

## STEM PROJECTS

### STUDENT LEARNING OUTCOMES

#### PK-Kindergarten

- **Basic Inquiry Skills:** Demonstrate curiosity and ask questions about the natural world.
- **Problem-Solving:** Identify simple problems and work collaboratively to find solutions.
- **Creativity:** Explore different materials and techniques to create imaginative projects.
- **STEM Concepts:** Introduce basic STEM concepts (e.g., simple machines, plants, animals) through hands-on activities.

#### 1st-3rd Grade

- **Scientific Method:** Understand the basic steps of the scientific method (ask a question, make a hypothesis, test, analyze, conclude).
- **Engineering Design Process:** Follow a design process to create and improve simple structures or devices.
- **Collaboration:** Work effectively in groups to complete projects and share ideas.
- **STEM Applications:** Apply STEM concepts to real-world problems (e.g., building shelters, designing transportation systems).

#### 4th-6th Grade

- **Data Collection and Analysis:** Collect and analyze data using simple tools (e.g., rulers, thermometers, graphs).
- **Technological Literacy:** Use basic technology tools (e.g., computers, tablets) to research and create projects.
- **Critical Thinking:** Evaluate information and make informed decisions based on evidence.
- **STEM Careers:** Explore various STEM careers and their applications.

#### 7th-9th Grade

- **Experimental Design:** Design and conduct experiments to test hypotheses.
- **Engineering Design Optimization:** Improve designs based on feedback and testing.
- **Computational Thinking:** Use logical reasoning and problem-solving to create algorithms and solve problems.
- **STEM Challenges:** Participate in STEM competitions and challenges to apply skills and knowledge.

## 10th-12th Grade

- **Research-Based Projects:** Conduct independent research projects on STEM topics.
- **Advanced Technology:** Explore advanced technologies (e.g., 3D printing, robotics, coding) and their applications.
- **STEM Ethics:** Understand the ethical implications of scientific and technological advancements.
- **Career Pathways:** Develop a plan for pursuing a STEM-related career.