Computer Science:

Using Coding in the Classroom

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Computers are changing everything, yet most schools don’t teach computer science

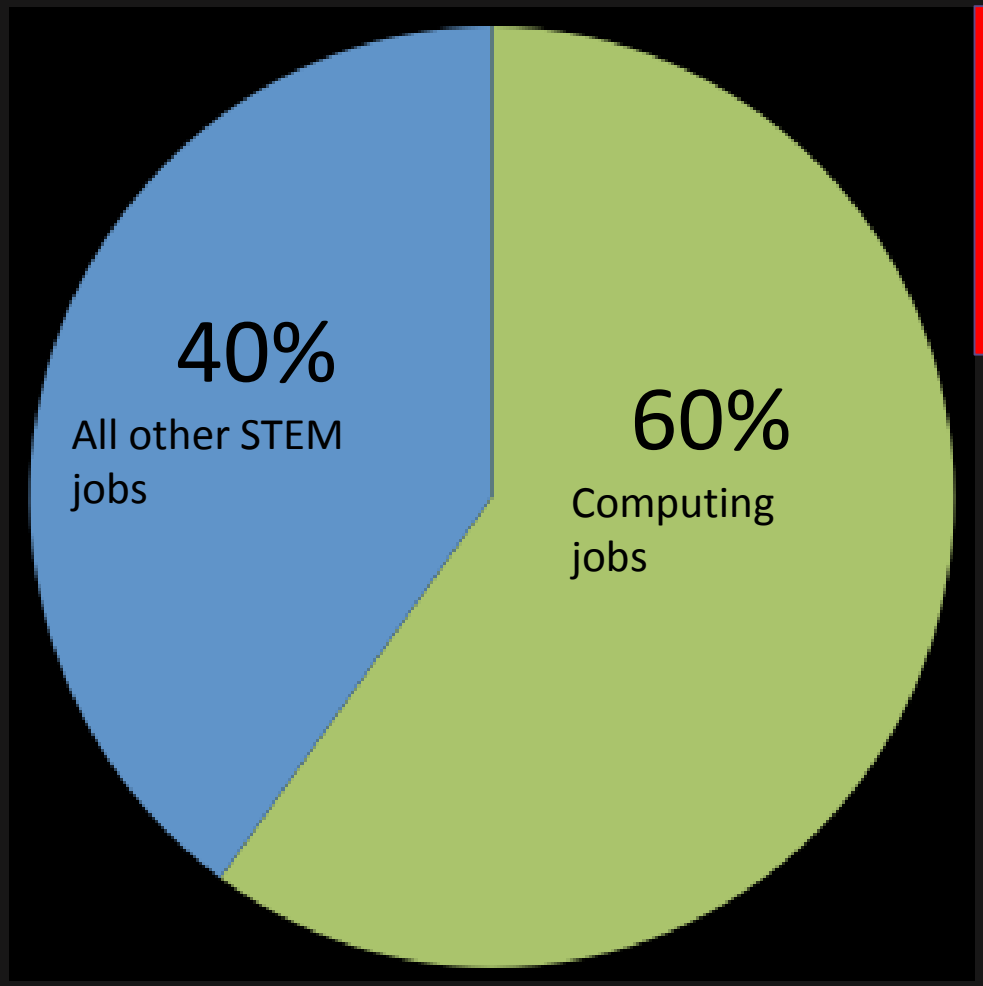
Our kids should be learning to code.

Our schools should be teaching computer science.

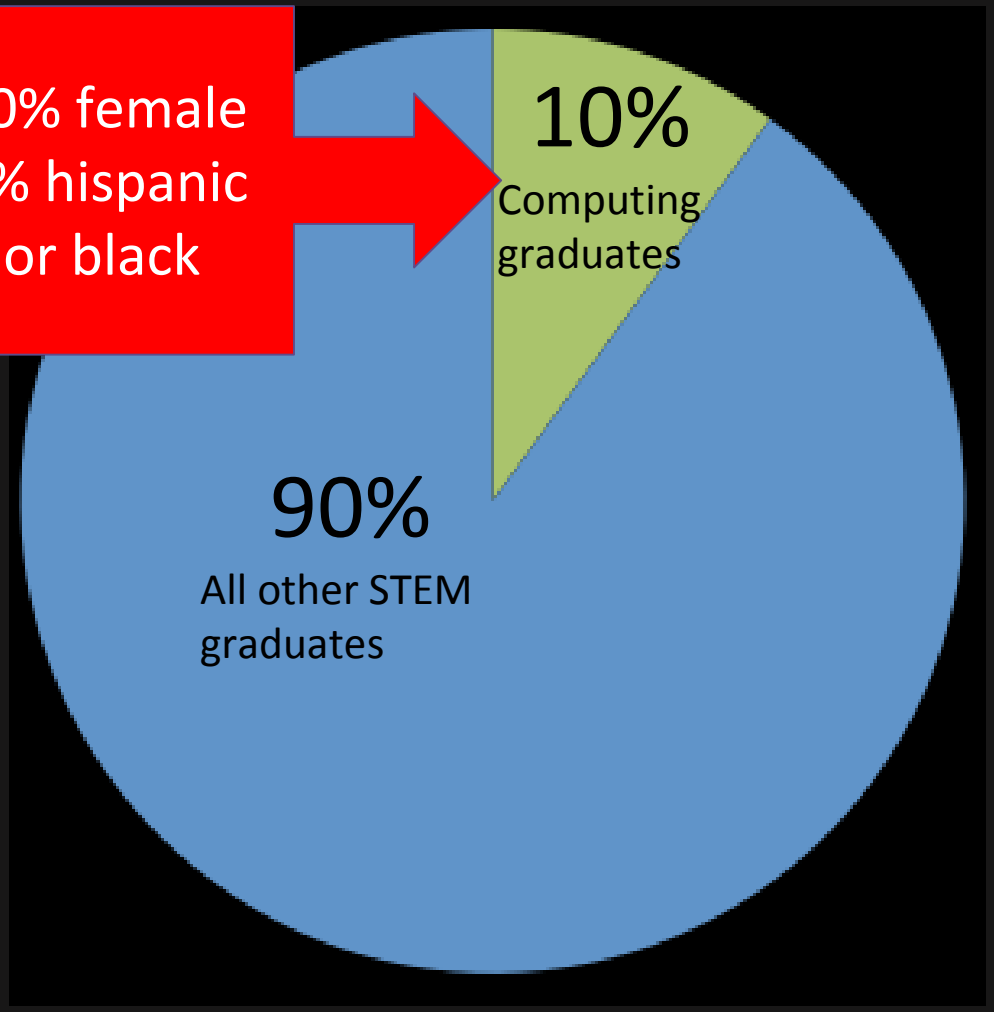
The tech industry is desperately trying to hire computer programmers in California.

