

# Using Technology to Assess Hard-to-Measure Constructs in the Common Core State Standards and to Expand Accessibility

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6/20/2013

1

**Technology Enhanced Assessments**  
Innovation Achievement Adaptive Serious games 21st-Century Skills  
Authentic tasks Simulations Personalization Engagement Measurement  
Real time Accessibility

## The Challenge to Presenters:

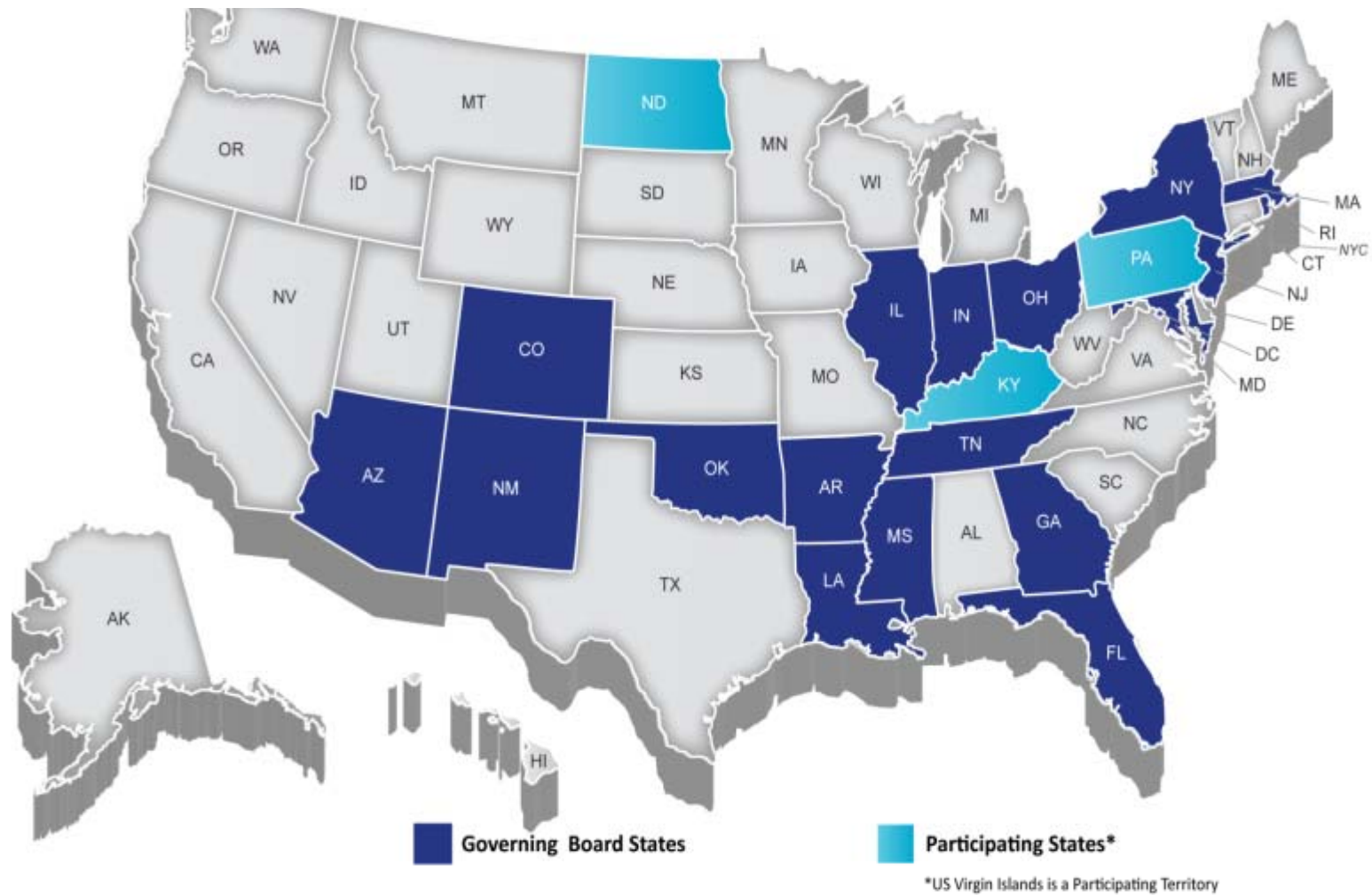
Remember emphasis here is not only on how you are better measuring complex constructs and being broadly accessible in your current assessments, but how you are designing the larger system and assessments to allow for evolution/advances after 2015.

