



Chapter Fifteen



Computers at School and at Home

After reading this chapter,
you should be able to:

- Explain how the information age places new demands on our educational system
- Describe several ways computers are used in classrooms today

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you should be able to:

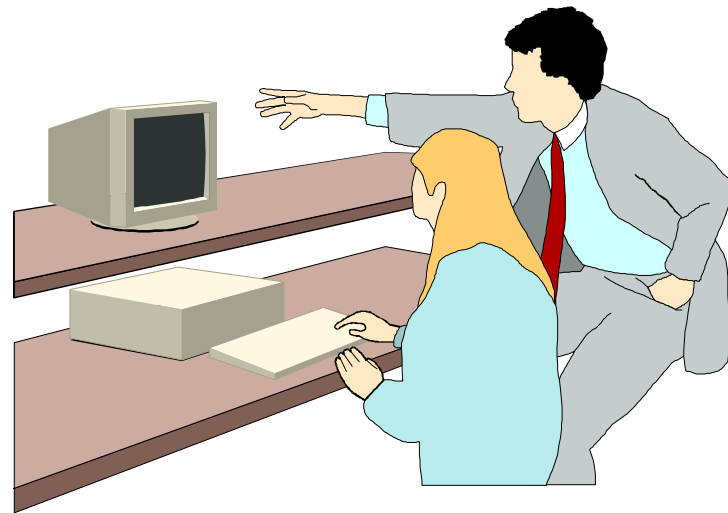
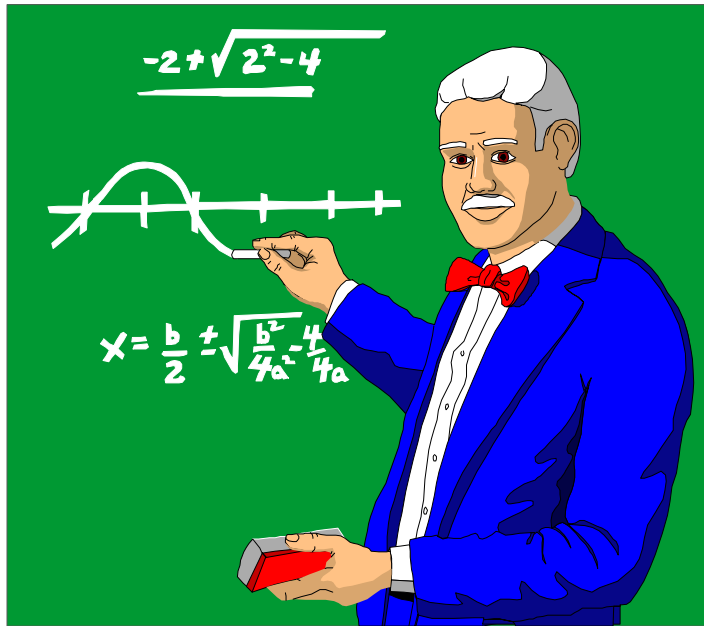
- Discuss the advantages and limitations of computers as instructional tools
- Describe the role of computers in our homes and leisure activities in the next decade

Chapter Outline

- Education in the Information Age
- Computers Go to School
- Computers at School: Midterm Grades
- Computers Come Home
- Green Computing

