**E. Vlachos Grade 4 PIE Scope and Sequence 2018-2019**

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| **Dates** | **Topic/ Concepts** | **Essential Understanding/Big Idea** | **Essential Questions** | **Skills** | **Overview** |
| **September- December** | STEAM Challenges  (Science, Technology, Engineering, Art, Mathematics) | \*Technological design is a creative process  \*Trends across disciplines are necessary for survival. | \*How does collaboration impact the design process  \*Does STEAM have negative and or positive consequences? | \*Creative problem solving (CPS)  \*Critical thinking  \*Real world problems  Research skills- data collection and analyze results  \*Collaboration and communication skills.  \*Reflect  \*Construct | During the STEAM unit, science, technology, engineering, art, and mathematics, will be incorporated into collaborative activities.  Students will work in teams to troubleshoot a problem, design a solution, create their own design, and test it out.  Students will reflect on their experiences, learning, and applications to the real world. |
| **January-March** | Geometry Exploration/Polyhedraville | \*Geometry is a way to describe the physical world.  \*Various strategies can be used to solve problems. | \*What unique characteristics do 2D and 3D shapes possess?  \* How can 2D and 3D shapes be described using their spatial relationships?  \*How are nets a 2D representation of 3D shape? | \*Identify and classify polyhedra according to their attributes.  \*Draw and describe polyhedra using nets.  \*Analyze and record data about polyhedra in a table  \*Build models of 3D shapes and recognize the relationship between two and 3 dimensional objects.  \*Mentally visualize objects in spatial relationships. | Students will learn about the importance of mathematical concepts, strategies, problem solving, and mathematical  flexibility when solving problems using their creativity by engaging in tangram challenges and exploration.  Polyhedraville is an investigation of three-dimensional geometry where students build a 3D community of the future. Students work in groups to design their plan, develop blueprints, and present their ideas to the class. After a design is agreed upon, each student creates and builds one public and one private building using polyhedron nets for the futuristic community. Their challenge is to create a unique, modern day buildings that keeps within a designated budget. |
| **April-June** | Environmental Science Challenge | \*Change impacts the environment.  \*Environmental improvements impact change. | \*Is change necessary?  \*Are environmental changes always positive? | \*Creative Problem Solving  \*Real World Problems  \*Research skills: data collection and analyzing data.  \*Collaboration  \*Critical thinking  \*Communication | Students will participate in an environmental challenge where they will learn about science and conservation through project based learning.  Students will identify and perform research about a local environmental challenge, plan a solution, and reflect on the impact of this solution. |