

TECH:Introduction to Programming (IT)

Summary

(1 IT day) This lesson introduces students to computer programming in the Tech Ed TLC curriculum. This can be done through a multitude of applications such as programmable robots, game programming, creating a web page, digital video and or writing instructions to complete a task.

There are some IT careers and terms that we'd like emphasized during instruction of this lesson.

Time Frame

1 class periods of 45 minutes each

Group Size

Large Groups

Life Skills

Thinking & Reasoning, Employability

Materials

See IT TLC Web Site.

Background for Teachers

Basically we'd like it identified to the students that a computer or programmable device cannot perform any function unless it is given specific and accurate instructions. These instructions can be called code. The process of providing code to the computer or device is known as "coding" or computer programming. We also want them to recognize that if they like coding, they may want to pursue a career in computer programming.

These concepts can be introduced through a variety of activities including but not limited to programmable robots, CNC, game programming, digital video, web page design, and animation.

Student Prior Knowledge

None.

Intended Learning Outcomes

- 1) Understand the definitions of computer programming, computer programming languages, code, syntax, compiling and instructions.
- 2) Identify the most prevalent computer programming languages. (C++, Java, Visual Basic)
- 3) Write accurate instructions to perform a task or application.
- 4) Explore career opportunities in computer programming and software engineering.

Instructional Procedures

Introduction

Provide students with inaccurate instructions to complete a task such as making a paper airplane, folding an origami object, drawing a picture, etc. After the students have unsuccessfully completed the task, reinforce the importance of complete and accurate instructions.

Activity

1. Explain the importance of accurate instructions in completing any task. Explain that computers, software and any programmable device requires accurate instructions to achieve the desired outcome(s).

2. Define the following terms: (See IT TLC Terminology)

*Instructions

*Computer Programming or "coding"

*Computer Programming Languages

*Syntax

*Compiling

See the graphic below to illustrate the programming process

See the programming languages attachment below to view a sample of the C++, Java and Visual Basic programming languages.

3. Have students complete an individual or group activity that illustrates the concepts of giving accurate instructions and computer programming as identified previously. Be sure to identify the relationship of the instructions/code to computer programming and its importance to the desired outcomes of the activity. A sample web page activity is provided below. See the Robocode web site below for another sample activity in game programming. Other activities could include CNC, creating a peanut butter sandwich, writing an HTML web page, programmable robots.

4. Review IT career opportunities in computer programming and engineering by viewing the Tech Career Compass web site below.

5. Assess activity and review concepts.

Assessment Plan

Use the attached Rubric to evaluate your students Source Code activities.

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