Education in the Information Age

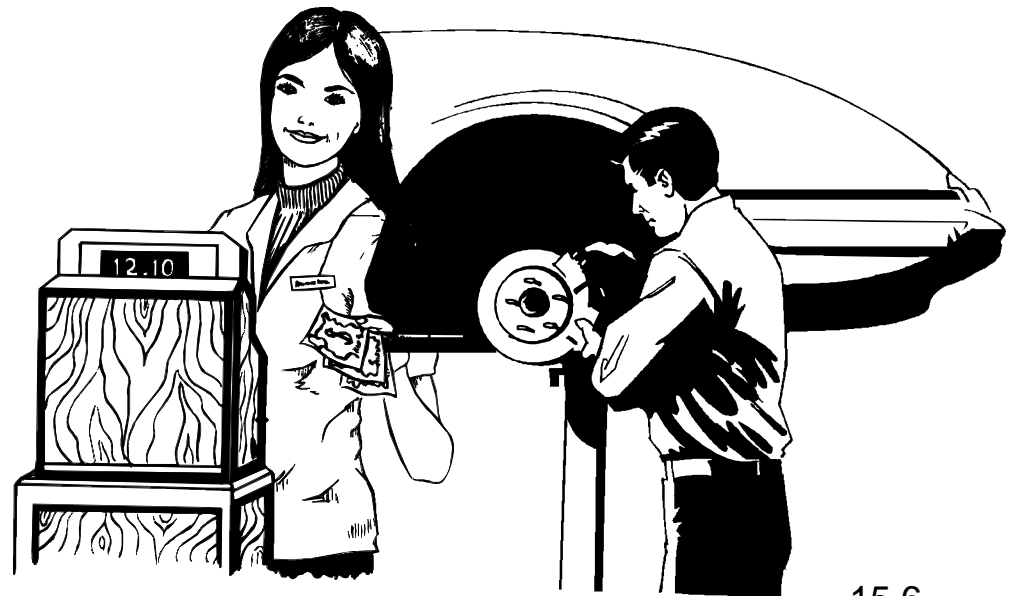
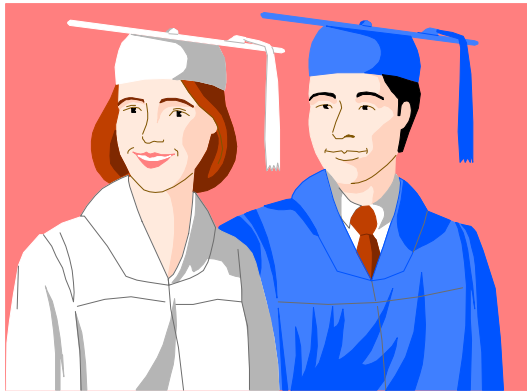
The Roots of Our Educational System



Information-age Education

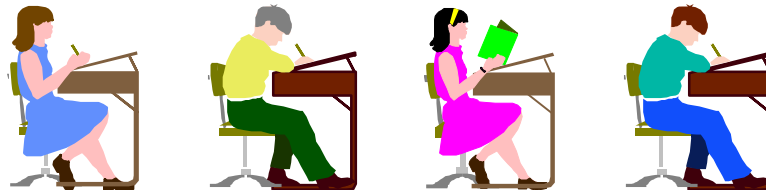
The Roots of Our Educational System

- Our educational system was designed to teach students the basic facts and survival skills needed to work in industry and agriculture



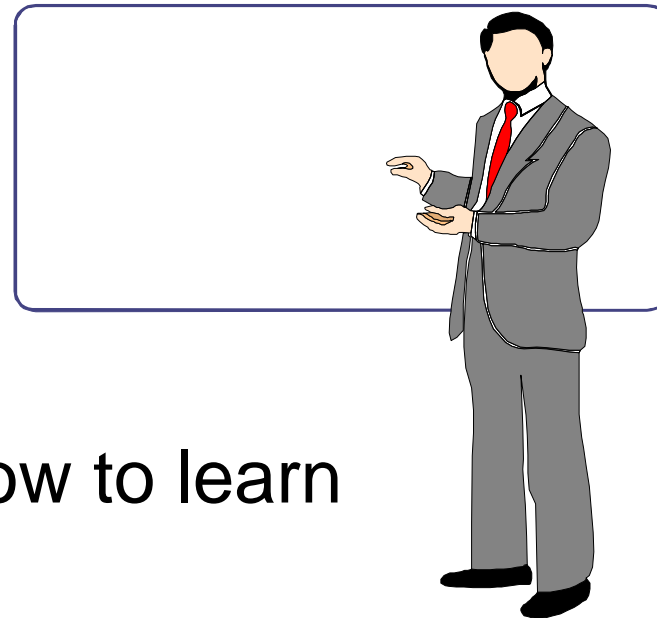
The Roots of Our Educational System

- Assumptions:
 - All students learn the same way
 - The teacher's job is to “pour” facts into students
 - Students will work individually, absorb facts, and sit quietly in rows



