

STEM for Sale

NCGS Conference - June 2017

Presenters: Ann Hamilton-Dixon, Christy Irving and Annie
Kapetanidis



St. Catherine's School

RICHMOND, VIRGINIA



Library/Tech Class

Weekly one hour class periods for each 4th grade class

Team taught by Christy Irving, LS Librarian and
Ann Hamilton-Dixon, LS Technology

Students are introduced to and practice:

- Research Process
- Design Process
 - 3D designing/printing
 - Coding
- Self-guided learning



Cross-Curricular Support



Art

Positive and Negative space
Additive Art

Jacque Minarik
LS Art



Science

Properties of solids (plastic)
Melting points
Extrudability

Amy Adkins
LS Science



Economics

Understanding the
relationship between:

- Revenue
- Profit
- Expenses

Doug Bader
US Economics



Classroom

Vocabulary development
Math concepts
2D/3D Cartesian Coordinate system
3D geometric shapes
Mentors for Student Committees
Support for students during design process

Mayan Cavallo, Sloan Hlscok,
Judy McCallum, Pam Roberts
Grade 4 Classroom Teachers

Schoolwide Support



Head of School

Provided Summer Grant program to support the development of the project

Terrie Scheckelhoff



Director of Lower School

Supported project from conception to sale

Annie Kapetanidis



Office of Alumnae Relations

Supports the sale
Meets with student representatives to plan the event

Laura Birdsey



Business Office

Meets with student representatives to discuss best ways to collect money at sale

Kathy Laube



Director of Technology

Found funds for acquiring the LS 3D printer
Meets with student representatives to discuss tech needs for the sale
Provides tech support for the sale

Doran McBride



Event Coordinator

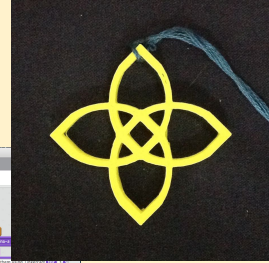
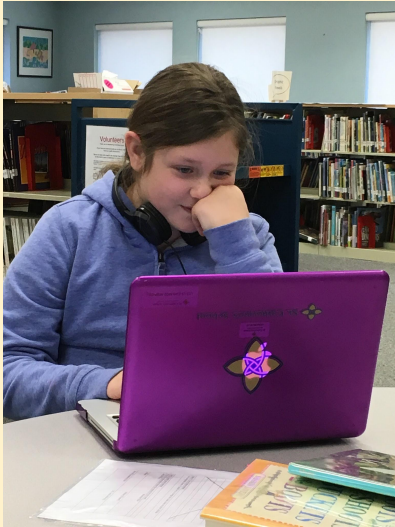
Meets with student representatives to discuss setting up space for the sale

Carroll Keiger

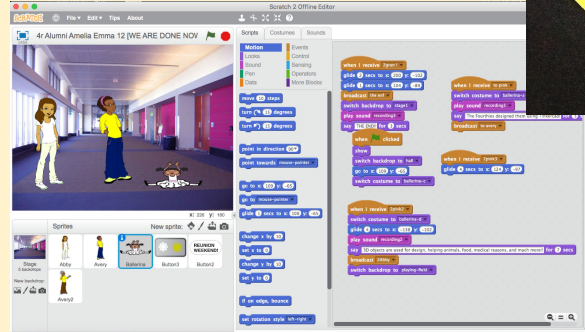
The Fourth Grade Design Project

3D Design and Printing

Research



Entrepreneurship



Computer Coding



Entrepreneurship and Research Thread



Research

Efficient, reasonable search terms

Knowing what information you are seeking,
but being open to finding the unexpected

Purpose: Create a Business Plan

Mrs. McCallum's Class's Business Guide

1. Set a goal/plan
2. Find your inspiration
3. Get money and/or supplies do we need to start.
4. Set your time frame.
5. Get business Permissions
6. Choose business location and work dates.
7. Decide what to sell.
8. Decide price for products
9. Learn how to use materials (get training)
10. Learn from you mistakes
11. Advertise
12. Sell your product
13. HAVE FUN!!!

Library Databases and Search Engines



Search Engine for finding websites



Periodical Database for finding articles

Starting a Business - Entrepreneurship

Making a business plan

Conducting market research

Reporting findings to whole class

Understanding division of labor

Determining reasonable sale price

Supporting the community



Determining a Reasonable Price

price
 profit - money that is left after expenses are paid
 expenses - money a company spends
 revenue - all the money you make at the sale

Economic Terms
from Mr. Bader

The goal is to make \$22.00.

