THE TIME-SAVING SCIENCE TEACHING SOLUTION

FIND TIME TO TEACH SCIENCE WITH PROJECT-BASED LEARNING

Science A-Z

Finding the time to teach science effectively in your already packed schedule is an experiment in itself. Do you mix in a bit of science during literacy centers? Do you add a quick science activity at the end of the day before dismissal? And even if you squeeze science in, will students remember the concepts, feel ownership over the learning, and see how it relates to their own lives?

No need to concoct diluted science lessons. Project-Based Learning is the rich science instruction solution for a tight teacher schedule.

What Is Project-Based Learning (PBL)?

Project-Based Learning (PBL) is an instructional method that engages students in solving real-world problems through cross-curricular projects. Students work together in groups and take the reins in their learning, while the teacher acts as a facilitator. In turn, students develop content knowledge as well as STEM skills like critical thinking, collaboration, and communication.

Why Choose PBL?

PBL serves as a powerful tool for teachers, as it allows for integration of language arts and multiple content areas. This eliminates the need for designated content-specific instructional blocks. Instead of a fixed 30-minute lesson, scientific topics can be explored through extensive projects that also develop literacy skills such as conducting research, writing, note-taking, listening, and public speaking. Teachers can assign students to investigate and inquire about a science question or engage in an engineering design challenge.

Because PBL requires tackling relevant real-life challenges, students engage in authentic learning experiences. Students who participate in PBL have the opportunity to:

- Deepen understanding and retention of content
- Solve problems that are important to their own lives
- Interact with community leaders and businesses
- Develop college and career readiness
- Gain agency over their learning

PBL helps students become successful in today's rapidly changing world, by developing a broader set of knowledge and skills, like decision making.

PBL helps teachers satisfy standards in multiple areas of the curriculum at once. Teachers can "bundle" standards from science, ELA, math, and more in a single lesson!

There are multiple approaches to implementing project-based learning in science. The Science A-Z PBL instructional method mirrors the Engineering Design Process (EDP), which is a systematic series of steps that engineers often take when designing a solution to a problem. The Science A-Z PBL Packs focused on explaining scientific phenomena also use the EDP as a framework to guide instruction. In our method, the PBL process is broken down into three different phases: Getting Started; Plan and Create; and Present, Assess, and Extend.

Getting Started:

Begin the PBL journey by introducing a topic related to a real-world problem through a Driving Question. Once the question is posed, Conduct an Entry Event to build on students' prior knowledge and spark excitement about the upcoming project. Entry events can consist of a hands-on investigation, demonstration, field trip, guest speaker, or any other experience related to the topic. Science A-Z ready-to-use resources, like books, passages, and videos, can also serve as tools to build background knowledge.

Plan and Create:

During this phase of the project, student teams brainstorm project ideas, evaluate these options based on criteria and constraints, and then select a course of action, including planning for the materials and resources they will need. Before teams begin developing their projects, they present their project ideas to the class for review. Each team explains which project it selected and why. Afterwards, student teams execute their plan to address the Driving Question, which may involve designing and building a model or a working prototype. For science-focused projects, the result might be developing a creative way to explain the findings of the group's investigation.

Present, Assess, and Extend:

To conclude the instructional process, student teams present the outcome of their project. In their presentations, students can use video cameras, digital presentation software, graphing applications, spreadsheets, interactive whiteboards, and other forms of technology. After projects are presented, students self-evaluate their work using grade-appropriate individual and group rubrics. Teachers also evaluate individuals and groups using their own rubrics. New questions may arise after the completion of a project, which can extend to further research or lessons.