Every industry is desperately trying to hire computer programmers, everywhere.

The STEM problem is in CS



20% female
8% hispanic or black



Sources: College Board, Bureau of Labor Statistics, National Science Foundation

Computer science is about technology.

Computer science is about logic, problem solving, and creativity.

Computer science
is vocational.

Computer science
is foundational.

Technology affects EVERY field

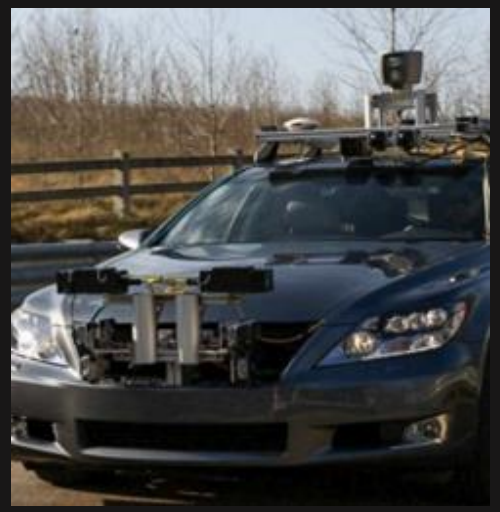
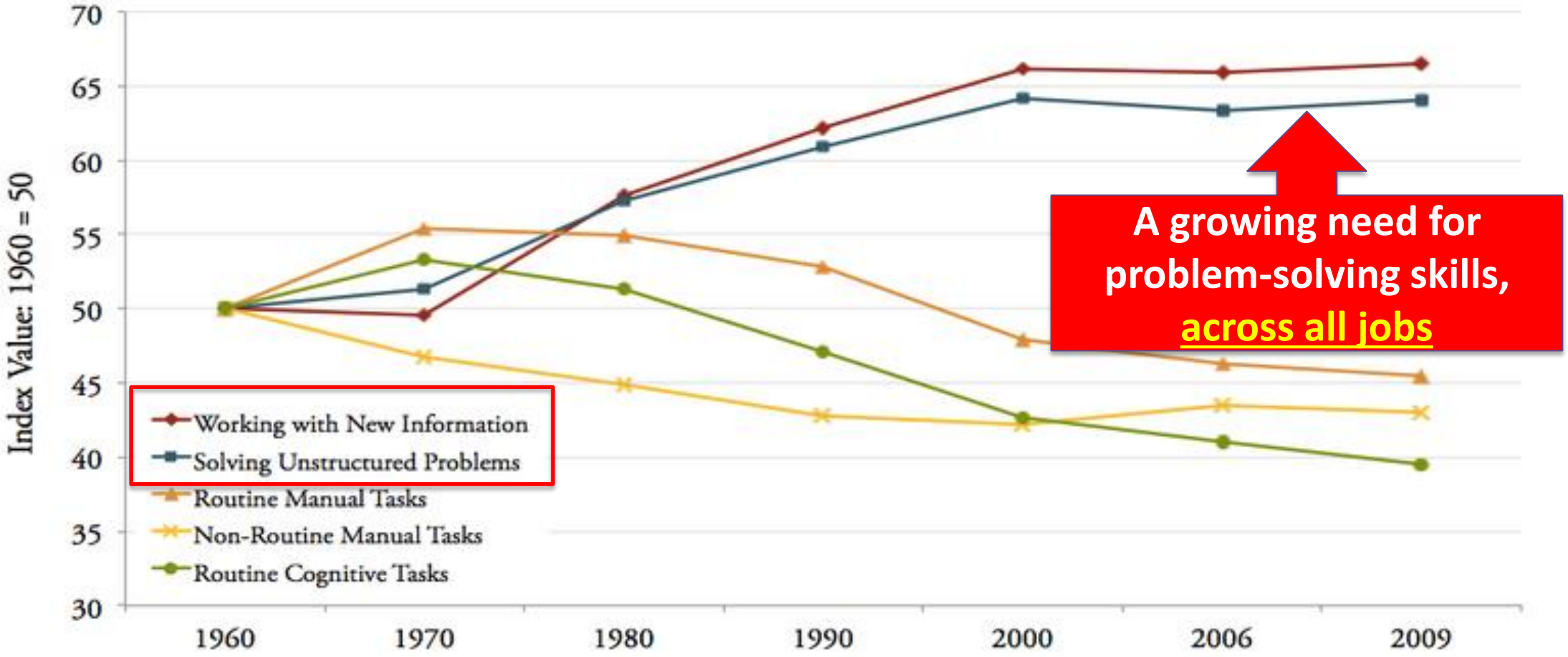


