Arizona Science Standards Revision Working Group

July 13-14, 2017

Housekeeping

1. Sign in
2. Parking validation
3. Restrooms
4. Breaks/Lunch
6. Travel Questions – Fill out W9 if needed
7. Sign non-disclosure form – All members

Cell phones should only be used during breaks and lunch. If you need to take a call, please go to the break room. Please check text and email only during break due to non-disclosure.

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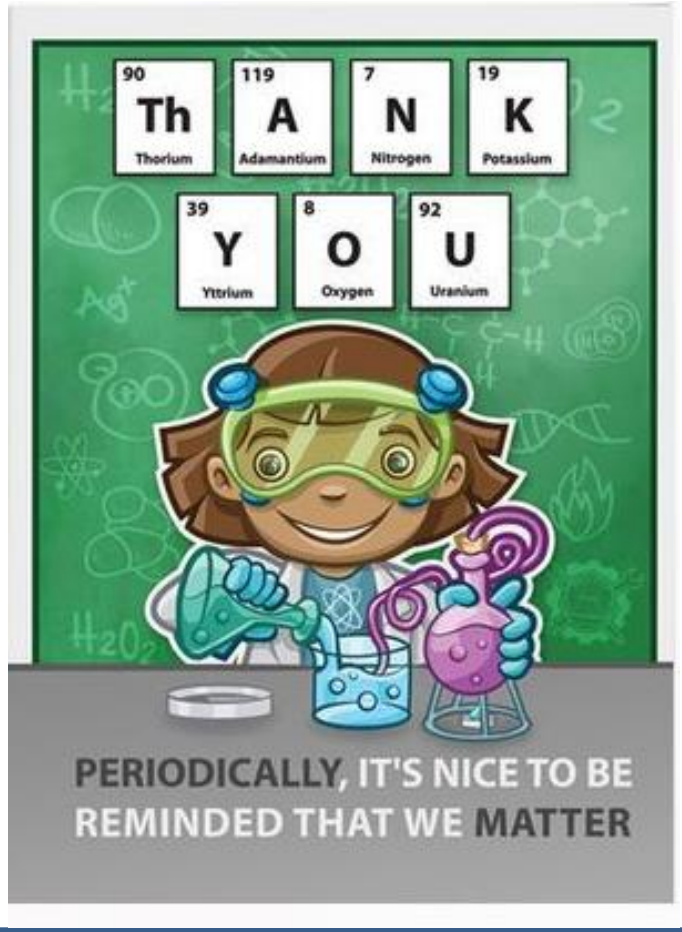
Biggest Thank You!



Housekeeping

Dr. Eugene Judson

Associate Professor - Science Education
Arizona State University

ASU Research project – IRB consent

Participation in this research project is completely voluntary and does not impact your participation in standards work.

Introductions

Introduce yourself by telling everyone in the group:

1. Your name
2. Your school/district
3. Your current position

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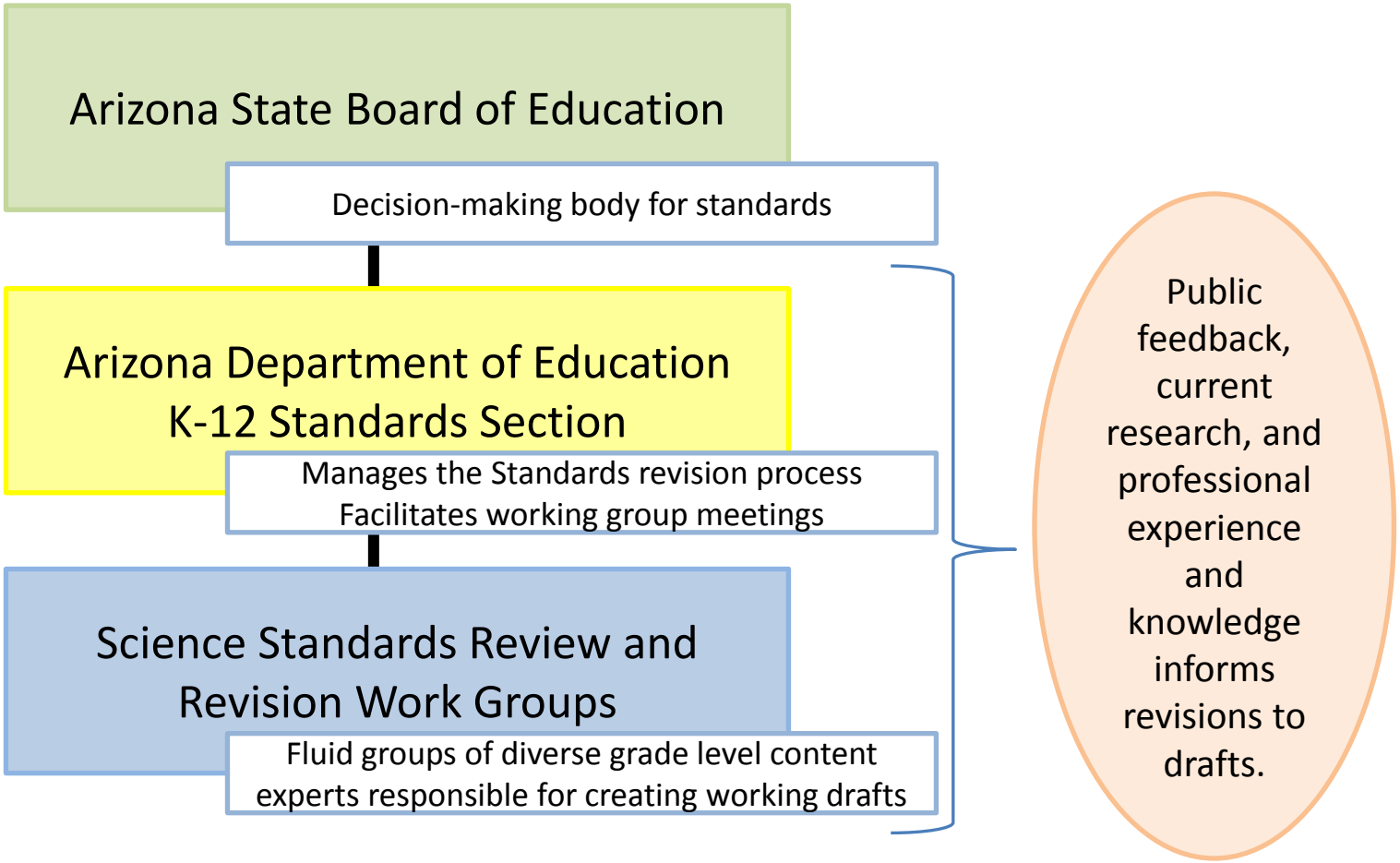
Standards Review - Structure



