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ABSTRACT

This brief description of the Department of Defense Dependents Schools' (DoDDS) computer education program is intended to provide direction for and to stimulate development of computer applications in elementary and secondary schools administered by DoDDS. This 3-dimensional program consists of (1) computer instruction, including both computer literacy and computer science: (2) classroom applications, including computer-assisted instruction (CAI), computer-simulated instruction (CSI), computer-developed instruction (CDI), and computer-managed instruction (CMI): and (3) such administrative applications as student services, resource management, and education research and program development. (LLS)

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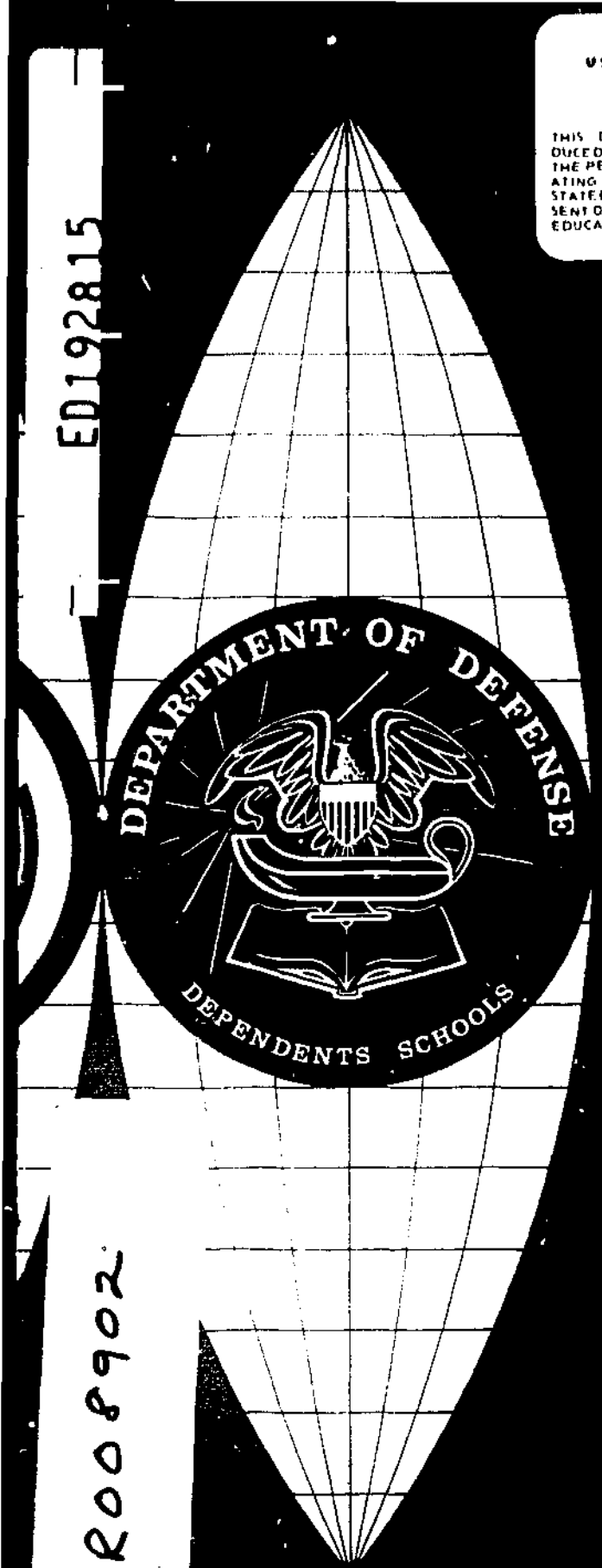


computer education

FOREWORD

Tools and methods which have impact throughout the curriculum are characteristic features of the Department of Defense Dependents Schools (DoDDS) computer education program described in this Manual.

These descriptions are intended to provide direction for and to stimulate development of computer applications in elementary and secondary schools administered by DoDDS. It is through our implementation of these applications that the DoDDS computer education program is collectively defined.

