

Teacher: Stephen Sabaugh

Unit Plan: UNIX Data & Statistical Modeling

Grade and Content: 12th Grade Computer Science

Date: May 16th, 2022

Overall Goal/Objective of Lesson (one sentence): Through the use of AWK and UNIX, students will learn how to make a predictive computer model.

Content Objectives (nouns) -Students will understand the similarities and differences between AWK and Java and Python -Students will understand the basics of creating a computer model -Students will see how AWK is a powerful tool for Data Analytics and File Handling	
Skill/Objectives (verbs/Common Core Standards) - Students will be able to program AWK from the UNIX command line and Text file - Students will be able to navigate and do basic file and directory manipulation in UNIX file structure - Students will be able to calculate Linear Regression - 9-12.CT.1 Create a simple digital model that makes predictions of outcomes.	Assessment -Do Now Awk Navigation and Utility assignment -Population Predictive Model using AWK and Regression Analysis program

Materials

Computers with UNIX or Linux environment (or Replit)

Guided Notes (differentiated)

Assignment Guides (differentiated)

Pens/Pencils

Code Journal and Folder

USB Stick

PowerPoint projector

Instructor Laptop

Sequence of Lesson Plan

<p>Time Allotment</p> <p>5 minutes</p>	<p>Anticipatory Set <i>List specific statements or activities you will use to focus students on the lesson. State clearly what students are learning/doing and how it connects to prior learning.</i></p> <ol style="list-style-type: none"> 1. <u>Do Now:</u> Students will complete a self-guided UNIX. warm-up exercise 2. <u>Turn-in:</u> Class will turn in screen shots of their UNIX navigation warm-up 	<p>Plans for Differentiation/ Culturally Responsive Instruction</p> <ul style="list-style-type: none"> -Do Now is self-guided with a sheet providing all instructions and commands -Students may work together -Translation available if needed
<p>20 minutes</p>	<p>Mini-Lesson/Direct Instruction (with Modeling) <i>What information is essential for the student to know before beginning and will this skill be communicated? How will you be demonstrating this skill? Identify strategies to be used to determine if students have learned the objectives. The teacher models the process to be followed and makes connections to previous instruction. The teacher checks for student understanding. The teacher's explanation should be clear. Questions and tasks are higher order and have multiple possible answers.</i></p> <ol style="list-style-type: none"> 1. <u>Mini-Lesson:</u> What makes AWK such a powerful tool? How do we make a computer model? How is AWK similar/different to Java? 2. <u>Modeling:</u> Model how to use the AWK language to manipulate a data set. I will demo the language using stats of a baseball player. Students can code-along or just watch the demo. I will use the think-aloud method to show my problem solving process. I will continue to model by creating a predictive model of Ted William's batting averages if he did not leave to fight in WWII. As I am modeling this language, I will remind students of the similarities to what we have covered during our unit so students know what we can look for when comparing to other languages. As I am demonstrating, I will also be teaching the history and math behind the lesson. 	<p>Plans for Differentiation/ Culturally Responsive Instruction</p> <ul style="list-style-type: none"> -Mini-Lesson notes are completed in guided notes format, therefore being easier to copy and comprehend -Terminal commands are printed ahead of times so students can follow along easier -Material is presented in clear and easy-to-follow format -Modeling is done so students can see how to use this strategy -Harder concepts are shown clearly in slides
	<p>Guided Practice (with Teacher Monitoring) <i>List activities which will be used to guide student practice (i.e. small groups, whole group with less scaffolding, partners). Teacher monitors individual and group understanding, providing timely feedback. Students are actively engaged in discussions and extend them without mediation by the teacher. Students assess and make improvements to their work.</i></p> <ol style="list-style-type: none"> 1. <u>Guided Practice:</u> 	<p>Plans for Differentiation/ Culturally Responsive Instruction</p>

	<p>Independent Practice <i>Assignments to be given to students to ensure they have mastered the skill without the teacher's guidance. Students have a choice in how they complete tasks. Students may modify or make additions to the task based on their needs.</i></p> <p>1. Independent Practice: Students will work in pairs to complete there own simplified computer model based on one of 4 population data sets.</p>	<p>Plans for Differentiation/ Culturally Responsive Instruction</p> <ul style="list-style-type: none"> -Elbow pairing -Think-pair-share -Pairs are differentiated because students are working with partners based on level. -Program is based on mini-lesson -Students need only to adapt the code to their data set. -only 1st question is required. questions 2-4 are extra challenge. -populations reflect can reflect borough, NYC NYS or USA to be culturally responsive students may choose.
	<p>Closure <i>What method of review/assessment will be used to complete the lesson? Students will have an opportunity for reflection, sense-making, and closure. Teacher cites multiple approaches for those students who experience difficulties. The teacher conveys that the lesson is not "done" until all students understand or can demonstrate the skill.</i></p> <p>1.</p>	<p>Plans for Differentiation/ Culturally Responsive Instruction</p>