Spool of plastic
data

1 spool - \$13.00 - \$31.00 \$22.00

400 m $\frac{22}{400} = 0.055$
 27.05 0.06

71 students $\times 0.06 = \$4.26$
 71 students $\times \$1.00 = \71.00
 71 students $\times .50 = \$35.50$

\$0.06 cost \$1.00 price \$0.94 markup

What does one meter of
filament cost?

There are 71
objects for sale.

How much should we charge
for each item?

How much
plastic was
used in each
design?



Design Thread

Student(s) speak



Training

Video
Tutorials

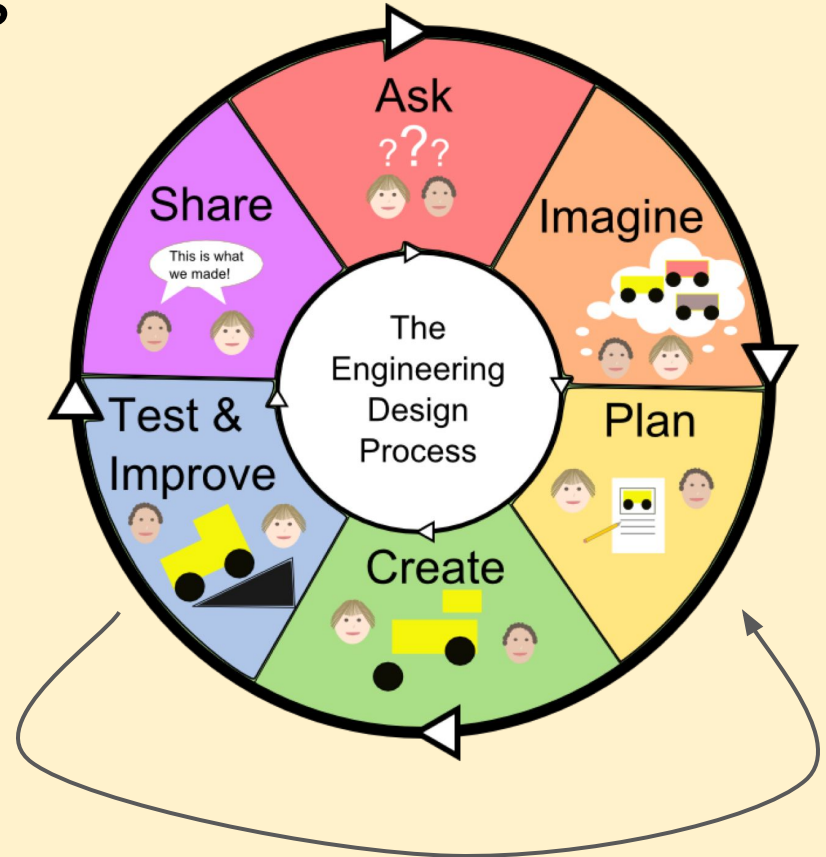


Read and Do
Tutorials

Engineering Design Process

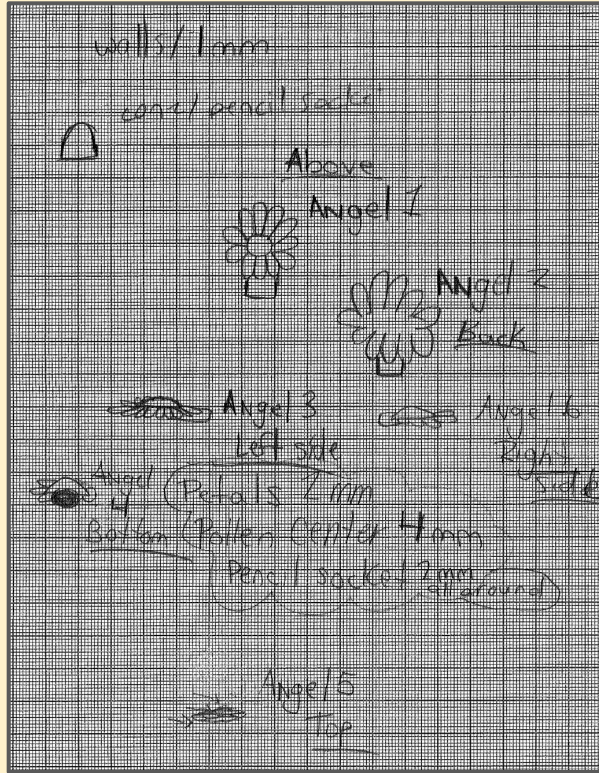
Used for both the coding project and the 3D design project.

