starting points for inquiry
- Encouraging teachers to take an exploratory approach to ELT teaching with a focus on learning
- Promoting attention to how contexts of practice foster or hinder our own and our students’ learning
- Finding strategies to manage constraints in ELT and webcomics

Structure:
The training activity was organized as follows (see also annex II for the syllabus):
- Workshop: 12 hours
- Learning to use WCBC/Hands-on experience: 8 hours
- Self-study: 10 hours

5. Discussion and Future work
The materials produced by EDUCOMICS partners and the training events organized by the project are rich and articulated, cover a wide range of educational contexts and disciplines, and provide a significant contribution to the project domain that in principle can be reused by trainers from other projects on web comics for organizing similar training activities, as well as by teachers for self-learning.

Informal evaluation of the material and the training session structure has been carried on during the events by each partner, involving discussions and semi-structured interviews with participants.

This preliminary evaluation has shown that the material has been perceived very positively by teachers, has registered a good level of satisfaction and has largely achieved the main goals of WP2. In general, the material and the proposed activities has been judged “clear”, “exhaustive”, “usable”, “challenging”, “stimulating”. Still, a number of teachers pinpointed the need of addressing more specifically instructional design aspects and how to adapt the proposed workflows or lessons plans to the needs of specific learning contexts and students’ profile. This issue will be taken into account in the next delivery of the teaching material and in the design of future training events.

Obviously, a more systematic evaluation is needed to assess more rigourously the quality of WP2 outcomes in relationship to teachers’ needs, and to identify directions for improvement, evolving from anecdotic evidence to a deeper analysis of educational goals and benefits, and to the development of lessons plans and educational process “patterns” involving web comics as a teaching and learning tool. We regard WP2 as a continuous incremental activity, involving a constant revision of material and training activities format till the end of the project, since partners will be organising new training seminars, tutorials and workshops.

In addition, a better understanding of the effectiveness of WP2 outcomes will be gained from the experience that we will develop in the second year of the project, when we will carry on user trials and case studies in real educational environments, as part of Workpackage 3. In the EDUCOMICS project, we have already discussed a general structure for pilot study documentation that will allow us to describe user trials in a systematic way so that this material can be more easily re-used for training as well as self-learning purposes by different subjects. Such documentation will pinpoint the context (environment, subjects involved, subject of the comics, timing...) in which the web comics learning experience will take place, the educational goals and motivations, the elements that will contribute to success (or failure), the pitfalls encountered.
REFERENCES


Constantinou, C. P., & Papadouris, N. (2008). Epistemological awareness: a basic component of the learning objectives in science. In V. Koulaides et al. (Eds), Approaches in teaching the nature of science (pp. 39-69), Geitonas school, Athens: Child Services (in Greek)


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

# Annex 1 - detailed outline of the material developed and used by partner Partner P5: University of Cyprus (UCY)

<table>
<thead>
<tr>
<th>Actual documentation according to the annex</th>
<th>Short description</th>
<th>Main topics covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>preparatory paper to read before workshop.pdf</td>
<td>Before coming to the seminar, attendees are asked to read a theoretical paper that explores issues related to epistemological awareness as a component of science learning.</td>
<td>Relevant theoretical issues are discussed with the students concerning:</td>
</tr>
<tr>
<td><strong>Session I</strong></td>
<td>1. Presentation and discussion on some of the paper’s critical aspects</td>
<td>- How is epistemological awareness defined</td>
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<tr>
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<td>- Resources for defining learning goals related to epistemological awareness</td>
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<td>- Critical aspects of the nature of science that are considered as important to be taught by the science education community</td>
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<td>- Why should we explicitly teach the nature of science</td>
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<td></td>
<td>- Weaknesses of conventional science education systems to promote epistemological awareness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Existent strategies of implementing epistemological discourse in classroom settings</td>
</tr>
<tr>
<td>Session1_a+b+d.ppt (slides 1-11)</td>
<td>2. Existent expertise on teaching the nature of science. Activities concerning suggested strategies for addressing nature of science issues in the classroom</td>
<td>Explicit epistemological discourse activities are practiced with the students that include:</td>
</tr>
<tr>
<td></td>
<td>Session1_b_NOSactivities.pdf</td>
<td>- Decontextualized activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Contextualized activities using scientific contexts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Studying stories from the history of science</td>
</tr>
<tr>
<td>Session1_c_Educational_Comics.ppt</td>
<td>3. Presentation and discussion on the educational use of digital comics</td>
<td>Relevant theoretical issues are presented concerning:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Definition of ‘comic’ and ‘comic strip’</td>
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<tr>
<td></td>
<td></td>
<td>- Some history about the use of comics in education. Local and European uses of comics for educational purposes</td>
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<tr>
<td></td>
<td></td>
<td>- Affordances of the comic medium as an educational tool</td>
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<td></td>
<td>- Examples of web comics</td>
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<tr>
<td></td>
<td></td>
<td>- Attempts to employ comics in the teaching and learning process</td>
</tr>
<tr>
<td>Session1_a+b+d.ppt (slides 34-36)</td>
<td>4. A few words about the research project EduComic</td>
<td>- How comics are or can be used in science education</td>
</tr>
</tbody>
</table>