Roles/Responsibilities: ADE K-12 Standards Staff

ADE K-12 Standards Members

- Facilitate work group meetings
- Provide meeting goals, agendas, tasks, and instructions
- Provide needed materials
- Organize committee members into vertical, horizontal, and/or content groups, as appropriate.

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Roles/Responsibilities: Working Groups

1. **Develop the vision for the revised Science Standards**

2. **Develop drafts of K-12 Science Standards**
   - Make decisions about content and structure of grade level standards
   - Apply content knowledge, grade-level expertise, research, and public feedback to inform all decisions

3. **Develop drafts of the introduction, glossary, and other appendices, as needed for the K-12 Science Standards**

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Structure: Working Groups

Use a fluid membership model ("accordion model") to include multiple voices and perspectives throughout the process

- K-12 teachers, coaches, curriculum directors, administrators
- Higher education: science education and science content instructors, professors, and/or researchers
- Content experts from the community
- Parents

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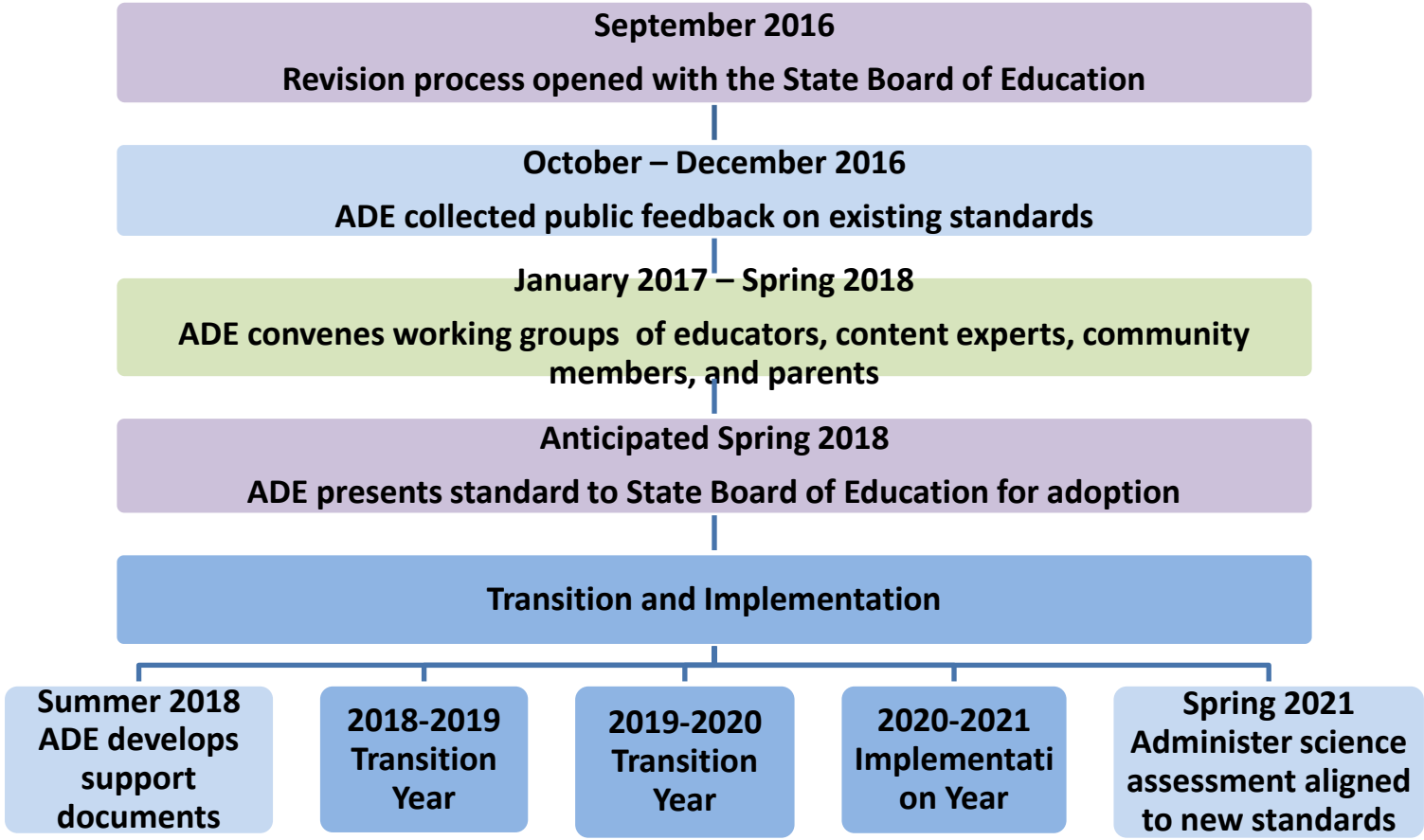
Science Standard Revision and Implementation Timeline