Resources for Effective PBL

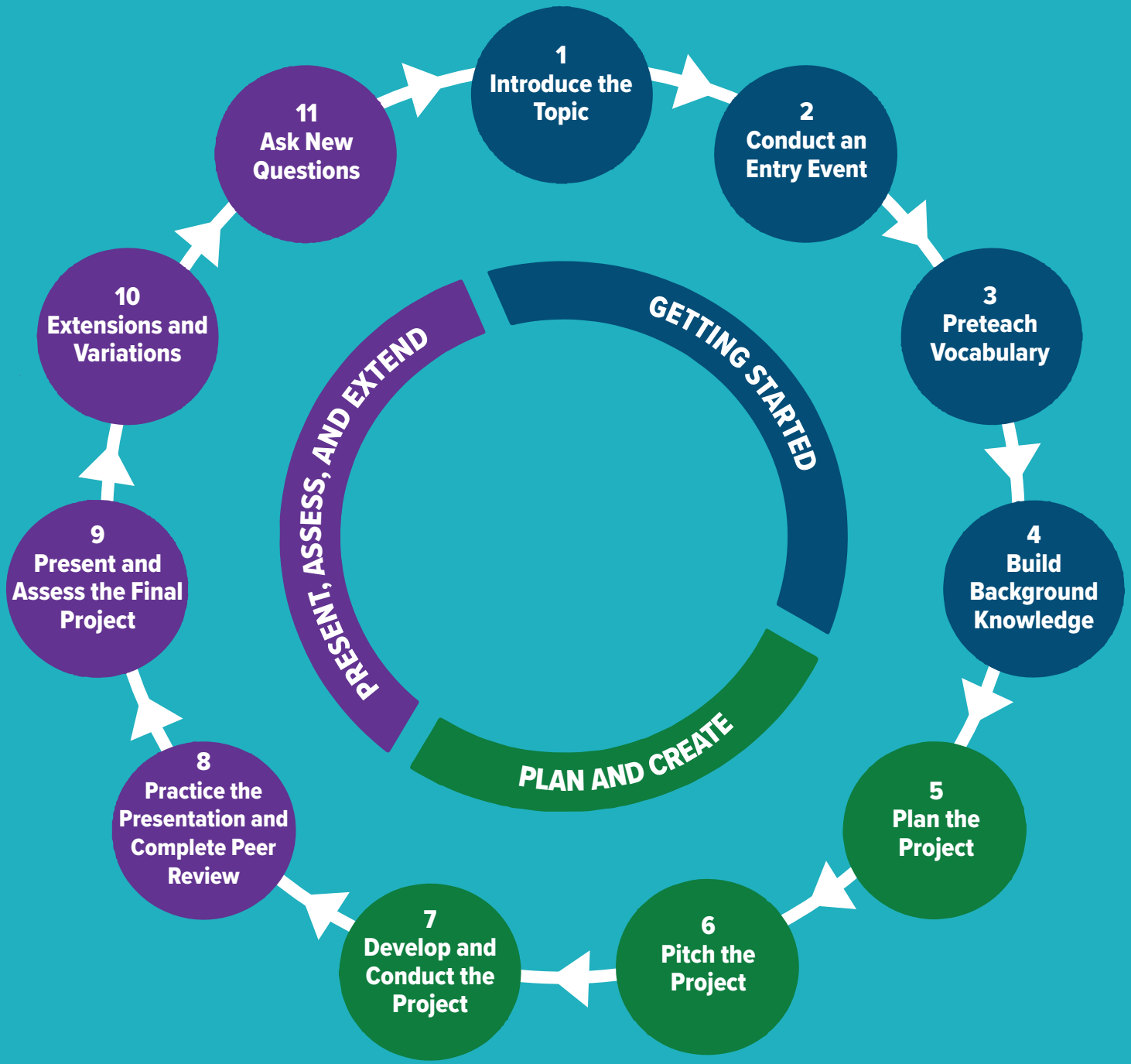
In order to effectively implement PBL in the classroom, teachers and students need to be organized and have access to quality curricular resources. To make the experience especially meaningful, target standards and key concepts need to be identified, rubrics created, and resources selected. Prepping and planning for PBL may seem extensive, but Science A-Z makes the process easy.