EduComic 142424-LLP-1-2008-1-GRCOMENIUS-CMP
<table>
<thead>
<tr>
<th>Actual documentation according to the annex</th>
<th>Short description</th>
<th>Main topics covered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Goals of the project in general</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Special interest on behalf of the University of Cyprus in exploring how web-comics can be employed for raising epistemological awareness</td>
<td></td>
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<td></td>
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<td>Session II</td>
</tr>
</tbody>
</table>
| SessionII_a_ComicCreators.ppt | 1. Theoretical presentation concerning tools for creating web comics | Relevant theoretical issues are presented concerning:  
- How a comic book is designed  
- Software applications for managing comics  
- Tools for creating digital comic strips and comic books  
- Existent e-communities of web comics |
| SessionII_b_WCBC_guide.pdf  
SessionII_b_WCBC_checklist.doc  
WCBC software | 2. Practical acquaintance with the Web Comic Book Creator tool | Hands-on practice with the WCBC environment |
| SessionII_c_Beribi.doc  
SessionII_b+c.ppt (slides 1-10) | 3. On using the historiographic approach and web comics for promoting epistemological understanding |                                                                                                                                 |
| WCBC software | 3.1 Study of a given historical episode concerning a socio-scientific issue with respect to aspects of the nature of science that can be implemented through the use of this story in classroom | - The participants study a narrative story concerning many researchers’ attempts to investigate and find a cure for a known local disease.  
- Participants are asked to specify and discuss aspects of the nature of science that are derived through the story and explain with examples from the story (e.g., the role of creativity in science, subjectivity in scientific investigations, the distinction between observation and interpretation, the role of experiments, the dynamic character of science, the credibility of scientific claims, etc) |
| WCBC software | 3.2 Design and development of activities for students by teachers based on the given topic to promote a specific epistemological learning objective | - Participants develop teaching and learning activities (grade level and topic are optional) with a specific purpose to promote individual aspects of epistemic awareness |
| WCBC software | 3.3 Presentation of the activities and open discussion | - The activities developed by the participants, are presented within an open discussion pertaining to the potentials of web comics towards addressing epistemological learning objectives in science classrooms |
Annex 2 – The syllabus of the training course developed by partner Partner P6: UGranada

1. Why webcomics in EFL education
2. The place of comics in ELT
   2.1. Brief history of comic books in education
   2.2. Comic books as reading material
   2.3. Digitalizing comic books: educational web comics.
   2.4. The use of comics in ELT
3. Creativity in EFL: Webcomics
   3.1. Becoming active: the learner as creator of comic strips.
   3.2. Previous experiences
   3.3. Enhancing the learner’s creativity, involvement and motivation: webcomics as educational tool
4. EduComic: a European project on the use of educational webcomics
5. Tools for authoring digital comics
6. Hands-on experience: Web Comic Book Creator (WCBC)
7. Individual work at home
8. Class presentation of webcomics created by participants
9. Discussion and evaluation of the potential of webcomics based on the course
Annex 3 – Workflow of the training activity
developed by partner Partner P4: POLIMI

As discussed in section 3, the training activity of POLIMI comprised a
preliminary phase involving teachers only, devoted to provide teachers with
the fundamental background on web comics, and a project-phase, involving
teachers and their four classes of students, devoted to experimenting
multimedia comics in the actual educational setting.

