Shell Education

50 Strategies for Teaching STEAM Skills

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Welcome

STEAM (science, technology, engineering, arts, and mathematics) education is not new, but its importance continues to grow. STEAM education provides students with the skills necessary to succeed today and excel tomorrow. Although STEAM has been gaining popularity for years, guidance for educators on how to get started with it is still sparse. This book provides fifty standalone strategies that teachers can do with students in grades PK–12. The strategies are bundled into five sections that each focus on an essential STEAM skill: creativity, communication, collaboration, critical thinking, and, most important, failing. Each section includes ten strategies that give students an opportunity to build the skill.

This book is born from the work of countless educators who recognized the importance of providing their students with STEAM experiences and began creating activities to do so. Over the years, I have worked with other STEAM educators to identify and create activities that could be done in a single class period or extended over multiple days. I led professional learning sessions with hundreds of educators, building a community with them and collaborating around ideas that would become the foundation for the strategies in this book.

This collection of strategies is not exhaustive. Every day, teachers are sharing creative and innovative ideas for how to engage students in STEAM. It is, however, a collection of activities I have used in my work as a STEAM teacher, curriculum writer, and coordinator to build essential skills for STEAM learning.

The resources and information about STEAM education are ever-growing and evolving. Be a part of this conversation. Make these strategies your own and inspire your students to be the inventors and innovators of today, tomorrow, and the future.

—Kara Ball

Tips and Practices for Getting Started with STEAM

Implementing any new strategy can be hard, but there are things you can do to make getting started with STEAM a little easier. As you make your way through the strategies in this book, focus on encouraging students to take reasonable risks, to try new ideas, and to explore the unknown. Emphasize the importance of staying within the criteria or constraints over being "right" or "perfect." Give students opportunities to work alone, with partners, and on teams or in groups. You might even want to set up an area in the classroom to collect recyclables for use in the activities and designate a space for common supplies like scissors, tape, glue, crayons, and paper.

Young people are naturally curious, and STEAM is a wonderful way to engage them in learning about the world they live in and considering the possibilities for the world they will someday create. We can tap into that curiosity by connecting STEAM activities to students' lives and engaging in real-world problem-solving.

As you work through the strategies, you'll notice some overarching key practices. These practices help engage and motivate students to be active participants in STEAM learning. They include:

- providing real-world problems and authentic learning experiences
- giving students voice and choice
- using performance-based assessment
- offering opportunities for hands-on experiential learning
- using inquiry-based instruction
- fostering curiosity
- encouraging cooperative learning