

IT and Me Works

Lesson Plan for Programming Strand

Topic: Final Project – IT and Me Works in My Life
Teacher: April Bellafiore, Cheri Allen, and Karen Olmstead

Subject: IT & Me Works
Grade: 9th

Time: 10-20 hours

Objectives: At the end of this lesson students will:

- Have developed a simple program using common programming concepts.
- Understand problem solving and critical thinking skills.
- Have effectively communicated program function and flow.
- Understand different programming career pathways, necessary skills and educational requirements.

Standards:

- Students will be able to apply rational, creative-thinking, and investigative skills and use scientific knowledge in their roles as citizens, workers, family members, and consumers in an increasingly technological society.
- The student will use information-gathering techniques and technologies in collecting, analyzing, organizing, and presenting information.
- Students will demonstrate competence in using the interactive language processes of reading, writing, speaking, listening, and viewing to gather and organize information in a variety of subject areas.
- The student will make developmentally appropriate decisions about future education and continuing preparation for life and work.
- The student will understand and demonstrate the relationship of academics to careers in civic, social, and everyday settings.
- The student will plan and prepare for a variety of current and future educational and career opportunities, based upon assessments of individual qualities and interests.

Setting: Classroom.

Materials: None

Note - This project is completed in steps over the course of the strand. If additional time is available, or if you want to give advanced students additional steps, students can actually write the code and debug the program.

Teacher's Role:

Teacher will explain assignment to students and interact with students as necessary to ensure an understanding of the project components.

Part A – In groups, students will research an industry that uses programming for some component of its business. Suggested industries include web development, gaming, marketing, manufacturing, banking, ecommerce, publishing, entertainment and computer animation. Each

group should research a unique topic. Students should be able to answer some or all of the following questions based on their research:

1. How does the use of computer programs impact the business?
2. What do the programs do?
3. What programming languages are used?
4. Does the business buy the programs or develop them inhouse?
5. What skills are needed to work in the industry? This should include general business skills as well as programming skills.
6. What types of computer-related jobs are available in the industry?
7. What educational background does the company look for when hiring workers for computer dependent positions?

Students should prepare a short presentation (5 minutes) to share their findings with the rest of the class.

Part B – (This can be done in groups or individually) Students should select one of the programming languages used by the industry they researched and research the history of the programming language, and how this language differs from other languages. Students should prepare a short presentation (2-3 minutes) to the class that answers the following questions:

1. What type of programming language is this? Procedural/Object Oriented?
2. What types of applications is this language used to create?
3. Do you need any special hardware or software to develop or run programs in this language?
4. Can you develop or run programs in this language on any operating system?

Students should locate resources – online references, tutorials, books, etc., and provide an example of the language if possible.

Note: This component of the project can be used to replace a lecture on programming history and explaining the various languages.

Part C – Students should select a programming career that they are interested in and research the following:

1. What training is needed to work in that career?
2. What are expected salary levels?
3. What colleges offer training in that career?

Students should then prepare a flowchart and/or write pseudocode to answer the following question:

What do I want to do with my life?

The flowchart and pseudocode should include at least the following decisions:

1. Do I need to graduate from high school?

2. What will I do when I leave high school – college, work?
3. If I work, what skills will I need?
4. If I go to college, do I go to a 2-year or a 4-year college?
5. What courses do I need to take in high school to properly prepare for the next step – work or college?
6. What additional information do I need to make these decisions?

After students have completed the flowchart/pseudocode, they should write user documentation for their program. This document should include:

1. An instruction sheet for a new user to the program.
2. Valid values for any variables used in the program.
3. In addition, students should include an explanation of how the program works including an explanation of flow of logic.

In addition, students should include an explanation of any problems they encountered along the way and how the problems were resolved.

School to Career Connection: Interviews with individuals at local businesses, interviews with admissions officers at local 2 and 4-year colleges, guest lecturers.

Employability: Communication skills, critical thinking, problem-solving, technical writing, presentation skills, research skills.