Iterative
Repeat until
goal is reached.



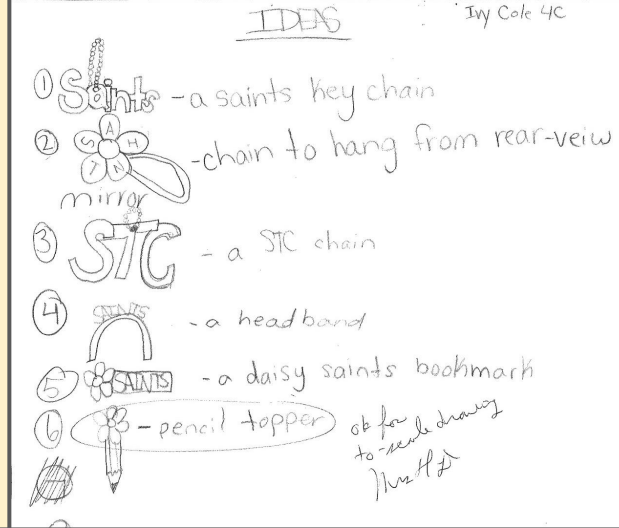


3D Design Process



2. Plan

To-scale drawing

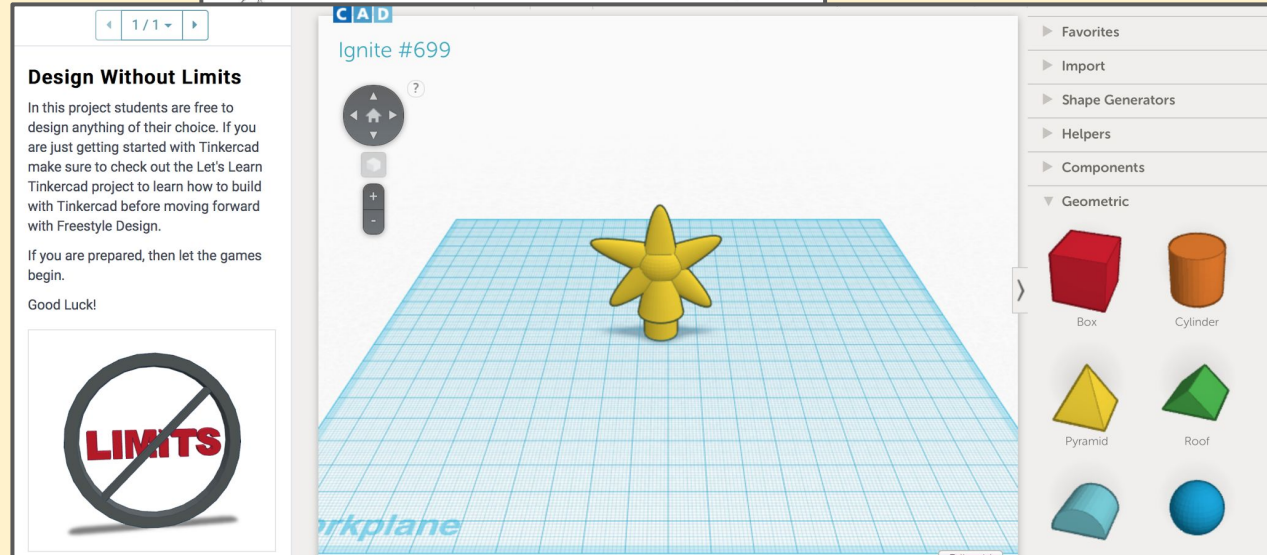


1. Imagine

Doodles of possible objects

3. Create

3D designing in Tinkercad.com

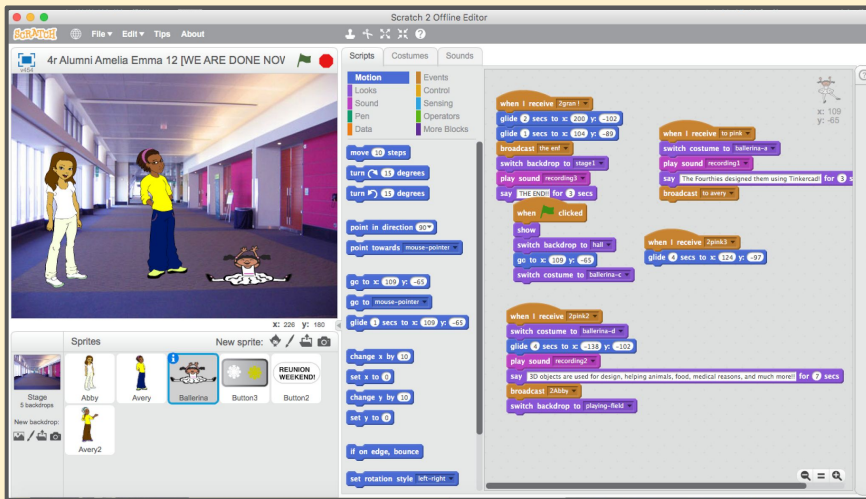
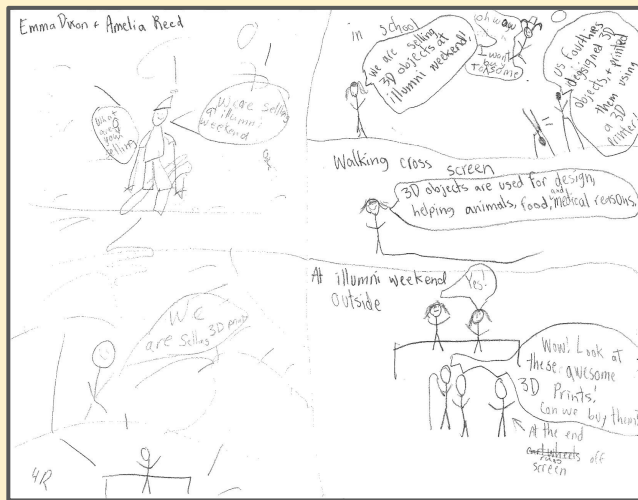


Coding Design Process

1. Imagine Ideas for possible animations



2. Plan Storyboard



3. Create Coding in Scratch

Committees

Permissions

January

Mrs. Roberts

Met with Mrs. Birdsey



Organization

March - April

Mrs. Cavallo

Met with Mrs. Keiger, Mrs. McBride,
Mrs. Laube and Mrs. Birdsey

Advertising

March - April

Mrs. Hiscock and Mrs. McCallum

Created Poster



Engaging with Alumnae:

A meeting of
generations

