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Message from the President

Dear Colleagues:

It is a privilege to serve the educational community and to continually expand and enhance the skills our students need in this ever-changing world. As educators, we have the honor and the duty of ensuring our students are prepared for all that lies ahead. We must balance standards, state testing, special needs, and the social-emotional health of our students (among many other important aspects), while still incorporating district initiatives. It often seems a daunting task to add “one more thing,” like children’s engineering and STEM/STEAM to our already over packed school days. The educators who have paved the way in children’s engineering have helped to truly integrate these into the core disciplines, as vital aspects to best prepare our students for their future. We know that children’s engineering is not one more “thing” to do, it can be the very vehicle towards critical thinking, problem solving, and applying student knowledge in insightful ways, while still working toward curricular needs.

In this edition of the Virginia Children's Engineering Journal, you will find evidence of the collaboration, communication, critical thinking, creativity, and citizenship that the Virginia Department of Education recognizes as an essential element of our core instruction. Teachers have created materials and activities for you to take into your classrooms tomorrow to enhance your students’ learning experiences. When your students are learning to their best potential, it is FUN to teach! VCEC aims to connect you to other educators who have experienced the rewards of using children's engineering to create the most impactful learning experiences for our students.

On behalf of the Virginia Children's Engineering Council Board of Directors, I thank you for continually promoting children's engineering in your schools and classrooms.

Kimberly Dempsey, NBCT
President, Virginia Children's Engineering Council
Assistant Principal
Little River Elementary School
Loudoun County Public Schools


President: Kimberly Dempsey
Editor-in-Chief: Barbara Westlund
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Layout Editor: Teresa Wilburn

Consider submitting an article for publication in upcoming issues of the journal. Submit your article or design brief and pictures (500-1000 words and up to three JPEG pictures) to bwestlund@ycsd.york.va.us, or vcejournal@gmail.com

WRITE FOR VCEC! Upcoming Journal Topics:
Summer 2020 Children's Engineering and Technology - Submission Deadline April 15, 2020

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Understanding a Design Brief, Part 2: The Guided Portfolio
by Elizabeth Kirk

Children’s engineering and STEM use a process to solve problems which begins to help students develop problem-solving strategies to make them life ready. When completing a STEM challenge, using a consistent design process helps to build these skills. The Virginia Children’s Engineering Council’s design process includes the following: Ask, Brainstorm, Design, Create, Test, and Communicate. Redesign is another step that happens throughout the process.

A guided portfolio is the compliment to a design brief that walks the students through the design process as they work to help them become better problem solvers.

Here’s a little more detail about the basic format of a guided portfolio.

**Ask:** The ask process part is where the students restate/ask questions about the challenge to ensure understanding.

**Brainstorm:** The brainstorm step is where students have many, varied possible solutions.

**Design:** The design process part is where students sketch in detail the one idea they plan to build. The design needs to include labels.

**Create:** The create step is where the students build or create their product.

**Test:** The test process part is where the students test their creation to check that all criteria are met.

**Communicate:** The communicate step is where the students share about their learning and the successes and challenges throughout the process. Students can do this orally, through writing or even using digital resources.

**(Redesign):** Redesign occurs throughout the process. Students need help to understand where they naturally and intentionally redesign.

**Standards/Teacher Notes:** The SOLs that are covered in the challenge are listed to emphasize the curriculum supported in the challenge. This section also includes any teacher tips and background knowledge that teachers or students need, safety rules, etc.

Visit the design brief section of our website - www.childrensengineering.org - to see samples of guided portfolios. A new set of design briefs with guided portfolios is currently being worked on, so keep a lookout for them.

Understanding how to problem-solve is a skill that every student needs for life. By including guided portfolios with STEM experiences, we are providing practice in going through a process to solve a problem. Students will begin to use this process to solve problems, both academic and personal, and to collaborate throughout their lives, which is the true definition of life ready.
BUILD Across the Curriculum
by Amy Buerlein and Meredith Smart

What is BUILD?
At St. Christopher’s school, we believe in an organic approach to STEM or STEAM. Because we are an all boys school, we created the acronym Boys Using Innovation to Learn and Design to get the boys excited about BUILDing in and out of the classroom. Essentially, BUILD means that we are infusing challenges that revolve around science, technology, engineering, art and mathematics into our curriculum. Incorporating this into our teaching means the boys are having experiences that encourage them to work together and use innovation and critical thinking skills. We try to weave BUILD into every aspect of our day, tying our design briefs directly to curriculum and daily activities.

