

ARKANSAS

K-12 SCIENCE STANDARDS

EDUCATION FOR A NEW GENERATION

Science Standards Implementation Tool Kit 2016

Successful implementation of the Arkansas K-12 Science Standards is contingent upon the effective communication and intensive professional development offered to Arkansas science educators. The educational cooperatives and university STEM centers are vital to successful implementation. The Arkansas Department of Education (ADE) suggests the following resources for education leaders to facilitate successful implementation in Arkansas schools.

List of Resources:

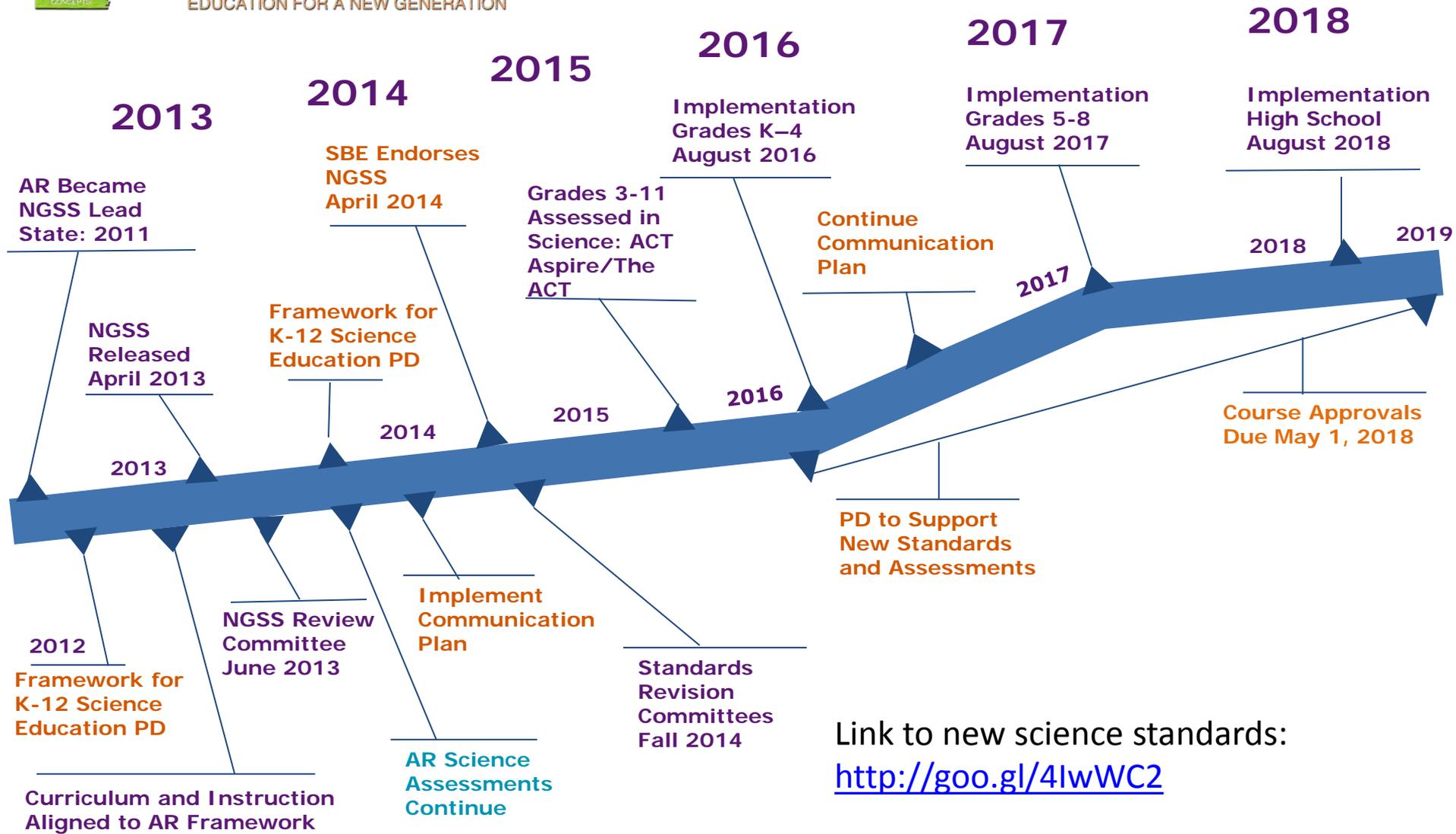
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ARKANSAS K-12 SCIENCE STANDARDS

