Arizona Science Standards Revision Working Group

October 18, 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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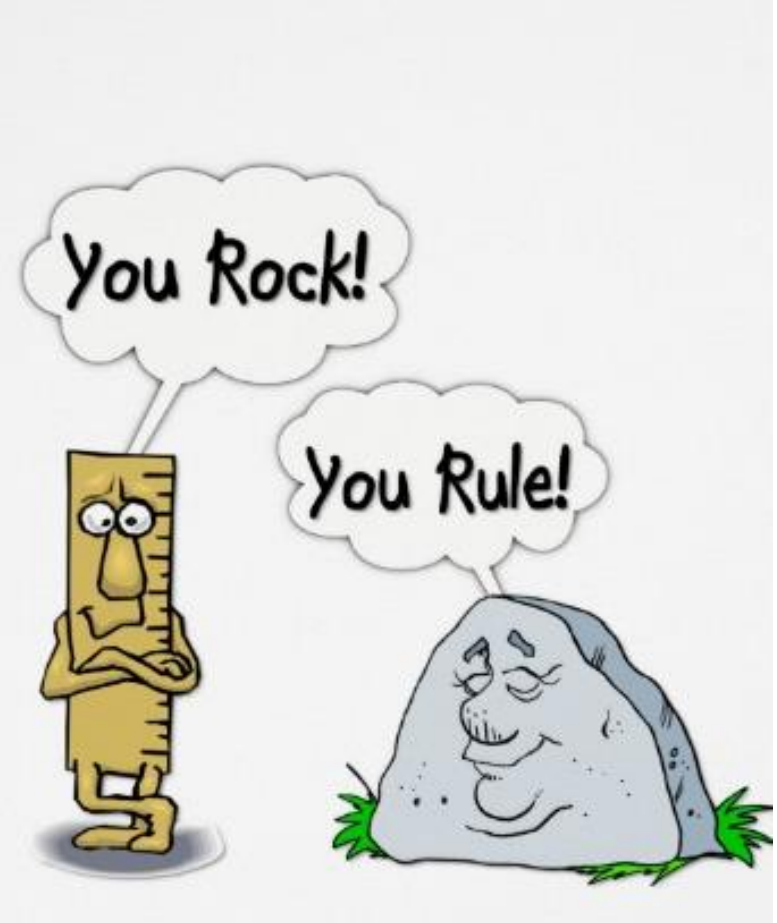
Biggest Thank You!



Housekeeping

Dr. Eugene Judson

Associate Professor - Science Education Arizona State University

ASU Research project – IRB consent

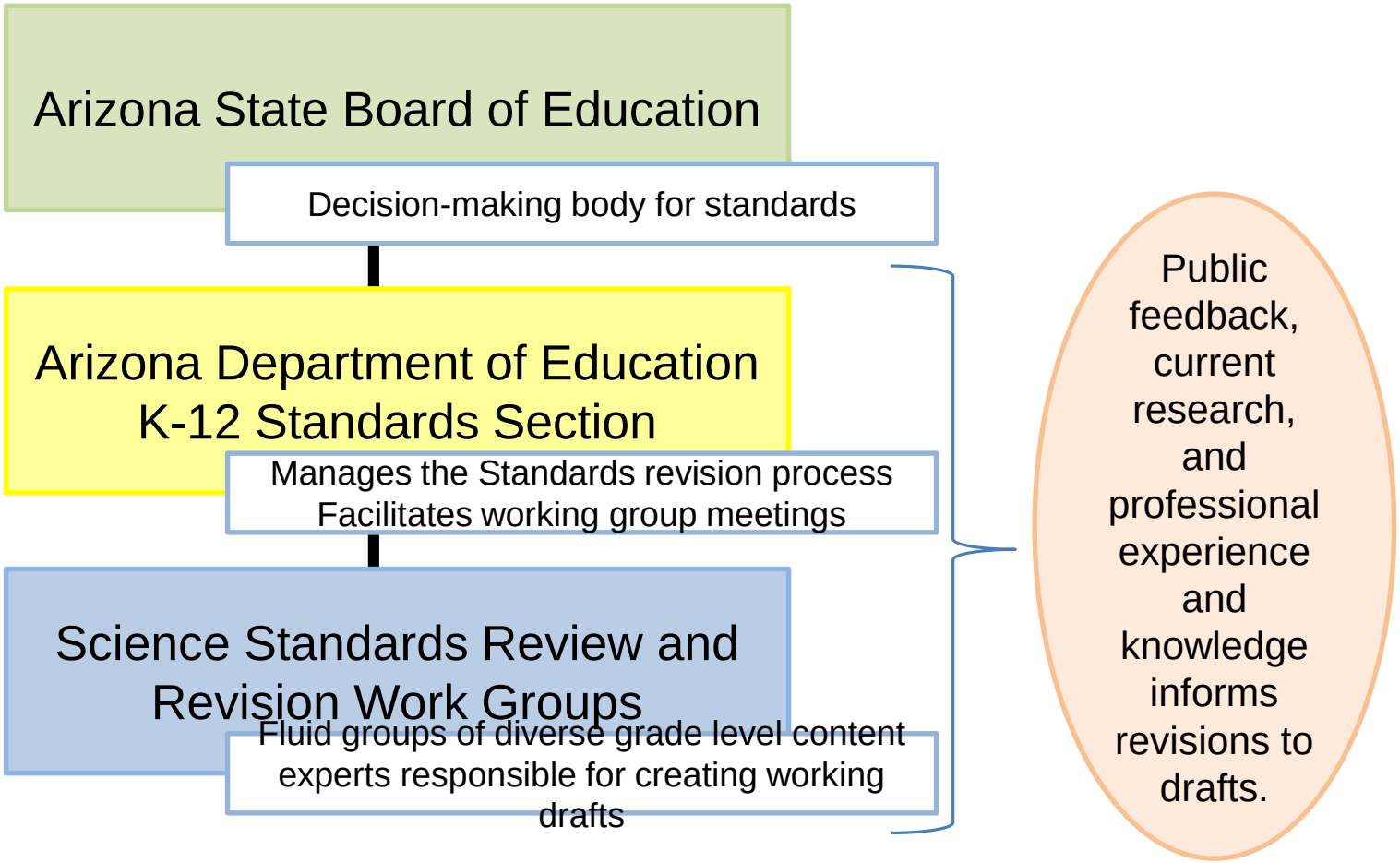
Participation in this research project is completely voluntary and does not impact your participation in standards work.