Information-Age Education

- What education should be provided to students in the Information Age:
 - Technological familiarity
 - Literacy
 - Mathematics
 - Culture
 - Communication
 - Ways of learning how to learn



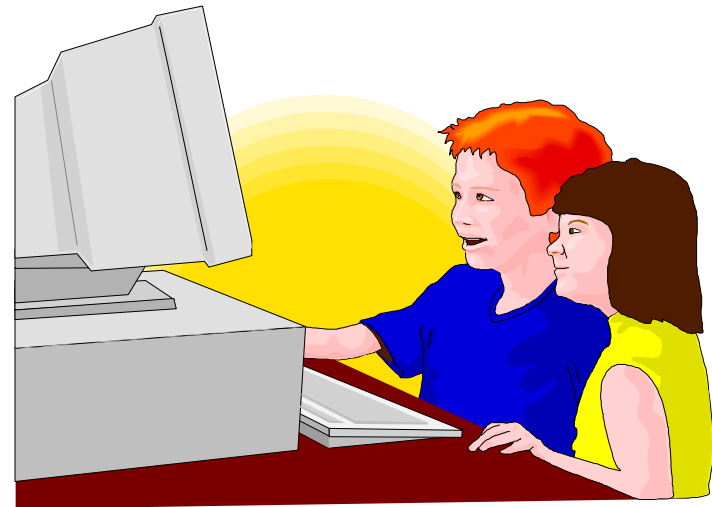
Computers Go to School

- Students are using computers in the following ways:
 - Computer-aided Instruction
 - Programming Tools
 - Simulation and Games
 - Productivity Tools
 - Computer-controlled Media
 - Distance Learning



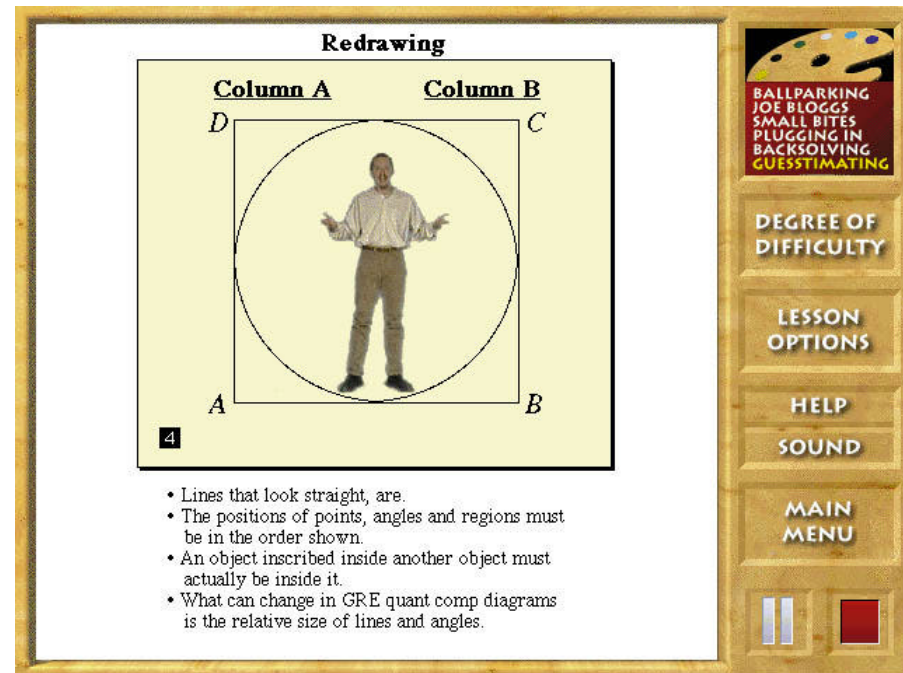
Computer-Aided Instruction

- Drill-and-practice software:
individualized rate, small steps, and
positive feedback
- Tutorial software:
direct instruction
in a clearly specified
skill or subject



