

WEB-LIT: Web-Based Support for Learning Theory and Instructional Design

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The primary objectives of our project include creating an open and flexible web site to host materials on learning theory and instructional design. We will find and evaluate existing web-based materials on these topics which reflect a wide variety of perspectives, applications and lessons learned and organize the site so that materials can be posted and easily accessed. Interactivity also plays a key role. Opportunities are provided for users to comment on existing materials and/or submit new materials. Our goal is not to create an online course in the area of instructional design of learning theory, but to augment the design of these courses by offering support resources. A secondary goal of this site is to create a web-based set of resources that can provide a source of evaluation data on the use of web-based materials in graduate education.

Realism and Credibility in a Simulation-Based Virtual Physics Laboratory (VPLab): An Empirical Study

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Realism and effectiveness of computer simulation-based learning or training environments have been examined in several studies. It was shown that under certain conditions, simulations can be as efficient as real experiments, and that increased realism may result in gains in 'practical appreciation'. However, few have investigated the relationship between realism and credibility, or between credibility and effectiveness. The VPLab is a simulation-based learning environment featuring many characteristics and constraints normally associated with real experiments. These include uncertainty in measurement, random fluctuation of parameters, and limitations in user control over the simulation. This approach distinguishes the VPLab from most existing simulation-based laboratories. We will present first results of an experimentation with first-year university science students, in which we sought to identify the factors, most notably those associated with our approach of realism, that may enhance the credibility of such an environment and/or its perceived relevance as a tool for learning laboratory skills as well as science concepts.

A Web-based Tutorial on Optical Communications

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We are developing a tutorial on optical communications in order to increase the interest of the students in this area and to clear up some concepts. The tutorial is divided into four didactical units: Propagation of Signals; Components and Devices; Optical Communication Systems; and Optical Communication Networks. Within each unit, basic information is provided as well as simulators and animations. The students can also perform self-evaluations to check their progress. The self-evaluations are randomly generated from the contents of a database according to the students' preferences (topics, difficulty and kind of items: questions and/or short problems). The tutorial is being developed at <http://pesquera.tel.uva.es/tutorial>. The utilization of web technologies allows the students to access the tutorial from their homes, and we hope it will facilitate the collaboration with other groups working in these topics. This work is partially supported by Consejería de Educación y Cultura (Junta de Castilla y León).

Posting Visual Cues on Threaded-Message Boards in Science Curricula: Enhancing Transfer of Theory Knowledge to Clinical Practice

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Results of a pilot study (16 baccalaureate nursing students) suggest posting thematic, integrated photographs, graphic, and text data on asynchronous, threaded-message boards facilitates transfer of theory knowledge to clinical practice and supports the acquisition of skills in clinical reasoning (pattern recognition, critical analysis, problem solving, and identification of therapeutic interventions). Visual cues provide powerful representations of reality that enable students to recognize manifestations and patterns of clinical pathologies. Text-based learning prompts stimulate reflective thinking and collaborative problem solving. Used synergistically, they create clinical context, authentic complexity, and scaffold learning. Provided both words and pictures during instruction, learners encode information in such a manner that recall is facilitated and transfer of knowledge enhanced. Students report on-line interaction results in the positive experience of belonging to a professional community during learning, affords support and opportunities for collaboration, and increases access to the instructor to clarify "accuracy of learning" and provide feedback. Using visually-enriched on-line conferencing is an enjoyable, convenient, and satisfying way to amplify and enhance learning, and "brings the course content alive".