Introductions

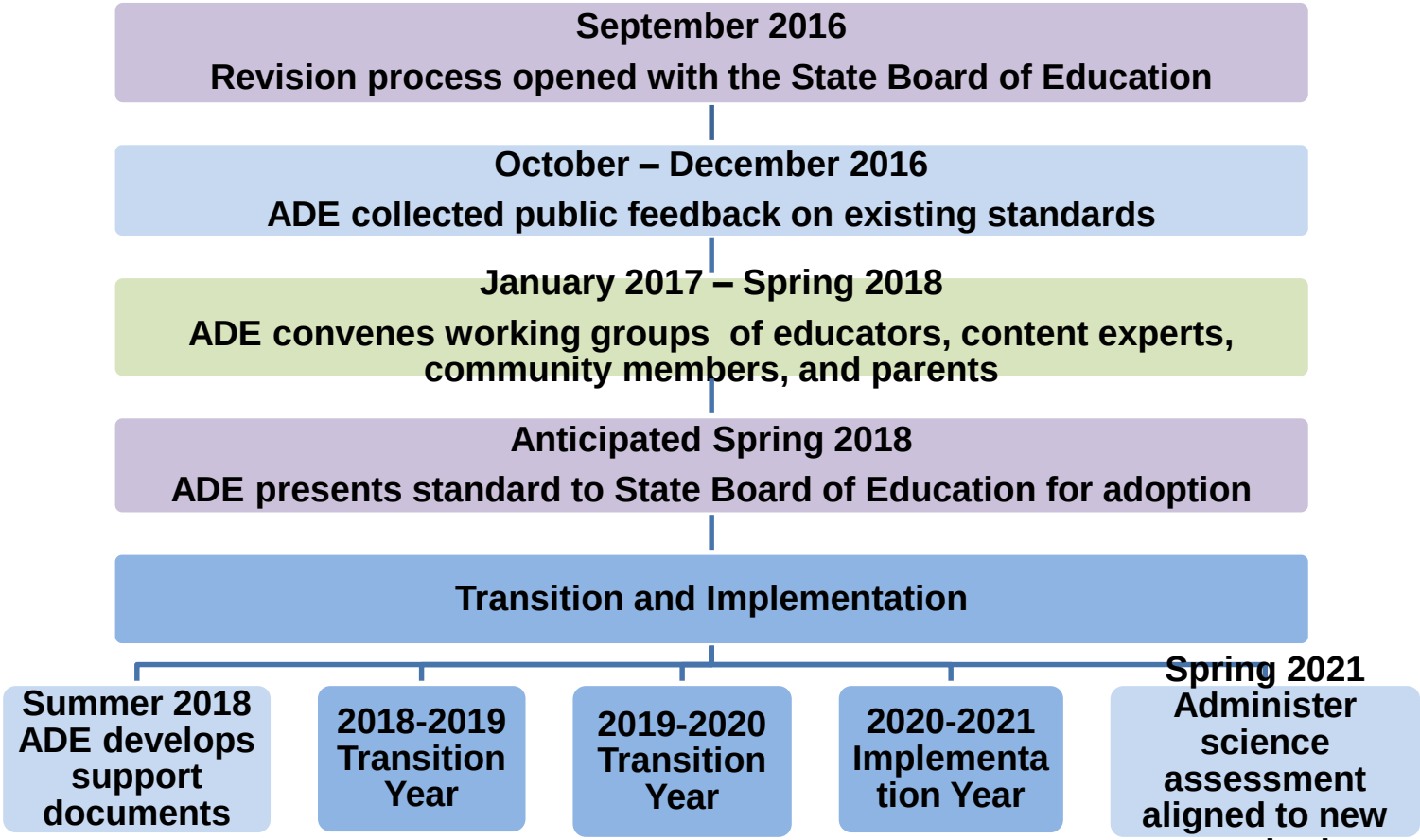
Introduce yourself by telling everyone in the group:

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

Standards Review - Structure



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

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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:

- Articulated and refined critical content from grade bands to grade levels.
- Agreed on design constraints for instructional time needed to teach new science standards.
- Wrote grade level standards.
- Reviewed and revised standards for vertical alignment and against set criteria.

Work to Date:

- Small high school group worked on high school standards
- Parent and community focus group provided feedback

- **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)

Standards Review - Structure

(January 2017)

Establish vision of standards

Identify critical content (the 'know and understand') at each grade band

Refine vision, if needed

Refine critical content, informed by research and public comments

Articulate critical content from grade bands to grade levels

Refine, informed by research and public comments

Identify critical process skills (the "do") at each grade

Refine, informed by research and public comments

Write grade level standards incorporating what students need to know, understand, and do.

Incorporate crosscutting concepts, as appropriate

Review standards for vertical and horizontal alignment, and connections to other content areas

Refine standards, informed by research and public comment

Refine language of standards using established criteria

Prepare introduction and glossary

Release DRAFT for public feedback

(Anticipated Dec 2017)

Refine DRAFT, informed by public feedback and additional research

Prepare standard for State Board Adoption

(Anticipated spring 2018)

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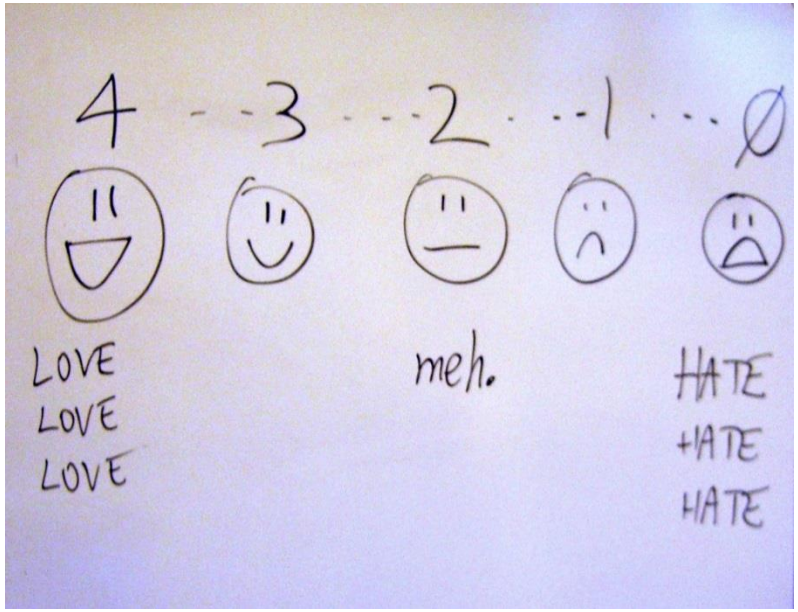
Today's Tasks



In your grade band groups, individually read the draft of the full standards document.

For the document, write individual feedback on:

- Strengths
- Weaknesses
- Missing Information

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Today's Tasks

In your grade band groups, discuss comments, questions, strengths, weaknesses, suggestions for revisions….

Returning working group members, update new members in your grade band on your process and decision making.

Today's Tasks

In your grade band groups, make revisions using questions on your directions sheet.

- Wording
- Alignment
- Overview text

Today's Tasks

Recommendations

- Coding
- Introduction
- Appendices

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