Why do it?
Boys love to BUILD. Not only do they create products to correlate with a lesson, the BUILD process helps to build their character and encourages use of appropriate technology, creative problem solving, intellectual risk taking, and the ability to collaborate effectively. It also allows them time to fail in a safe environment where failing simply means we’re not there ... yet. They get comfortable feeling uncomfortable. Whether it is simply designing a pop-up card about a favorite book character or a project that requires extensive planning and trial and error, the boys enjoy using their hands to create. The boys are excited every time we announce that we will be participating in a design challenge. We have found that the boys learn how to be flexible, to try again if an idea does not work, and the power of planning. These are all valuable life skills that will carry them far.

Our Approach
In the Lower School, we have adopted a learning commons practice of engagement. We have a learning commons team that consists of our librarians and technology specialists. We meet with the team once a month to discuss goals, curriculums, and best practices for tying the two together organically. The goal of the learning commons approach is to foster inquiry and project-based learning that is woven directly into our various grade level curriculums. This approach allows us to collaborate as a team to find lessons that are cross-curricular while teaching technology skills and integrating design briefs and inquiry-based learning.

With the learning commons team already in place, we are able to collaborate on how to infuse various design briefs into our curriculum. For example, to get the boys excited about sound, we started with a lesson where we created banana pianos with Makey Makeys. While we were learning about sound, we did another lesson with Voice Thread to show the boys in a tangible way how sound waves work. Finally, as a summative assessment the boys worked in collaborative groups on a design brief where they created their own instruments with recyclable materials.

What we love about this approach to learning is that it is seamless. We work in the classroom, or in the BUILD lab, on topics the boys are familiar with. Rather than meeting once a week with the technology teachers in the BUILD...
lab, we build learning around existing curriculum and needs. This allows lessons to ebb and flow, meeting cross-curricular needs in a meaningful way.

**Getting Started**

We both started small in our classrooms. We believed in the process and created design briefs that correlated with our curriculum. As we began to see the benefits of the process and the approach, we started to take more challenges as educators to weave this approach more often into our curriculum.

We first started collecting recyclable materials and storing them in our classrooms. This turned into a “Creation Station.” We also added art supplies such as tape, popsicle sticks, card stock, etc. Boys have the freedom to free BUILD during Fun Friday or other special times.

In our school we have an allotted space for a BUILD lab. It is complete with tables and stools that can easily be moved. We have storage space for projects and materials that are easily accessible for the boys to use. Parents are happy to donate when asked to help to stock the lab. Grade levels often will complete projects in this space. It is wonderful to have a place to go to for a change of pace and it helps to create a BUILD mindset.

Once we felt established in our classrooms, we were able to design challenges that focus on collaborating with others outside our classrooms. For both of us, it has been easily woven into our curriculum; it is not difficult to create a design brief anymore. It is helpful to have a supportive team and to have others that believe in the process to bounce ideas around with.

**Varied Approach to Grouping**

One of the most valuable components of STEAM/ BUILD is that we have both learned that collaboration is extremely important in your own classroom, but it can also go beyond your classroom. We partner with our Middle School Buddies, kindergarten, amongst our grade level, and with our sister school, St. Catherine’s. We have the parents and grandparents involved for special events. This grouping helps to form important relationships, and the boys are able to have different roles when working on these tasks.

**Creating Design Briefs**

Because we have an organic approach to BUILD, it actually makes creating design briefs easier. As a grade level team we start with what topic or skill we are hoping to assess or enhance. We may browse ideas on various websites, or think about design briefs we have done in the past. (VCEC has a great one to get you started: VCEC design briefs.) We will usually bring these ideas to the learning commons team to see if there are any technology skills or tools that can enhance our design briefs. As with most effective lessons, we tweak them to best fit our students’ needs. As we build our design briefs, we always consider these aspects:
there something we need to assess? How much time do we need to allow? What tools or supplies will we need? How will we create our groups? One of the most important aspects of creating these design briefs is allowing time for reflection. This can be in the form of sharing their projects with the class, creating videos about their projects, and simply time for question and answer. At the conclusion of each design challenge we always ask the boys these three questions:

What worked well?
What didn’t?
How could you make your project better?

