A Cross Country Collaborative Project in Latin America

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Abstract: This is an article on the development of web-based learning modules conducted in Latin America on a collaborative cross-country project (RIVED). The Red Internacional Virtual de Educacion (RIVED) is an initiative that utilizes computer technology to improve the teaching of science and mathematics at the secondary level. A module here consists of a sequence of learning activities presented in a variety of media forms, such as diagrams, text, animations, movie-clips, simulations, etc. The development of the learning activities is based on the learning objects approach to ensure flexibility, reusability and scalability. The production process involves a series of steps which are performed by a multidisciplinary team in each participating country. In justifying the need for such steps, this article describes the changes and adjustments made since the first products. The country teams interact with each other through a virtual network exchanging ideas for the design of the modules.

Introduction

Driven by the knowledge explosion, our beliefs about what students should learn have changed. The new society requires individuals with deeper scientific understanding to live the everyday life. Research has shown that the teaching of basic facts, laws and theories alone, does not prepare students for the new society demands. Instead, we know that students need to acquire skills, such as critical thinking, quantitative reasoning, effective communication and abilities to find relevant information and work collaboratively. Computer technology is a key factor in those changes bringing new possibilities for education.

In view of the above considerations, the Red Internacional Virtual de Educacion (RIVED) aims to enhance the role of the teacher as a facilitator and leader of the teaching/learning process, and to equally enhance the role of the student as a learner, thinker, investigator and problem-solver. RIVED comprehends instructional design of teaching/learning activities, production of web-based curricular materials, teacher training, a distribution communication network, learning achievement assessment and program evaluation. The project’s main focus is the sciences and mathematics education at the secondary level in Latin American countries. The science and mathematics program is intended to be hands-on, minds-on and reality-on in order to make the educational process engaging, authentic, and sustainable for the students. The project was designed in 1999 and launched in 2000, and the participating countries are Brazil, Venezuela and Peru. It is funded by participating countries resources, but its beginning was supported by grants from Inter American Development Bank and UNESCO. Currently, RIVED is covering the pilot developmental phase

The production teams

A multidisciplinary team in each of the three participating countries develops the learning material. They work as individual country teams as well as a cross-country network. As the production teams develop the learning material, the material is distributed to member countries for implementation into participating schools. The production teams are composed of content specialists, instructional designers, programmers and multimedia designers. The teams are in charge of developing a sequence of teaching/learning activities that meet instructional objectives of a curricular unit. This body of learning material is assembled in a modular format. Every module brings a suggested sequence of teaching/learning activities and an on-line teacher’s guide.
Design and development of learning modules

The original idea for the learning modules was to have a body of learning material covering the whole topic of study in any media format. As the work progressed, the project changed the focus mostly to the development of web-based activities and learning objects. These activities involve motivating and engaging learning systems such as interactive simulations, games, and animations. Researchers (Sims, 1998; Harper & Hedberg, 1997) have found that an interactive learning environment can generate effective instruction and learning. These findings agree with the constructivist view of learning, which encourage the learner as an active participant to construct knowledge in making sense of their real-world experiences. The module counts on the teacher for coaching and scaffolding the students. Teachers play important roles in implementing technology in classrooms, making decisions about “if, when, and how” they will use technology in the classroom. The reusability of learning objects offers an efficient way to facilitate instruction, and it can be re-adapted to satisfy different types of users (Willey, 2000). The learning objects can be a part of an educational strategy, as suggested in the module, or it may stand alone, according to the teacher’s needs. To encourage the best use of learning objects, the teacher’s guide suggests complementary classroom activities, assessment exercises and includes relevant reference.

The steps of the modules development are described below

Step 1 – Content specialists consult the content mapping to select the topic of the new module. The team of specialists establishes the educational objectives and design the teaching / learning activities that meet the intended objectives. The instructional designers interact with specialists to guide instructional sequence, and observe the adequate order of cognition required for the activity. The objectives and activities are described in a document called General Design of Module – GD.

Step 2 – The General Design is posted in the Rived collaborative site so all other Rived production teams can now access the GD for comments. The other teams access the GD of a module on the web and initiate a review/feedback process that includes: a) review the design and pedagogical approach; b) raise questions or trade-off in the selection of strategies/technologies; c) provide suggestions for different activities or technologies; d) call attention to existing materials; e) relate module to country suitability.

Step 3 – Content specialists revise the original design according to other team members’ feedback, and develop specifications for each learning object, including descriptions, scripts, and storyboards so that technology members of the team will be able to use to translate into actual products.

Step 4 – The technology members produce the learning objects. During this phase, content specialists, instructional designers and technical members work together to avoid errors.

Step 5 – Content specialists create the teacher’s guide for each learning object.

Step 6 – Learning objects are assembled into a module and published on the web.

Experience has shown the most important difficulties the teams have in developing and generating learning objects. The lessons learned have helped RIVED refining and improving the process of development of modules continuously.

References