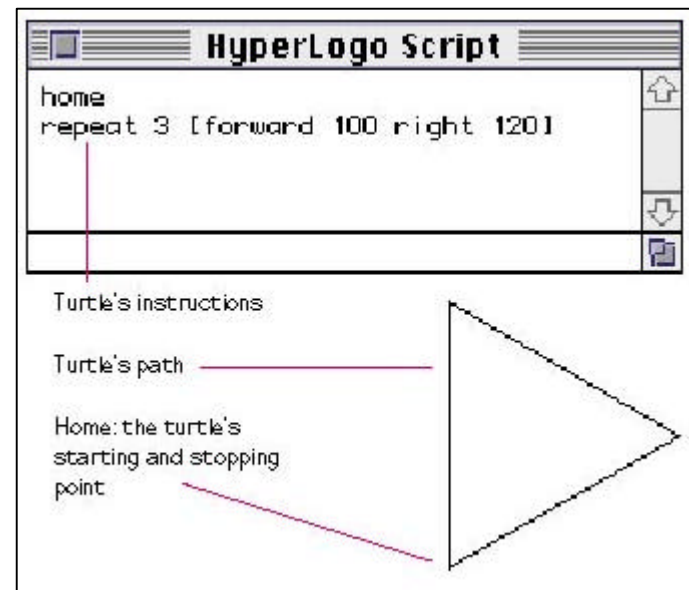
Computer-Aided Instruction

- Advantages:
 - Motivation to practice and learn
 - Individualized learning
 - Confidence building



Programming Tools

- Environments for learning are created by programming a computer to follow user instructions
- Example: LOGO



Programming Tools

- Advantages:
 - Stresses originality
 - Enhances creativity
 - Students learn advanced computer concepts



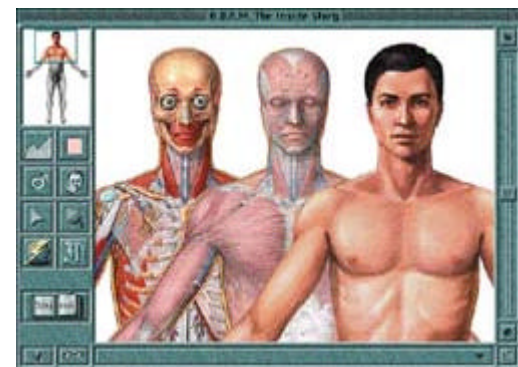
Simulation and Games

- Children learn by inventing and exploring artificial environments
- Example:
Where in the World Is Carmen Sandiego?



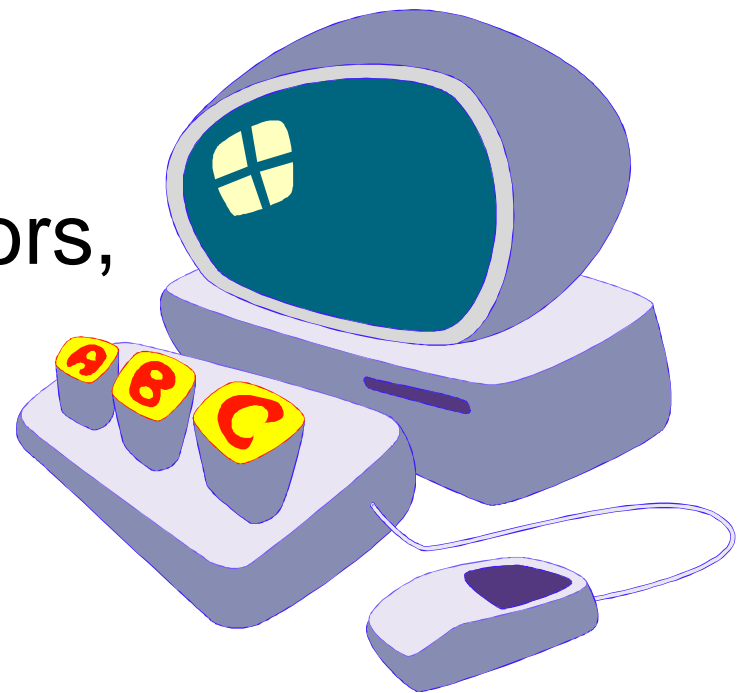
Simulation and Games

- Advantages of artificial environments:
 - They focus student attention
 - Students are in control of learning
 - They provide a context for knowledge
 - They challenge students
 - Students experience the consequences of their actions



