Chapter 1: Integrating Educational Technology into the Curriculum

Chapter Objectives

- Define curriculum-specific learning
- Explain the difference between computer, information, and integration literacy
- Explain the necessity of changing instructional strategies from traditional to new learning environments
- Describe the evolution of computers and digital media
- Differentiate among the various categories of computers

Curriculum-Specific Learning

- Learning how to apply teaching principles, knowledge, and ideas to authentic and practical classroom lessons and projects that can benefit your students

Computer, Information, and Integration Literacy

- Computer literacy
  - Knowledge and understanding of computers and their uses
- Information literacy
  - Knowing how to find, analyze, and communicate information
- Integration literacy
  - The ability to use computers, digital media, and other technologies combined with a variety of teaching and learning strategies to enhance students’ learning

Computer technology and digital media are present in every aspect of daily living — in the workplace, at home, in the classroom, and for entertainment.
What Is a Computer and What Does It Do?

- An electronic device, operating under the control of instructions stored in its memory, that can
  - accept inputted data
  - process the data according to specified rules,
  - produce results as output, and
  - store the results for future use
- A computer is a computational device

Data - collection of unorganized facts
Information - data that is organized, meaningful, and useful
Input - data entered into a computer
Output - processed results from a computer

Storage – holding data and information for future use
Information processing cycle – the cycle of input, process, output, and storage
Hardware – the electronic and mechanical equipment that makes up the computer
Software – a series of instructions that tells the hardware how to perform tasks

The Evolution of Computers and Digital Media

- The goal of multimedia computing and communications is to assist individuals in organizing and managing vast amounts of information in various types of media
- Digital media – technologies that allow users to create new forms of interaction, expression, communication, and entertainment in a digital format
  --Refer to graphic on next slide

Categories of Computers

- Personal computers
- Mobile computers and mobile devices
- Game consoles (like the wi)
- Servers, supercomputers, and embedded computers

--Details on each on next several slides
Personal Computers

- A computer that performs all of its input, processing, output, and storage activities by itself.

Mobile Computers and Mobile Devices

- Mobile Computers
  - Notebook computer
  - Tablet PC
  - Netbook
- Mobile Devices
  - Handheld Computer
  - PDA
  - Smartphones

Game Consoles

- Mobile computing device designed for single player or multiplayer video games
- Controller is the input device
- Television is the output device
- Hard Disks, CDs, DVDs, and memory cards are used for storage

Servers, Supercomputers, and Embedded Computers

- Server
  - Manages the resources on a network and provides a centralized storage area for software programs and data
- Supercomputer
  - Used for tasks such as analyzing weather patterns, tracking hurricanes, and identifying safety issues regarding the space shuttle
- Embedded computer
  - A special-purpose computer that functions as one component in a larger product (ex: in a car engine or a furnace)

Why Use Computer Technology in Education?

- Technology and digital media are everywhere!
- Technology can support learning
- Computers support communications beyond classroom walls
- Support of national and international organizations

Why Use Computer Technology in Education? . . .Continued

- International Society for Technology in Education has set Standards for:
  - Teachers
  - School Administrators
  - Students
- See list of ISTE’s Educational Technology Standards for Teachers on page 12 in your textbook.
The World Is Flat

- Lightning-swift changes in technology and communications put people all over the globe in touch with each other as never before.

21st Century Skills

- National organization that focuses on infusing technology skills in K-12 and higher ed.
- Goal = ensure students have skills needed to be effective workers, citizens, and leaders in the global economy.

Computing in the Digital Age

- Digital Students: Who are they and how do they learn?
  - Digital generations – students use different technologies to communicate and to access information from multiple resources
  - Digital students (digital kids)
    - Hypercommunicators
    - Multitaskers
    - Goal oriented

Computing in the Digital Age

- Digital Students: What they should know
  - Creativity and innovation

Refer to page 17 in your book

Gamemaker is an example of a software program that allows students to create video games while fostering opportunities for creativity and innovation.
Computing in the Digital Age

Digital Students: What they should know
Communications and collaboration
Refer to page 18 in your book.

Research and Information Fluency
Information fluency is when a person has mastered the ability to analyze and evaluate information

Critical thinking, problem solving, & decision making

Digital Citizenship

Technology operations and concepts

ARCS motivational model
Developed in 1983 and applicable to learning in the digital age

Attention
Relevance
Challenge/Confidence
Satisfaction/Success

--Refer to graphic on next slide for details
Computing in the Digital Age

Refer to page 24 in your book

The ARCS Motivational Model and Digital Students

Attention
- Lessons are designed to gain student attention using alternative techniques, such as a story, sensory media, physical learning experiences, and using digital media.

Reference
- Students are not bored, which in turn, leads to increased retention. The instruction must be relevant, and the students must be connected to the learning, but also be previously taught.

Challenge/Confidence
- Students are challenged to achieve and they gain confidence as they meet the challenge. Students need to be engaged in and connected to their digital learning.

Satisfaction/Success
- Students gain success in achieving their objectives, which promotes self-satisfaction from the learning experience. The most powerful element in this is the opportunity for students to take ownership and control in their own world or the one they aspire to join and work in.

An Example of How One School Uses Computers

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- Ridgedale High School
  - All computers on a local area network
  - Three labs of 30 computers each
  - PCs and Macs
  - High-speed Internet connection in each classroom

- Users (details slides 33-42)
  - Superintendent
  - Principal
  - School Secretary
  - Technology Coordinator
  - Teachers
  - Media Specialist
  - Students
  - Parents
  - Community

- Principal
  - Sending several text and e-mail messages to teachers and staff
  - Research on digital storytelling

- School Secretary
  - Computerized telephone system
  - E-mail and voice mail
  - Teacher database
  - School inventory database
  - Desktop publishing
An Example of How One School Uses Computers

- Technology Coordinator
  - Installing and testing new software
  - Supporting systems
  - Problem solving

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An Example of How One School Uses Computers

- Teachers
  - Community digital storytelling
  - Transmedia story
  - Research assignments
  - Wireless mobile lab
  - Network stores student data

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An Example of How One School Uses Computers

- Media specialist
  - Maintains online catalog
  - Creates classroom activities
  - Runs media center
  - Assists with research projects

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An Example of How One School Uses Computers

- Students
  - Live broadcast of *Ridgedale News Show*
  - Talking, texting, and instant messaging about digital storytelling projects

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An Example of How One School Uses Computers

- Parent
  - Web site links parents and school
  - Keep track of events
  - School information

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An Example of How One School Uses Computers

- Community
  - Links school and community
  - Students teach senior citizens how to use a computer

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Chapter Summary

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Chapter Summary Continued

- Explain why computer technology and digital media are important for education
- Describe the National Educational Technology Standards for Teachers (NETS-T) and Students (NETS-S)
- Explain why 21st century skills need to be incorporated in K-12 curriculum
- Describe the characteristics of today’s digital students
- Describe six categories of what today’s students need to know
- Provide examples of how computers are changing the way people teach and learn