Figure 3: Index of Changing Work Tasks in the U.S. Economy 1960-2009[21]



Source: Dancing with Robots - Human Skills for Computerized Work, Levy and Murnane, 2013

First, a short video.

Why we chose to start coding in the Elementary Level:

- The earlier that we introduce students to coding, the earlier they learn problem solving skills that can be used throughout their lives.
- It is a great way to practice steps in a process, as well as trial and error.
- We had concerns that the students needed more clicking and dragging practice for PARCC and this was a great way to incorporate those skills into something fun as well as educational!
- Coding skills align to CCSS, NGSS, and ISTE standards.

What we chose and how we want to implement it:

- We want to use www.code.org.
- We liked the fact that Code offers free trainings for teachers to help get started. They also offer plugged activities that you do on the computer and unplugged activities that explain the process of coding in real life situations.
- We want to have computer science in the classroom one time each week for 30 minutes.

3 courses

- Course 1: for early readers, ages 4-6. (Grades K-1)
- Course 2: for beginners, ages 6+ (Grades 2-5)
- Course 3: for ages 6+ (Kids who have completed course 2)

- Each course is ~20 lessons, ~40 minutes each
- Blend of online tutorials with “unplugged” activities that teach computing concepts without a computer
- Designed for all ages. Reinforce math, science, English standards in elementary school.

C O
D E

The Hour of Code for
All Ages

Hour of Code
Try the basics of computer science. Millions have given it a shot.

Continue

Frozen
Let's use code to join Anna and Elsa as they explore the magic and beauty of ice.

Continue

Infinity Play Lab
Use Play Lab to create a story or game starring Disney Infinity characters.

Try now

Flappy Code
Wanna write your own game in less than 10 minutes? Try our Flappy Code tutorial!

Try now

Play Lab
Create a story or make a game with Play Lab!

Try now

Artist
Draw cool pictures and designs with the Artist!

Try now

20 hour courses for
Computer Science Fundamentals (all ages)

Course 1
Start with Course 1 for early readers.

Ages 4-6

Continue

Course 2
Start with Course 2 for students who can read.

Ages 6-18

Continue

Course 3
Course 3 is a follow-up to Course 2.

Ages 8-18

Continue

Course 4 beta
Students taking Course 4 should have already taken Courses 2 and 3.

Ages 10-18

Try now

Teacher Home Page

Student Accounts and Progress

Your Course Progress

Lesson Plans and Resources

Help and Community

Professional Development

Computer Science Guest Speakers

Teacher home page ▸ Student Accounts and Progress

New section

Section	Login Type	Grade	Course	Students	Section Code	
My Class View Progress Manage Students	picture	1	course1	7	HTEOYH	Edit Print Certificates
Code Class View Progress Manage Students	word		course2	8	MSWASZ	Edit Print Certificates
Using Gmail Manage Students	email	3	course2	0	EFXMAD	Edit Delete Print Certificates

Login Type

This table helps explain which of these login types, picture, word, or email, you'll want to choose for a section.

Teacher home page ► Student Accounts and Progress ► Section: My Class

Switch section: My Class

View Progress | View Stats | Manage Students | Add student | Add multiple students