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Science Standards Timeline



Link to new science standards:
<http://goo.gl/4lwWC2>

Curriculum and Instruction

Assessment

Professional Development

2016 -2017 Science Professional Development

<http://www.arkansased.gov/divisions/learning-services/curriculum-and-instruction/arkansas-k-12-science-standards>

*State-initiated Science PD Opportunities

- **Grasping Phenomenal Science** for Grades K-4: Navigating from Standards to Instruction
Educators will engage in grade-specific lessons to make sense of science phenomena and reflect on instructional strategies designed to engage students in science instruction consistent with the new Arkansas science standards.
- **Grasping Phenomenal Science** for Grades 5-8: Navigating from Standards to Instruction
Educators will engage in grade-specific lessons to make sense of science phenomena and reflect on instructional strategies designed to engage students in science instruction consistent with the new Arkansas science standards.
- **Grasping Phenomenal Science** for Grades 9-12: Navigating from Standards to Instruction
Educators will engage in content-specific lessons to make sense of science phenomena and reflect on instructional strategies designed to engage students in science instruction consistent with the new Arkansas science standards.

*These opportunities, in particular the K-4 sessions, may be offered regionally as science conferences coordinated by area educational cooperatives and/or university STEM centers. Check with the science specialist at your local cooperative or STEM center for dates and locations or search [ESC Works](#).

Supporting Science PD Opportunities

- **Picture Perfect Science (K-6)** – Provided in collaboration with the National Science Teachers Association
On May 16-18, 2016, join award winning authors, Karen Ansberry and Emily Morgan, at Dawson Educational Cooperative in Arkadelphia, for this dynamic workshop where participants will learn to use scientific inquiry, the 5E instructional model, and reading comprehension strategies to integrate science into the elementary classroom in a meaningful way. Registration is through [Dawson Education Cooperative](#) and a registration fee is required.
- **Arkansas IDEAS**
Several new science PD opportunities are available through the [Arkansas IDEAS learning management portal](#) including
 - DLB15002 - Disciplinary Literacy: Big Shifts in Science and Technical Subjects Grades 7-12
 - SSC15028 - A Vision and Plan for Science Teaching and Learning
 - LAC15041 - Shifts in Science Education: Standards, Curriculum and Instruction (for school administrators)
 - SIC15047 - Elementary Science Safety and Lab Guidelines (available Summer 2016)

2016-2017 Science Professional Development

<http://www.arkansased.gov/divisions/learning-services/curriculum-and-instruction/arkansas-k-12-science-standards/science-pd-opportunities>

ADE Science PD Opportunities

Grasping Phenomenal Science (GPS) for Grades K-4: Navigating from Standards to Instruction
Grasping Phenomenal Science (GPS) for Grades 5-8: Navigating from Standards to Instruction
Grasping Phenomenal Science (GPS) for Grades 9-12: Navigating from Standards to Instruction

Educators will engage in content-specific lessons to make sense of science phenomena and reflect on instructional strategies designed to engage students in science instruction consistent with the new Arkansas science standards.

These opportunities, in particular the K-4 sessions, may be offered regionally as science conferences coordinated by area educational cooperatives and/or university STEM centers. Information regarding dates and locations may be obtained by contacting the science specialists at local cooperatives and STEM centers or [ESC Works](#).