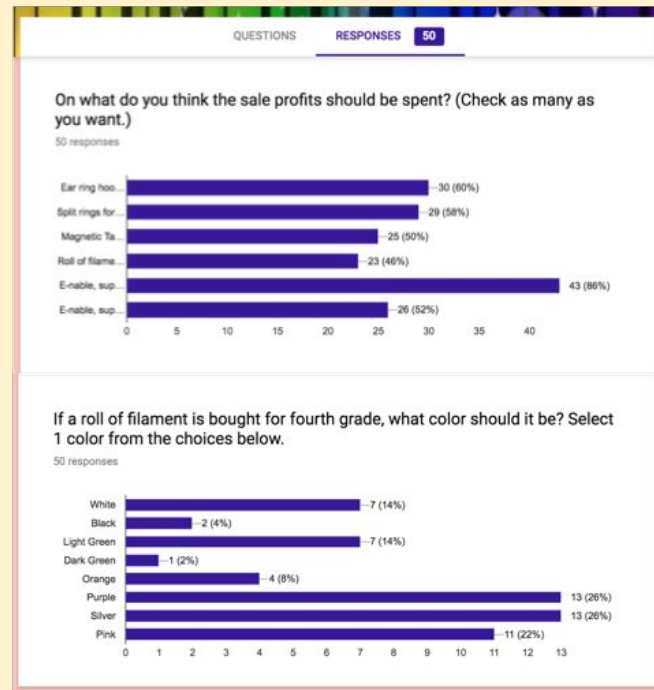




Vote Results for Spending Profits

Fourth Grade Design Sale Result for Spending the Profits May 2017

The results are in:



The profits will be spent in this order:

1. \$25.00 will be saved to purchase an accessory kit for an e-Nable hand.
2. \$4.00 will be used to purchase a package of earring hooks
3. \$10.00 will be used to purchase a package of split rings
4. \$30.00 will be saved to purchase a particular color of plastic for an e-Nable hand.
5. \$5.00 will be used to purchase a small roll of magnetic tape.
6. \$30.00 will be used to purchase a roll of purple or silver filament for next year's 4th Grade Design Project if a spool is not bought for e-Nable.







Questions?

Sites to Explore

goo.gl/Lc627m



STEM for Sale
Resource List