

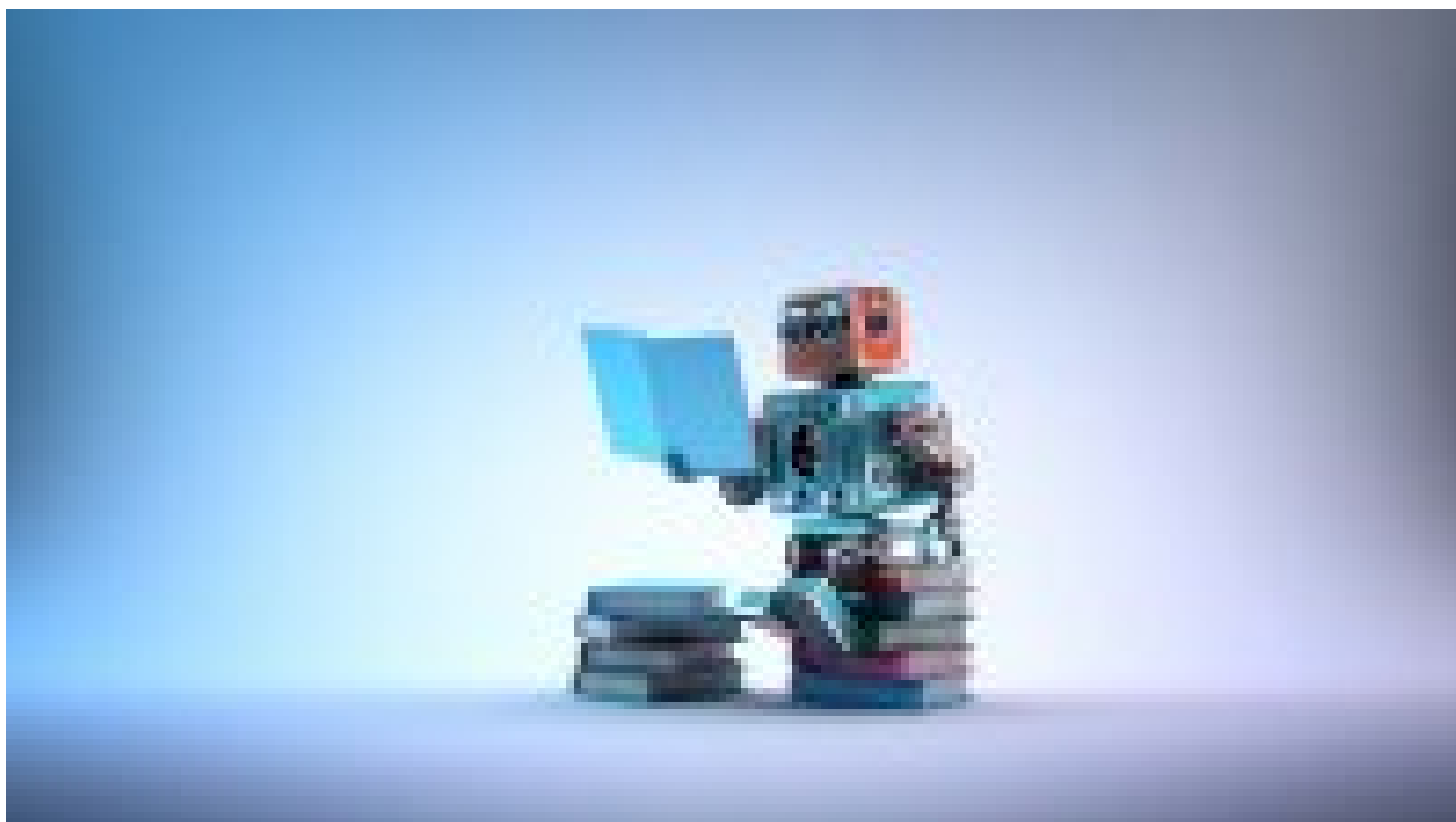
Integrating Coding and Robotics Into ELA Classrooms

edutopia.org/article/coding-robotics-ela-classrooms

Technology Integration

Coding can help middle school students gain a deeper understanding of ELA concepts and build problem-solving and critical thinking skills.

By Sydni Taylor
January 9, 2024



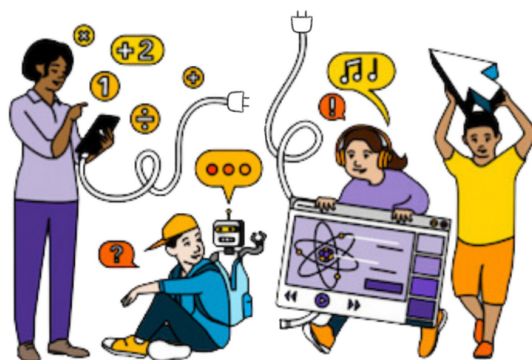
Kirillm / iStock

“Coding is today’s language of creativity. All our children deserve a chance to become creators instead of consumers of computer science.” —*Maria Klawe*

With technology changing so rapidly, how do we teach students how to use, and thrive in a future with, technology that doesn’t yet exist? This question was a major factor driving my venture into coding in my eighth-grade English language arts classroom. I wanted to show students that technology and the arts are not separate entities but in fact able to coexist.