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Working Group Norms

- Actively engage in all discussions
- Be open-minded
- Have an attitude that fosters collaboration, agreement, and consensus
- Be mindful of timelines and scope of work
- **Cell phone/email checks are limited to breaks (non-disclosure)**

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Questions on Structure

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ADE Directive for the Science Standards

- Arizona standards, written for Arizona teachers and students, by Arizona educators and content experts
- Write grade-level standards and not performance objectives

Standards, Curriculum, & Instruction

Standards – What a student needs to know, understand, and be able to do by the end of each grade. Standards build across grade levels in a progression of increasing understanding and through a range of cognitive demand levels. Standards are adopted at the state level by the State Board of Education.

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This is the "WHAT"

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Standards, Curriculum, & Instruction

Curriculum – The resources used for teaching and learning the standards. Curricula are adopted at a local level by districts and schools.

Instruction – The methods used by teachers to teach their students. Instructional techniques are employed by individual teachers in response to the needs of the students in their classes to help them progress through the curriculum in order to master the standards.

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This is the "HOW"

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Standards versus Performance Objectives

Content Standards

Standards are what students need to know, understand, and be able to do **by** the end of each grade level. Standards build across grade levels in a progression of increasing understanding and through a range of cognitive demand levels.

Performance Objectives

Performance Objectives are **incremental steps** toward mastery of individual content standards. Performance Objectives are knowledge and skills that a student must demonstrate at each grade level. Performance objectives do not imply a progression of learning and, because they are discrete skills, reach a limited level of cognitive demand.

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Work to Date:

- Developed a working vision and agreements to guide science standards work.
- Reviewed public feedback on 2004 standard.
- Identified and refined critical content for each grade band.

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Work to Date:

- Refined critical content based on public feedback, research, and expertise.
- Articulated critical content from grade bands to grade levels.

Work to Date:

June Meeting

- Agreed on design constraints for instructional time needed to teach new science standards.
- Refined grade level articulation of critical content.

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- **Recommendation 1: Standards should set rigorous learning goals that represent a common expectation for all students.**
- Recommendation 2: Standards should be scientifically accurate yet also clear, concise, and comprehensible to science educators.
- **Recommendation 3: Standards should be limited in number.**
- Recommendation 4: Standards should emphasize all three dimensions articulated in the framework—not only crosscutting concepts and disciplinary core ideas but also scientific and engineering practices.
- **Recommendation 10: Grade-by-grade standards should be designed to provide a coherent progression within each grade band.**
- Recommendation 11: Assumptions about the resources, time, and teacher expertise needed for students to achieve particular standards should be made explicit.

A Framework for K-12 Science Education (pages 298-305)

July 13-14 Tasks

- Intersect Content Big Ideas (1-10) in each grade level with NOS Big Ideas (11-14), as appropriate.
- Write a standard (what students should **know**, **understand**, and be **able to do**) at each intersection.
- Edit and refine the language of the standards

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July 14 Task

- Divide into mixed grade/content groups.
- Review yesterday's work.
- Provide feedback to help each grade revise their standards.

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