FROM CONCRETE TO VIRTUAL - USING A SCIENCE FAIR AND WEB PAGES BUILDING AS STRATEGY FOR THE DEVELOPMENT OF THE CONCEPT OF HYPERTEXT BY ELEMENTARY SCHOOL STUDENTS

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The students of elementary schools belong to the multimedia generation. They will be dealing with hypertexts much more frequently than their teachers. Our students are using Internet as source to get information useful in the knowledge construction. Teachers must give those students the opportunity to know the hypertext structure by acting directly in its construction. Our 99’ Science Exhibition was physically structured so that the school rooms, each one used to the exhibition of one or more themes, became links of an big and concrete hypertext. As complementary activity, the students developed web pages with the main purpose of complementing the themes that they presented in the Science Exhibition. Each room of the school used in Science Exhibition then became pages with links in the WWW. The task was a cooperative work and our students answer to this challenge in a very pleasant way.

Using website development as strategy to integrate information technology in pre-service teacher education

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In Brazil, pre-service teacher education courses still act as if the computer hadn’t existed while pedagogical tool. At PUC Science teacher education, searching for a more dynamic pedagogical structure necessary in the Knowledge Society, we need to prepare teachers to incorporate the new information technologies into the educational work. In a way without relationship with the teaching methods courses, in 1999 we started the Information Technology Pedagogical Initiation Project into the Cytology, discipline of the specific subject curriculum. That Project allows the students to develop important skills, like critical and creativity, to act in a cooperative way and to use problem solving strategies. They develop web pages and other computer uses having the cell as the main subject. The Project is developed as an outclass activity, students use their own computers and shareware/freeware. The pedagogical and technical support is provided by the Cytology teacher.

Pedagogical issues in teaching mathematical, signal processing and physics concepts to non majors

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Many of the courses in health sciences have to deal with mathematical, physics-based, electrical circuits and signal processing concepts. Even though these concepts are at an introductory level, most of the students taking these courses, which include physics, signals and circuits do not have the necessary background in Calculus, differential equation or basic electrical engineering courses. The paper details the experience the author has in teaching one such course, “Hearing Science” in the Hearing and Speech Science (HSS) department. Hearing Science is a core course required by the HSS department. It is one of the fundamental courses and a foundation for the advance courses like Psychoacoustics, Physiology of the Ear, Audiology, Pathology of the Ear, Speech Science, Speech production etc. The course entails trigonometric (sine), and logarithmic functions, sound physics, anatomy, physiology, and psychoacoustics. Since the students do not have the prerequisite background in math and physics, the instructor in the past either skipped the concepts which are very critical in understanding and synthesizing details of hearing science like cochlear implants, hearing aids, instrumentation used in the clinic, or the instructor has to spend time in teaching the basic mathematical and signal processing concepts and cannot cover the actual hearing science material planned for the course during that quarter. By developing web-based tools to graphically and interactively let student explore and learn the concept of unit conversion, signals, wave models, psycho acoustic correlations, student can learn these concepts at their own pace and time. Students can review the material anytime from anywhere as long as they have access to the WWW and can go through as many examples/sessions as they need to master/learn those concepts. Since the web-based course/tools development was accomplished before the course started, students could start using the tools immediately and thus have enough time to grasp the information.

Ergonomic Issues for K-12

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A survey study occurred in 1998 in a southern state. The study population consisted of 302 K-12 schools. The survey had a 70% return rate totaling 212 schools (Elementary:129; Junior High:49; Senior High:34). Survey results indicated computers are used for teaching of non-computer subjects in all schools. Classes in word processing were the most popular. Internet use was common. Fifteen percent of elementary schools reported instructions in programming. Less than 1/4 of the schools reported extensive training in the uses of software. Initial training related to computer software usage appears to have shifted from senior high level courses to elementary schools. In contrast to the common 1:1 workplace ratio of computers to people, an education setting must provide access for an average of seven students per computer. Most schools had furniture for children, but few had customizable environments. Reported data from the survey indicated computer-related visual problems and physical discomfort.

Science and Engineering Online Solution Library for Education

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Abstract: This presentation focuses on an interactive web computing library, Science and Engineering Online Solution Library (SEOSL) for education. The library can be easily integrated into science and engineering web courses for