

STEM Career Exploration Workbook

Grades 3-5 Hands-On Projects Connecting Learning to Real Careers

Welcome to your STEM Career Workbook! These fun projects will help you explore exciting science, technology, engineering, and math jobs. Each activity shows you how what you learn in school is used in real life—and it lets you try out some skills STEM professionals use every day.

1. Civil Engineer: Build a Strong Bridge

What They Do: Civil engineers design and build bridges, roads, and buildings that keep communities connected and safe.

Project:

- Using popsicle sticks, straws, or toothpicks and glue, build a bridge that can hold the weight of a small toy or a few coins.
- Test your bridge by slowly adding weight. What design works best?
- Draw a blueprint of your bridge before you build it. How does your blueprint help guide your work?

Skills You Use: Planning, measuring, problem-solving, and engineering design.

2. Meteorologist: Make a Weather Station

What They Do: Meteorologists study the weather and help people prepare for storms and changes in the environment.

Project:

- Create a simple rain gauge using a clear jar and a ruler taped to the side.
- Make a wind vane with a paper arrow on a straw and a pencil.
- Record your local weather for a week: temperature, rain, wind direction.
- Use your data to make a weather forecast for your neighborhood.

Skills You Use: Observing, measuring, recording data, and analyzing patterns.

3. Computer Programmer: Code Your Own Game

What They Do: Programmers write the instructions that tell computers and games what to do.

Project:

- Use a free online coding platform like Scratch (scratch.mit.edu) to create a simple game or animation.
- Plan what your characters will do and what happens when players press buttons.
- Test your program and fix any problems (bugs) you find.

Skills You Use: Logical thinking, creativity, sequencing, and troubleshooting.

4. Environmental Scientist: Test Water Quality

What They Do: Environmental scientists study nature and help protect the environment.

Project:

- Collect water samples from a local stream, pond, or tap water.
- Use a water testing kit (available online or at science stores) to check for things like pH, clarity, and cleanliness.
- Record your results and think about what they mean for plants, animals, and people.

Skills You Use: Observing, testing, recording data, and critical thinking.

5. Architect: Design Your Dream House

What They Do: Architects design buildings that are safe, useful, and beautiful.

Project:

- Draw a floor plan of your dream house on graph paper. Include rooms, doors, and windows.
- Build a model house using cardboard, paper, or building blocks.
- Explain how you made your house safe and comfortable for people to live in.

Skills You Use: Drawing, measuring, spatial thinking, and creativity.

6. Robotics Engineer: Build a Simple Robot

What They Do: Robotics engineers design and build robots that can do jobs or help people.

Project:

- Use craft supplies like cardboard, straws, and pipe cleaners to create a robot model.
- Pretend your robot can do a special job—write down or act out what it can do!
- If you have access, try simple robot kits or programming toys like LEGO Mindstorms.

Skills You Use: Creativity, designing, problem-solving, and basic programming.

7. Astronomer: Explore the Stars

What They Do: Astronomers study planets, stars, and space.

Project:

- Make a constellation viewer using a paper towel roll and paper with star patterns punched out.
- Learn about your favorite constellation and draw it.
- Use a stargazing app or website to find stars and planets outside.

Skills You Use: Observation, research, and creativity.

8. Biomedical Engineer: Design a Medical Tool

What They Do: Biomedical engineers create tools and machines to help doctors and patients.

Project:

- Think of a problem someone might have (like a broken arm).
- Design a tool or machine that could help (like a brace or a machine that helps people walk).
- Draw your design and explain how it works.

Skills You Use: Creativity, design, and understanding how the body works.

9. Chemist: Make a Color Change Experiment

What They Do: Chemists mix chemicals to discover new things or make useful products.

Project:

- Mix baking soda and vinegar to watch the bubbling reaction.
- Try adding red cabbage juice (a natural pH indicator) to different liquids like lemon juice or soap water and watch colors change.
- Record what happens and try to explain why.

Skills You Use: Experimenting, observing, and recording data.

10. Data Scientist: Find Patterns in Numbers

What They Do: Data scientists look at lots of information to find answers and help people make decisions.

Project:

- Collect data on your family’s favorite fruits, colors, or sports.
- Make charts or graphs to show the most popular choices.
- Ask questions like “What is the most popular fruit?” and use your data to find the answer.

Skills You Use: Collecting data, organizing information, and analyzing results.

Tips for Parents and Teachers

- Encourage kids to ask questions and think like real STEM professionals.
 - Celebrate their designs and solutions, even if they don’t work perfectly at first.
 - Connect projects to everyday life by sharing stories or visiting local STEM workplaces.
 - Use resources like local science museums, libraries, or online STEM platforms to expand learning.
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This workbook helps kids explore STEM careers through fun, hands-on projects that bring science, technology, engineering, and math to life. Enjoy discovering what you can build, create, and solve!