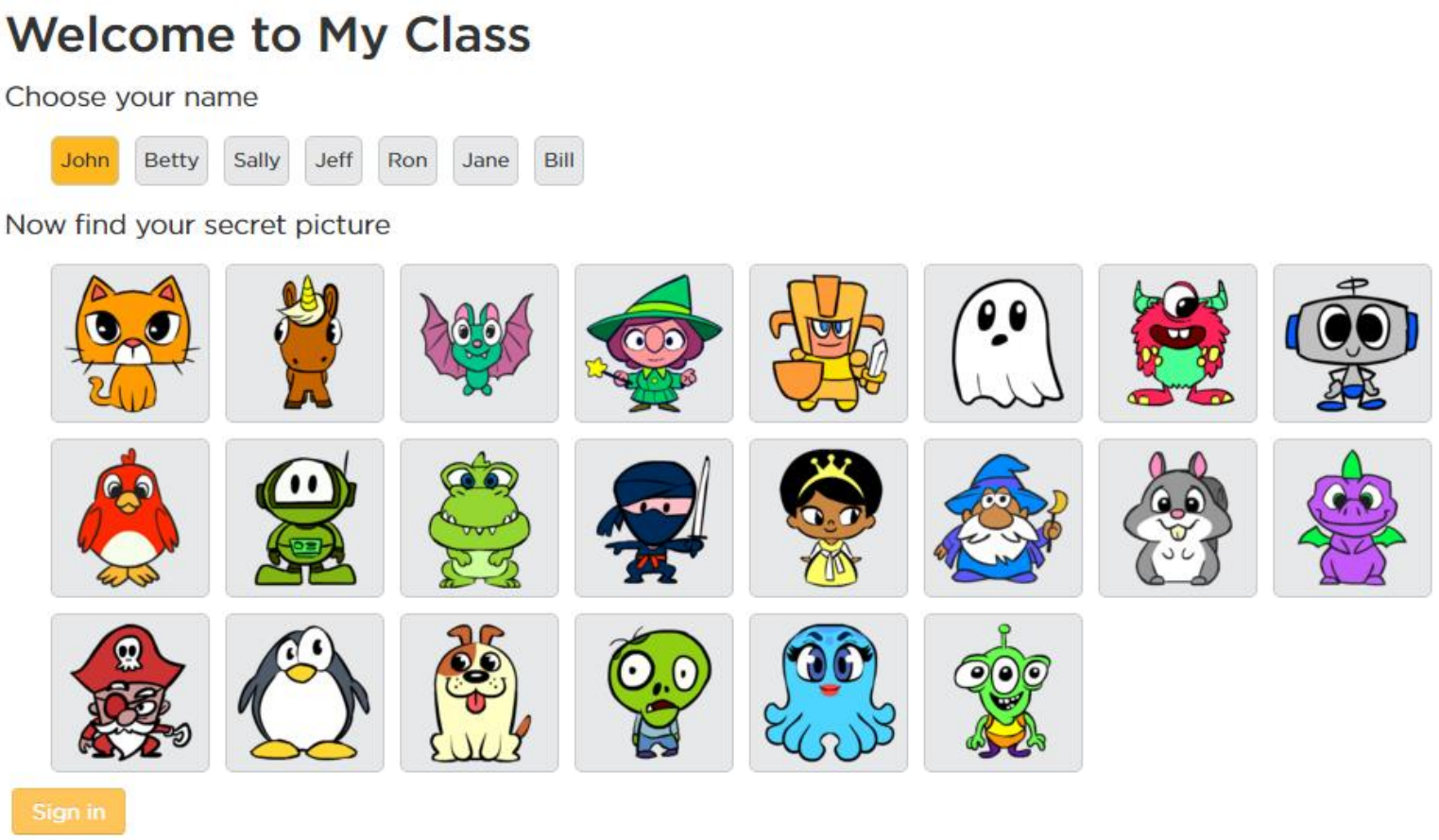
Name	Age	Gender	Secret	
John			 Reset secret	Edit Remove
Betty			▼ Show secret	Edit Remove
Sally			▼ Show secret	Edit Remove
Jeff			▼ Show secret	Edit Remove
Ron			▼ Show secret	Edit Remove
Jane			▼ Show secret	Edit Remove
Bill	6		▼ Show secret	Edit Remove

Share this section's sign in page with your students: **http://studio.code.org/sections/HTEOYH**

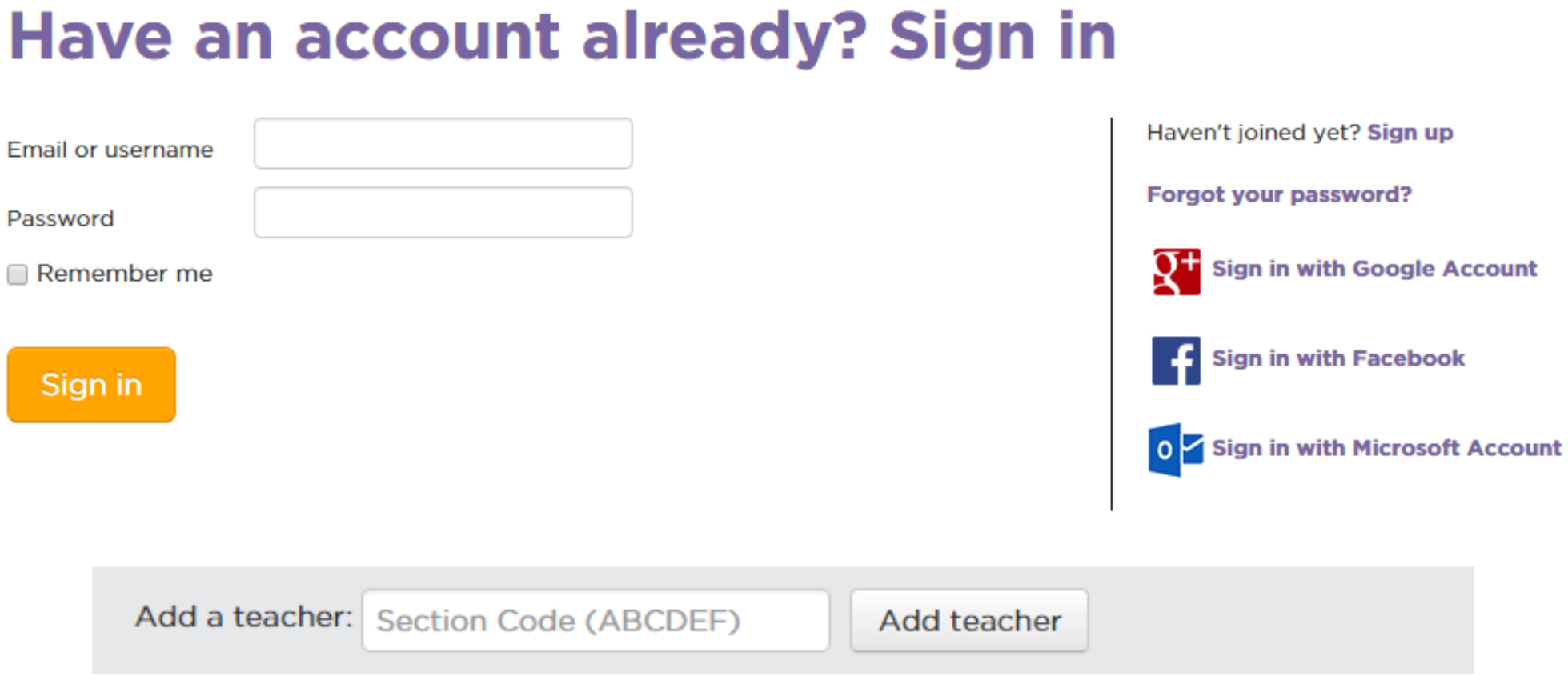
Print out cards with your students' login information.