Many states have begun adding a digital literacy component to curriculum. In fact, every state now has a law promoting computer science in K–12 education. I have no degrees in computer science, coding, or technology. I am a language arts and literature teacher, with a love for teaching critical thinking and problem-solving skills. I knew that students would need those skills, and I found coding and robotics to be the bridge between two worlds.

Start of newsletter promotion.



Our Edtech Newsletter Is Here

Supercharge your pedagogy with *The Wired Classroom*! Our monthly coverage will show you how to save time and drive deeper learning with tech.

Sign me up

End of newsletter promotion.

How to Begin integrating coding into ela

For me, integrating coding into ELA initially started as a desire to teach the hero's journey in a new and creative way. I wanted to avoid having students simply completing worksheets. I initially stumbled across Code.org, which has free resources for teachers, including this course, which combines Minecraft and the hero's journey. This approach helped several of my students who would ordinarily tune out a lecture-style lesson to really engage with the content. It also sparked more discussion than I would typically be able to get from an eighth-grade class, by having them compare how well the program lined up with Joseph Campbell's theory.

Resources like these connect clearly with what you are teaching and allow students to think about character details, patterns, or literary elements in a way that they hadn't before. Coding teaches students to put things in order, to create and follow patterns, to evaluate results and make corrections to solve a problem. All of these skills are things that all teachers want to develop in the classroom.

Here is some advice for teachers who are looking to begin.

Start small: You do not need to teach students how to build a robot (though that sounds very cool). Start with something small, free, or even programmed for student use. One of the first programs I began using was Scratch, by MIT. Ask students to code a character’s actions in a chapter from the novel you are reading, match a character’s path through the story, or design a game that follows a traditional plot structure.

Embrace failure: Be open and honest with your students, particularly if (or when) something fails. One of the first concerns many teachers have is that they are not familiar enough with the technology to make sure that it works perfectly 100 percent of the time. However, shying away from the imperfections of the technology results in missing a key learning opportunity: allowing students to see an adult troubleshoot in real time and to participate in the problem-solving process.

Prioritize content in grading: Grade thinking and standards over the accuracy of the use of technology. When scoring student work, ask students to reflect on their learning. Score student ability to show mastery of ELA content instead of trying to score the coding or program. When assessing student work, ask them to explain how their products show their understanding of a concept. For my classroom, I ask students to complete a reflection on these types of tasks. One of the critical questions I ask students is “Does this product show that you understand [key concept]? How do you know?” The answer to this question is almost always a very good indicator of whether they understood the ELA concept, regardless of how the technology worked for them.

Connecting Technology to ELA Content

When connecting technology skills to ELA content, teachers should focus on a particular standard and look at the core process involved. Here are some examples of how that could work:

Let’s say students are learning to “analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision” (Common Core ELA standard, RL8.3). The teacher could have them code an Ozobot (or use the free online coding program) to “react” as the character does to key events in the story or to particular lines of dialogue. For example, if the character reacts in sorrow, maybe the bot could light up blue or move slowly to show their struggle. Not only does this provide a memorable and visual way for students to interact with the text, but it asks them to represent things on a level they may not have previously considered.

Students can also code connections. Have a list of events, terms, or characters, and ask students to code a bot or program to connect the items, explaining the significance of the connections. For example, if you are working on vocabulary terms, ask students to code a bot to make a path between terms, and have the students explain similarities with each coded connection.

Coding can also replace some of the more traditional summative assessments that often are used in the ELA classroom. Instead of having students create a hand-drawn book cover to show significant themes in a novel, Code.org’s module can help students create an interactive book cover, with characters that show

depth or movement. Tools like Makey Makey can be used in combination with Scratch to create interactive posters. Instead of the typical research poster, or biography, ask students to code audio for the poster for a more dynamic and engaging option, as well as a more exciting gallery walk at the end.

In the end, the key skills you are teaching are not how to perfectly code a robot or write a program that has no flaws. To be completely honest, I am not sure that is a realistic expectation for anyone, much less a student. Instead, by incorporating coding into the language arts classroom, educators are teaching students about the metacognitive processes involved in trying to solve problems and find solutions, as well as to embrace failure as a learning opportunity. These skills will serve students well into the future—no matter what technological advances it holds.

©2024 George Lucas Educational Foundation. All Rights Reserved.