Anthony Cardinale

Anthony Cardinale
Director

INTRODUCTION

References: (a) DoD Directive 1342.6, August 26, 1976, Department of Defense Dependents School (DoDDS)

(b) "Computers in Secondary Schools—1975," Creative Computing, Sep—Oct 76, Vol II, No. 5'

In accordance with the above referenced DoD Directive and in recognition of current and anticipated uses of computers by schools in the United States (Ref b), the Department of Defense Dependents Schools (DoDDS) is committed to the establishment of a computer education program which will meet the needs of all students within the geograpically dispersed regions.

PROGRAM DESCRIPTION

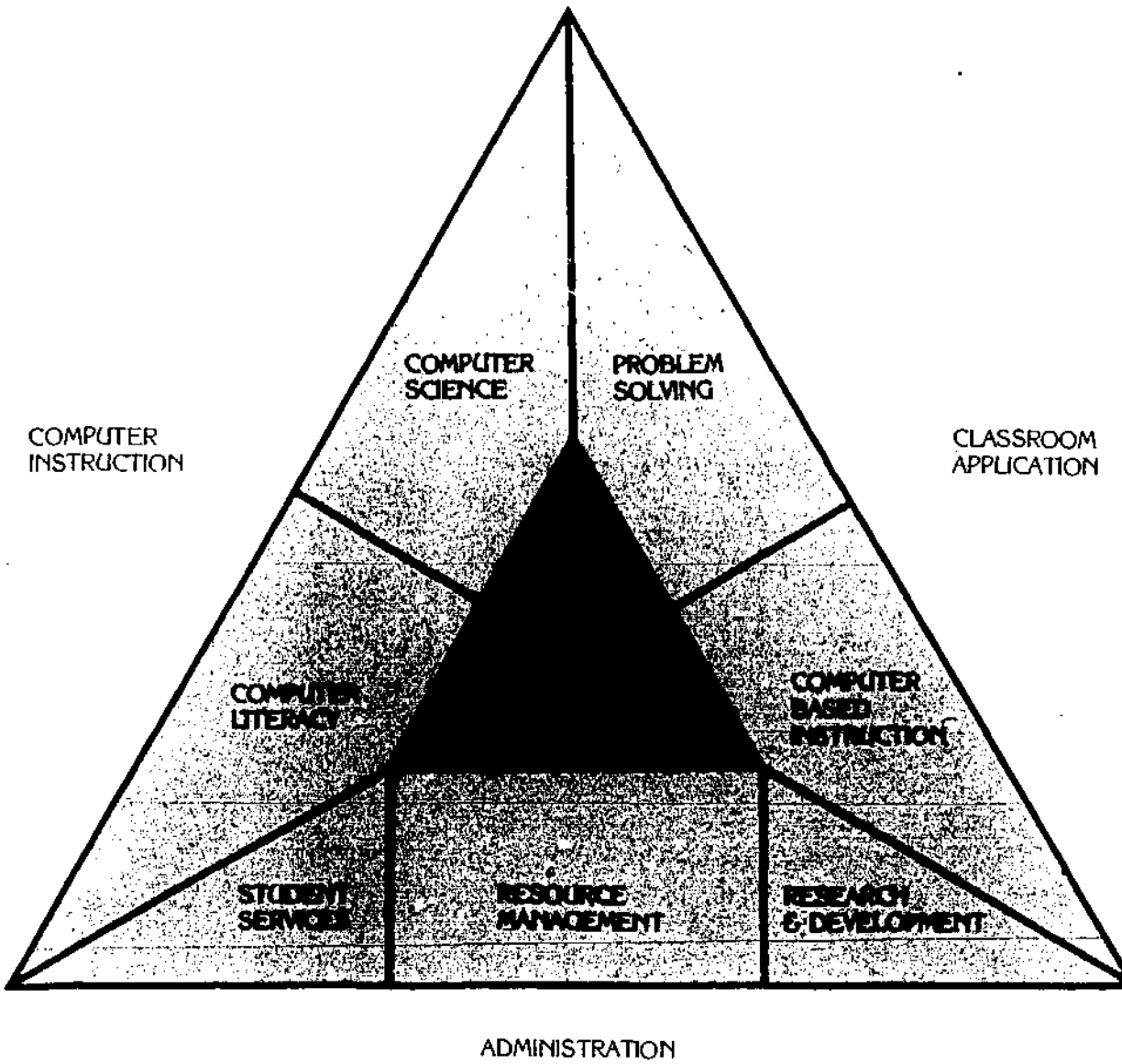


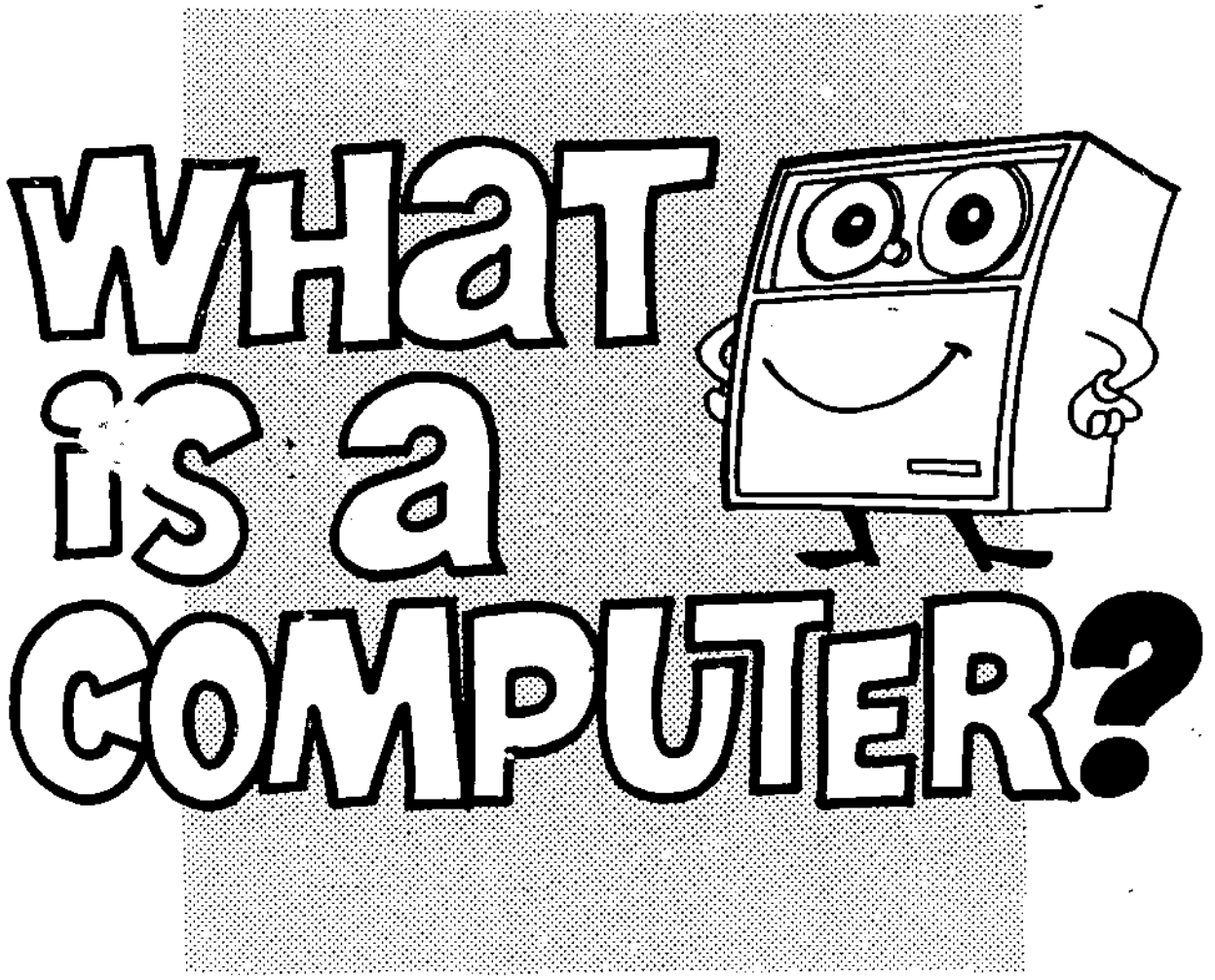
Figure 1. DoDDS Computer Education Program

