The background of the slide is a composite image. The top left portion shows two yellow school buses parked outdoors. The bottom left portion shows a classroom interior with blue walls, decorated with colorful balloons and framed pictures. Several small, square tables and chairs are arranged in the classroom.

“Kentucky Academic Standards for Science” and Alignment of Assessment Blueprint

Interim Joint Committee on Education

Oct. 18, 2022

The background of the slide is a collage. The top-left portion shows two yellow school buses, with the one in front labeled 'SCHOOL BUS' and the number '32'. The bottom-left portion shows a classroom with blue walls, decorated with colorful balloons and framed pictures. There are several small tables and chairs in the classroom.

“Kentucky Academic Standards for Science”

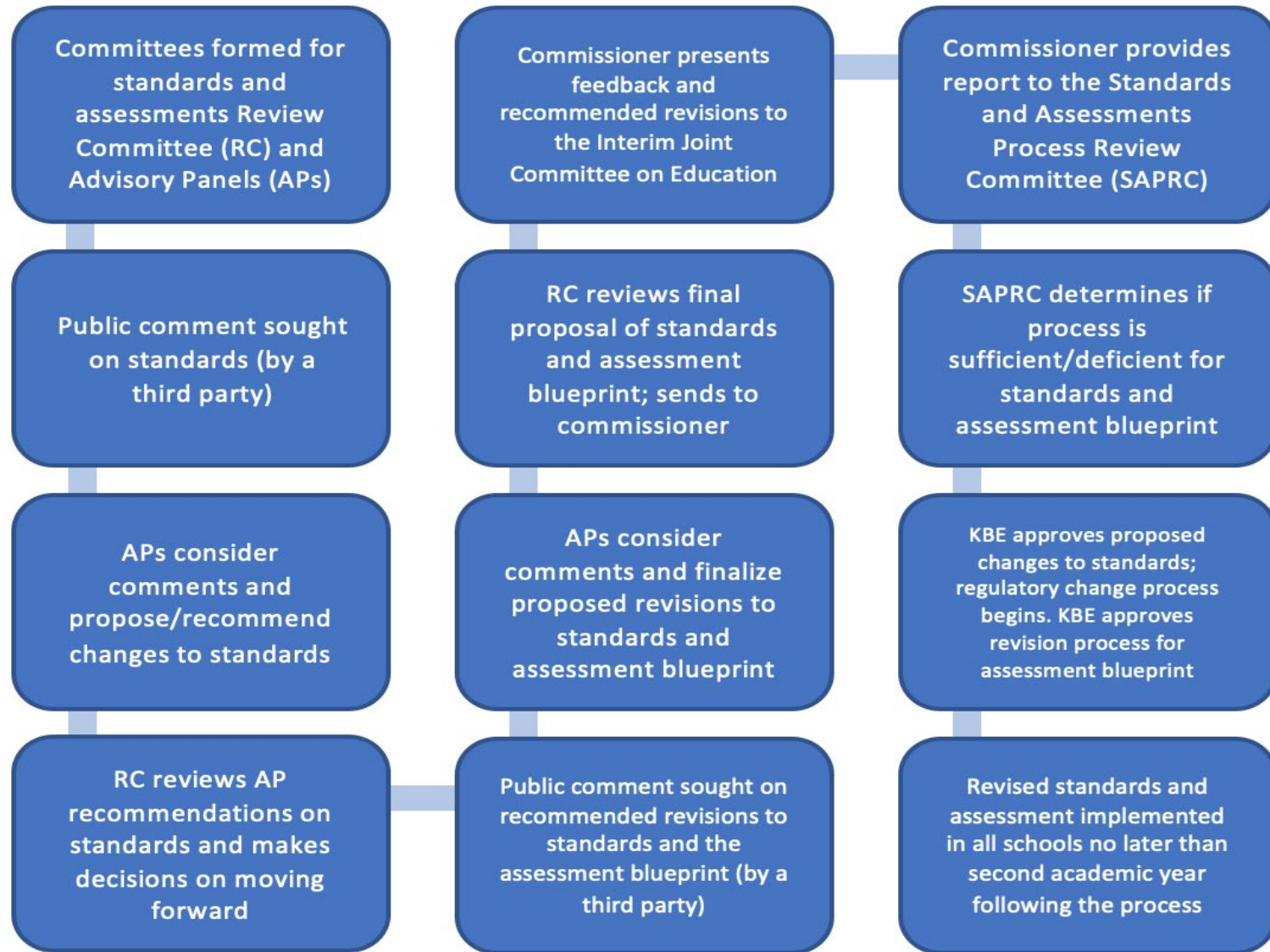
KRS 158.6453 Standards Revision Requirements