Additional Science PD Opportunities

Picture Perfect Science (K-6) will be provided in collaboration with the National Science Teachers Association:

On May 16-18, 2016, join award winning authors, Karen Ansberry and Emily Morgan, at Dawson Educational Cooperative in Arkadelphia, for this dynamic workshop where participants will learn to use scientific inquiry, the 5E instructional model, and reading comprehension strategies to integrate science into the elementary classroom in a meaningful way. Registration is through [Dawson Education Cooperative](#) and a registration fee is required.

Two options are available

- May 16-17-Teacher Workshop
- May 16-18-Training of Trainers

Arkansas IDEAS

Several new science PD opportunities are available through the [Arkansas IDEAS learning management portal](#):

- DLB15002 - Disciplinary Literacy: Big Shifts in Science and Technical Subjects Grades 7-12
- SSC15028 - A Vision and Plan for Science Teaching and Learning
- LAC15041 - Shifts in Science Education: Standards, Curriculum and Instruction (for school administrators)
- SIC15047 - Elementary Science Safety and Lab Guidelines (available Summer 2016)

Science Standards Frequently Asked Questions

http://www.arkansased.gov/public/userfiles/Learning_Services/Curriculum%20and%20Instruction/Science_Standards/Arkansas_K_12_Science_Standards_FAQs_102115.pdf

Q. What is the process for creating new science content standards in Arkansas?

- The periodic review and revision of science content standards is outlined in law and rule for the Arkansas Department of Education (ADE).
- The State Board of Education endorsed the [Next Generation Science Standards](#) (NGSS) to guide the development of the new Arkansas K-12 Science Standards.
- Committees of K-12 teachers and instructional facilitators, assisted by higher education content experts, have completed [Grades K-8](#) standards and are currently creating new high school courses.
- More information about the work is available on the [Arkansas K-12 Science Standards](#) on the [ADE website](#).

Q: What science standards are required to be taught?

[Arkansas Science Curriculum Frameworks](#), revised in 2005, will be taught until new standards are implemented. Districts and schools can implement the new standards early because the State Board of Education adopted them in advance of the years planned for implementation. However, teachers need to be prepared to teach them effectively. The Arkansas K-12 Science Standards represent a fundamental change in the way science is taught, and if implemented well, will ensure that all students gain a mastery over fundamental concepts of science.

Q: When will the new standards be implemented?

Arkansas schools will implement Grades K-4 in 2016-2017, Grades 5-8 in 2017-2018, and new high school courses in 2018-2019. This allows Arkansas educators the time necessary to transition to the new standards. The [timeline](#) indicates the projected dates for implementation.

Q: What are the Next Generation Science Standards?

NGSS are K-12 science standards rich in content and practice and designed to provide all students an internationally-benchmarked science education. The NGSS are based on *A Framework for K-12 Science Education*, published by the National Research Council and available as a free download ([Click here](#)). The National Research Council is a private, nonprofit institution that provides expert advice on pressing issues pertaining to science, engineering, and medicine. The final version of [NGSS](#) was released in April, 2013.

Q: Who was involved in the NGSS development process?

Arkansas was one of the 26 [lead states](#) actively engaged in the development and review of the NGSS. Writing and review teams included K-12 teachers, higher education faculty, scientists, engineers, and business leaders. These teams were joined by several partner organizations, including the [National Academies of Sciences, Engineering, and Medicine](#), the [National Science Teachers Association](#) (NSTA), and the [American Association for the Advancement of Science](#) (AAAS).

Q: What are some of the strengths of the Arkansas K-12 Science Standards?

The new Arkansas standards make connections to English Language Arts, literacy, and mathematics standards and provide a clear vision of rigorous science instruction across K-12. These standards offer all students 21st century learning opportunities to be more scientifically literate and prepared for high-paying jobs.

Q: What science assessments are being administered?

The ADE Science Benchmark assessments for Grades 5 and 7 and the Biology EOC have been replaced by The ACT Aspire assessment. The ACT Aspire assesses science for Grades 3-10. In addition, The ACT for Grade 11 also includes a science test. The ADE Alternate Portfolio Assessments continue for Grades 5, 7, and 10. Information about these [assessments](#) is available on the [ADE website](#).

