WORLD WIDE WEB IN EDUCATION
Ethical Use of Resources and Information

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Abstract: Internet is nowadays included to almost all National Curriculums of the elementary school. A comparative study of US' UK's and Greek, curriculums leads to the conclusion that a complete curriculum should also aim to student's acquisition of the abilities to navigate and search for information and additionally to emphasize on ethical use of resources and information, specifically referring to Intellectual Property Rights laws and regulations. In a constructivistic knowledge framework instruction of these Internet characteristics has to take under consideration the conceptual representations of students. The following paper presents the conceptual representation of students of eleven years old, attending the Sixth Grade of Greek Elementary School about World Wide Web and proposes a course based on them, in order to introduce students to the ethical use of resources and information.

1 INTRODUCTION

World Wide Web offers an enormous range of easily accessible information. Therefore students have to conquest capabilities of collecting information through the Net but also adopt principles towards a responsible use of it, especially regarding respect to Intellectual Property Rights laws and regulations.

Taking under consideration the above and based on their conceptual representations about Internet a course was designed and materialized about World Wide Web, with the participation of eleven years old students.

2 THEORETICAL FRAMEWORK

2.1 Ethical Use & Intellectual Property Rights

Borrowing a book from a library seems easy but as a matter of fact, it is based on a complicated mechanism, involving laws, publication policies and many financial and technological parameters. This mechanism might be in a balance and in everyday use but this balance could be affected by the rapid digitization of the information provided (the books).

The problem can be proved in a simple way: a book could be borrowed by one or two people at the same time by the same library. An electronic book could be borrowed by anyone with a telephone line, a computer and an Internet connection. From the Internet user point of view this news is really good. The library owns a book which is never exclusively borrowed and is always available for countless readers. In fact this library is open for twenty four hours a day, seven days a week. On the other hand, the news is very stressful for publishers and writers. How many copies will be sold or published while digital networks allow world wide access to digital information? The publishers and writers could think of the number of one and only copy. How many books, movies, music pieces and copyrighted information can be created, published and sold to the

Internet while for world wide access to readers, listeners and viewers one digital copy is enough?

The aforementioned simple (as it seems) problem, is describing exactly the modern digital dilemma as Randall D. (Randal, 2001) has predicted. World Wide Web (WWW) is a powerful mean to publish and distribute information and the world's largest infrastructure for making digital copies of this information. It is a technology with which free and efficient access to information could grow at an unbelievable pace, but at the same time could prove to be a force of deepening the discrimination line between the one who has and the one who hasn't.

According to the House of Representatives (1998), the Information Society Technologies are changing the most common methods of providing access to digital content. The information available in digital form is increasing in an every day basis, the Internet is connecting world-wide digital contents and the WWW is providing an efficient platform consisting of access services, a gate to scientific and cultural resources, music, movies and video archives to everyone as well as children. The technologies which provide access to digital content are at the same time provoking important problems concerning the protection and management of Intellectual Property Rights (IPR) for this digital content. This is happening mainly because technology is supporting efficient access to and at the same time ease of copying copyrighted information. As a result many legislative rules and laws for IPR which are referring to physical objects are almost invalid for digital objects. The specific problem is becoming even more intense while broadband Internet is being applied world-wide and any Internet user has fast data transfer rates at his disposal. Other examples which prove the size of the problem include the free distribution of copyrighted music and movies through the Internet, the on-line sale of copyrighted digital images of art and culture without permission.

Proposed solutions to the problem of Intellectual Property Rights (IPR) protection in the internet tend to be aggressive and lock valuable educational content which is accessed only from private and restricted numbers of users threatening e-inclusion and the Internet democracy as a whole.

The only approach which deals with the issue in the long term and sets the basis for future ethical use of the Internet is instructional actions which raise awareness and teach the Internet user the basics of IPR and at the same time the need to respect the copyright of information acquired by the Internet. The instructional approach starts from the early grades of the elementary school and through specific curriculum and courses aim to "preserve honest internet users, honest", supporting the ethical use of the Internet by children. The structure and rationale of these courses are mainly based on the experience of experts in the area and most of times do not take into account what are the conceptual representations of children about the Internet. This leads usually to complex teaching activities and to non – constructivistic courses.

The proposed by this paper approach is to study the conceptual representations of children about the Internet and based on these representations to implement instructional activities towards the construction of new knowledge and capabilities for ethical Internet use.

2.2 Conceptual Representations

Contemporary psychological approaches of learning and science didactics create a new, common base for the design and the materialization of various subjects. Nowadays the aspect that learning procedure is not possible to be materialized if it doesn't take under consideration the conceptual representations of students and the process of knowledge construction is becoming more and more acceptable.

Thus, learning is not a Knowledge collecting process, is not being acquired or transferred. On the contrary, it takes place when the student's exploration of the student reveals inconsistencies between current representations and experience. In that case, a student tends to change his/her conceptual model not necessarily in order to replace it by the objectively right but by the most viable one (Von Glasersfeld, 1990). A major theme in the theoretical framework of Bruner is that learning is an active process in which learners construct new ideas or concepts based upon their current/past knowledge. The learner selects and transforms information, constructs hypotheses, and makes decisions, relying on a cognitive structure to do so. Cognitive structure (i.e., schema, mental models) provides meaning and organization to experiences and allows the individual to "go beyond the information given" (Bruner, 1973).