Computer education is a "three-dimensional" concept which includes computer instruction, classroom application, and administration. These three facets of the DoDDS Computer Education Program are illustrated in Figure 1. Each content area is briefly described above.[1]

[1]See Appendix 1

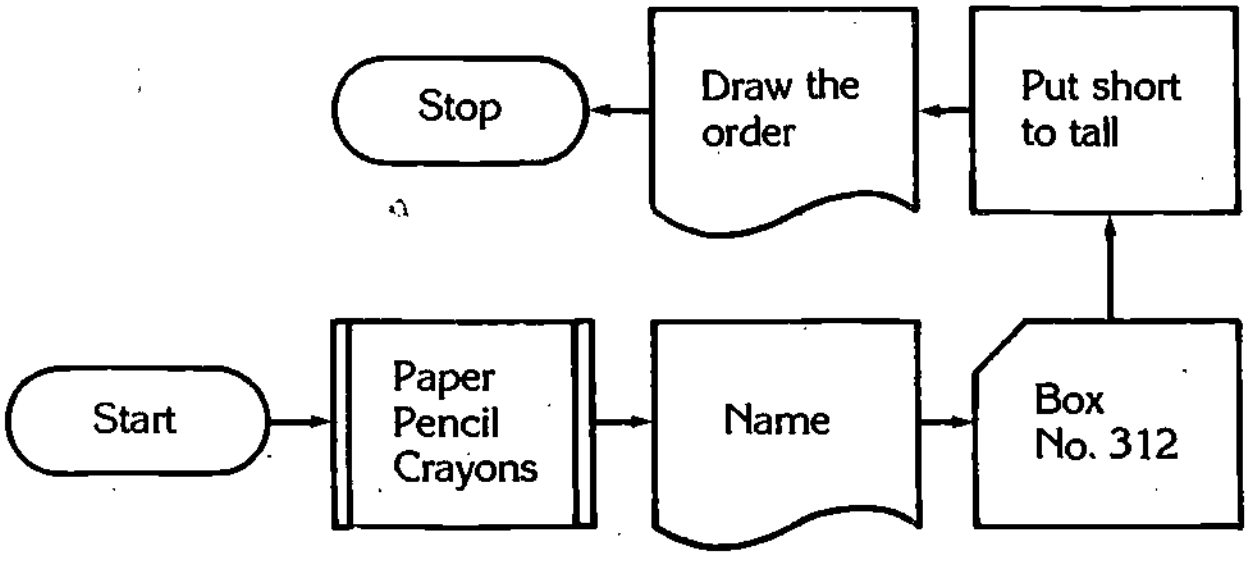
COMPUTER INSTRUCTION. Student instructional needs are multiple and vary from general computer literacy to actual acquistion of entry-level vocational skills. To become "computer literate," students need to develop an understanding of the capabilities, applications, limitations, and implications of computer technology in our society. Entry-level skills in the computer sciences run from flow charting and keypunching through programming in BASIC, and several other languages, to understanding of computer systems themselves (operation, analysis, and management).

