A presentation given at the Information Technology for Teacher Education Conference, Trinity College, Dublin.
Title: Shaping the Future, July 2002.

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Setanta Project: The development of an Interactive Maths Tutorial

In this presentation, we hope to show how the technical and pedagogic expertise in Third level institutes can support certain curriculum needs of Primary and Second level schools.

The project involves the development of courseware, which takes the form of an Interactive Maths Tutorial; it is specifically aimed at pupils preparing for Secondary school assessment tests, i.e. Sixth class pupils in Ireland. It suggests that a partnership between Second and Third level institutions is one way of facilitating the creation of courseware.

The program does not aim to teach students, but rather to build on and test their existing knowledge base. The interactive tutorial teaches by starting with a basic questions on each topic. As the pupil progresses, the questions become more challenging. The aim is to ensure that pupils are able to work comfortably at their own pace and that the questions asked match their ability level. The project works in two ways: there is a practice mode where the learner can practice different types of questions individually. There is also a story mode, based on the new idea of trails, where all types of questions are asked together in the form of a story.

The tutorial runs on a Tomcat server. It is programmed in Java Servlets. It uses printwriters and streams to write XML files. The front end is HTML, with XML references. It connects to an Oracle database where the student and teacher information is stored.

We had regular meetings with our supervisor Margaret Farren, Lecturer in the School of Computer Applications, during the development of this Interactive Maths tutorial. During the project we met with Primary school teachers and they highlighted several areas for improvement. One included the the idea of trails, a new idea of the Department of Education in Ireland where maths is integrated into real life situations.

Aims of Project

To allow the teacher to keep track of how their class are progressing both individually and as a whole.

To allow the teacher to have a degree of input into what the learner sees while working. The project allows teachers to add information themselves to the web pages.

Suggestions for Improvement to Interactive Maths Tutorial

Because of the time constraint of 6 weeks to develop the courseware certain tasks were not completed. However, the following improvement could be made to the program.

A version of this project is available on the Internet and on disk. A disk copy of the project would reduce the functionality, however, it would be more realistic to have it in this format, if Irish Primary schools were to use it.

After interviewing two Primary school teachers for 90 minutes, most aspects of the project were changed. It is hoped to evaluate this program in classroom situation.

Improved teacher input functions would be very beneficial. Ideally the program could allow the teacher to define what happens in each topic at various difficulty levels. Not only to select the

type of questions asked at certain levels, but to define what ranges of numbers are used, or to be able to set the array double [ ] decimalValues (see the workings of the project section). Also giving pupils the ability to create their own stories was a suggestion made at a recent presentation.

The project was intended to have substance and functionality. The web page design could be improved.

Obviously with more time it would be useful to expand the topics and to encompass the Maths course for the entire year.

Trails suit this kind of program extremely well. Expanding the trail idea would be an excellent way to develop the project. Multiple trails, trails which keep score or event triggered trails i.e. the events are dependent on how well a learner is performing with multiple endings.