Coding in the Classroom

Internet@Schools Conference 2015
Maya Bery
Carlisle Public School
Contact Information

Email: mayabery@gmail.com

Twitter: @booksandqi
Coding in Context

What’s Wrong with These Numbers?

“Coding is the new literacy” - NPR’s MarketPlace, Feb. 20, 2015
Why should we care about coding in the classroom?

Pushes students into the Zone of Proximal Development

Students engaged in problem-solving, trying new approaches, persevering in the face of failure, collaborating - 21st Century Learning

Can easily integrate with curricular standards
Hour of Code

- Hour of Code began in 2013 to encourage students to pursue coding and make it accessible.

- Uses block based coding to represent Javascript commands.

- Gets progressively more challenging, but tutorials and tips help guide students.
Hour of Code: Angry Birds

Can you help me to catch the naughty pig? Stack a couple of “move forward” blocks together and press “Run” to help me get there.

Drag a “move” block and snap it below the other block.

Hit “Run” to try your program.
Coding in Action
Going Beyond Hour of Code: Scratch

- Created by MIT in 2006
- Online community of users who share projects you can “remix”
- ScratchEd community for educators
- Scratch Jr. iPad app for ages 5-7
- Web or desktop based
- 100% free
Integrating Scratch

Two challenges:

⊙ Lack of personal knowledge about how to use Scratch past basic commands

⊙ How to integrate it in a purposeful way?
Integrating Scratch: The Solutions

- Found students in each section who had experience with Scratch
- Enlisted them as peer coaches and told them they would be guiding their classmates
- Told students to rely on each other, experiment, or explore to figure out more complex commands
Integrating Scratch: The Project

Topic: Greek Mythology

Task: Work in groups to read and summarize myths, make links to language

Create a storyboard

Use Scratch to translate storyboard into animation
Scratch Project: Skills

- Collaboration
- Summarization - both written and visual
- Understand how mythology influences language
- Learning a new technology tool
- Using technology to demonstrate understanding
Scratch Project: The Results!

4th Grade Greek Myths
Scratch Across the Curriculum

Student opened my eyes to the possibilities of Scratch across the curriculum - language arts, math, social studies

Projects by cats123noah
Lightbot
Trying Tynker

- Only using the free HoC activities
- Offers paid modules, class and school licenses
- Also offers free iPad and Android tablet apps
Advantages of Tynker

- Structured activities
- Defined skill sets
- Student management
- Progress tracking
- Gradebook
- Individualized concept mapping
- Can assign lessons
- Transition to real Javascript
- Showcase to share student work
# Tynker Teacher Dashboard: Assigning Lessons

## Lesson Plan: Bery 3-demers lesson plan

<table>
<thead>
<tr>
<th>#</th>
<th>Lesson Plan</th>
<th>Assigned on</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Candy Quest</td>
<td>Jan 09, 2015</td>
</tr>
<tr>
<td>2</td>
<td>Comic Creator</td>
<td>Jan 09, 2015</td>
</tr>
<tr>
<td>3</td>
<td>Pattern Maker</td>
<td>Jan 09, 2015</td>
</tr>
<tr>
<td>4</td>
<td>Dragon Dash</td>
<td>Jan 09, 2015</td>
</tr>
<tr>
<td>5</td>
<td>Astronaut Training</td>
<td>Jan 09, 2015</td>
</tr>
<tr>
<td>6</td>
<td>Animated Card Creator</td>
<td>Jan 09, 2015</td>
</tr>
</tbody>
</table>
# Tynker Teacher Dashboard: Student Metrics

<table>
<thead>
<tr>
<th>Student</th>
<th>Hour of Code</th>
<th>Mobile Puzzles</th>
<th>Candy Quest</th>
<th>Puppy Adventure</th>
<th>Trailblazer 1</th>
<th>Debugger</th>
<th>Dragon Dash</th>
<th>Lost in Space</th>
<th>Trailblazer 2</th>
<th>My Art Studio</th>
<th>Arcade Shooter</th>
<th>Brick Breaker</th>
<th>Comic Creator</th>
<th>Pattern Maker</th>
<th>Cannon Game</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claire B</td>
<td>6/20</td>
<td>1/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tara B</td>
<td>12/20</td>
<td>10/17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Olivia B</td>
<td>12/20</td>
<td>7/17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ben C</td>
<td>7/20</td>
<td>6/17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Isabella D</td>
<td>12/20</td>
<td>1/11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Samantha F</td>
<td>6/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Marianna G</td>
<td>12/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dylan K</td>
<td>12/20</td>
<td>4/17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cameron M</td>
<td>12/20</td>
<td>3/17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Erin P</td>
<td>9/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ben P</td>
<td>9/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phoebe R</td>
<td>12/20</td>
<td>2/17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethan S</td>
<td>9/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Michael S</td>
<td>5/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alexander S</td>
<td>12/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Autumn S</td>
<td>12/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>William W</td>
<td>10/20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
# Coding Apps: A Comparison

<table>
<thead>
<tr>
<th>Features</th>
<th>Scratch</th>
<th>LightBot</th>
<th>Tynker</th>
</tr>
</thead>
</table>
| **Cost**   | Free    | Hour of Code - Free Jr. - 2.59-2.99          | Hour of Code - Free iPad/Droid Tablet Apps: Free
            |         | Regular - 2.59-4.99                         | Modules - $50/each
            |         |                                              | Class license (30): $399
            |         |                                              | School license: $2000+                                                |
| **Platform** | Web-based | Web-based/iPad/iPhone/Android/Mac/Windows/Kindle | Web-based iPad
            |         |                                              | Android Tablet                                                        |
| **Management** | Can curate projects into studios | N/A                                      | Teacher dashboard
            |         |                                              | Class studios
            |         |                                              | User metrics                                                          |
Mozilla Webmaker - A New Experiment?

- Teaches students HTML and CSS in real-time (can use W3 Schools to supplement)
- Allows you to “remix” projects
- Can also create mobile apps: personal goal tracker, music player, and more!
Mozilla Projects

Animated Poem

Hack the News!
Online Coding Resources

Khan Academy
Beyond Hour of Code
Codecademy
Mozilla Webmaker and Thimble (W3 Schools also teaches HTML)
other resources from Mozilla
List of Best Coding Apps and Sites
Other Coding Resources

#YesWeCode: Dedicated to training 100,000 students from disadvantaged communities to become top coders

Intel Computer Clubhouse Network: For kids in underserved communities to learn computer skills after school

Girls Who Code

CodeEd: Teaching girls in underserved communities compsci from MS onwards

Digital Literacy Project: Harvard students teach 10 weeks of compsci in Boston schools