Maker Space: The Next Level
(or, I Have My Maker Space...Now What?)

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I am lucky to have a large room with lots of workspace and storage!
My Curriculum: Tech Lab

- 9 week Exploratory
- Students participate in 3 rotations/topics
- Each rotation/topic is 12 days long
- Google Doc Reflection is completed each day
  - Brief reflection of what they worked on/learned
  - Picture of what they worked on
  - Allows me to respond to each student individually and follow their progress, answer questions, etc.
My Struggles

Learning curve was huge

- New software and hardware
- How to Design meaningful and interesting lessons
Trial & Error

- Have students do tutorials
- Students love to play, let them experiment
- Let students become experts
Don’t be afraid to “fail”

- Students enjoy helping!
- Let students see you as a learner.
- Listen and learn from your students!
- Don’t be afraid to say:
  “I don’t know, let’s find out together.”
3D Design & Printing

- I have two Makerbot Mini 3D printers
- Use Tinkercad
- Students spend 4 days doing tutorials so they understand how it works
- The remaining 8 days are used to make original creations that are printed on the 3D printer
3D Design & Printing

- Original snowflakes (3 days to create)
- Given basic parameters
- Examples provided to help them visualize and understand the parameters (# of layers, time to print, grams of filament)
3D Design & Printing

- Original autobiographical cake (5 days to create)
- Given basic parameters
3D Design & Printing

- Epic Failure #1
  - Lesson: *Create whatever you want*
    - They spent the time doing nothing because, "I can’t think of anything"
    - They went online and copied someone else’s design
    - They created things that could not be printed
      - Basketball court, cityscape, nature scene (like a painting)
3D Design & Printing

- Epic Failure #2
  - Lesson: *Create a Chess Piece*
    - I learned that 7th graders do not understand chess pieces
    - They generally were not printable
  - Bright spot: This is how snowflakes came into existence
  - From there, students wanted something more challenging, so the cake was born!
Students have 3 days of learning how to control and program the Sphero

9 days to create various projects
Wagon Races

- 1 day to design, 1 day to build
- Epic Failure #3:
  - tried chariots, but they have no idea what a chariot is
  - Bright spot: wagons
Maze

- 2 days to design and build cardboard maze
- Program spheros to go through maze without touching walls
- Failure #4: original mazes were free-form
  - Students had no idea how to connect pieces together to make a maze
  - Bright spot: paper boxes are free and plentiful. Students love to build things!
Sphero Robotics

Costume Races

- Evolved because I trimmed the time for tutorials
- Their creativity really shines!
Makey Makey & Scratch

- Students create a simple board to use while learning Makey & Scratch
- Learn now the clips and wires work
- Make simple changes to Scratch programming
Makey Makey & Scratch

4 days of Tutorials using a very simple board

- Use existing Scratch games
  - Piano, Interactive Art, Draw
- Connect to Makey using clips
- Learn simple Scratch programming
  - Movement
  - Sound
  - Costume
Makey Makey & Scratch

Original Project #1

- More complex Scratch programming
- Start from a blank Scratch screen
  - Background
  - Movement
  - Sound
  - Change costume
Makey Makey & Scratch

Original Project #2

- More complex Scratch programming
- Use 7+ wires/clips
- Create a simple game
- More difficult and varied Scratch programming
  - Movement
  - Sound
  - Change costume
Stop Motion Movies

- Students write original stop motion movies
- Use small digital cameras
- Microsoft Paint for special effects
- Music
- Movie Maker
Rube Goldberg Machines

- 8th Grade
- Build Rube Goldberg Machines
- Design, build, problem-solve
Rube Goldberg Machines

- Team work
- Collaboration
- Critical thinking
- Perseverance
Conclusion

I have the best job in the world!
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