Transform your Literacy Block through the Engineering Design Process

McKissick Academy of Science and Technology
Easley, SC
MCKENZIE MARTIN
Mckenziecox@pickens.k12.sc.us
Second Grade Teacher

ANGELA SPEARMAN
Angelaspearman@pickens.k12.sc.us
Reading Coach

SCHOOL WIDE INFO

McKissick Academy of Science and Technology

@MASTfinsup

@MASTfinsup
TODAY’S AGENDA

- School Wide Approach
- Classroom View
- Resources
- Your Turn to Explore
SCHOOLWIDE APPROACH
MAST STEM Notebook Expectations

Pre-K
- Picture

Kindergarten
- Date, Title
- Labels on pictures

First Grade
- Date, Title, page number
- Labels on pictures
- Prediction or Revision Sentence

Second/ Third Grade
- Date, Title, page number
- Labels on pictures
- Prediction or Revision Sentence

Fourth/ Fifth Grade
- Date, Title, page number
- Labels on pictures
- Prediction or Revision Sentence
- Goals statement for activity or learning objective

***Bold denotes new learning.***
THINKING ON DISPLAY
THINKING

It is important to see the students thinking and first attempts.
## Types of Inquiry That Foster STEM

<table>
<thead>
<tr>
<th>Mini Inquiries</th>
<th>Direct Inquiries</th>
<th>Literature Circle Inquiries</th>
<th>Open Inquiries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students understand that their</td>
<td>Invites students to participate</td>
<td>What are students</td>
<td>Hot topics</td>
</tr>
<tr>
<td>questions or wonderings matter</td>
<td></td>
<td>wonderings?</td>
<td></td>
</tr>
<tr>
<td>Allow ourselves permission to be</td>
<td>Teacher decides the topic</td>
<td>Teacher facilitates</td>
<td>Burning questions</td>
</tr>
<tr>
<td>interrupted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allows research practice</td>
<td>Teacher creates interests in topic</td>
<td>Allow research practice</td>
<td>Student decided</td>
</tr>
<tr>
<td>Share ourselves</td>
<td>Confers and facilitates</td>
<td>Teacher only facilitates</td>
<td></td>
</tr>
</tbody>
</table>
CHILDREN NEED THE FREEDOM TO APPRECIATE THE INFINITE RESOURCES OF THEIR HANDS, EYES, AND THEIR EARS, THE RESOURCES OF FORMS, MATERIALS, SOUNDS, AND COLOURS.

LORIS MALAGUZZI
3 Ways to Develop STEM through Inquiry

- Picture Books and Novels
- Engineering Design Process
- Project-Based Learning
Use a picture book to research and conduct STEM projects within a text.

Use texts you already use during your instruction.

After reviewing letters throughout the beginning of school, students read the book *Chicka Chicka Boom Boom*. Students were given the task of creating a tree to hold the letters of the alphabet that they were able to recognize.

Standard: KRL.1.4 Recognize and name all upper- and lowercase letters of the alphabet.
Students had to name the letter and identify if it was uppercase or lowercase before placing it on the tree.
"It's pretty cool we bought a fictional character to life." - Natalie
ENGINEERING DESIGN PROCESS

- Level 1 - Team Building
- Level 2 - Solving Problems with Constraints
- Level 3 - Solving Real World Problems
Students were given the task of reading a fable with a partner and determining the theme using text evidence.

Standard: RL.MC.6.1- Determine the development of a theme within a text.

Essential Question: What is theme? How do readers infer the theme of a fable using textual evidence?
Students were then given a STEM challenge that related to their fables. Students used the Engineering & Design Process to complete the given tasks.

**Challenge:** Design a straw that you can use to take a drink of water from a cup.

**Suggested Materials:**
- Tin Foil
- Pipe Cleaners
- Rubber Bands
- Masking Tape
- Scissors
- Cup of Water

- Students list materials needed
- Students sketch their design ideas
- Students answer questions (opportunities to reflect):
  - Did it work?
  - What worked well?
  - What did not work well?
  - How can I improve my design?
Students were then given a STEM challenge that related to their fables. Students used the Engineering & Design Process to complete the given tasks.
A Challenging Problem or Question
Authenticity
Integrating All Subjects
Student Voice & Choice
Reflection
Critique & Revision
Public Product
Project Based Literacy Instruction

Students read, write, and learn because there is a real-world problem to solve, a need to address, or a question to answer.

Traditional Literacy Instruction

Students read, write and learn because you told them to, their parents want them to, and/or they think they should.
Integrating Reading, Writing, and Technology
Reflection, Revisions, and Public Product
SILOS Project
Today's mini inquiry:
A direct instruction STEM project.
Your team is going to create a balloon to go in the parade. The balloon must represent a character from a book.

Constraints:
1. Can only use the materials available.
2. Cannot touch the balloon with your hand.
3. Must be able to walk with balloon ten steps.
4. You have ten minutes.
Questions?

angelaspearman@pickens.k12.sc.us

mckenziecox@pickens.k12.sc.us