The standards revision to the content standards shall:

- Focus on critical knowledge, skills and capacities needed for success in the global economy;
- Result in fewer but more in-depth standards to facilitate mastery learning;
- Communicate expectations more clearly and concisely to teachers, parents, students and citizens;
- Be based on evidence-based research;
- Consider international benchmarks; and
- Ensure that the standards are aligned from elementary to high school to postsecondary education so that students can be successful at each education level.

Standards and Assessments Review Process

To occur every six years



Standards and Regulation

- 704 KAR 8:120 “Kentucky Academic Standards for Science”
- This administrative regulation will adopt into law the “Kentucky Academic Standards (KAS) for Science.”

“KAS for Science” and Assessment Alignment Timeline

- **October 2020:** Call for participation on standards committee opened
- **January 2021 - February 2021:** Current science standards open for public comment/feedback
- **April 2021:** Initial Science Review Committee (RC)/Advisory Panels (APs) kickoff meetings
- **June 2021:** 2nd Science RC/AP meeting working on vision statement
- **July 2021:** 3rd Science RC/AP meeting finalize vision statement
- **July 2021- January 2022:** AP met 11 times and RC met 6 times to review public feedback and make recommendations to the draft standards
- **February 2022 - June 2022:** Subcommittees met 17 times to provide justifications, review progressions and coherence, and make recommendations to the layout
- **June 2022:** RC and AP recommend release of draft for public comment
- **June 2022 - July 2022:** Science Standards and Science Assessment Blueprint released for public comment
- **August 2022:** AP and RC meet to review public feedback and finalize their recommendations to draft standards
- **September 2022:** AP and RC meet to review public feedback and recommend potential changes to assessment blueprint
- **October 2022:** Commissioner presents recommendations and public feedback to the Interim Joint Committee on Education

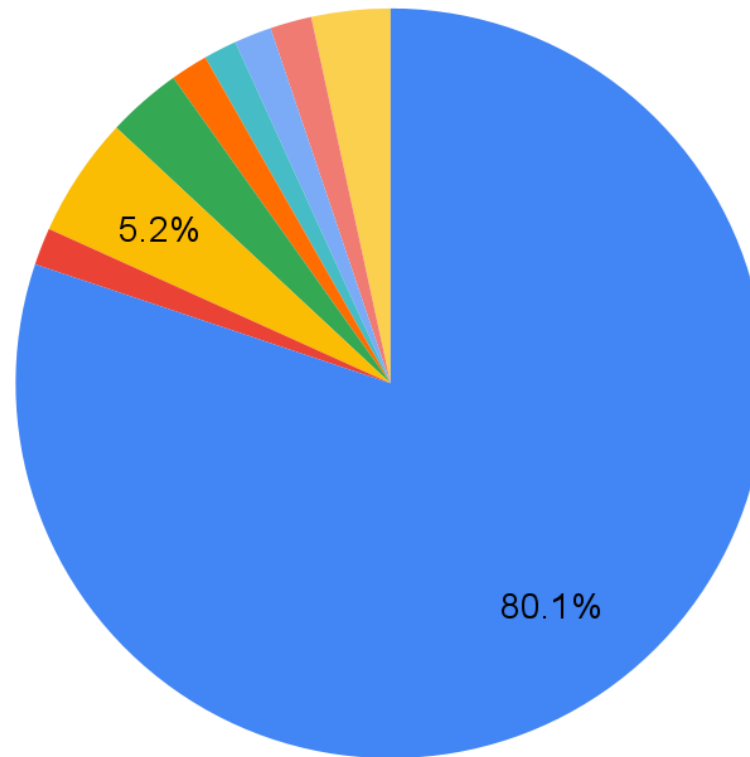
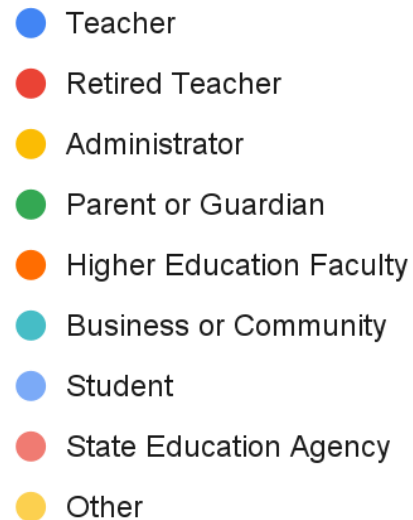
Guiding Principles Determined by APs and RC

