

Computer-Assisted Instruction (C.A.I.) -

Math Challenges for Grade 1

2010

A Special Problem

Presented to

the Faculty of the Department of Mathematical Sciences

and Computer Studies

De La Salle University - Dasmarinas

Dasmarinas, Cavite

In Partial Fulfilment

of the Course Requirements for the Degree

Bachelor of Science in Computer Science

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February 1997

25 MAR 1997

ABSTRACT

Name of Institution: De La Salle University - Dasmarinas

Address: Dasmarinas, Cavite

TITLE: COMPUTER-ASSISTED INSTRUCTION (C.A.I.) - MATH CHALLENGES FOR GRADE 1

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DATE STARTED: December 1996

DATE COMPLETED: February 1997

OBJECTIVES OF THE STUDY:**A. GENERAL**

To develop CAI lesson for Math 1 students that will make learning pleasant and interesting by using graphics as conveyor of information.

B. SPECIFIC

The specific objectives are:

1. to aid the learning process of Math 1 students by presenting a visual model of the information to be learned;
2. to formulate criteria of a good quality educational software that will be used in comparing the different softwares available;
3. to let future users evaluate the software that will be developed for possible betterment of its quality.

SCOPE AND COVERAGE:

The Computer-Assisted Instruction was developed to be of help to children learning Mathematics 1. The system would help students view Mathematics as a fun and exciting subject and not as something to be feared and annoyed.

^{2/}The study covers only thirteen lessons about Mathematics for grade 1. Quizzes on each lesson consist of five questions given in random order^{2/} Random sequence of questions are implemented in order for the students not to memorize the sequence of questions and the answers to the quizzes.

METHODOLOGY:

Review of developed CAI lessons, concepts, theories and different approaches in developing CAI lessons are done by the author. Study of the recommendations of the authors who developed these CAI lessons were done in order to have an overview of what the system to be developed should do.

The computer screen is designed as a book inside the computer which implements the book learning environment metaphor. In this way, the learner interacts with the computer screen as if she or he were interacting with a book.

A qualitative student model is used to assess the students knowledge state by making inferences about the students conceptions and misconceptions. Presentation of learning materials are determined using the tutorial module and by using the Socratic and Coaching methods.

OUTPUT OF THE STUDY:

A Computer-Assisted Instruction on Mathematics for grade 1 was developed to demonstrate improvements in the design of CAI. The improvements include: student record keeping, allow skipping of lessons for fast learners and more discussion for slow learners, hypertexts, graphics, animation, speech, music and sound, and student evaluation after each lesson.^{3/}The software was made to run in a DOS-based environment^{3/}

CONCLUSION:

Technology helps students, especially children, to have better memory and understanding of what they have been taught, if the concepts and principles are presented with graphics and sounds. Through hypertext, the student escapes the linear, sequential presentation of material to produce instructional programs which engage students with an enhanced learning experience.

As a final result, the role of the teacher becomes one of a facilitator and organizer of problems for students to study, discuss, and solve, and technology supports this philosophy by providing rich resources for students to use as they construct their personal knowledge bases.

RECOMMENDATIONS:

The author recommends that learning with the use of Computer-Assisted Instructions be situated in an integrated environment, rather than in fragmented materials. Integrated environment means a learning environment in which a learner can not only learn theoretical knowledge, but also learn how to apply knowledge; in which a learner can use multisensory channels (visual, audio, hands-on) and multifaceted media (video, voice, speech, music, graphics, images, text, animation) to gradually and delicately shape a more knowledge base in his or her memory. Speech is highly recommended to support the effectiveness of the pictures or images used in presenting mathematical concepts.

Random Access Memory (RAM) of the computer to be used should also be considered in developing CAI lessons since such system requires large memory.

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