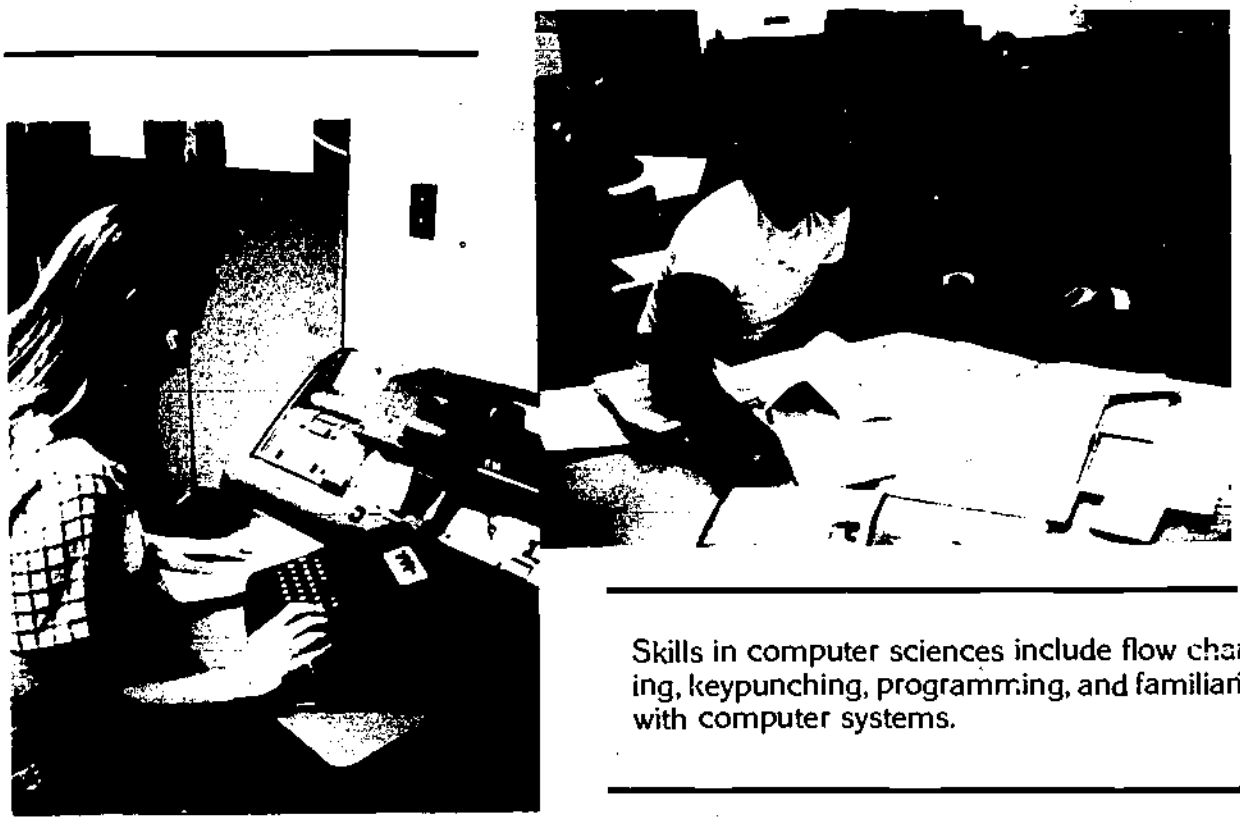
"Computer Literacy" is knowing about computers. What they are, how they work, and what they can and cannot do.[2]



[2]Marion J. Ball, **What Is A Computer?**, Houghton Mifflin Co. (1972).

A FLOW CHART FOR ORDERING[3]





Skills in computer sciences include flow charting, keypunching, programming, and familiarity with computer systems.

[3]Hubbard and Ashlock, "Using Flow Charting With First Graders," The Arithmetic Teacher, (January 1977).

CLASSROOM APPLICATIONS are universal. Integrated into the mathematics and science curriculum, the computer has been shown to be a motivational and reinforcement tool of proven value. In handling all calculations precisely and instantaneously, it frees the student to concentrate on the underlying concepts and operational algorithms used in solving problems.

Computer programs for assisted, simulated, developed, and managed instruction are becoming increasingly available to all academic disciplines. These computer-based instructional programs can be used by students for drill, practice, tutorial instruction, and dialogue as well as to simulate real situations in order to learn more about the process. Teachers are able to use these programs to facilitate their arrangement, selection, and/or production of instructional materials as well as to monitor individual/class performance and progress.

ADMINISTRATION. The same computer system which supports hands-on, interactive experiential learning by students can also be used to accomplish a wide range of administrative services; however, administrative applications will be on a time-available basis and will permit all students to have sufficient computer access to accomplish instructional objectives.

