

STEMulating Design Challenges in Science

STEM challenges are not recipes to follow, step-by-step instructions that guide students in creating identical projects, or processes that lead them to the same outcome. STEM is about creating access and opportunities for students to apply their content knowledge, creativity, critical thinking, and other skills as they work to solve real-world problems and create solutions.

STEM challenges will take time, so plan accordingly. Squeezing them in or treating STEM practices as “extra” may communicate that the skills and practices are not valuable. Our attitudes and beliefs are important as teachers; who we are informs who our students become. Believe your students can successfully complete STEM challenges with gentle guidance. The teachers’ role in STEM challenges is to facilitate the process, ask questions, and support students. You don’t have to study content or create prototypes for the STEM challenges. Your students will develop solutions that will amaze you. According to Hoffer, “If we model optimism, confidence, and courage about STEM in our classroom each day, students will absorb those” (2016, p.3).

It is our hope that the STEM challenges included in this book provide you with the opportunity for hands-on learning where students are able to apply content and STEM skills. The hope is that through STEM education and by having students creatively solve real-world problems with innovative, design-based thinking, we can increase the STEM-capable workforce and develop students’ skills to be successful in their careers.