- Standards should be limited in number and be written in clear and precise language.
- K–12 alignment guides evidence-based, developmentally appropriate learning that progresses logically across grade levels.
- Using observations and evidence, students make sense of the natural world.
- Students need sustained opportunities to work with and develop the underlying ideas and to appreciate those ideas' interconnections over a period of years rather than weeks or months.
- Teachers at all grade levels have ongoing access to high quality science professional learning and resources to help students make sense of the natural world.

Initial Public Comment Period- Survey

Respondent Roles

Participant Roles



Role	Number
Teacher	448
Retired Teacher	9
Administrator	29
Parent or Guardian	16
Higher Education Faculty	9
Business or Community	8
State Education Agency	5
Student	10
Other	19

Public Comment Period: Standard Ratings

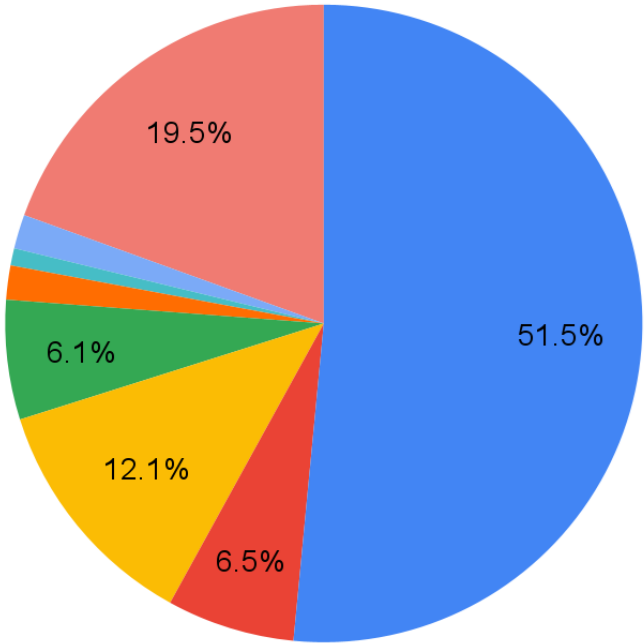
- A total of 553 respondents completed the survey.
- Not all respondents commented on all performance expectations; most had no suggested changes to the performance expectations.
- Of the 553 respondents, 348 had no proposed changes or comments at all.
- Among those who provided comments, they did so on average for a little over five performance expectations.