Reflection is key! Let’s be honest: Sometimes their creations don’t look like much. However, if you dig deep and ask questions about their intentionality you will be amazed. Here are a few examples of different ways to document their reflections. We love sharing these with parents so they can ask their boys at home too!

Amy and Meredith teach second grade at St. Christopher’s School, a JK-12 independent Episcopal school for boys located in Richmond. They have been using BUILD in their classrooms over the past five years. They have also enjoyed participating and presenting at the VCEC convention. In addition, they have presented at the 2017 International Boys School Coalition conference in Baltimore as well as for parents at St. Christopher’s School.
Recently I had an amazing opportunity to attend the Missle Defense Agency (MDA) STEM Education Development in Huntsville, Alabama. In mid-March I received an email that the MDA was accepting applications from educators across the country for their STEM ED teacher workshop. The application process seemed daunting (about 13 pages for myself) and required three professional references that also had several pages of questions. The applications stated we would be notified in early May whether or not we were accepted.

On May 7, the email finally arrived. “Congratulations! You have been selected to participate in the 2019 Missile Defense Agency (MDA) Science, Technology, Engineering, and Math Educational Development (STEM ED) workshop in Huntsville, AL, July 7-12, 2019.” A welcome benefit to this program is that it provides attendees reimbursement for travel as well as to receive a stipend for attending.

After arriving at the conference center to begin this adventure we were welcomed by the staff who ran our class for the week (Dr. Laurdine, Ms. Stubbs, Mrs. Amber Horton, Mr. Ernest Valine, and Mr. Chuck Piersall). We learned what MDA does to protect our country from incoming missiles and were given an overview of what to expect during the week. Attendees were divided into two groups. Within our group we participated in a team building activity using a ball of string. Each group member would share about himself or herself and make connections with other people in our group. With each commonality the ball of string was passed from person to person, quickly making a spider web. It was a great way to find out how much everyone had in common. We learned that this is similar to how Facebook determines friend suggestions or the “Kevin Bacon Game.”

On Monday we had several different presenters, but my favorite was Dr. P. J. Benfield from the University of Alabama. He had us build a structure to safely get an egg to the ground from 100 feet up. We also launched a high altitude balloon with a tracker. Our task began by creating lesson plans in small groups. We had work time each day to complete a project that would be shared on Friday afternoon.

Tuesday we had the chance to visit the U. S. Space and Rocket Center (where Space Camp is held). It was amazing to see so many space-related things close up. I could have spent several more hours, but we had to go back to the hotel for a presentation at lunchtime.

On Wednesday we again visited with Dr. Benfield. Using the tracker, we identified where our balloon traveled and got to see video of what it looks like when a balloon pops.

Thursday we took a field trip to Boeing. This is a secure facility that does not allow any photography. Our host patiently answered many questions before sending us to another Boeing facility where computer boards and chips were being assembled.

On Friday morning we had a few final activities and housekeeping tasks to address before having lunch and leaving for Redstone Arsenal for our presentations and closing ceremonies. Upon arriving at Redstone Arsenal, I was impressed at how quickly we got onto the base and through security. After arriving at the MDA building and going through a second security check, we were escorted in groups of two or three upstairs to a meeting room. Several groups shared their presentations. We were then honored to hear from the director of MDA, Mr. John H. James Jr. Mr. James shared several stories about how engineering relates to everyday life and the importance of teachers introducing engineering concepts and skills at an early age. After a quick photo shoot with the director, he left for another meeting and our presentations continued. After we finished our group presentations, we had a certificate ceremony with some of the MDA staff.

As Wayne Gretzky says: “You miss 100% of the shots you don't take.” With this in mind, apply for opportunities and grants like this as often as you can. Sometimes you will get selected and sometimes you won’t. You may obtain information related to this program and the application process at https://www.mda.mil/about/STEMoutreach.html.
**Design Brief**

**Catch a Breeze**

**Background:** In the story *Feel the Wind* we learned that we have wind in lots of different types of weather. We also learned that wind helps us in many different ways.

**Challenge:** You will design and create a vehicle that will move with the wind.

**Criteria:**

Your vehicle must:

• move at least 6 Unifix cubes in distance when wind hits it
• have a place for a person (mini-fig) to sit
• hold the person in their seat when it moves (have some kind of seat belt)
• include a sail to catch the wind.

