Problem Based Programming Making STEM Relevant to Students

Falling Creek Middle School Grant

Dana Wilson

- Chesterfield County
- Educator / Project Coordinator

Chuck English

- Science Museum of Virginia
- Director of Playful Learning and Inquiry

Susan Dandridge

- Chesterfield County
- Grants Coordinator

FA # 1 (Dots on Charts for STEM)

The Museum's Role

- The Science Museum of Virginia is developing a new series of Digital Media Projects for Out-of-School Time (OST) Programming. These projects are open ended challenges designed to get students to apply their knowledge from a wide range of disciplines, work with local experts, and digitally communicate their

PBL (Project / Problem Based)

What is Problem Based Learning?

What do you think about when you hear problem bas

- Relevant
- Open-Ended
- Design Learning

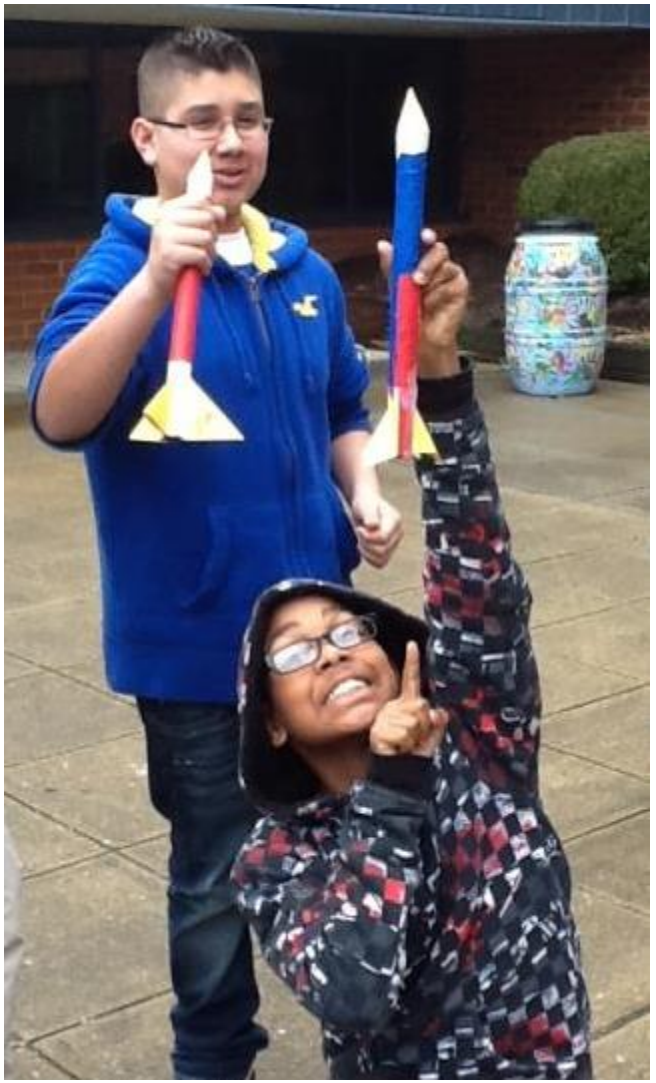
Buck Institute for Education

In Project Based Learning (PBL), students go through an extended process of inquiry in response to a complex question, problem, or challenge. While allowing for some degree of student "voice and choice," rigorous projects are carefully planned, managed, and assessed to help students learn key academic content, practice 21st Century Skills (such as collaboration, communication & critical thinking), and create

Shorter Definition…

- A way to engage people in their own learning that is relevant and goes beyond common

Why Use PBL?



Examples

- Science
  - Environmental Disaster - Plans or Flooding / Weather Reports
  - Rockets (Wallop's Island)
  - Moon / Mars Base design
- Other
  - History - alternative timelines
  - Finance - business planning for a food truck
  - English - marketing materials
  - PE - create a

How is PBL used?

- Main Course…not dessert
- ***Dessert*** is when students apply what they have learned to a project at the end of the lesson.
- ***Main Course*** is when students learn the content by working and completing the project.

Back to the 8 Common Parts of PBL

Project Based Learning…

- is intended to teach significant content.
- requires critical thinking, problem solving, collaboration, and various forms of communication.
- requires inquiry as part of the process of learning and creating something new.
- is organized around an open-ended driving question.
- creates a need to know essential content and skills.
- allows some degree of student voice and choice.

Common Concerns

- Assessment (How would I evaluate the work?)
- Teamwork (among students)
- Money (for the projects)
- Time (for a project…)
- Standards (Can it be tied to the SOLs)
- Content (Are they ge
  them to get?)
- Collaboration (with
- Support (from Admini

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- Scaffolding
  - Getting youth used to open-ended projects, breaking from more 'chemistry cookbook' models
  - Reinforcing different answers… acknowledgement
  - Encourage re-iteration; mistakes and redevelopment are wonderful opportunities
    - Assessment concerns - this is one of the ways to separate this programming from traditional educational settings

The Students

- 21st Century Skills
- Student Behavior / Management
  - Tools / Technique
  - OST - not more school afterschool however the youth lose their structure and boundaries therefor educators tend to move back to formal settings.
- Mentors - Local Colleges

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- Facilitation
  - Videos instead of Direct Instruction
  - Supporting group work
  - Learning to say… "I don't know" and helping the children learn with you.

Video for Junk Band

- This will be made available soon on the Science Museum of Virginia's Website and Youtube Channel

Video for Paper Rockets

- This will be made available soon on the Science Museum of Virginia's Website and Youtube Channel

SMV OST STEM

- Assessment / Evaluation
  - School Quantitative Info…
    - Attendance
    - Behavior
    - Grades
  - Observation Protocols
  - Interview Protocols
    - Self-Interviews with Technology
  - (In)Formative Assessments

Questions

- Specifics?
- Future Programming?
- Curriculum Release? (SMV materials will be made free - and we will be available for training)

FA # 2 (Commit, Crumple and Toss activity)

Contact Information

- Susan Dandridge
  - susan_dandridge@ccpsnet.net (underscore between names)
  - 804.639.891
- Dana Wilson
  - dana_wilson@ccpsnet.net (underscore between names)
- Chuck English
  - cenglish@smv.org
  - 804.864.1430