Productivity Tools

- Children use software tools to increase their productivity
- Examples: made-for-children word processors, lab-sensing software, collaborative writing groupware, etc



Productivity Tools

- Advantages:
 - learn to work in groups
 - build on general-purpose skills
 - learn special-purpose software and hardware



Computer-Controlled Media

- Using computers to control various forms of media (computer graphics, VCRs, CD-ROMs, etc.) so as to convey information
- Presentation aids: customize computer-generated visual aids
- Hypermedia and interactive multimedia: nonsequential presentations

Computer-Controlled Media

- Authoring Tools: create interactive lessons



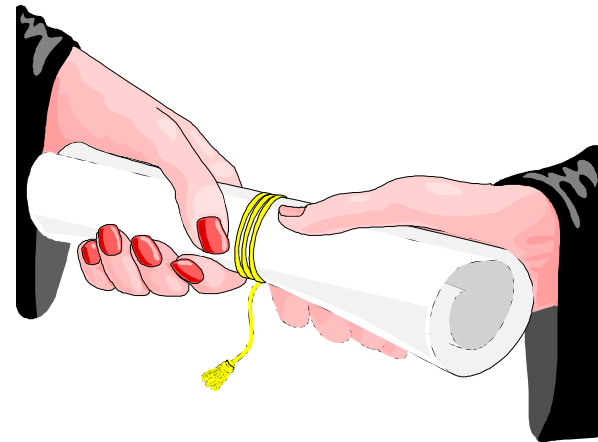
Distance Learning

- Using technology to extend the educational process beyond the walls of the school
- Examples:
 - Fax machines
 - Modems
 - The Internet
 - Satellite video transmissions



Computers at School: Midterm Grades

- Computers have been in classrooms for more than a decade
- People want to know if classroom computer technology is a worthwhile educational tool



