

STEAMWORKS:

Priority Topics List

General Topics

- Making sense of problems and persevering
- Analyzing their own reasoning and the reasoning of others/viable arguments
- Patterns and structures

Mathematics Topics

- Cause & effect
- Classification
- Data/Graphs
- Estimation
- Logic - combinations & permutations
 - Along the lines of mathematical reasoning and thinking
- Mathematical Reasoning and Thinking
- Problem-solving
- Symbolic Play (Infant/Toddler)

Science Topics

- Cause & Effect
 - Explore the relationship between two actions or situations. For example:
 - Making a ramp taller causes a ball to roll faster and further
 - Warmth and moisture cause seeds to germinate
 - Heat causes a popsicle to melt
- Observe & investigate
 - For example:
 - Observe objects/events and describe them
 - Use observation and measurement tools.
 - Gathering information using senses
 - Making predictions based on observations and data collection
 - Forming a hypothesis or making a prediction that incorporates rich vocabulary and provides insight into scientific reasoning
- Energy
 - For example, how humans use energy and need to replenish their energy.
- Movement and Structure

- This topic may focus on the difference between structure and function. May include:
 - How our bodies move?
 - How do animals move differently based on their body structure?
- Light and Sound Waves
- Moon/Sun/Earth moving around the sun
 - Could include but not limited to:
 - A child's observations and reflection based on their own observations
 - Shadow explorations
- Classifications lead to conclusions and sense-making
 - Exploring differences and similarities
 - Noticing differences between living things
 - Noting the defining differences between organisms and objects (dog vs. cat, sedimentary rock vs. igneous rock)
 - The realization that organisms and objects can share similar attributes but not be the same. For example, a child comes to understand that even though birds and bats both fly, they are not the same type of animal.

Science and Engineering Practices

- Making observations
- Collecting and Interpreting Data
- Looking for and identifying patterns
- Solving problems based on prior knowledge
- Approaching a situation through a few different ways (modalities, perspectives, processes)
 - For example, representing an idea with words and drawings.
- Explaining the steps of a solution
- Finding evidence to support findings
- Obtaining, evaluating, and communicating information

Computer Science/Technology Topics

- Breaking down a large problem or task into multiple smaller steps.
- Using logic (such as IF...THEN statements) to reach a conclusion.
- Finding an error and using problem-solving strategies to fix the error.
- Extracting key information from a complex concept.
- Representing the information with a symbol.
- Collect and Present data in various visual formats
- Coding with objects that are non-technology-based
 - Might incorporate:
 - How skills translate to technology applications

- How these steps are similar to online applications/processes
- Emphasis on hands-on steps

Art Topics

- Developing a meaningful understanding of STEM concepts through the arts
 - For Example:
 - Pretend play (theater) as a means to solve a problem or work through a solution
 - Use of a drawing to represent mathematical or scientific understanding
 - A character's artistic ability is shown as one of multiple valid approaches to problem-solving.
 - The arts are shown as a unique and meaningful vehicle that enhances STEM thinking, discovery, and understanding.