**Materials:**

- Construction paper
- Pipe cleaners
- Cardboard
- Paper fasteners
- Glue
- Wheels
- Small boxes
- Straws
- Popsicle sticks
- Cardstock
- Yarn or string
- Masking tape
- Wood
- Cardboard tubes
- Bottle caps
- Soda bottle

**Tools:**

- Scissors
- Ruler
- Hole punches
- Push pin paper drill
- Hot glue - teacher will use
- Fan (wind)
- Mini-figure
- Unifix cubes for measuring

**Targeted Standards of Learning:** Science 1.7c; Math 1.10; English 1.1

**Support Standards of Learning:** English 1.2, 1.14; Science 1.3a

**Targeted Standard for Technological Literacy:** 8, 9, 10, 11, 13

<table>
<thead>
<tr>
<th>Prior Knowledge &amp; Skill</th>
<th>Materials &amp; Preparation</th>
<th>Safety Issues</th>
<th>Class Management</th>
<th>Materials Provided</th>
<th>Design Process</th>
</tr>
</thead>
</table>
| Students should understand that wind is a part of weather. Students should understand that when wind blows it can move things. | • Secure a copy of the book *Feel the Wind*  
• Pre-read book and develop leading questions related to how wind helps humans.  
• Gather materials. | Use of push pin paper drill. | Organize students into groups of three.  
Determine whether you want to set limits on materials. | Design Brief  
Guided Portfolio (adapt as appropriate/optional)  
Rubric Assessments | Follow the Design Process:  
Restate the problem.  
Brainstorm solutions.  
Create the best solution.  
Test the solution.  
Evaluate the solution. |
Guided Portfolio

Name: ____________________________

Group Members: ___________________________________________

Question:

1. What is the challenge? I will create a ________________ that will ________________ with the ________________.

2. Brainstorm solutions. Sketch and/or describe some possible solutions.

<table>
<thead>
<tr>
<th>My idea:</th>
<th>The idea our team is building:</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

3. Create the solution you think is best.

4. Test the solution and redesign if needed.

   My vehicle:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moves at least 6 Unifix cubes in distance</td>
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<tr>
<td>Has a place for a person to sit</td>
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<td></td>
</tr>
<tr>
<td>Holds the person in their seat when it moves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Includes a sail to catch the wind</td>
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</tbody>
</table>
5. Evaluate your solution.
   Turn and talk to a partner and then share as a whole group.
   
   Was your solution a success?  
   YES  NO
   
   How many Unifix cubes in distance did your vehicle move?  
   __________
   
   What can you do differently?  
   __________________________________________________________________________
   
   __________________________________________________________________________
   
   __________________________________________________________________________
   
   __________________________________________________________________________
   
   What was a challenge you had?  
   __________________________________________________________________________
   
   __________________________________________________________________________
   
   __________________________________________________________________________
   
6. Rubric for Catch a Breeze

<table>
<thead>
<tr>
<th></th>
<th>Met Expectations</th>
<th>Partially Met Expectations</th>
<th>Didn’t meet expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Portfolio:</strong></td>
<td>Designed a sketch and created a solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Team Work:</strong></td>
<td>Worked well with my team.</td>
<td></td>
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</tr>
<tr>
<td><strong>Product:</strong></td>
<td>Met all the criteria.</td>
<td></td>
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<tr>
<td><strong>Presentation:</strong></td>
<td>Shared my solution with others.</td>
<td></td>
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</tbody>
</table>

Two Main Types of Wind

- Both caused by uneven heating
- Global wind
  - 3 Types
    - Calm Regions
    - Wind Belts
    - Jet Stream
- Local wind
  - 3 Types
    - Sea Breeze
    - Land Breeze
    - Monsoon – Seasonal changes in wind
Design Brief

The Mud Pony

Background: In the story *The Mud Pony*, we read about how a poor Indian boy created a pony from river mud. The boy’s life changed because of the mud pony. You have learned about various Indian tribes and should be able to infer what tribe this boy belonged to from elements of the story. How would you summarize this story?

Challenge: You will design and create a summary of the story *The Mud Pony*.

Criteria:

Your summary must:

- include the main character or characters
- include what the main character wanted or needed
- have one moving part
- show the problem that the character faces
- show how the problem is solved
- show how the story ends.