Will My Students Have to Remember a Password?

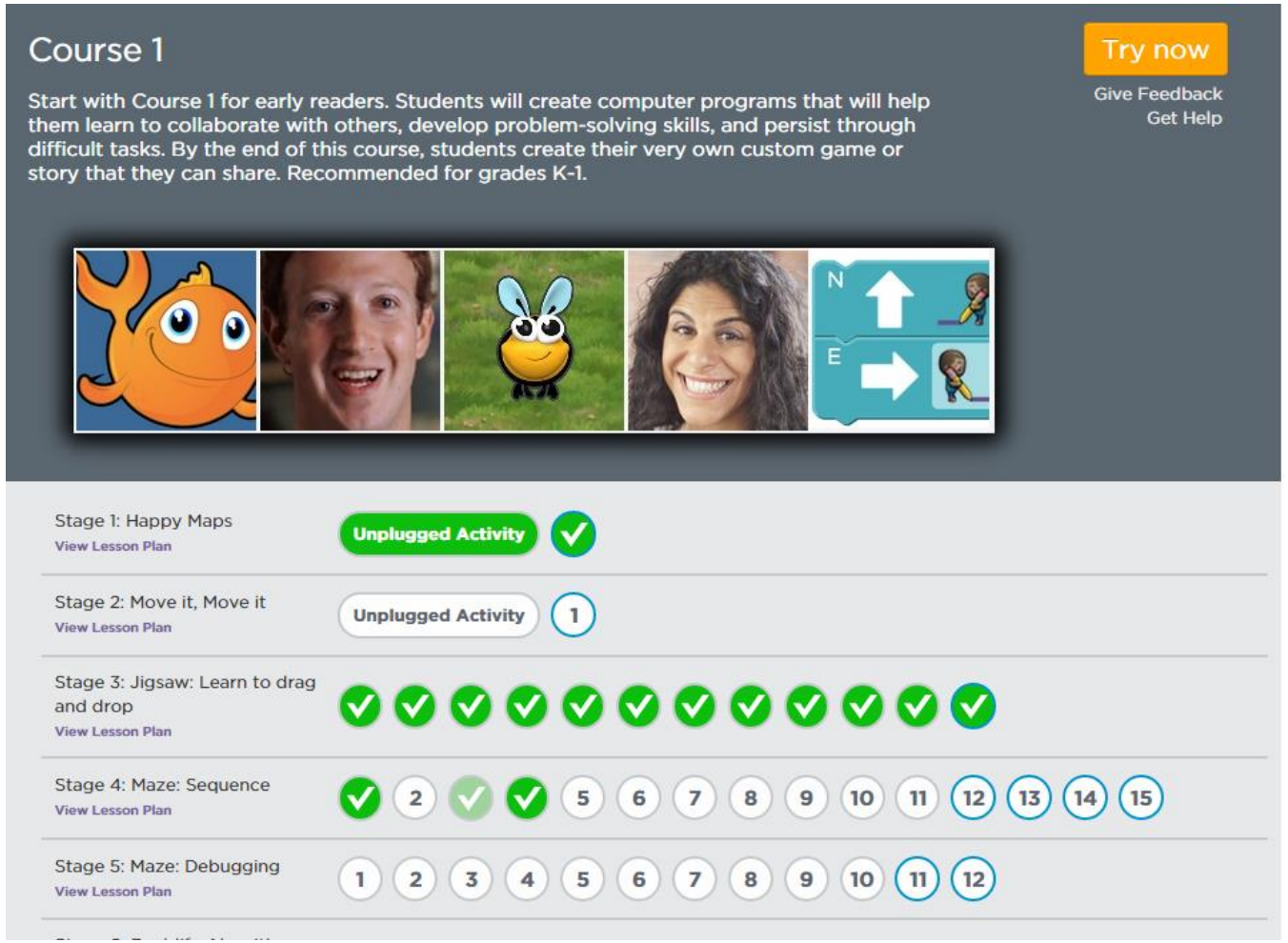
This is the login screen for our younger students.



