

Chapter 6

Low-Prep STEM Activities That Make a Big Impact in the ELA Classroom

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ABSTRACT

This chapter will inspire English teachers to independently integrate low-prep science, technology, engineering, and math (STEM) activities into their English language arts (ELA) classrooms. It will discuss how STEM projects can ignite engagement to the classics and build excitement for challenging texts. This chapter will offer multiple ideas for STEM integration in the ELA classroom. The ideas, which can be adapted for any text, are meant to inspire teachers to look for science and engineering concepts in literature.

LOW-PREP STEM ACTIVITIES IN THE ELA CLASSROOM

English literature teachers often get stuck with the drudging stages of STEM projects, including writing project reports, editing for grammar, and conducting traditional research. This sends the message to impressionable minds that the tedious work of engaging project-based learning takes place in the English classroom. English teachers may strive to show that hands-on learning, building, and experimenting require key ELA concepts. These teachers aim to reach reluctant readers, especially those who are bored by literature. In doing so, students can gain new perspectives on using their ELA skill set to connect with challenging texts.

ELA teachers can challenge the traditional ELA curriculum script by including hands-on STEM projects. These projects should address language standards in a creative way so that students view reading and writing as integrated skills for use in a limitless number of careers.

ELA is not found in the STEM acronym. Therefore, merging English with science, technology, engineering, and math may not be an intuitive curriculum fit for English teachers. To incorporate STEM into ELA classrooms, English teachers need to examine their language standards from a different lens.

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Using this wide metaphorical lens, teachers can review their standards to see how literacy fits into the 21st century's skill sets.

Integrating STEM into the ELA classroom requires a change in both mindset and creativity. Great minds find inspiration from other sources. Therefore, the classroom STEM-based projects and activities generate engagement, critical thinking, and hands-on learning.

Some of the projects in this chapter are novel-specific. Others can be applied to any text. I provide activities that can be efficiently implemented. In addition, I share models to create unique STEM projects.

I used the following techniques to spark STEM creativity in the English classroom:

1. Students design a tiny house for a character
2. Students practice procedural writing by building a story element
3. Students explore literature through a scientific lens

TECHNIQUES

Tiny House Character Design

The tiny house character project, which was favored by the students, inspired future STEM projects in the English classroom. In fact, I did not realize the project fit the STEM category. After sharing the project on Twitter, the assistant director of schools commented that she was proud of the initiative to incorporate STEM into the high school's English class.

The project begins with student research and inquiry on tiny houses. From their research, students find abundant information on eco-friendly benefits of tiny houses. For example, Planet Forward (2013) posted an article explaining that tiny houses are inherently green because their size reduces heating and cooling costs, as well as limits the amount of manufactured "stuff" inside the home. They are so efficient that most can be completely powered by solar energy (Planet Forward, 2013). Using articles like in this example, students can curate a plethora of articles during their investigations.

The concepts of science and technology are addressed during student research of informational texts on the environmental benefits of tiny houses. Next, students apply their tiny house knowledge to a characterization analysis. Students design a tiny house to fit the needs of a character from their assigned reading. For example, the class read both Emerson and Thoreau during their project.

Table 1. Tiny house character design: Activity overview

	Activity Overview
Lead Subject	ELA
Grade Range	Middle or High School
Time Needed	At least two days
ELA Practice(s) Addressed	E5. Read, write, and speak grounded in evidence E6. Use technology and digital media strategically and capably
Science Practice(s) Addressed	S2. Develop and use models S5. Use mathematics and computational thinking

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