PHASE 1: involved 2 training sessions (2 hours each)

- **Session 1**: presentation of EDUCOMICS project and web comics in
general (general concepts and examples); group discussion of i) organizational
  and educational requirements for adoption of web comics in a real school context; ii) specific requirements on training
  and support

- **Session 2**: presentation of webcomics book creator tool; further
group discussion of requirements, and goal definition and planning of
Phase 2

PHASE 2: a set of supervised (by our team) activities with children and
teachers, which involved the actual use of digital comics as an educational
tool.
The educational goals agreed with teachers were:
- improving narrative skills in a playful, engaging way for children
- promoting collaboration capabilities
- fostering technology fluency

Activities in phase 2 were organized as follows:

1) **Preliminary Step**: children’s exposure to (non comics) interactive
narratives in the school computer lab

2) **Teachers’ Design Step**: Teachers designed a narrative meta-structure
for comics to be proposed to children as a *conceptual plot frame* to be
filled with comics contents. The agreed comics subject was a *fantasy tale*,
for which teachers defined (inspired by Propp’s theory) a simple structure
based a sequence of narrative “moments”: START; THEN...; AT SOME
POINT...; AFTER A WHILE...; FINALLY...
3) **Learners’ Design Step:** Children were organized in small groups, each one conceived and created their comics on paper, as a classroom activity.

4) **From Paper to Digital:** Children and teachers worked in the computer room to transfer of the paper comics into a digital interactive multimedia format.
5) **Group discussion with children:** Children and teachers discussed the resulting “products” comics and the overall experience.

6) **Focus Group with teachers:** Polimi team discussed the experience with the group of teachers, focusing on both organizational and pedagogical aspects, and identifying some lessons learned for a wider scale adoption of web comics at school.

The adopted authoring tool was a “customized” Powerpoint: we created an “environment” for kids in the computers of the school lab that simulates a simplified version of WebComics Creator, providing with a small repository of human and animal “characters and scene elements that they could reuse and integrate with comics textual elements (1 “scene” = 1 ppt slide). The reason for this choice was that Powerpoint was already known to teachers and is widely used in Italian normal school environments, while the Italian version of WebComics Creator was not available at the time of implementation of the envisioned activities.
Basically, POLIMI team provided children with:
- The meta-plot (set of "plot moment" ppt forms) first on on paper (to be used in learner design – step 3) and later in powerpoint (to be used in the actual creation of the multimedia comics– step 4)
- Multiple instances of characters and scene elements both as color-printed paper elements and as digital object that children could import in powerpoint.

Thus children could first build a **paper comics** in the **classroom (step 3, where they** conceived their narrative and the description of each "moment", instatiating the meta plot as a comics, gluing images for characters and scene elements, drawing balloons for characters dialogues, and hand-writing text ins.

At the end of this process, they moved to the computer lab, to implement the scene of each moment inserting the proper images from the repository (digital characters and screen elements), creating and editing the ppt dialogue baloons.
Annex 4 – Workflow of the training activity developed by partner Coordinator (Partner P1): UPRC

Title: “Using Web Comics in Education”

Format: Full Day Tutorial

Structure: The tutorial consisted of five parts:

Part 1: The EduComic Project and the overview of the Web comics: a new digital medium (30 min)
Part 2: Authoring tools for digital comics presentation, live demonstration with step by step review and comparison (90 min)
Part 3: Exemplary usage scenarios of digital comics in the domain of Education and Art creation and (60 min)
Part 4: Discussion for the development and possibilities of Digital Comic Authoring Environments. (30 min)
Part 5: Designing an EduComics learning activity with (90 hours)

The tutorial concludes with group discussion about the use of web comics in classroom and ideas for course subjects where they could be applied.

Part 5: Designing an EduComics learning activity is a hands-on activity. It is divided into four (4) phases:

- experimentation with the features of the interactive ComicLab tool at a laboratory;
- planning of the comics’ storytelling in the classroom and explanation of the way to teach students the way to organize the narration of digital stories in the web comics format, the specification of the main theme, the setting, the characters/actors, the plot-action, and dialogue; Use of Freytag's analysis of dramatic structure:
  - The central idea of a story
  - The main characters: What are the names of the main characters? Who are the stars of a comic? Describe the main character's personality (funny, honest, etc.).
  - The storyline and the sequence of the events: What happens in the story?
  - The order of events: Use transition words such as first, next, then, and finally.
- planning of the action in each panel of the comic, according to the script of the previous phase, and transformation of the script into Web comics format, using the ComicLab software tool at the laboratory;
Assessing and evaluating students’ performance and the outcomes of a web comics based learning activity using rubrics

Material

Audiovisual tutorials (see figure below) and printouts are being used during the teacher training workshop that cover the following topics:

- Overview of EduComic Project
- Theoretical grounding for comics in education
- Characteristics of web comics as a new digital medium
  - Definitions, History of comics, Strengths of comics, Digital comics- web comics
- Comics in Education
  - Pedagogical strategies for using comics in education, samples of educational comics, case studies from the use of educational web comics in real educational settings
- Authoring tools for creating web comics

Figure. Screenshot of a video tutorial about the pedagogical strategies of web comics