GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

BUSINESS & COMPUTER SCIENCE

PATHWAY: Computing

COURSE: Computing in the Modern World

UNIT: 3.2 Computer Images and Sound

INTRODUCTION

Annotation:

In this unit, students will explore computer pictures, sounds and audio. Students will examine how computers represent these types of media and will become familiar with different picture, sound and video formats. Teachers will use lecture, independent assignments, hands-on lab assignments, or possibly group work. Students will use an Internet website to learn about pictures, sounds and video and will complete worksheets to check for understanding.

Grade(s):

X	9th
X	10th
X	11th
X	12th

Time: 2 hours

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Additional Author(s):

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards:

BCS-CMW-7 Students will demonstrate an understanding of how pictures, sounds and video are represented in a computer.

a. Describe how a picture is digitized and represented in a computer.

b. Describe how a sound/song is digitized and represented in a computer.

c. Describe how video is represented in a computer.

d. Compare and contrast image formats, sound/song formats, and video formats.

GPS Academic Standards:

ELA10W2 The student demonstrates competence in a variety of genres.

National Standards:

UNDERSTANDINGS & GOALS

Enduring Understandings:

- After completing the unit, students will be able to explain how pictures, sounds and video are represented in a computer.

Essential Questions:

- How is the binary system used to represent images?
- What is a pixel?
- How is a pixel used to represent images?
- How can the two-state nature of transistors be used to represent information?
- How are decimal numbers converted to binary numbers and vice versa?
- What is the 8-bit ASCII code?

Knowledge from this Unit:

- Students will learn how the binary system can be used to represent images.
- Students will learn what a pixel is and how it is used to represent images.
- Students will learn how the two-state (on and off) nature of transistors can be used to represent information.

- Students will learn how to convert decimal numbers to binary numbers and vice versa.
- Students will learn how to add binary numbers.
- Students will learn how to represent letters of the alphabet with the 8-bit ASCII code.

Skills from this Unit:

ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

_____ Pre-test
_____ Objective assessment - multiple-choice, true- false, etc.
__ Quizzes/Tests
__ Unit test
_____ Group project
_X_ Individual project
_____ Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
__ Self-check rubrics
__ Self-check during writing/planning process
__ Journal reflections on concepts, personal experiences and impact on one's life
__ Reflect on evaluations of work from teachers, business partners, and competition judges
__ Academic prompts
__ Practice quizzes/tests
_____ Subjective assessment/Informal observations
__ Essay tests
__ Observe students working with partners
__ Observe students role playing
_____ Peer-assessment
__ Peer editing & commentary of products/projects/presentations using rubrics
__ Peer editing and/or critiquing
_X_ Dialogue and Discussion
__ Student/teacher conferences
__ Partner and small group discussions
_x_ Whole group discussions
__ Interaction with/feedback from community members/speakers and business partners
_____ Constructed Responses
__ Chart good reading/writing/listening/speaking habits
__ Application of skills to real-life situations/scenarios
_____ Post-test

Assessment(s) Title:

Terms and Concepts

Assessment(s) Description/Directions:

Students should be graded on the mini projects they complete at their stations and on the pictures and sounds that they create.

Attachments for Assessment(s):

Web Resource Title: Intel Education: The Journey Inside: Instructional Strategies: Digital Information

Web Resource Description: An educational webpage instructing students on how computers represent images and sounds.

Web Resource: http://educate.intel.com/discover/JourneyInside/TJI_Strategies_DigitalInfo/default.aspx

LEARNING EXPERIENCES

Instructional planning: Include lessons, activities and other learning experiences in this section with a brief description of the activities to ensure student acquisition of the knowledge and skills addressed in the standards. Complete the sequence of instruction for each lesson/task in the unit.

Sequence of Instruction

1. **Identify the Standards. Standards should be posted in the classroom for each lesson.**

   BCS-CMW-7 Students will demonstrate an understanding of how pictures, sounds and video are represented in a computer.

   a. Describe how a picture is digitized and represented in a computer.

   b. Describe how a sound/song is digitized and represented in a computer.

   c. Describe how video is represented in a computer.

   d. Compare and contrast image formats, sound/song formats, and video formats.

2. **Review Essential Questions.**

   How is the binary system used to represent images?

   What is a pixel?

   How is a pixel used to represent images?

   How can the two-state nature of transistors be used to represent information?

   How are decimal numbers converted to binary numbers and vice versa?

   What is the 8-bit ASCII code?

3. **Identify and review the unit vocabulary.**

4. **Assessment Activity.**

(Based on a 50 minute period)

Day 1

Teacher will bring in a color by number picture for each of the students. Instructor will explain how there is a hidden picture in all the lines and numbers on the page. Students will read through the lesson

found in the Intel site:

http://educate.intel.com/discover/JourneyInside/TJI_Strategies_DigitalInfo/default.aspx

Day 2

Students will finish the website activities, and the teacher will assess the students by checking the worksheets.

Technology Connection/Integration

Students will be using technology to work through an online lesson. Students will work with sound and picture files.

Attachments for Learning Experiences: Please list.

Notes & Reflections:

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

Attachments for Culminating Performance Task:

UNIT RESOURCES

Web Resources:

Attachment(s):

Materials & Equipment:

Computer

Color printer if the students wish to print out pictures

Internet access

What 21st Century Technology was used in this unit:

	Slide Show Software		Graphing Software	x	Audio File(s)
	Interactive Whiteboard		Calculator		Graphic Organizer
	Student Response System		Desktop Publishing	x	Image File(s)
	Web Design Software		Blog	x	Video
	Animation Software		Wiki		Electronic Game or Puzzle Maker
	Email	x	Website		