Kindergarten STEAM Unit 1 - Discovering STEAM: Exploring Science, Technology, Engineering, Art, and Math

Unit Focus

In this unit, kindergarten students are introduced to the world of STEAM learning while building classroom routines, expectations, and curiosity. Through stories, songs, and hands-on exploration, students learn what each letter of STEAM stands for and what it means to be a respectful, creative problem-solver.

Students will:

- Learn routines and responsibilities for using materials safely and respectfully.
- Explore each part of STEAM through engaging books, videos, and activities:
  - Science: observe and ask questions like real scientists.
  - Technology: discover tools and inventions all around us.
  - Engineering: build and test creative designs.
  - Art: express ideas through different artistic tools and media.
  - Math: play with numbers, shapes, and patterns.
- Start their STEAM sketchbooks to capture ideas, designs, and discoveries.
- Collaborate and create in their first experiences with the makerspace.

By the end, students will understand that STEAM is all around them—and that they, too, are scientists, engineers, artists, mathematicians, and creators ready to explore the world!

Stage 1: Desired Results - Key Understandings

Standard(s)

Common Core
Mathematics: K

- Count to answer how many? questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. (CCSS.MATH.CONTENT.K.CC.B.5)
- Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. (CCSS.MATH.CONTENT.K.G.B.5)

National Core Arts Standards
Visual Arts: K

- Identify a purpose of an artwork. (VA:Cn11.1.K.a)
- Through experimentation, build skills in various media and approaches to artmaking. (VA:Cr2.1.K.a)

NGSS/NSTA Science & Engineering Practices
NGSS Science & Engineering Practices: K-2

Transfer

Students will be able to independently use their learning to...
T1 Leverage connection(s) in other subject areas (including STEM) to make sense of a given problem, product, or solution.
T2 Explore and hone techniques, skills, methods, and processes to create and innovate
T3 Ask questions to gain understanding, communicate their ideas, explain their thinking process, and evaluate efficiency or connectedness to a concept.
T4 Work collaboratively and contribute constructively to project teams with a broader or global perspective.
T5 Use the engineering design process to invent or innovate solutions.

Meaning

Understanding(s)	Essential Question(s)
Students will understand that... **U1** Scientists examine evidence to formulate interesting questions and solve problems. **U2** Engineers utilize the engineering design process to solve problems and develop new ideas.	*Students will keep considering...* **Q1** Based on what I know, how do I develop a design that I can test? **Q2** How do I explain my results? What questions do I wonder about now?

Stage 1: Desired Results - Key Understandings

- With guidance, plan and conduct an investigation in collaboration with peers (for K). (SE.K-2.3.1)
- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons. (SE.K-2.3.4)
- Make predictions based on prior experiences. (SE.K-2.3.6)

Madison Public Schools Profile of a Graduate

- Design: Engaging in a process to refine a product for an intended audience and purpose. (POG.2.2)
- Collective Intelligence: Working respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective. (POG.3.1)

Acquisition of Knowledge and Skill

Knowledge	Skill(s)
Students will know... **K1** Artwork is created for various reasons **K2** That experimenting with materials can lead to new discoveries and different results. **K3** One to one correspondence **K4** The basic attributes of 2D and 3D shapes **K5** Problems can be solved with tools and objects. **K6** Observing (using their senses) is a way to gather information about the world around them. **K7** Observing patterns in past events can help them anticipate future events.	*Students will be skilled at...* **S1** Identifying a basic purpose for artwork **S2** Exploring and playing with various art materials and tools in an open-ended way **S3** Counting objects in a structured or scattered way **S4** Building or drawing a 2D or 3D shape with supporting materials **S5** Making observations to better understand a problem **S6** Using senses and measurements to draw conclusions **S7** Stating or showing what they think will happen in a given situation