6/20/2013

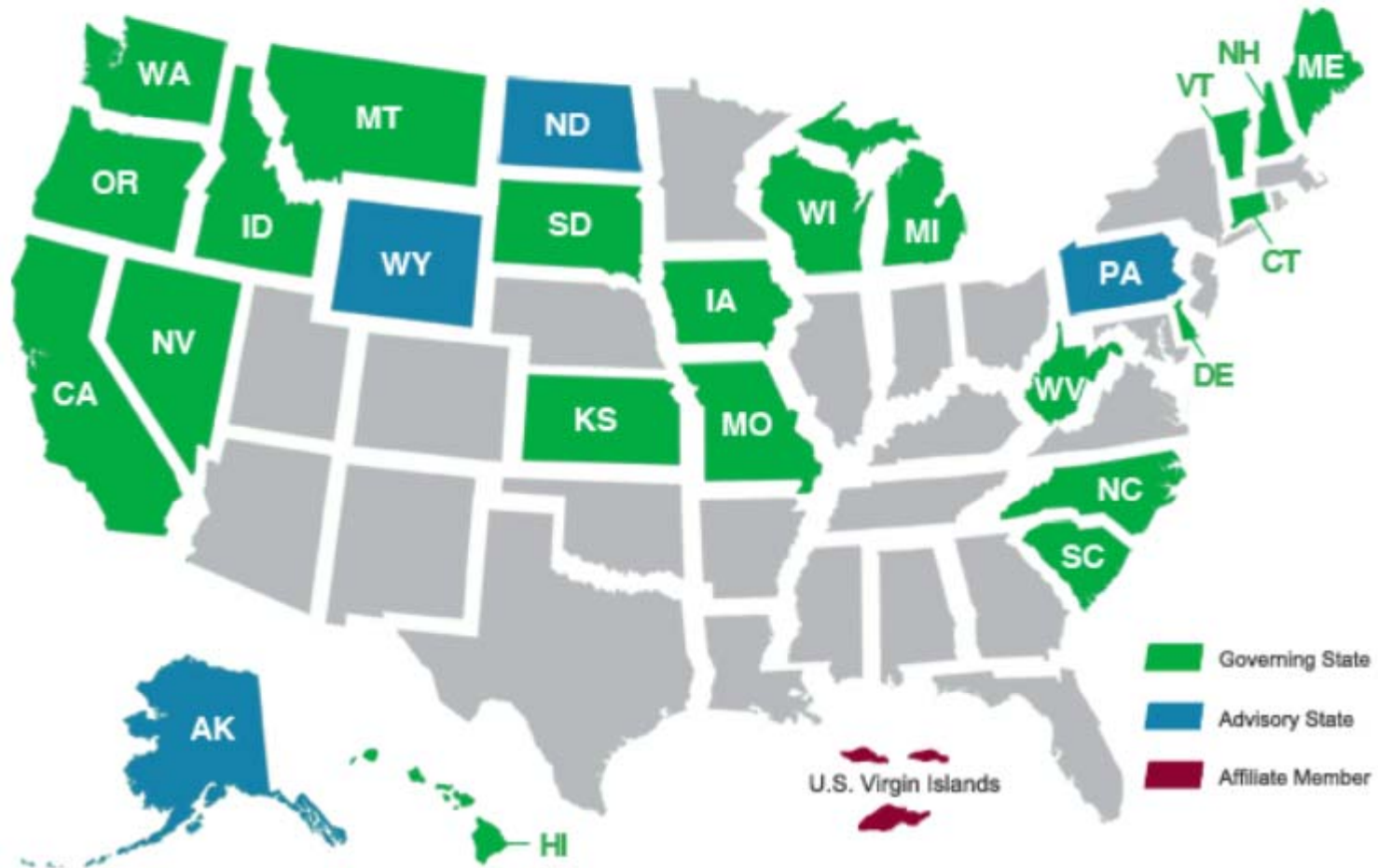
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# Presentation from PARCC States



# Presentation from SBAC States



Below is a table showing Aliya's recipes for making cherry punch.

	Number of Scoops of Mix
Aliya's recipe	3
Malcolm's recipe	3



Which recipe makes the sweeter punch?

Aliya's recipe  
Malcolm's recipe

Answer in terms of number of scoops of mix and water.

