GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

BUSINESS & COMPUTER SCIENCE

PATHWAY: Computing

COURSE: Beginning Programming

UNIT: 2.1 Programming Languages and Processors

INTRODUCTION

Annotation: The topics of this unit are the role of the computer processor and the evolution of programming languages throughout history. Methods include: lecture, discussion, and independent work. Students will use technology for research purposes to create a guide book profiling the evolution of programming languages.

Grade(s):

	9th
	10th
	11th
X	12th

Time: 3 weeks

Author: Jason Naile

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-BP-2 Students will describe the major parts of a processor and how the processor handles execution of a machine language program.

a. List and describe the function of the major components of the processor (ALU, registers, program counter, etc).
b. Describe the steps in the execution of a simple assembler program.
c. Choose an assembler program that is equivalent to a small high-level program.
d. Solve simple binary arithmetic problems.
e. Explain the interaction between the operating system and the processor.

BCS-BP-3 Students will explain the process that turns a high-level language program into something a computer can execute.

a. Explain the purpose of a compiler, interpreter, and assembler.
b. Compare and contrast a compiler and an interpreter and specify languages that use each.
c. Compare and contrast high-level and low-level languages for different uses.

GPS Academic Standards:

MM3P4 Students will make connections among mathematical ideas and to other disciplines.

ELA11W1 The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals a satisfying closure.

ELA11LSV1 The student participates in student-to-teacher, student-to-student, and group verbal interactions.

National Standards:

UNDERSTANDINGS & GOALS

Enduring Understandings:

- As a result of this unit, students should understand the role the processor plays in the computer. Additionally, students should be able to identify, compare, and contrast low and high level programming languages. Finally, students will understand the role of assemblers, compilers, and interpreters.

Essential Questions:

- What is a computer processor?
- What must occur for a computer system to function properly?
- How and why have computer programming languages evolved over time?
- What are high and low level languages?

Knowledge from this Unit:

- Students will be able to list and describe the major components of the processor.

- Students will be able to explain the interaction between the operating system and processor.
- Students will be able to describe how computer programming languages have evolved over the course of the history.
- Students will be able to compare and contrast high and low level languages.

Skills from this Unit:

- Students will summarize and orally present information.
- Students will use proper research techniques.
- Students will use technology as a productivity tool.

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
X Objective assessment - multiple-choice, true- false, etc.
_x_ Quizzes/Tests
__ Unit test
_____ Group project
_____ 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
X 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
_____ Dialogue and Discussion
__ Student/teacher conferences
__ Partner and small group discussions
__ 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: Teacher observation and quizzes/tests

Assessment(s) Description/Directions:

Teacher should observe and facilitate students in completion of the project. Informally observing and providing feedback is a large part of this unit. Quizzes and tests should be given as teacher sees fit.

Attachments for Assessment(s):

Web Resource: http://www.oreilly.com/news/graphics/prog_lang_poster.pdf

Web Resource Title: O'Reilly Timeline of Programming Languages

Web Resource Description: A .PDF timeline of the major programming languages. Students may use this as a guide.

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-BP-2 Students will describe the major parts of a processor and how the processor handles execution of a machine language program.

   BCS-BP-3 Students will explain the process that turns a high-level language program into something a computer can execute.

2. **Review Essential Questions.**
   - What is a computer processor?
   - What must occur for a computer system to function properly?
   - How and why have computer programming languages evolved over time?
   - What are high and low level languages?
3. **Identify and review the unit vocabulary.**
4. **Assessment Activity.**

(Based on a 50 minute period)

Week 1: Processors and Computers: The Relationship Explained

Week 2: Programming Languages

Week 3: Project completion/presentation

Technology Connection/Integration

Students will use technology to conduct research on the processor and programming languages and view videos to gain a better understanding of the processes inside the computer. Finally, technology will be used as a productivity tool in the unit performance assessment.

Attachments for Learning Experiences: Please list.

Notes & Reflections:

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title: **Programming Languages Electronic Book**

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

This is meant to be a culminating project for this unit and provide a way for students to summarize their findings. Some form of electronic textbook (PowerPoint presentation or Wiki) will be developed to help students summarize their findings. Complete directions, specifications, and rubric are attached.

Attachments for Culminating Performance Task:

Rubric for Performance Task:

Programming Languages Electronic Guide Book

Directions: Understanding the past can be vital to comprehending the present and realizing the possibilities of the future. Create a PowerPoint presentation or a small Wiki of the programming languages throughout history. This presentation should cover the languages that we have discussed in class over the past several weeks.

Please include the following in your presentation:

- Dates the language was used
- Whether the language was a high or low level language (make sure your choice is explained)
- The creator(s) of the language
- Explain how and why the language was created
- Define assembler, compiler and interpreter and indicated if the language used any of the above

90-100 (Excellent) Guide Book includes a comprehensive list of programming languages indicating whether the language was a high or low level language. Creator(s) and dates are included. Identification of the various features of the language is provided. Electronic Guide Book contains very few grammatical errors. Design of Wiki/PPT is superior.	**80-89 (Acceptable)** Guide Book contains most languages. Guide Book contains most other features (high/low level language, creators, dates, use of assembler, interpreter or compiler). Guide Book contains few grammatical errors. Sounds design skills are used.
75-79 (Marginal) Book contains some languages but is not comprehensive. Some of the features are included. Some grammatical errors are present and design could be improved.	**70-74(Needs Improvement)** Many languages are missing along with many features. Minimum guidelines are met. Many grammatical errors are present and the design is poor.
<70 (Resubmission) Guide Book contains no programming languages and no features are identified. Many of the features are not included. Numerous grammatical errors and poor design of guide book. Resubmission is required.	

Web Resource Title: WikiSpaces

Web Resource Description: This is a site that will allow anyone to create a Wiki. This will be a fun/different way for students to complete an assignment. The result will be an e-book. Please make sure to check with your local school district regarding any technology/privacy guidelines before allowing students to complete this option.

Web Resources: http://www.wikispaces.com/

UNIT RESOURCES

Web Resources:

Attachment(s):

Materials & Equipment:

Computer

Internet connection

Microsoft PowerPoint

What 21st Century Technology was used in this unit:

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