Computers at School: Midterm Grades

- Most experts acknowledge:
 - High Marks
 - Room for Improvement



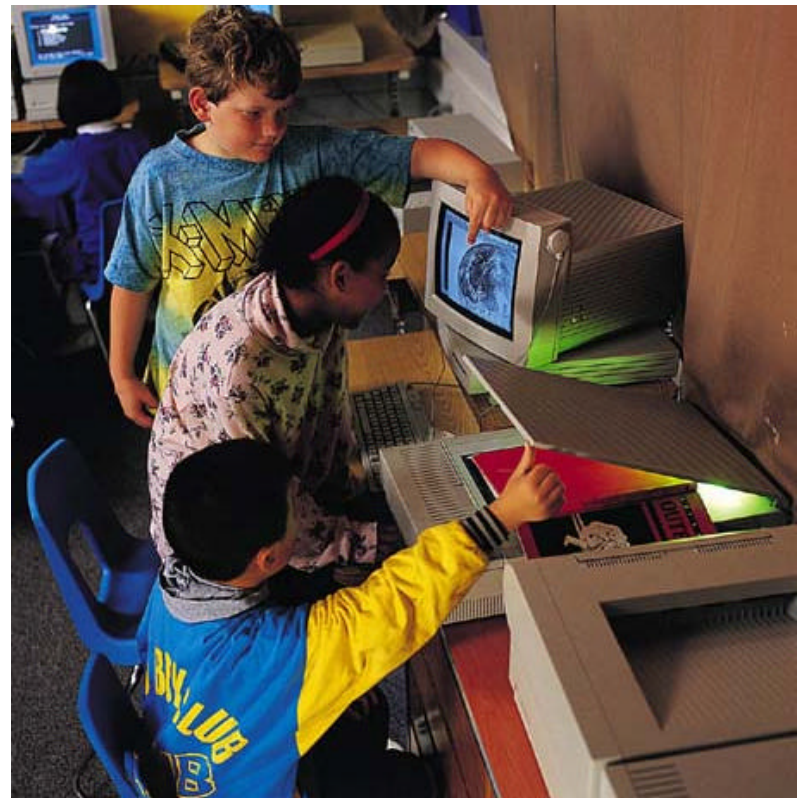
High Marks

- Information technology can improve education by helping students:
 - Improve problem-solving skills
 - Become more motivated to learn
 - Increase their self-esteem
 - Practice cooperative learning
 - Increase student/teacher interaction
 - Apply higher-order thinking skills



Room for Improvement

- Some of the areas still needing improvement:
 - Using technology merely as a substitute for paper
 - Constant practice of computer skills



Room for Improvement

- Equal access to state-of-the-art technology tools
- Methods of assessing a technology-based education
- Planning and support by school districts
- Teacher training, support, and time to integrate technology into the curriculum
- Restructuring the American educational system

Computers Come Home

- There are more computers in homes than in schools



Computers Come Home

- What are people using their computers for, and what role will computers play in future homes?
 - Household Business
 - Communication, Education, and Information
 - Home Entertainment Redefined



Household Business

- Certain aspects of family life are unavoidably businesslike.
- People are using computers at home to take care of household business by using:
 - Business Applications at Home
 - Smart Cards



Business Applications at Home

- Many people use software applications on their home computers that are similar to what they use in their offices:
 - Word processors
 - Spreadsheets
 - Databases
 - PIMs (personal information managers)
 - Accounting and income tax programs



Smart Cards

- Smart cards are wallet-sized cards with embedded microprocessors and memory



Smart Cards

- They can be used to:
 - Record financial transactions
 - Buy meals
 - Gain access to sensitive computer data
 - Replace food stamps
 - Pay highway tolls
 - Buy groceries
 - Check out library books
 - Store emergency medical information

Education and Information

- Millions of people use computers for education and information
- Improvements in communication technology will bring even more services into the home