Therefore, starting point of learning is what a person knows or ignores before teaching. Often traditional teaching slightly effects the conceptual representations of a student not only after a course but even after adult age (Viennot, 1979), because of the ignoration of conceptual representation during teaching. It is clear that a teaching course based on

constructivism has to study the conceptual representations of students in order to use them if they are according to a scientific model or to reconstruct them if they are conceptual obstacles, via the creation of conceptual conflict learning conditions (Ravanis, 2003).

Also the instructor should try and encourage students to discover principles by themselves. The instructor and student should engage in an active dialog (i.e., socratic learning). The task of the instructor is to translate information to be learned into a format appropriate to the learner's current state of understanding. Curriculum should be organized in a spiral manner so that the student continually builds upon what they have already learned (Bruner, 1966).

Based on the above axioms the paper in the next sections presents a research methodology which leads to the implementation of an innovative course which supports the construction of new knowledge about the ethical use of Internet.

3 METHODOLOGY

3.1 Objective

In the following sections is presented the design and the implementation of a course about WWW in which took part eleven years old students, attending the last grade of Greek elementary school.

The objective was the design and implementation of an innovative course about WWW, that would raise the awareness of IPR, based on the study of student's conceptual representations.

3.2 Research

The research took place in real class conditions. Took part six elementary school students, eleven years old, who consisted two work groups, divided by gender. The research initiated by the study of conceptual representations.

In order the conceptual representations to be emerged the researcher used personal questionnaires and interviews (Pandelis, 1995). A questionnaire of twenty questions, gradually more demanding was given to every student. There were many types of questions as open questions, semi-open, closed, multiple choice (Javeau, 2000). After the questionnaires was filled in, students took part in personal interviews where answered to questions about the answers given to the questionnaires. The answers of the questionnaires and the interviews were organized using the statistical software SPSS (Evaggelopoulos, 1987). Then, a course was designed that took under consideration these representations.

4 RESEARCH ANALYSIS

4.1 Students' Conceptual Representations

In the following paragraph will be presented the students' answers about critical aspects of WWW and the researcher' s conclusions.

All students have a personal computer at home. They don't take computer lessons but they use their computer in many different ways, such as navigating in WWW in order to search for information and games.

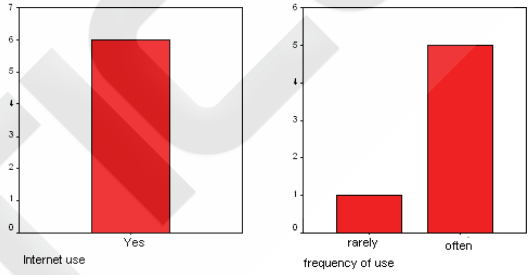

Figure 1: Frequency of Internet use.

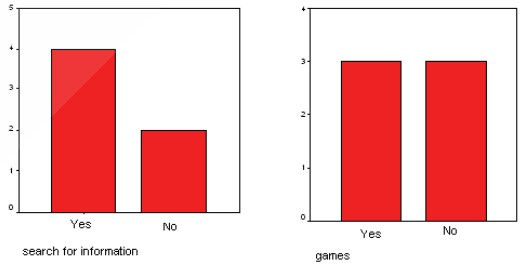

Figure 2: Reasons of Internet use.

Students know about the technological means demanded to access the Internet and that they are able to access through it to any kind of information, in any language. Though they ignore where information is being stored and how to search for them.

Also they consider that all information in WWW come from experts, so that they are valid and updated. Finally they totally ignore the concept of "Intellectual Property Rights".

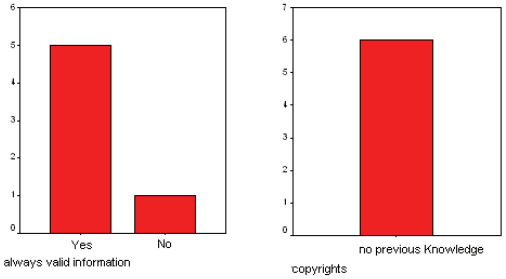

Figure 3: Credibility of Internet information, Copyrights.

4.2 Setting Didactical Goals

The goals that the course set for students to achieve, based on their conceptual representations were:

- To accept and embrace WWW as a source of information
- To evaluate the credibility of the information given from WWW
- To perceive concepts as "Intellectual Property Rights" and "Copyright protection and management"
- To adopt policies result from them

5 IMPLEMENTATION

Students access pre chosen sites where is emphasized that their content is being protected by the laws of Intellectual Property Rights (http://www.culture.gr - http://www.in.gr).

- Is being discussed the matter of Copyright protection and management
- Teacher calls students to compare the copyright protection of the content of a site to the copyright protection of a bookgiven.
- Then they visit a pre chosen site (http://www.geocities.com/makedonia007/) that publishes historical information about Macedonia. They compare that information with history books realizing that the two sources are totally different.
- Initiates a discussion about the credibility of a site. Who publishes the information of a site? Is he/she an expert? Is it a formal site or a personal one? Is a published book more trustworthy and under which conditions?

6 CONCLUSIONS

Raising awareness to children and at the same time constructing new knowledge and capabilities regarding the ethical use of the WWW is the most sustainable approach for the future respect of the Internet user to the IPR laws and regulations.

Research has to turn towards to this direction. More statistical data about student's conceptual representations on the matter, case studies and curriculum planning is needed.

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