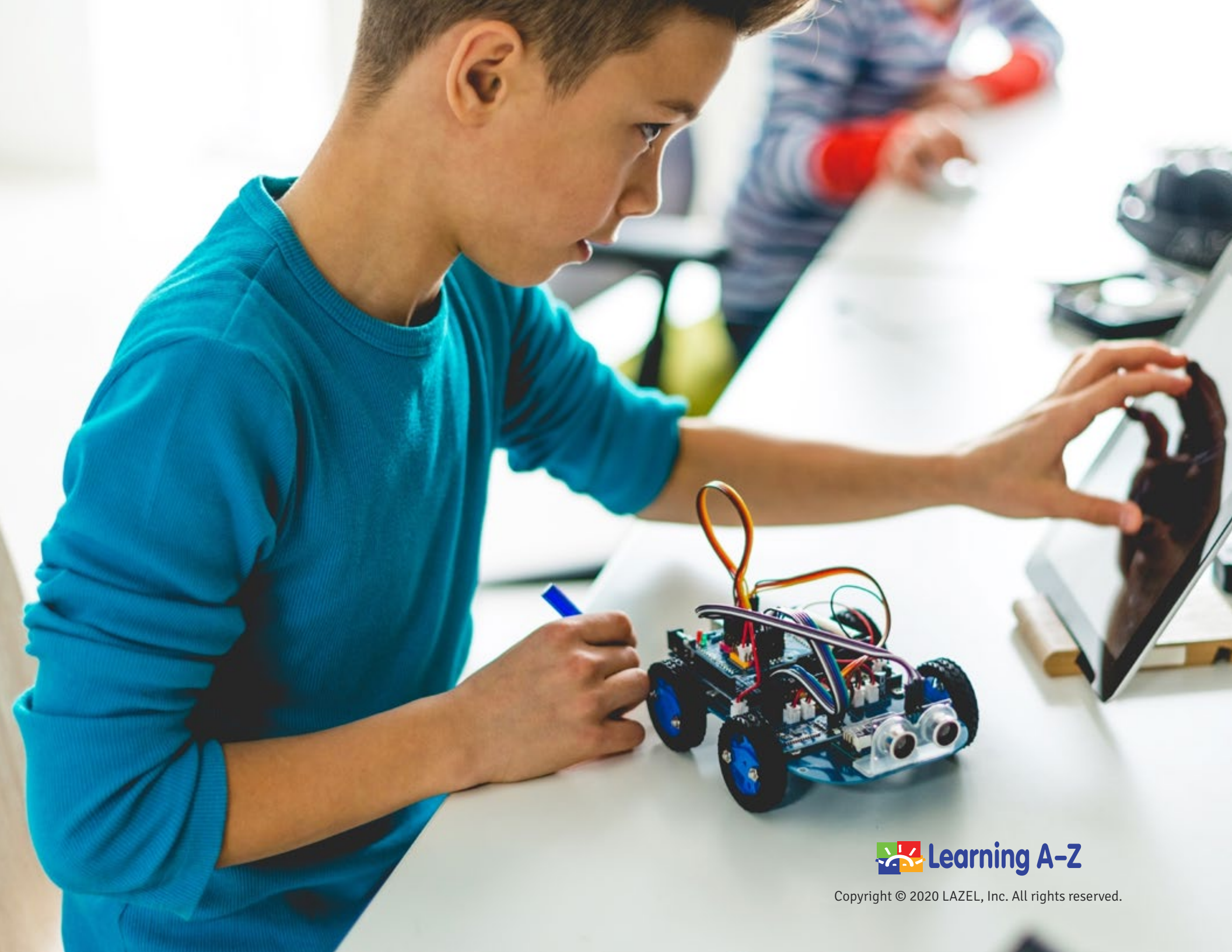
Science A-Z Project-Based Learning Packs provide the resources to get students thinking and acting like scientists and engineers, with the teacher support to go with it. Teams of students work collaboratively using multiple unit resources to gain a deeper understanding of standards-based core unit concepts, then put that understanding into practice as they complete their projects.

Science A-Z Project-Based Learning Pack resources include:

- **Project Organizer** and **Science A-Z Journal** to help students demonstrate what they have learned.
- **Teaching Tips** to help teachers facilitate the project.
- **Teacher Rubrics** and **Student Rubrics** to assess student performance.

The Science A-Z PBL Instructional Process





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