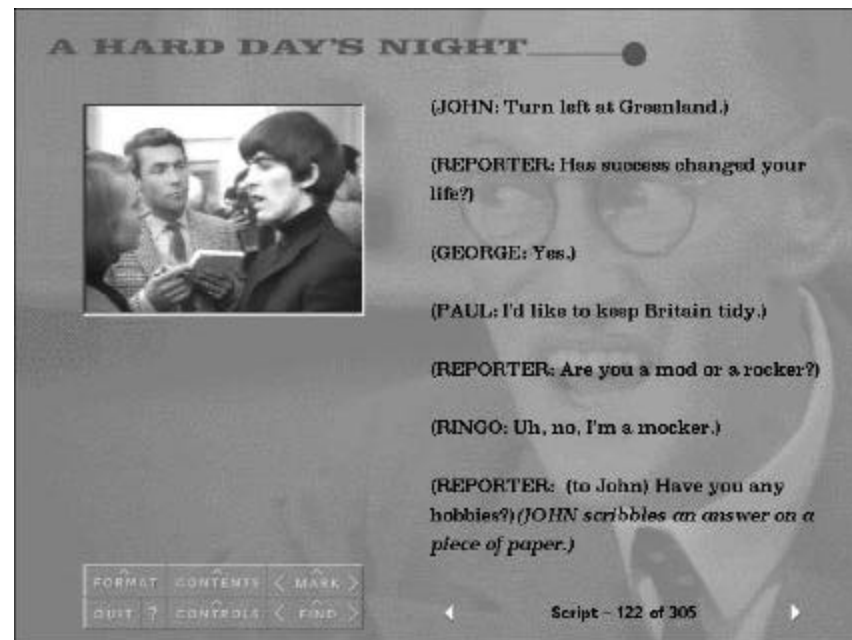
Education and Information

- Edutainment
- Narrowcasting



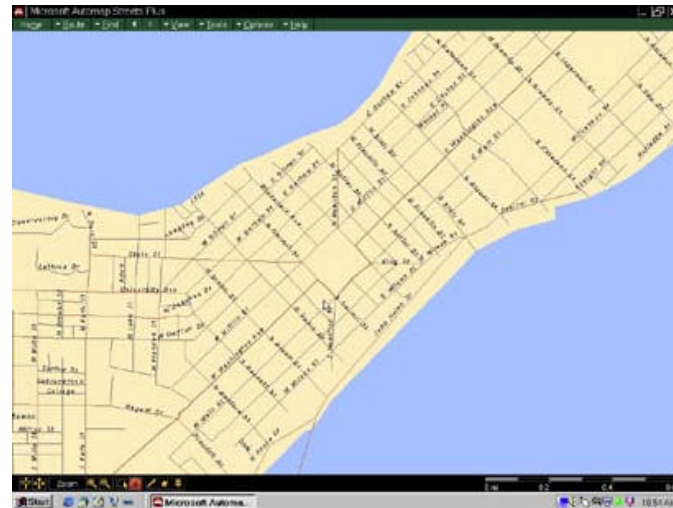
Edutainment

- Edutainment is the combination of education and entertainment



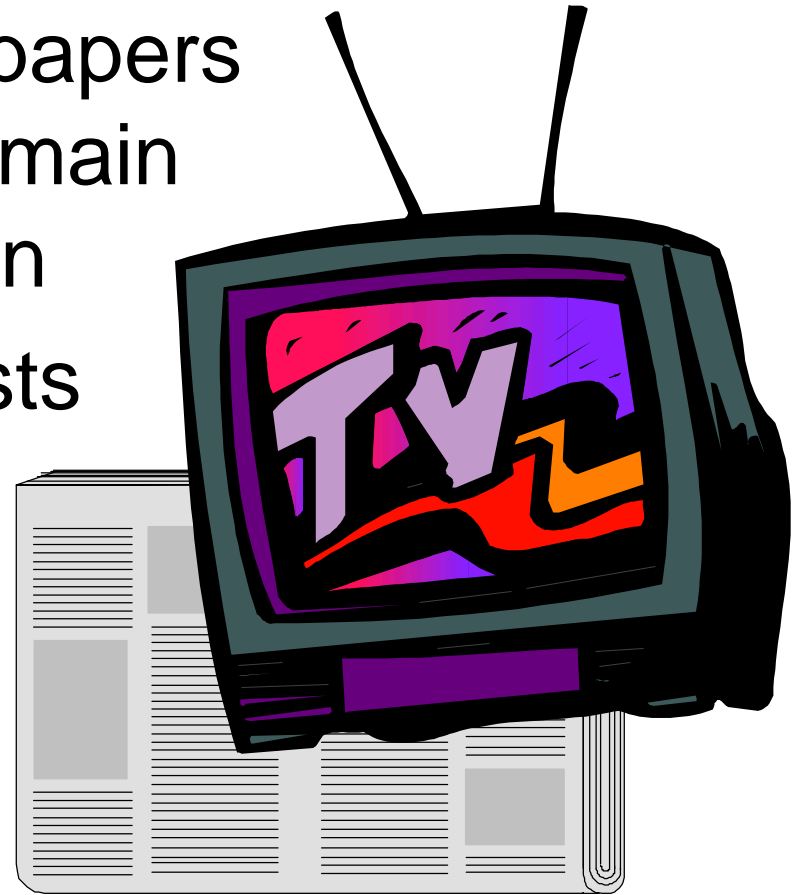
Edutainment

- Edutainment competes with television and electronic games
- Edutainment includes encyclopedias, dictionaries, atlases, etc., and are offered via:
 - CD-ROM
 - On-line services
 - The Internet



Narrowcasting

- Television and newspapers will no longer be our main sources of information
- Customized newscasts will be available on demand



Home Entertainment Redefined

- Interactive:
 - Fiction (game players control the plot)
 - Movies (viewers control the characters in the movie)



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Green Computing

- Buy green equipment (energy efficient)
- Take advantage of energy-saving features
- Turn it off when you're away
- Print only once
- Recycle your waste products
- Send bits, not paper