Materials:

- Construction paper
- Pipe cleaners
- Cardboard
- Paper fasteners
- Glue
- Paper plates
- Styrofoam
- Fabric
- Popsicle sticks
- Cardstock
- Yarn or string
- Tape
- Wood
- Cardboard tubes
- Foam shapes
- Clay
- Styrofoam
- Fabric
- Popsicle sticks
- Cardstock
- Yarn or string
- Tape
- Wood
- Cardboard tubes
- Foam shapes
- Clay

Tools:

- Scissors
- Rule
- Hole punches
- Push pin paper drill
- Hot glue - teacher will use

Targeted Standards of Learning:

English

2.1 The student will use oral communication skills.
   a) Listen actively and speak using appropriate discussion rules.
   b) Use oral language for different purposes: to inform, persuade, entertain, clarify, and respond.
   c) Speak audibly with appropriate voice level, phrasing, and intonation.
   d) Share information orally with appropriate facts and relevant details.
   g) Participate as a contributor and leader in collaborative and partner discussions.
   i) Retell information shared by others.
   j) Restate and follow multi-step directions.
   m) Create a simple presentation using multimodal tools.

2.4 The student will read and demonstrate comprehension of fictional texts.
   c) Ask and answer questions using the text for support.
   d) Describe characters, setting, and plot events in fiction and poetry.
   e) Identify the conflict and resolution.
   g) Summarize stories and events with beginning, middle, and end in the correct sequence.
   h) Draw conclusions based on the text.
Targeted Standards of Learning: (continued)

History
2.7 The student will locate and describe the relationship between the environment and culture of
   b) the Lakota of the Plains;

Supporting SOL:

English
2.1 The student will develop oral communication skills.
   h) Ask and answer questions to seek help, get information, or clarify information.
   l) Work respectfully with others and show value for individual contributions.

Targeted Standard for Technological Literacy:
Standard 8: Students will develop an understanding of the attributes of design.
Standard 9: Students will develop an understanding of engineering design.
Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
Standard 11: Students will develop the abilities to apply the design process.
Standard 13: Students will develop the ability to assess the impact of products and systems.

<table>
<thead>
<tr>
<th>Prior Knowledge &amp; Skill</th>
<th>Materials &amp; Preparation</th>
<th>Safety Issues</th>
<th>Class Management</th>
<th>Materials Provided</th>
<th>Design Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students should have background information on the Lakota Indians. Students should understand what it means to summarize a story.</td>
<td>Secure a copy of the book <em>The Mud Pony</em>. Pre-read book and develop leading questions related to the challenges the boy faces. Develop leading questions to help students identify that the boy is a Lakota (or Plains) Indian. Gather materials.</td>
<td>Use of push pin paper drill.</td>
<td>Organize students into groups of three. Determine whether you want to set limits on materials.</td>
<td>Design brief Guided portfolio (adapt as appropriate/optional) Rubric assessments</td>
<td>Follow the Design Process: Restate the problem. Brainstorm solutions. Create the best solution. Test the solution. Evaluate the solution.</td>
</tr>
</tbody>
</table>
Guided Portfolio

Name: _______________________

Group Members: ________________________________________________

Question:

1. What is the challenge? _______________________________________

2. Brainstorm solutions. Sketch and/or describe some possible solutions.

Sketch or describe the idea your team will build.
3. Create the solution you think is best.
   Keep notes about your problems and how you solve them. Make sketches if they help.

4. Test the solution and redesign if needed.
   My design:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Includes the main character or characters</td>
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<td>Shows the problem</td>
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<td>Shows what the character wanted or needed</td>
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<td>Shows how the problem is solved</td>
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<td>Shows how the story ends</td>
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<tr>
<td>Has one moving part</td>
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</table>

5. Evaluate your solution.
   Turn and talk to a partner and then share as a whole group
   Was your solution a success? YES NO
   What can you do differently? ___________________________________________
   ___________________________________________
   ___________________________________________

   What was a challenge you had? _________________________________________
   ___________________________________________
   ___________________________________________
6. Rubric for The Mud Pony

0—no evidence; 1—limited understanding; 2—some understanding with room for improvement; 3—good understanding with room for improvement; 4—substantial understanding