STUDENT SERVICES. Scheduling, testing, recordkeeping, and progress reporting are examples of essential clerical tasks, normally associated with the school's pupil personnel services system, which are more easily accomplished by computers. Introduction of computerized recordkeeping into the school enhances the overall services program since administrators, counselors, learning specialists, nurses, and teachers have more time to work directly with students in their respective areas of expertise.

RESOURCE MANAGEMENT.

In order to ensure effective utilization of material, financial, and human resources, DoDDS computer systems are/will be utilized to augment existing services provided by military departments. These auxiliary computer services are/will be limited to school-unique applications such as clerical recordkeeping associated with the personnel movement program.

EDUCATIONAL RESEARCH AND PROGRAM DEVELOPMENT. Computer services can be utilized in assessing needs in evaluating programs or practices as part of an ongoing process of developing and improving the curriculum.

It should be obvious from these descriptions that the DoDDS Computer Education Program addresses both administrative and instructional applications of computer technology. Administrative and instructive applications are, in fact, inseparable. Both contribute to the overall educational program and it is through our implementation of these applications that the DoDDS Computer Education Program is collectively defined.

APPENDIX 1

A GLOSSARY OF COMPUTER EDUCATION TERMINOLOGY

COMPUTER INSTRUCTION. Instruction which is related to, serves for, or promotes understandings of electronic and/or mechanical computational devices and of their uses to systematically organize information, perform substantial computations, and to accomplish many clerical functions.

Computer Literacy. An understanding of what computers are, an awareness of their many uses in our society, and an appreciation of their limitations.

Computer Science. An academic discipline which uses electronic and/or mechanical devices to systematically organize information, perform substantial computations (including numerous arithmetic or logical problem-solving operations) and to accomplish many clerical functions.

Vocational Skills. Computer science skills which lead to or enhance learner opportunities for gainful employment soon after their acquisition (e.g., flow charting, keypunching, DAPRO equipment operation).

Programming. A facet of computer science which deals with the development of programs (sequentially coded instructions) for the systematic organization of information, performance of computations, and accomplishment of many clerical functions by electronic and/or mechanical devices. Programs may be written in any of several standard "languages" (e.g., BASIC, COBOL, Fortran IV, Assembler, RPG).

Systems. Elements of computer science which provide for the operation, analysis, and management of electronic and/or mechanical computational devices in the organization of information, performance of substantial computations, and in the accomplishment of many clerical functions.

CLASSROOM APPLICATION. Elements of computer education which are related to, serve for, or promote learning.

Problem Solving. The use of electronic and/or mechanical devices and computational processes in the solution of problems.

Computer-Based Instruction. Any instructional technique which utilizes a computer.

Computer-Assisted Instruction (CAI). An automated instructional technique in which a computer is used to present an instructional program to the learner. Learning activities may include drill and practice, tutorial instruction, and dialogue.

Computer-Simulated Instruction (CSI). A technique in which a learner, using direct access to a computer, interacts with a mathematical model or simulation of a real situation in order to learn the process.

Computer-Develop Instruction (CDI). An instructional technique which uses a computer as an integral part of the arrangement, selection, and/or production of materials or experiences designed to facilitate learning. Does not include procedures in which the learner directly interacts with the computer.

Computer-Managed Instruction (CMI). An instructional technqiue in which a computer is used to maintain learner performance and instructional progress data to enable the instructor to better select learning activities for the learner.

ADMINISTRATIVE APPLICATIONS. Elements of computer education which are related to, serve for, or assist in the management of educational systems.

Student Services. The use of electronic and/or mechanical devices in the management of the pupil personnel services system. Specific uses include, but are not limited to, scheduling, testing, recordkeeping, progress reporting, guidance, discipline, student activities, and health services.

Resource Management. The use of electronic and/or mechanical devices in the administration of logistics, personnel, and financial systems to ensure effective utilization of material, human, and financial resources.

Education Research and Program Development. The use of electronic and/or mechanical devices in assessing needs and in evaluating programs or practices as a part of an ongoing process of maintaining and improving the curriculum.

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