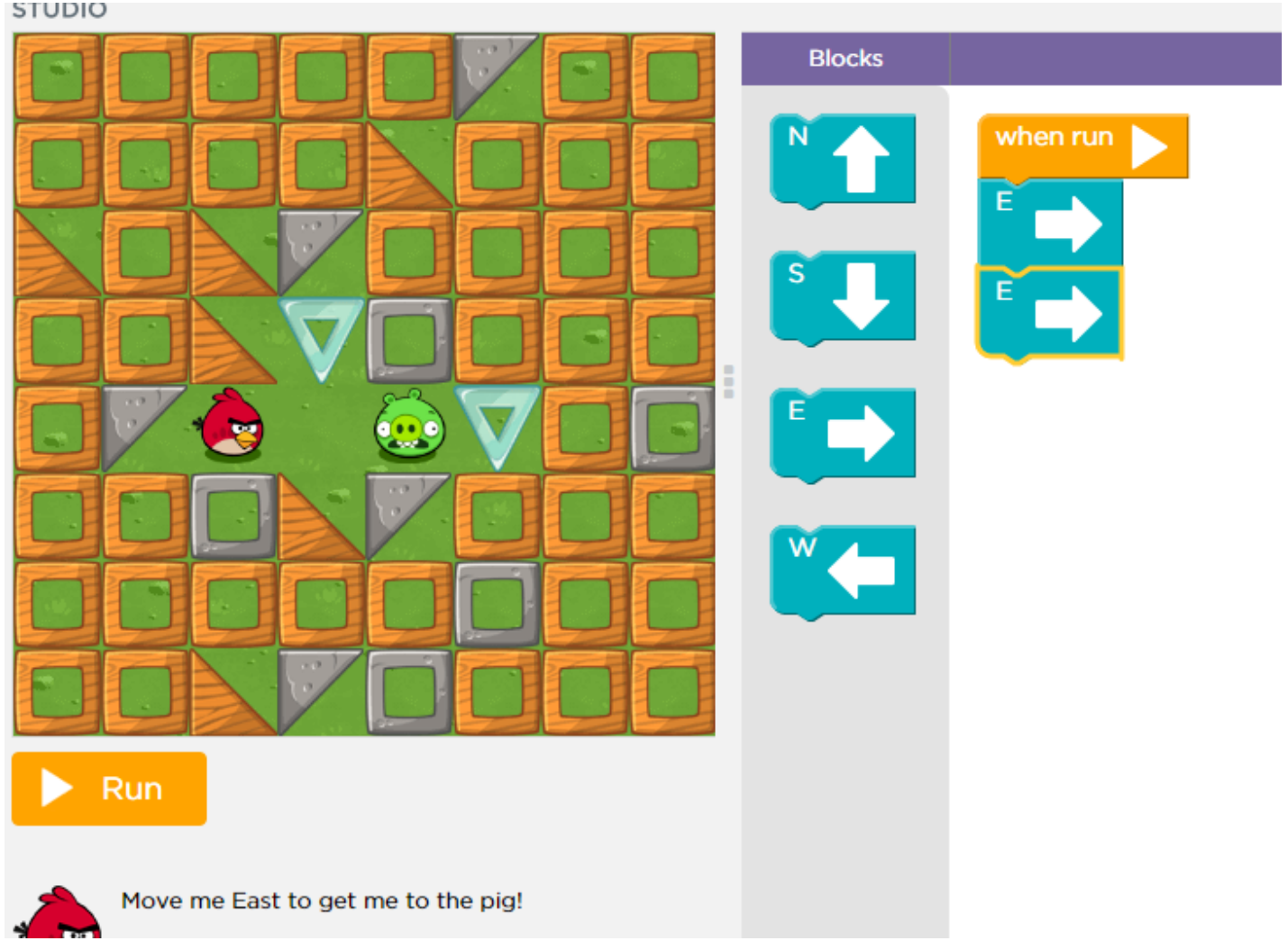
Login Options For Older Students:



