

**Pequea Valley School District**  
**STEM**

**Unit 1: Digital Literacy**

**Course: STEM**

**Grade: Kindergarten**

**Planning the Focus Based on the Desired Result**  
**What do you want all students to know, understand and do by the end of the unit?**

**Unit Essential Question(s)**

- How do I use technology to effectively communicate, create, think critically, and collaborate with others?
- How do I use computer coding to accomplish tasks and solve problems?

**Keystone Eligible Content/PA Core Standard**

Standard - **15.1.2.B**- Ask and answer questions about right and wrong (ethics) in the classroom.

Standard - **15.3.2.N**- Identify positive work habits in the classroom.

Standard - **15.4.2.B**- Demonstrate responsible use of technology and equipment.

Standard - **15.4.2.G**- With help and support, select and use various software/applications for an intended purpose.

Standard - **CC.1.4.1.A**- Write informative/ explanatory texts to examine a topic and convey ideas and information.

Standard - **CC.1.4.1.C**-Develop the topic with two or more facts.

**Pacing:** Approximate number of class sessions per unit

- 7

**Tier 3 Vocabulary** (Content specific vocabulary)

- app, share, import, export, backup, stylus, algorithm, loop, troubleshoot, code, create, communicate, collaborate

**Know** - What do students need to **know** in order to be able to do and understand? *List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”.*

Applications and the 4 C's

- Notability - opening an application
- Notability- writing using a finger and/or stylus and color options
- Notability- typing text
- Notability- taking a picture
- Notability- recording audio
- PicCollage- using the software to import pictures into a project
- PicCollage- Adding online pictures, stickers, and gifs.
- PicCollage- Adding text to a project.

## Coding

- An algorithm is a list of step-by-step directions that a computer follows to complete a task.
- Create an algorithm for a sprite to follow in the app, “Kodable.”
- Loops are lines of code that repeat over and over again.
- To troubleshoot means to look for errors in code that keep our sprite from completing the task.

**Understand** - What do students need to **understand**? What is the **big idea**? *List broad concepts or “big ideas” in a statement of enduring understanding.*

### Digital Literacy-

- Understand that Notability is used to gather information or create simple written ideas about a topic.
- PicCollage is a tool used to communicate using visuals and text.
- Technology can be used to communicate our ideas to ourselves, others, and the world, in the way we understand it.

### Coding:

- Coding is giving a computer directions to follow in order to solve a problem.
- When problems arise in an algorithm, we can solve them through Troubleshooting.

**Learning Outcome** - What do students need to be able to **accomplish** by the unit’s end? *List skills and competencies.*

### Digital Literacy and the 4’C’s

1. Students will be able to:
  - a. use Notability in the classroom to respond to literature and content taught in the classroom that requires audio, text, or picture recording of information.
  - b. Use PicCollage to create a picture collage using pictures, text, and other media that communicates a message

### Coding:

1. Students will be able to:
  - a. Create an algorithm to accomplish a task that requires up to 4 blocks of code.
  - b. Identify an algorithm that accomplishes a task in multiple choice with up to 4 actions or blocks of code.
  - c. Put an algorithm in order from first to last in a simple, real life situation.
  - d. Identify an looped algorithm from a set of answer choices that accomplishes a task.

## Assessments:

Respect to Self, Others, and World project

Code.org mini assessments- informally assessed throughout

## Software/Resources:

- ipad’s - 1 per student
- Notability App
- PicCollage App
- Safari App

- Kodable App

**Pequea Valley School District**  
**STEM**

**Unit 3: Fairytale Engineering**

**Course: STEM K**

**Grade: Kindergarten**

**Planning the Focus Based on the Desired Result**  
**What do you want all students to know, understand and do by the end of the unit?**

**Unit Essential Question(s)**

- How do we work together to create prototypes that solve problems?
- How do I use observations when changing and evaluating the effectiveness of a design?

**Keystone Eligible Content/PA Core Standard**

- **3.2.K.A1:** Identify and classify objects by observable properties of matter. Compare different kinds of materials and discuss their uses.
- **3.2.1.B1:** Demonstrate various types of motion. Observe and describe how pushes and pulls change the motion of objects.
- **3.4.3.C1-** Recognizing design is a creative process and everyone can design solutions to problems.
- **3.4.4.C2-** Walk through and describe the engineering design process: Define a problem. Generate ideas. Select a solution and test it. Make the item. Evaluate the item. Communicate the solution with others. Present the results

**Pacing:** Approximate number of class sessions per unit

- 7

**Tier 3 Vocabulary** (Content specific vocabulary)

- Ask, imagine, brainstorm, plan, create, improve, constraint, sketch, materials, design, test, evaluate, reflect.

**Know** - What do students need to **know** in order to be able to do and understand? *List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”.*

- Observations are what we see, hear, smell, taste, touch, and measure.
- Engineers record observations in order to compare results.
- In engineering, we create prototypes to test a solution to a problem within certain constraints.
- When testing a prototype, we observe its ability to follow measurable criteria.

**Understand** - What do students need to **understand**? What is the **big idea**? *List broad concepts or “big ideas” in a statement of enduring understanding.*

- Engineers consistently go through the engineering design process to solve problems, propose solutions, create prototypes, test, and evaluate their effectiveness.

**Learning Outcome** - What do students need to be able to **accomplish** by the unit's end? *List skills and competencies.*

- Students will be able to discuss and make observations when testing a product.
- Students will be able to compare which design is better based on observations.
- Students will be able to discuss what they would change to improve a prototype to meet stated criteria.
- Students will be able to delegate tasks and work as a team.

**Assessments:**

- Goldilocks- Chair design rubric
- Billy Goats Gruff Bridge design Rubric
- 3 Little Pigs comparative house design Rubric

**Software/Resources:**

- Popsicle sticks
- tape
- glue sticks
- toothpicks
- Lego Bricks
- index cards
- blow dryer (wolf)
- weights - for 3 goats and a troll
- teddy bear
- ipads