<table>
<thead>
<tr>
<th>Student Evaluation</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td><strong>Oral Presentation</strong></td>
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<tr>
<td>The student</td>
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<tr>
<td>• used complete sentences.</td>
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<td>• used descriptive words.</td>
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<td><strong>Guided Portfolio</strong></td>
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<tr>
<td>The student participated in</td>
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<td>• restating the problem.</td>
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<td>• brainstorming solutions.</td>
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<tr>
<td>• creating a solution.</td>
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<td>• testing the solution.</td>
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<tr>
<td>• evaluating the solution.</td>
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<tr>
<td><strong>Team Skills</strong></td>
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<td>The student</td>
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<tr>
<td>• used appropriate voice.</td>
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<td>• encouraged team members.</td>
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<td>• listened to team members.</td>
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<td>• was involved in all aspects of the project.</td>
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<td>• respected team members.</td>
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Wild Thing Swing!

Background: Max was having a rough night and escaped to Where the Wild Things Are. Wild things love to swing from trees! Swinging from trees all day makes the wild things’ arms very tired! Can you create a tree that includes a swing that will hold a wild thing?

Challenge: Create a tree that includes a swing to hold a wild thing.

Criteria: Your tree must be freestanding and include a swing that will hold one of the wild things without the tree falling or the wild thing being restrained (held) on the swing.

Materials:
- Paper bags
- Aquarium rocks
- Card stock
- Tissue paper
- Cotton balls
- Chipboard
- Rice
- Pipe cleaners
- String
- Beans
- Foam

Tools:
- Scissors
- Tape
- Hole punch
- Small stuffed monster for testing
Guided Portfolio

Name: _______________________

Group Members: ___________________________________________________________

Question:

1. What is the challenge? _________________________________________________
   __________________________________________________________
   __________________________________________________________

2. Brainstorm solutions. Sketch and/or describe some possible solutions.

   My idea:  

   The idea our team is building: 

3. Create the solution you think is best.

4. **Test the solution and redesign if needed.** Your tree must be freestanding and include a swing that will hold one of the wild things without the tree falling or the wild thing being restrained (held) on the swing.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>My tree and swing: My tree is freestanding.</td>
<td></td>
<td></td>
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<tr>
<td>My tree includes a swing.</td>
<td></td>
<td></td>
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<tr>
<td>My swing will hold a wild thing without tree falling.</td>
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</tbody>
</table>

5. **Evaluate your solution.**

   Turn and talk to a partner and then share as a whole group.

   Was your solution a success? **YES** **NO**

   What can you do differently? __________________________________________

   __________________________________________

   __________________________________________

   __________________________________________

   __________________________________________

   What was a challenge you had? ________________________________________

   __________________________________________

   __________________________________________

   __________________________________________
This hands-on interactive course is designed for teachers in grades K-5. Participants will learn to use design, engineering, and technology instructional resources to enhance children’s attainment of the Virginia Standards of Learning in science, mathematics, social studies/history and language arts. Emphasis will be placed on the 5 C’s in the Profile of a Virginia Graduate, including strategies for deeper learning.

The course/workshop will engage participants in critical thinking and problem solving experiences that contribute to a child’s ability to retain instructional content and apply knowledge and skills learned.

Participants will discover how easy it is to integrate Children’s Engineering into the existing curriculum as a strategy for increasing children’s academic success. Teachers will take home product samples, design briefs, and ideas for enhancing their daily instruction.

Save the date!!!
Graduate Course/Workshop
K-5 Children’s Engineering
July 20-24, 2020
(and one follow-up Saturday with date to be determined)
Goochland County Public Schools
Goochland Elementary School
3150 River Road West
Goochland, VA 23063

For more information, contact:
Yvonne Richard
yrrichard@kgcs.k12.va.us
Dawn Hillis
dhillis@kgcs.k12.va.us

Registration Form
http://childrensengineering.org/workshop/
SummerWorkshop2020gcps.pdf

James Madison University Course Information

Option 1: Graduate Course: Children’s Engineering (501)
• JMU - 3 graduate credits, 90 recertification points
• JMU Tuition – (cost pending, 2019 cost was $972)
• JMU Non-refundable Application Fee - $20
• VCEC Materials Fee $75

Option 2: Professional Development Points
• Non-college credit, 45 recertification points, $395

Registration deadline: June 30, 2020
Thank You to Our Sponsors

The Virginia Children's Engineering Council gratefully acknowledges the following organizations for their sponsorship of the 2020 convention and their contributions to our professional organization.