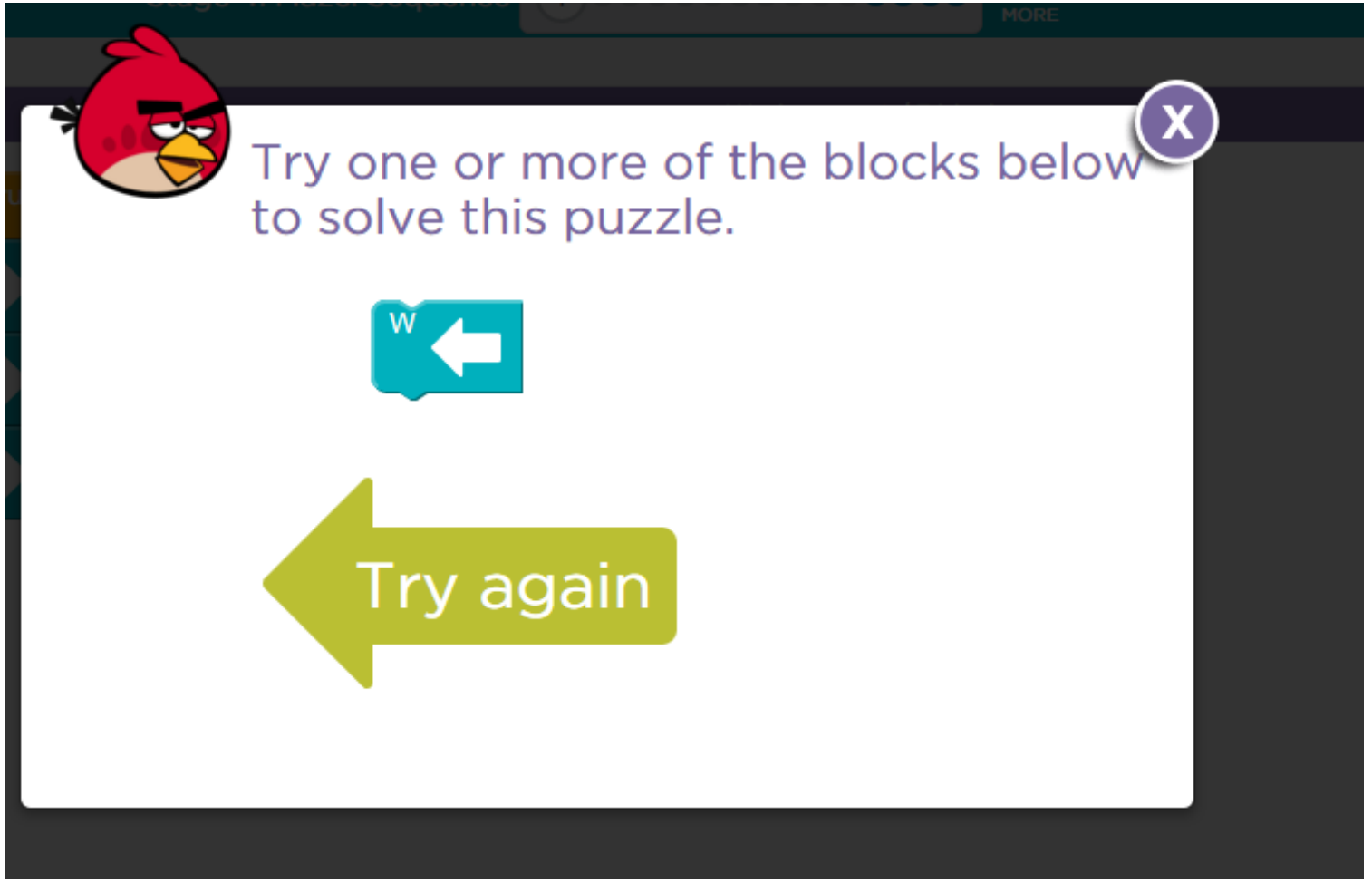
This is the student dashboard. The student and the teacher can get into this to see progress.



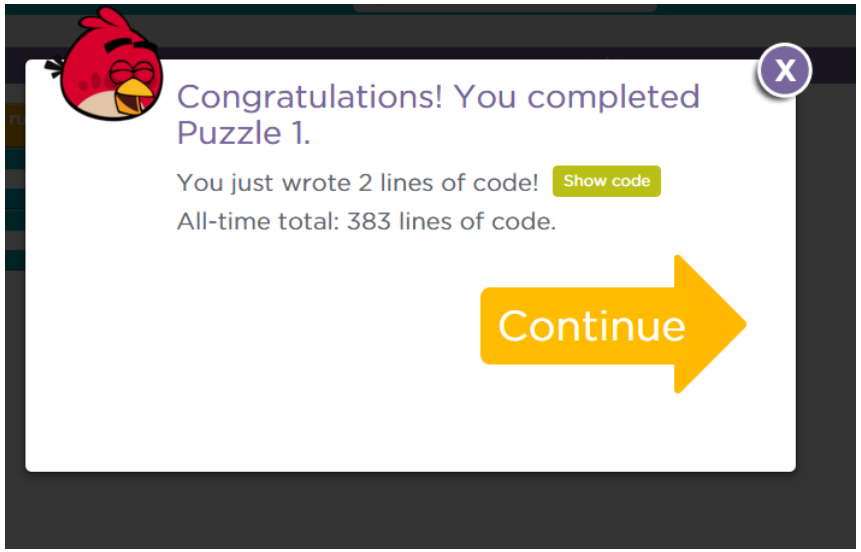
Plugged Activity:



