

Effects of Computer Literacy improving the achievement in Mathematics Instruction of students.

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Introduction

As part of the mathematics and standard-based reform movements the National Council of Teachers of Mathematics (NCTM) developed the *Principles and Standards for School Mathematics*. The focus of the NCTM standards is on conceptual understanding rather than procedural knowledge or computation (Maccini & Gagnon, 2002, p.326). This has important implications for classroom practice because Mathematics education has not focused on problem solving and reasoning. Also ineffective instructional strategies, problems in reading and basic computation skills, difficulties in problem representation and failure to identify relevant information and operation have been contributing the poor problem solving performance of student.

The history of computer use in education is quite long. Much of the early work in developing electronic digital computers was done in university research settings. As computers came into use in colleges and universities, their application quickly spread to the precollege level. Thus, by 1960 there was already some instructional use of computers in some schools.

The commonly used term computer literacy, coined in the early 1970s, originally referred to the ability to write simple computer programs to accomplish academic tasks. Later, the term encompassed a knowledge of computer vocabulary, computer capabilities, and computer limitations. More recently, the term has come to mean knowledge and skill in using basic computer tools such as word processors, databases, spreadsheets, graphics, and telecommunications.

In response to these developments, many schools have established the achievement of computer literacy among students as one of their curriculum goals. However, the definition of computer literacy is now somewhat dated. Goals for computer-related technology in education have broadened into areas that had not been conceived of 30 years ago. Today, computer literacy usually refers to a working knowledge of the computer as a tool to help solve problems and accomplish tasks encountered at school, work, and play.

Moreover, the expectations about computer literacy among students are changing. As computer hardware and software become more powerful, it is assumed that educational

institutions will help students learn to use this hardware and software. As computers have become more readily available, the computer literacy expectation for students--even in the primary grades--has risen.

Problem of Statement

In 1998, the INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION published National Educational Technology Standards (NETS) for Students to increase student learning and to broaden the students' range of learning opportunities. These standards specify what students should know and be able to do by the end of the 2nd, 5th, 8th, and 12th grades . All students shall be functionally computer literate. In 2000 ISTE published NETS for Teachers, and in 2002 they will publish NETS for School Administrators. Such national standards will help to provide a solid foundation (are part of the Needs Assessment) for many types of Information and Communications Technology proposals. A number of states, individual school districts, and individual schools have adopted the various ISTE standards, or modifications thereof.

Research question

How we can improve the achievement in Mathematics instruction using computer literacy?

Methodology

All students shall be functionally computer literate. Functional computer literacy can be divided into two major parts:

1. A relatively broad-based, interdisciplinary, general knowledge of applications, capabilities, limitations, and societal implications of computers and other information technology. This level of knowledge should be achieved by the end of the eighth grade. It has six components:
2. Talking knowledge and reading knowledge of computers and other information technology and their effects on our society. Every discipline students study should

include instruction on how electronic aids can be used for information processing and problem solving in that specific discipline.

3. Knowledge of the concept of effective procedures, representation of procedures, roles of procedures in problem solving, and a broad range of examples of the types of procedures that computers can execute.
4. Basic skills in the use of word processing, database, computer graphics, spreadsheet, and other general-purpose, multidisciplinary application packages. Basic skills in creating hypermedia materials as aids to communicating and to storing and processing information. Basic skills in designing effective communications in these computer environments.
5. Basic skills in using telecommunications to communicate with people. The ability to make effective use of computerized databases and other sources of information located locally (for example, in a school library, a school district library, or a local community library) and throughout the world.
6. Skill in using computers as problem-solving aids in the various disciplines. For example, a student taking advanced math courses shall learn about using computers for these courses' subject areas. A student studying commercial art shall learn about the computer's role in that field. Industrial arts students shall learn about computer-aided design. Science courses shall include instruction about microcomputer-based laboratories and computer simulations in science.
7. Skill in computer-mediated, collaborative, interdisciplinary problem solving. This includes students gaining the communication skills needed to work in a computer-mediated problem-solving environment.
8. All students shall learn general applications for computers as aids to learning and specific ways CAL can be useful. They shall become experienced users of CAL systems. The intent shall be to focus on having students learn to investigate problems, become responsible for their own learning, and become lifelong learners. Students have their own learning styles, so different types of CAL will fit those styles to greater or lesser degrees.

9. Telecommunications and other electronic aids are the foundation for an increasingly sophisticated distance education system. Education shall use distance education, when it is pedagogically and economically sound, to increase students' opportunities for learning.
10. In many cases, distance education can be combined with CAL; therefore, there is not a clear dividing line between these two approaches to education. In both cases students are given an increased range of learning opportunities. The education may occur at a time and place convenient to the student rather than in a school's traditional course schedule. The choice and level of topics may be more under student control than in our traditional educational system.
11. Information Technology Courses: A high school shall provide the following two, more advanced, tracks of computer-related coursework. When research and practice have demonstrated its effectiveness, computer-related technology shall be routinely and readily available to students with special needs. Student assessment systems shall reflect the student goals listed in items 1 to 6. For example, when students are being taught to write and solve problems in an environment that includes routine use of computers, they shall be assessed in such an environment.

Summary

All teachers shall have access to computerized data banks, word processors, presentation graphics software, computerized grade books, telecommunications packages, and other application software that teachers have found useful in increasing their productivity and job satisfaction. Computer-based communication is becoming an avenue for teachers to share professional information. Every teacher should have telecommunications and desktop presentation facilities in the classroom. Computer-managed instruction can help the teacher by providing diagnostic testing and prescription, access to item data banks, and aids to preparing individual educational plans. Use of literacy computer helps the education of our students and teachers having the student better comprehension of mathematics word problems and in general education. Using correct technology as strategy is effective for helping elementary, middle and High school students. Learning for example mathematics require extra support to guide them to focus on the important information and learn how to organize information.

Long-Term Commitment, the school district shall institutionalize computers in schools through the establishment of appropriate policies, procedures, and practices. Instructional computing shall be integrated into job descriptions, ongoing budgets, planning, staff development, work assignments, and other areas. Every school shall have a goal of increasing the functional computer literacy of its students and shall have appropriate methods for adequately assessing its students' functional computer literacy. The school district shall fully accept that computers are here to stay as an integral part of an Information Age school system.

The Internet can be visualized as a huge collection of computers connected to each other by way of an extensive telecommunications system. The Internet is designed to facilitate reliable communication among people and computers. Many of the computers connected to the Internet contain documents and databases that can help a proposal writer.

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