

Lecture 1 - Pencil Code

Materials

Every Class

- Student folders
 - Student guide
 - Storage for completed cards
- Previous weeks cards
- Road map to WOW!
- Expectations poster
- Word wall
- Stickers (simple)

This Class

- Index cards
- Ball
- Word wall with definitions
- Blank “Expectations” poster
- Human coding cards (2)
- Measuring tapes (2)
- “Treasures” (pencils)
- Week 1 Pencil Code Cards (one per student per card)
- Chart paper

Activities

Hook: Welcome to Pencil Code (3:30pm, Luke)

- **Reflect**
 - Write down one or two ways computers make life easier (hand out index cards)
- **Write** on board
 - Find information
 - Write
 - Take pictures
 - Stay in touch with family and friends
 - Buy things
 - Work
- **Introduce** ourselves
 - Our names

- Why we volunteered
- How we use computers
- **Share back circle**
 - Explain activity
 - * toss each student the ball
 - * introduce themselves
 - * read one thing off index card
- **Transition**
 - In this class we will use computers to
 - * Be artistic
 - * Be creative
 - * Engineer

Introduction: What is Computer Programming? (3:40pm, Luke)

- Coffeescript (language) to create programs
 - Draw picture
 - Game
- In real world, whole careers are dedicated to this
 - Artists
 - Engineers
 - Designers
- You can be 1 or all 3
- Emoji example
 - <3 or :)
 - * Artist creates the emoji's look
 - * Engineer turns the text into the image
 - * Designer reviews data to see test if people like the shortcuts
- Video game example (call of duty)
 - Artist
 - Engineer
 - Designer
- What is computer programming?
 - Writing down steps that both the computer and human can read
 - Explain more
- Introduce word wall
 - *Computer programming*
 - *Programmer*
- Master standards
 - Generate an original idea/product that suits a practical or artistic purpose
 - Use design process to create ideas or products
 - Realize a product or ideas that suits a given purpose
 - Implement problem solutions using a programming language including: looping behavior, conditional statements, logic, expressions, variables,

and functions

- Be creative while learning from computer code
- WOW! portfolio will be a program from each week AND final project
- Transition to expectations

Activity 1: Expectations (3:45pm, Luke)

- Include both apprenticeship specific and general campus specific expectations
- Let's establish expectations on how we will interact
- **Facilitate** what will make a great environment?
 - How do we want to be treated? and NOT
 - What do we want to see or hear? and NOT
- Divide the board into DO and DO NOT
 - Put own expectations
 - * Contribute during group time
 - * Work quietly
 - * Doesn't interrupt others
 - * Stay on task
 - * Shares ideas
 - * Computer use
 - * Etc...
 - Put student expectations
- **Sign** the chart
 - Have everyone sign it

Activity 2: Human Coding (4:00pm, Sally)

- Programming is breaking a task into specific steps
- **Exercise**
 - Think about what it takes for someone to go from lying down on floor to standing up
 - I'm going to lie down, take turns giving instructions
 - Go around the circle and each person will give one instruction
 - Assign student to start
 - Encourage laughter
- **Debrief**
 - What is difficult about giving instructions?
 - Expectation vs what happened
- **Say**
 - We will have Pencil Code Cards in this apprenticeship
 - Each card will challenge you to create a piece of code (instructions)
 - We are going to try human coding now
 - * Show a human coding card, and demonstrate how to follow it

- **Facilitate**
 - **Put** students in groups of 2-3
 - **Hand out** cards
 - **Establish** starting points
 - **Give** 5-7 minutes
 - **Debrief**
 - * What was difficult?
 - * Show similarities to coding
- Introduce badge stickers
 - Explain the stickers
 - **Place** a sticker in each student's folder on **Badge #1: Human Coding!**
 - **Highlight** badges that student can learn today
 - Make a **BIG** deal about challenges and badges. Consider bigger reward for completing all 6 badges.
 - Transition back to **Pencil Code**

Activity 3: Drawing and Cards (4:20pm, Luke and Sally)

- Review expectations for computer use
- Teach any procedures for getting on the computers
 - Assign Seats
 - Explain difference between **teacher talk** and **individual work**
 - * “1,2,3 all eyes on me”
 - * “1,2 back to you”
 - Getting folders (get as they come in the room)
 - Practice each procedure 2 times
- Practice
 1. Get folders
 2. Turn on computers
 3. Open pencil code
 4. Wrap up work
 5. Shutdown computers, put away folders
- Introduce students to pencil code
 - Lead students through creating user names and passwords
 - Keep a copy of all student user name in excel doc
- Show Tutorial 1 video (demonstrate how to drag and drop blocks of code, how to modify parameters)
 - Word wall
 - * Program
 - * Running a program
- Handout first card
 - Do you want to build a snowman?
 - Give 5 minutes of work time
 - Encourage them to use trial and error as well as the tips on the card

- Pause
 - Teach file saving procedure
 - Save file before you start working
 - Use format **week#/filename -> week1/snowman**
 - Show students how to access their folder
- Say
 - If you completed snowman you have choice
 - * Try a new card
 - * Create innovations to snowman
 - Brainstorm ideas (call on students)
 - * Write on chart paper
- Teach procedure for new card
 - They are in the folders already
- Ask for students to hold up 1 or 2 fingers for snowman and new card respectively
- Give students another 10 minutes of work time, or more if available
- Bring students back together
- **Award** badges
- Teach wrapping up procedure (give 45 seconds to wrap up work)
- **Transition**
 - Each week we will have cards that teach us
 - A workshop
 - Work individually and in small groups
 - This is how it is in real world, so that's how it will be here

Assessment: Work Product and Clean up (4:50pm, Sally)

- Say
 - Sometimes we have handout to turn in
 - In addition, you will pick one project each week to save as your assessment
 - Should be what you are most proud of
- **Pick** that project now
 - Save it as **week1/assessment**
- In student folder, fill out **Week 1 Assessment** in the **Work Product Assessment section**
 - Walk students through how to fill out **Week 1 Assessment**
- Say
 - Before next week I will check out your work and give you feedback
 - Next week we will get to share some of our work with each other
 - We will learn new programming techniques and have new cards
- **Connect to WOW!** (each week they pick what they are most proud of and they have a final project)
 - Ask if anyone remembers what WOW! portfolio is
 - Take student answers and fill in the gaps

- **Connect to next week**
 - Next week we will learn loops and more ways to control turtles in Pencil Code
 - Explain loops
- Review and follow shutdown/cleanup procedure