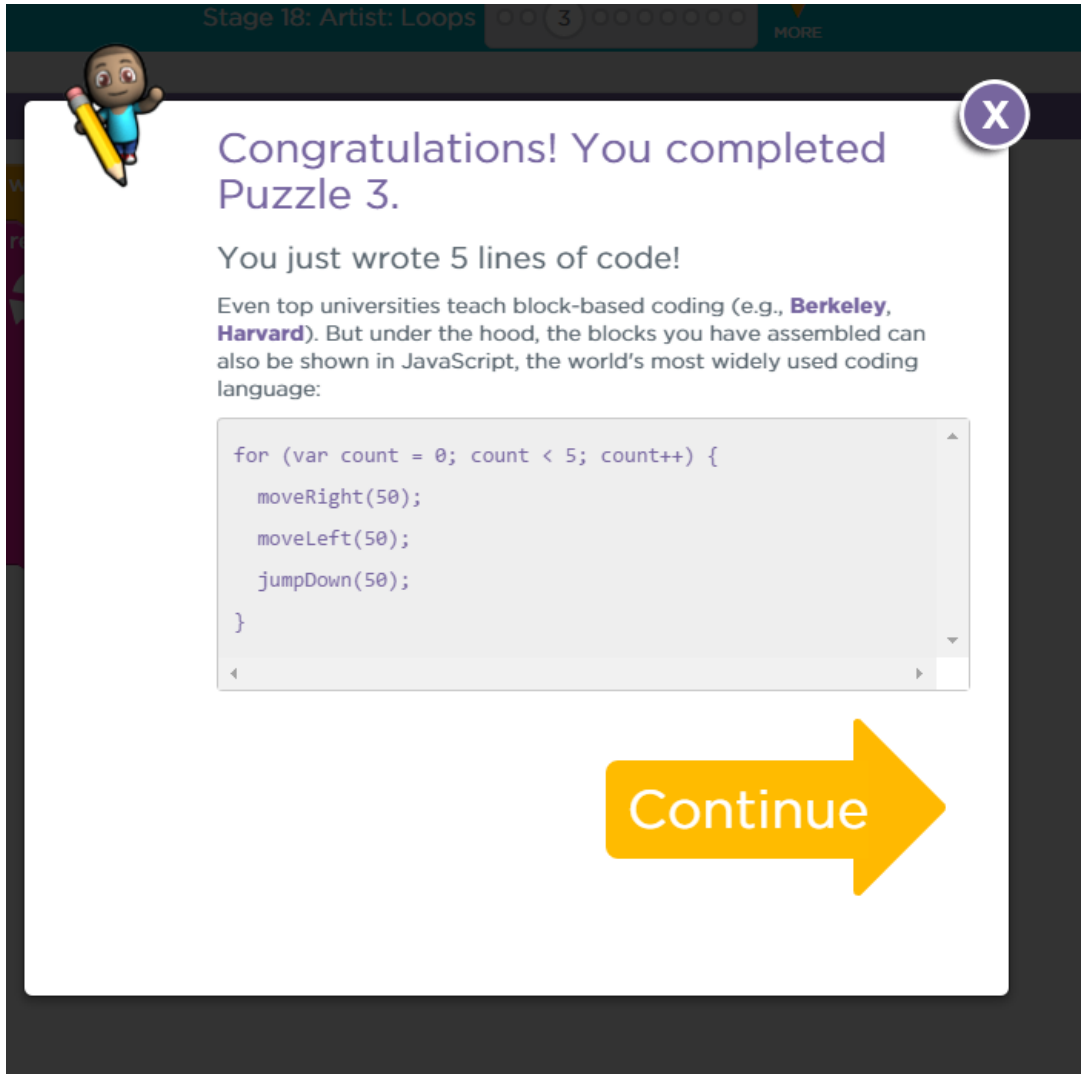
When the students make a mistake, it forces them to try again, but there is no penalty. It also gives them a hint of what they need to do to make the puzzle work.



If the student correctly solves the puzzle, 2 things can happen.



Students have the option to see the actual code in JavaScript.



How you can get started:

- Play, Play, Play!!!

- Sign up for a workshop to get better acquainted with coding.

- Choose one class or one group of students to pilot coding.

- Sign up for Hour of Code.

A. Fall Sem, 2015 -Recruit staff from 3rd Grade Berrian and Monroe, 6th Grade Baldwin, and 8th Grade Junior High

-Attend professional development conference for Code.org -12/07/15 (8:00 - 16:00)
-Identify and attain instructional materials and equipment (computers, instructional materials, etc.) Estimated cost at 20 laptop cart: $26,880 per class

B. Spring Sem, 2016 -Recruited staff will attend the Quincy Conference 2.0 on Computer Science for initial PD

-Establish additional meeting times for Computer Science Instructors
-Develop curriculum (w/staff)
-Develop instructional schedule at each building
-Develop equipment rotation at each building
-Pilot program with teachers who attended Quincy Conference 2.0
-Research PLTW Gateway Computer Science Module for Junior High

C. Summer, 2016 -Host Code.org workshop with at least 20 instructors.

-Receive feedback from staff and students (survey, observations)
-Have in-service with staff and develop changes for next year.
-Recruit staff from Kindergarten classes at Berrian and Monroe, and 4th Grade - Baldwin.
-If plausible, Junior High Instructor attend PLTW training

D. Fall, 2016 -Acquire additional instructional resources for new grade levels. Estimated cost at 20 laptop cart: $26,880 per class

-Implement program with staff from Kindergarten classes at Berrian and Monroe, and 4th Grade –Baldwin
-If plausible, implement PLTW Gateway Computer Science course
-Use current staff in selected schools to lead PD for new staff members

Support and Q/A

- Teacher Dashboard Explained
  - https://www.youtube.com/watch?v=E9Psq6wBBQA
  - Demo
  - How to move kids from year to year/class to class
  - https://www.youtube.com/watch?v=A4UAUe4oLWo

Support and Q/A

- What questions do you have???