

Evaluating Instructional Materials in Science

Introduction

The purpose of this document is to provide guidance and resources that can help support Local Education Agencies (LEAs) to evaluate instructional materials. The National tools provided in this document can help LEAs evaluate science education textbooks or other **large-scale** sets of instructional resources. It could also be used to guide adaptation of current sets of resources and determine **professional development** needs.

Before using one or more of these national tools, it is important to have a **comprehensive understanding** of the documents that were used to develop our 2018 Arizona Science Standards, including the progressions of learning detailed in them. The two research documents used to develop our standards are [NRC Framework for K-12 Science Education](#) and [Working with Big Ideas of Science Education](#). Equally important, is the understanding that we are not an “NGSS State,” as Arizona did not adopt the Next Generation Science Standards (NGSS). Arizona is considered a **“Framework-Based State”** because the committee developed the Arizona Science Standards using the NRC Framework for K-12 Science Education, which incorporates the three dimensions of science instruction; the Crosscutting Concepts (CCCs), Science & Engineering Practices (SEPs), and Core Ideas (CI).

Many instructional materials developed by curriculum companies will be aligned to the NGSS, so it is important to understand the key differences between our Arizona Science Standards and the national set of standards, NGSS. ADE has created two helpful videos to explain the key differences: [Arizona Science Standards \(AzSS\) vs. Next Generations Science Standards \(NGSS\) Part I](#) and [Arizona Science Standards \(AzSS\) vs. Next Generation Science Standards \(NGSS\) Part II](#).

The NRC Framework clearly emphasizes the following shifts in science education that should be present in instructional resources:

1. **Three-dimensional learning** – students engage in science and engineering practices to learn content, while relating and understanding that content through the lens of crosscutting concepts.
2. **Explaining phenomena and designing solutions** – students investigate the world around them to explain phenomena and use their scientific understanding to design solutions to problems.
3. **Engineering design and the nature of science** – students do authentic work of scientists and engineers, explicitly seeing themselves in those roles and understanding what that entails.
4. **Coherent learning progressions** – within a grade and from K-12, three-dimensional learning builds on past experience, avoiding redundancy and building connections across disciplines.
5. **Connections to English/language arts and mathematics** – students’ learning reflects real-world contexts as it explicitly uses practices and understandings from mathematics and English/language arts.

National Tools on Evaluating Materials

- [EQuIP Rubric](#) - the most common tool used is Achieve's EQuIP rubric, though it focuses more on the level of lesson or unit. This site includes resources on how to use this tool.
- [NextGen TIME](#) - suite of tools to prepare, screen, pilot and plan through an instructional materials review process, includes leadership PD guides. Requires a free registration.
- [EdReports](#) - In February of 2019 they released their [review tool and process](#) (important to understand first) along with a [series of reviews of five grades 6-8 materials](#). More 6-8 materials and 3-5 materials are in process.

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- [Reviewing Publishers' Claims](#) - tool from Achieve that notes claims publishers often make in relation to NGSS alignment and provides resources for evaluating those claims.
- [PEEC Tool](#) - this tool from Achieve is intended for reviewing full-year instructional materials.
- [List of "aligned" resources](#) - Achieve published a list in late 2017 of science materials that claim some NGSS alignment - importantly, it's an unverified claim.
- [BSCS Report](#) - this report by national experts details guidelines for reviewing NGSS instructional materials
- [Iowa's Collection of Resource Review Tools](#) - a useful listing of lesson and larger-scale material review tools from across the country