MASSACHUSETTS
Department of Elementary and Secondary Education

CURRICULUM & INSTRUCTION

Quick Reference Guide: High-Quality Science Instructional Materials

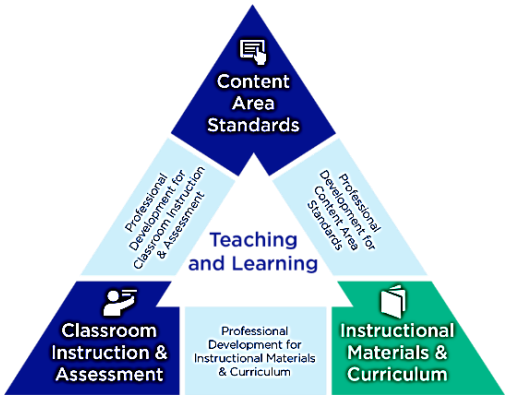

Image from Nebraska Instructional Materials Collaborative

Why select high-quality curriculum?

Using a high-quality curriculum is a critical component of student success (EdReports, TNTP). **Use of high-quality instructional materials (HQIM) can support equitable outcomes for all students, particularly marginalized students**.

What are the features of high-quality science instructional materials (HQIM)?

1. **Grade level standards aligned**. HQIM should address Disciplinary Core Ideas (DCIs) and Science and Engineering Practices (SEPs) at the appropriate grade level. Performance tasks should be embedded to support the teacher in assessing the SEPs.
2. **Real-world application**. HQIM should ground science and engineering learning in real world phenomena and design problems, for example, by using anchoring phenomena (download). Students should be engaged in authentic learning experiences.
3. **Supportive of student sensemaking**. HQIM units should be driven by student questions and interests and should be coherent to students (download). They should include a comprehensive assessment system that allows students opportunities to self-assess and provide peer feedback. The cognitive load for students should progress appropriately over time.
4. **Culturally and linguistically sustaining**. HQIM should provide varied means for students to access content and demonstrate learning. They should include questions and tasks that affirm and value diverse identities, backgrounds, and perspectives. They should support teachers in using best practices for multilingual learners, students with disabilities, and students working above and/or below grade level.

Along with robust learning standards and DESE professional learning, curricular materials can support learning for all students.

Massachusetts districts are encouraged to select a high-quality curriculum that works best for their students. . Curriculum developers are still working to develop a variety of K-12 options that reflect the needed content and pedagogical shifts embedded in the new standards WestEd Landscape Review, EdReports). Note: Curricula are reviewed periodically after meeting initial requirements, and publishers must consent to having their reports publicized; this process may impact the number of reviews available at a given time. DESE provides a number of resources that educators can use in order to select a high-quality option.

1. **CURATE** – highest level of review. Curricula that are reviewed by a CURATE panel have already met national standards for quality through other third-party review programs. The CURATE panel examines **full year/grade band courses** with a **specific Massachusetts lens** to ensure alignment with state standards and inclusion of culturally & linguistically sustaining practices.

2. **EdReports** – high level of review. EdReports assesses **full year/grade band** core curricula. Curricula that are reviewed by EdReports are reviewed against **national academic standards**, such as the Next Generation Science Standards (NGSS). Because the Massachusetts STE Framework is adapted from NGSS, most curricula that pass this level of review would serve as strong options for Massachusetts teachers. However, educators may need to make some adaptations to address all standards.
3. **NGSS Design Badge** – high level of review. **Individual units** are submitted for peer review using the EQuIP rubric for science. Like EdReports, this panel uses NGSS to rate materials, so Massachusetts educators may need to make adaptations. A school that adopts one or more badge units might use them as models to redesign other instructional units to complete the scope and sequence.

It is important to use an inclusive and transparent process in curriculum adoption.

DESE has developed the Implement MA Process Guide, an inclusive and robust four-phase process to select and implement HQIM. The process leads teams from initial learning and preparation to implementation and monitoring. DESE also facilitates an annual network to lead teams through the selection process. See more information about the process and the network at IMplement MA.

How can districts review their existing curricula for quality?

Many districts spend considerable time and resources on the development of "home-grown" materials and may have dedicated staff in place to work on curricula. In addition, some science DESE courses currently have few or no independently-reviewed, high-quality options available. DESE recommends the following resources and processes for evaluating and aligning district-developed curricula for quality:

1. The CURATE rubric is available for districts to conduct internal reviews at the **course or grade-band level**.
2. The EQuIP rubric for science is also publicly available and can be used at the **unit or lesson level**.
3. The NYU Metro Center Culturally Responsive scorecard can be used to further evaluate standards-aligned materials for **culturally and linguistically sustaining practices**.

After internal review, districts may be interested in having their units reviewed by a third party for an NGSS Design Badge. The NextGenScience Peer Review Panel does this work.

Professional learning is key.

Skillful use of high-quality curricular materials requires substantial instructional and pedagogical shifts. Educators will need guidance in order to effectively implement and customize high-quality materials to the local context. DESE advocates for the adoption of high-quality materials coupled with robust sustained professional learning at every stage of preparation, selecting, launching, and implementing materials. Please visit our professional learning page for guidance on certified PL providers. Also, consider joining our Evaluating & Selecting HQIM Network.

Further Resources

1. Finding High-Quality Science Materials – an article from NSTA on features of high-quality science materials
2. Science Instructional Materials and Assessment Reviews – tools from NextGenScience for evaluating curriculum
3. OpenSciEd – free and open-source high-quality K-12 science curriculum
4. Science Instructional Materials Selection and Modification – Landscape Analysis and recommendations for implementation