Intentional Thinking Map : Teacher: Ms. M. Walker/AP Psychology

Unit of Study:	Lesson Title:	Duration of Lesson:	Date:
Post AP Test Unit	Introduction to Programming for Potential Scientists	2-3 class periods	June 2014

Design Question Focus of the Lesson (elements from other DQ's may be used as support)

√Introducing New Knowledge (check calc, video clip, ppt)	√Deepening or Practicing (online tutorial)	√Generating and Testing Hypotheses (Exit slip and discussion)

Learning Goal: (based on Standards)

Students will be familiar with the programming language(Python) most of them are likely to encounter professionally. For professional readiness, students need to be able to articulate software changes necessary to their research or business plan. Should they need to code or participate in code design, they will be prepared.

SCI.9-12.5.1.12.A.a Mathematical, physical and computational tools are used to search for and explore scientific concepts.

TEC.9-12 Participate in online courses...as resources for lifelong learning.

TEC.9-12 Digital tools facilitate local and global communication and collaboration in designing products and systems.

TEC.9-12 Technology products and systems impact every aspect of the world in which we live.

TEC.9-12 The design process is a systematic approach to solving problems.

TEC.9-12 The use of digital tools...enhances creativity and the construction of knowledge.

Objectives

Students will understand:
- Why should one have a basic familiarity with programming
- How programming syntax works, conceptually.
- That Python is something they are likely to encounter professionally.
- That to contribute professionally, they will need to be able to communicate in meta-terms about technological needs.

Scale

2.0 Simpler Content:	3.1 Target (Objective) :	4.1 More Complex:
Students will: View a ppt that describes basic programming concepts. Be able to list 3 programming concepts. Students will write pseudo code while I teach using ppt.	Students will learn 3 Python commands. ---- in Media center --- **3.2 Target (Objective) :** Students will: be able to reach the second badge level in the *Codecademy* Python tutorial, with help.	Some students will finish before the others and can go further or help other students. **4.2 Learn to code while building a project** Create your own web page in HTML – bottom of codeacademy "Learn" page.

Assessment and Monitoring: (Formative Scale Checks)

Teacher will ask students to:
List 3 programming concepts, with a partner.
a brief piece of pseudocode.
List 3 Python commands, with a partner.
Reach the second badge level. (Successful completion of programming of check calculation)

Critical Information Chunks:

Why Python – what does this have to do with careers?

- Python has been explicitly designed to be used in bioinformatics (science and data)
- Programming ppt – What is a programming language? What are some basic commands? What are some python commands?

Lesson Activity:

Preview
Founder's video April 2014: coding in schools
http://video.cnbc.com/gallery/?video=3000269394
http://www.codecademy.com

Day 1
1. Write a set of instructions to calculate the cost of a meal at Chipotle.
   - Meal cost = $10.00, including tax.
   - Tip Percentage = 20%
   - Print "The Cost is ", then the cost, then "Thank you."
2. Observe and redirect.
3. Ask and answer – "Why Python?"
4. Present ppt. Student should take notes on an index card.

Day 2
1. Display Python tutorial.
2. Sign one student up. Have students add their logon to index card.
3. Students take Python tutorial.
4. Students ring bell whey they get a badge.

Day 3
1. Demonstrate "build your own website" software.
2. Students can try that or get further into Python Programming.
3. Alternate assignment – read article/make/present ppt based on article

INSTRUCTIONAL STRATEGIES

- Hook activity every day experience.
- Answer "What's in it for me – why should I learn this?"
Exit Slip :
- Did you enjoy learning about programming?
- How did you handle the stress of learning something knew – what does this tell you about how you handle frustration?
- Would you like to do more and work independently? (Day 3?)
Revise this material as a result of student input.

Adaptations for Unique Student Needs: (ELL, Special Education, Gifted, Students who lack support for school)

I will adapt questions for individual students . My ELL student is taking a leadership role, in that he plans to be a programmer and he has gone ahead and learned Python during an independent study day. He will be "tech support".

Assignment(s):

Students will not be assigned homework.

Resources and Materials:

Codecademy.com

Log mwalker@eccrsd.us/buddy123
Programming. Ppt
Index cards
"I did it!" bells.