Draft Public Comment Period- Survey

Respondent Roles

Participant Roles

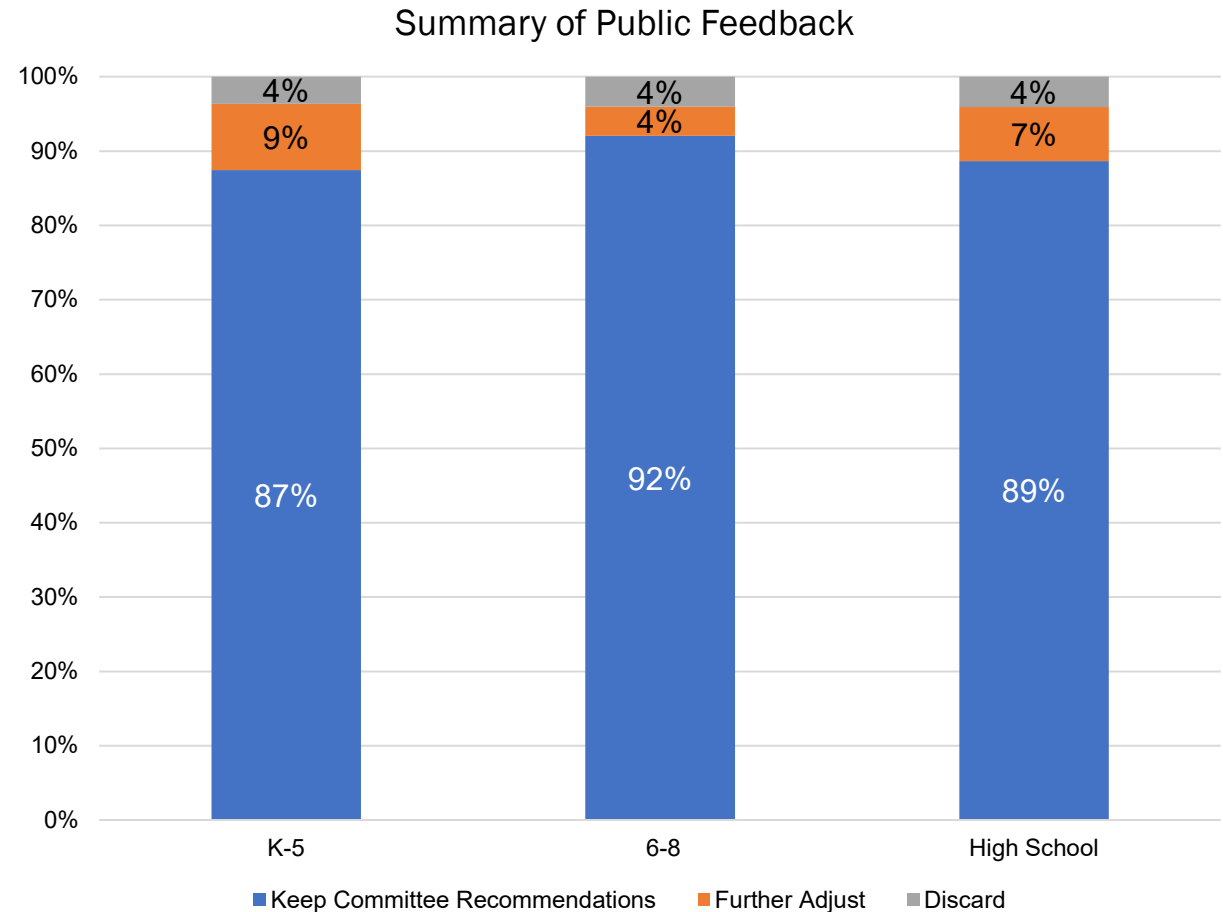
- Teacher
- Informal Educator
- Administrator
- Parent or Guardian
- Higher Education Faculty
- Business or Community
- Student
- No Response



Role	Number
Teacher	119
Informal Educator	15
Administrator	28
Parent or Guardian	14
Higher Education Faculty	4
Business or Community	2
Student	4
No Response	45

Public Comment Period: Standard Ratings

- K-5 received 820 ratings across 78 performance expectations; 87% requested to keep the committee's recommendations.
- Middle School had 793 ratings across 59 performance expectations; 92% requested to keep the committee's recommendations.
- High School had 856 ratings across 71 performance expectations; 89% requested to keep the committee's recommendations.
- 95 individuals provided feedback on the organization and layout. 83% of those agreed or strongly agreed that the layout was easier to identify the standards and meaning.



Additional Feedback

Seven focus groups were held during the summer/fall of 2022 consisting of:

- Higher education science instructors;
- Higher education teacher prep;
- Parents;
- Organizations supporting implementation;
- Secondary teachers;
- Administrators; and
- Students.

Draft “Kentucky Academic Standards for Science” Highlights

- Redesign of the layout to include foundation box
- Revision of clarification statement and assessment boundary
- Grades K-8 are grade level specific standards; high school is banded 9-12
- Standards are organized into four domains:
 - Physical science
 - Life science
 - Earth and space science
 - Engineering, Technology and Application of Science

Draft “Kentucky Academic Standards for Science”

Performance Expectation (PE): The performance students demonstrate to show mastery

K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, swings on a playground, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.

Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.

Clarification Statement: Provide examples or additional information

Assessment Boundary: States the limit of assessment for large-scale assessment

Foundation Boxes: Provides further information about each dimension that was combined to develop the PE.

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concepts
Planning and Carrying Out Investigations With guidance, plan and conduct an investigation in collaboration with peers.	PS2.A: Forces and Motion Pushes and pulls can have different strengths and directions. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. PS2.B: Types of Interactions When objects touch or collide, they push on one another and can change motion. PS3.C: Relationship Between Energy and Forces A bigger push or pull makes things speed up or slow down more quickly.	Cause and Effect Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Alignment of Science Assessment Blueprint



Kentucky Department of
EDUCATION

Assessment Alignment

Per KRS 158.6453, the Kentucky Department of Education shall implement a process for reviewing Kentucky's academic standards and the alignment of corresponding assessments for possible revision or replacement.

