

Key Considerations and Milestones for Pennsylvania LEAs to Implement the STEELS Standards

This document illustrates important considerations and milestones to fully implement Pennsylvania’s Science, Technology & Engineering, and Environmental Literacy & Sustainability (STEELS) Standards across all classrooms. The STEELS Standards are K–12 learning goals designed using research that shows how students learn best – by using the same practices as scientists, engineers, and technologists. “Implementation” means to move all parts (e.g., instructional materials, assessments, professional learning) of a school or LEA into alignment with STEELS Standards, a process that results in all students having the opportunity to learn and demonstrate learning of the new learning goals.

This document compiles lessons learned and resources created by other LEAs across the country during the past decade of implementing multi-dimensional standards.

Important Considerations for LEAs Transitioning to the STEELS Standards

STEELS Leadership Teams

1. Create and sustain an LEA-level STEELS Standards leadership team to manage the changes associated with STEELS Standards implementation.

Leaders will need to think carefully and strategically about the systemwide changes needed to support students in meeting the high expectations of the STEELS Standards. A STEELS Standards leadership team can provide the necessary infrastructure and accountability for implementing these standards, which include, among other things, ensuring all educators have access to high-quality instructional programs and resources, are prepared to use those programs effectively in the classroom, and are able to assess student learning through high-quality assessments.

Developing a team and strategy are foundational steps that set the stage for the rest of the work to transition to new standards and, ultimately, improve student learning experiences and outcomes. Without a team and strategy, changes may be unclear or haphazardly implemented, which reduces the chances for meaningful, sustained shifts to take root in a system.

Resources:

[The Power of STEELS Leadership Teams](#)

[District Standards Implementation Indicators](#)

High-Quality Instructional Programs

2. Ensure educators and students have access to high-quality instructional programs in order to make the shifts in science, technology, engineering, environmental literacy, and sustainability education that Pennsylvania’s standards demand.

One of the most important factors for ensuring all students experience an exemplary education that prepares them for future success is access to high-quality instructional programs.

While there may not be programs designed to cover the entirety of the STEELS Standards, a number of existing

instructional programs are high quality and will support the key instructional shifts reflected in both the STEELS Standards and the research about how students learn best in those fields. Such programs can be a useful starting point for STEELS implementation, and over time, modifications that can lead to a fully STEELS Standards-designed program. Modification of programs should be done at a schoolwide or districtwide level to ensure high quality and coherence.

Before purchasing any instructional resources, school and LEA leaders should [become critical consumers of curriculum materials](#), ensuring they are designed around

features that will support educators to meet the vision of the STEELS Standards. Because not all resources are created equal, it is important for leaders to use a selection process that includes a clear set of transparent criteria, is evidence-based, and engages educators in the process.

Resources:

[Critical Features of Instructional Materials Design for Today's Science Standards](#)

[NextGen TIME: Toolkit for Instructional Materials Evaluation](#)

“Research indicates that all teachers, no matter their experience level, can benefit from using high-quality, aligned materials. A **2017 study** provided evidence that the effect of high-quality curricula on learning is the same as moving an average performing teacher to one at the 80th percentile. ... Perhaps most importantly, providing teachers with coherent, student-centered instructional materials means that they no longer need to spend more than 12 hours a week [of preparation time] creating lessons from scratch or scouring the internet for lessons — **practices that produce low-quality results that disproportionately affect** students of color and those experiencing poverty.”

— Critical Features of Instructional Materials Design for Today's Science Standards

High-Quality Professional Learning

3. Make a plan to provide high-quality, ongoing professional learning experiences that are closely tied to what educators actually do in the classroom.

Curriculum-based professional learning enables educators to experience, practice, and reflect on effective STEELS Standards learning in the classroom. Such professional learning rooted in the district's selected program and STEELS Standards modifications can deepen educators' expertise in:

- Science, technology, engineering, environmental literacy and sustainability content, including their understanding of disciplinary core ideas, crosscutting concepts, scientific and engineering practices, and technology and engineering practices.

- Pedagogy, including practices that support rigorous student learning in STEELS Standards.
- Understanding the design of the district's curriculum and the implications for teaching and learning.
- Strategies for meeting the needs of all learners.

These professional learning opportunities honor educators' experience and expertise by aligning meaningful support with quality curriculum.

Resources:

[The Elements: Transforming Teaching through Curriculum-Based Professional Learning](#)

[The Professional Learning Partner Guide: A National Tool to Support HQIM Implementation](#)

High-Quality Assessments

4. Ensure access and use of high-quality, aligned assessments, which are an important signal and tool to more effectively monitor student learning and generate better student experiences and outcomes.

Pennsylvania's STEELS Standards represent a shift in learning goals from memorizing facts to developing a deeper understanding of ideas, practices, and concepts that can be used to make sense of the world. That shift has implications for measuring whether students have met their learning goals. Just as instruction must change, so must assessments. Assessments should be focused on making sense of uncertainty associated with a phenomenon or problem by using both STEELS Standards knowledge and practices — together.

High-quality assessments are an important tool to support better student outcomes and signal needed changes in instruction. High-quality instructional programs should include assessments that will allow educators to assess multi-dimensional learning goals throughout instruction. LEA leaders may also consider additional schoolwide supports, including professional learning to support the use of multi-dimensional assessments and high-quality benchmark assessments.

Resources:

[Pennsylvania STEELS Assessment Toolkit](#)

[Resources for Multi-Dimensional Assessments](#)

Adequate, Sustained Support

5. Ensure adequate and sustained support for STEELS Standards learning.

Educators are dedicated to doing their part to transform their classrooms, but they can't succeed without supportive systems and communities of practice. Investing in our students' futures will require careful attention to the infrastructure required to improve teaching and learning of STEELS Standards and investments in resources for students and educators.

This may include:

- Increasing time for both leaders and educators to participate in professional learning and planning conversations to establish a districtwide vision and goals for science, technology, engineering, environmental literacy, and sustainability education.

- The allocation of additional time, funding, and resources dedicated to the critical milestone of selecting, adopting, and modifying an instructional program.
- The allocation of additional time and funding for educators and administrators to participate in curriculum-based professional learning.
- The redesign of school schedules to ensure adequate instructional time dedicated to STEELS Standards.

Resources

[Pennsylvania Department of Education STEELS Implementation Plan](#)

[Framework for Leading Next Generation Science Standards Implementation](#)

[Pennsylvania Intermediate Unit \(IU\) offices](#)

Example LEA Milestones to Move Toward the STEELS Standards