Q: What skills will be assessed on The ACT Aspire and The ACT assessments?

The [ACT Aspire](#) and [The ACT](#) will focus more on student understanding of how science works and less on recall of science facts. The ACT tests assess science in the following three categories:

- Interpretation of Data
- Scientific Investigation
- Evaluation of Models, Inferences and Experimental results.

Q: What can educators do to prepare for the transition to new science standards?

- Ensure that sufficient time is allotted in the school day for hands-on science instruction.
- Evaluate and inventory the science resources currently available to determine if appropriate and sufficient resources, including safety equipment, are available to support hands-on learning.
- Incorporate the practices and crosscutting concepts from the Arkansas K-12 Science Standards in current units of study. [Resources](#) are available from the National Science Teachers Association (NSTA). [Implementation resources](#) are available from the NGSS website.
- Increase collaboration within the science department and across disciplines.
- Participate in ADE science [professional development](#).
- Utilize the science specialists at local [educational cooperatives](#) and/or [university STEM centers](#) for professional development offerings and school support.

Q. What is the best method for staying up-to-date with Arkansas’s progress toward new science standards?

Information is available at

<http://www.arkansased.org/divisions/learning-services/curriculum-and-instruction/arkansas-k-12-science-standards>. In addition, information about the development of and transition to new science standards will be sent out through ADE’s Curriculum and Instruction Listserv. To be added to the ADE curriculum listserv, please send your name, e-mail address, and district name to ADE.Candl@arkansas.gov.

Q. When is the best time to purchase new science instructional materials?

NGSS-aligned resources are currently being developed. School districts are encouraged to access the free [resources](#) available from [NGSS @ NSTA](#). Check with local educational cooperatives and/or university STEM centers for instructional materials (including lab equipment and kits) that schools can check out.

Action Steps

1. Communication

- a. Using regular communication channels, express the need for all science teachers to attend training. Repeat the communication frequently.
- b. Reach out to local business and industry to support school-based STEM programs such as robotics competitions, science fairs, STEM camps, and other events.
- c. Invite science and education professors to visit science classrooms and attend science professional development workshops.
- d. Prepare [parental materials](#) supporting the new science standards to be shared on district websites.
- e. Host a Science Night or Parent University during out-of-school time to engage students and parents in doing hands-on science activities.
- f. Organize a science visit for legislators. Identify leading hands-on science teachers in the district and invite legislators to visit those classes for the purpose of expressing the importance of a strong science education. Share data from the [Arkansas Science Facts Sheet](#).
- g. Empower teachers to become communicators about the new vision for science education in Arkansas. Assist them in creating talking points for parents, administrators, and legislators. The [Arkansas K-12 Science Power Point Presentation](#) is an excellent tool to facilitate this action step.
- h. Develop high-level talking points for district administrators. Focus on key messages, timelines, and language used in disseminating information to staff and families.
- i. Access [communication tools](#).

2. Professional Development

- a. Schedule and begin sharing and encouraging teachers and districts to enroll in the ADE science professional development for K-12 teachers.
- b. Organize study groups with a science specialist to read and discuss the new standards.
- c. Organize professional development to build science curriculum. The cooperative and STEM center science specialists can assist by creating curriculum templates.
- d. Access information about [ADE science PD](#)

3. Curriculum

- a. Budget for necessary science consumable materials. Access free science kits and instructional materials aligned to the new standards at education cooperatives or STEM centers.
- b. Consider joining the [National Science Teachers Association \(NSTA\)](#), a leading source for NGSS resources.

- c. Determine needed resources, consumable materials and budgets. Assist principals in being proactive regarding science materials and resources.
- d. Identify teacher-developed science instructional materials that are aligned to the Arkansas K-12 Science Standards.
- e. Review the [appendices](#) of Next Generation Science Standards.

For additional tools and information

- Visit the [Arkansas K-12 Science Standards webpage](#)
- Contact Michele Snyder (ADE Science Specialist) at Michele.Snyder@arkansas.gov or 501-682-7942.