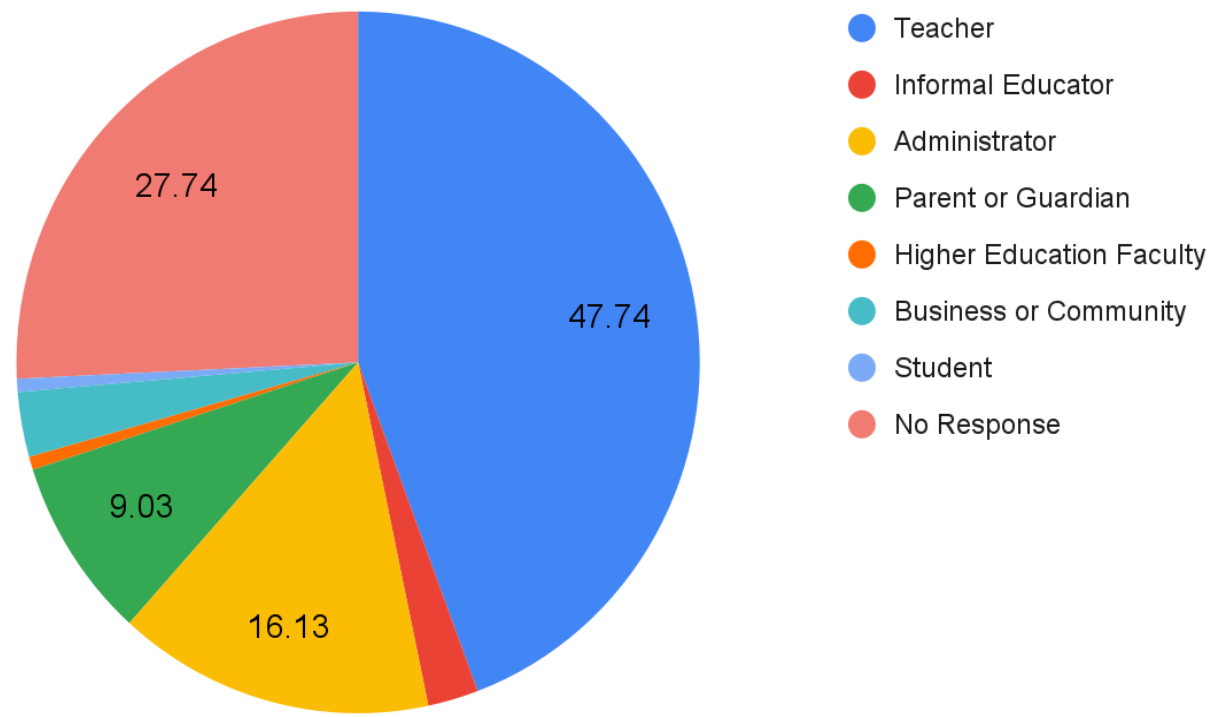
Standards and Assessments Review Process

To occur every six years



Blueprint Public Comment Period - Survey Details and Respondent Roles

Participant Roles



Role	Number
Teacher	74
Informal Educator	4
Administrator	25
Higher Education Faculty	1
Business or Community	5
Parent or Guardian	14
Student	1
No Response	43

Public Comment Period: Blueprint Feedback

- Majority 75%+ for physical science, life science and earth and space science, and 69% in engineering design identified blueprint domains communicate content being assessed
- **Target Percentage for Grade 4** - Greater percentage stated physical science and earth and space is “just right” or should be lowered; life science is “just right” or should be higher; engineering design is “just right”
- **Target Percentage for Grade 7** - Greater percentage stated physical science is “just right” or should be lowered; life science, earth and space, and engineering design is “just right” or should be higher
- **Target Percentage for Grade 11** - Greater percentage stated physical science and engineering design is “just right” or should be higher; life science is “just right” or should be higher; and earth and space is “just right”
- Most respondents stated that the document is easy to read and understand but some disagreed that it provides instructional guidance to teachers or is useful to non-educators

Draft Changes for Science Assessment Blueprint

- Additional language and hyperlink was added in blueprint introduction to make connection to released items to provide understanding of three-dimensional assessment items.
- At grade 7, lower boundary of earth and space science was changed to 20% to better reflect content taught leading up to assessment.

Draft “Kentucky Academic Standards for Science” and Alignment of Assessment Blueprint

Questions?



Kentucky Department of
EDUCATION