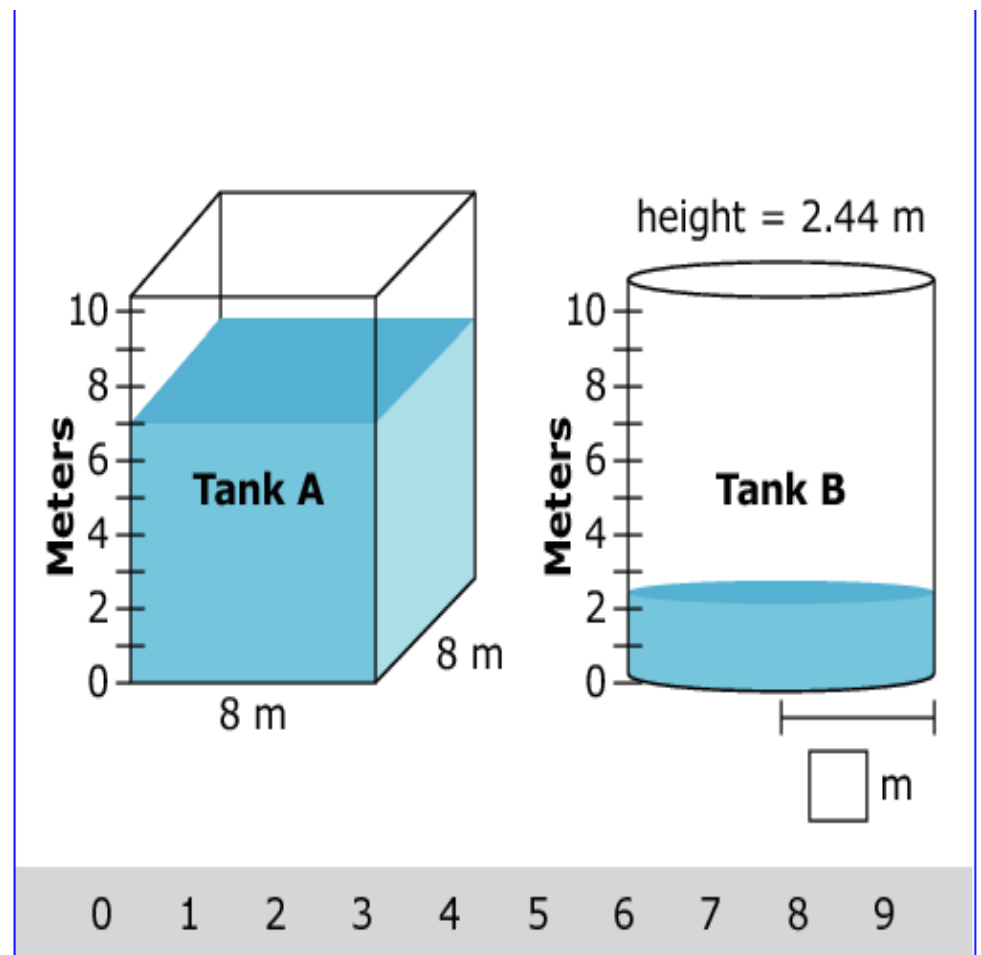
# Water Tank Simulation (SBAC)

Two water tanks are shown. Tank A is a rectangular prism and Tank B is a cylinder. The tanks are not drawn to scale.

Tank A is filled with water to the 10-meter mark.

Click Tank A to change the water level. The volume of water that leaves Tank A is transferred to Tank B, and the height of the water in Tank B is shown.

Drag one number into the box to show the approximate radius of the base of Tank B.





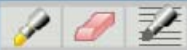
Session 1

Untimed Test

Question 1 of 5

Pause Test

Stop Test



Reading

Volume

Slow

Medium

Fast

Demo Student

Directions: Read the article "The Mystery of the Baghdad Battery." Then do Number 1.

# The Mystery of the Baghdad Battery

Most science textbooks credit Alessandro Volta with inventing the electric battery in 1800. But what if he only reinvented something that was first created 2,000 years ago? That's what a lot of scientists believe, based on the discovery of an [artifact](#) known as the Baghdad Battery.

This ancient [relic](#) was discovered in 1936, near Baghdad in Iraq. It is made of a clay jar about the size of a man's fist, with a tar-like stopper. Passing through the stopper is an iron rod. Inside the jar, the rod is surrounded by a copper tube.

Filling the jar with an electrolyte, such as lemon juice, causes a chemical reaction between the copper and the iron. The result is that the device produces about one volt of electricity. That's not much, but it's enough to make it a battery.

While many people see the design as clear evidence of the artifact's use, others remain doubtful. They think the jar was used to hold scrolls, which have turned to dust over the centuries. According to them, the

Explain how the artifact found in 1936 came to be called the Baghdad Battery. Include details from the article in your explanation.

You may enter your response in the box below or record your response by using the microphone option.



YOU ARE HERE

- 1
- 2
- 3
- 4
- 5

Go On ▶

Mark for Later Review

Session 1

Question 4 of 5


Untimed Test



Pause Test Stop Test

Reading Volume Slow Medium Fast Demo Student

Directions: Now do Number 4 by following the steps on the "Directions" tab.



Directions Article Video

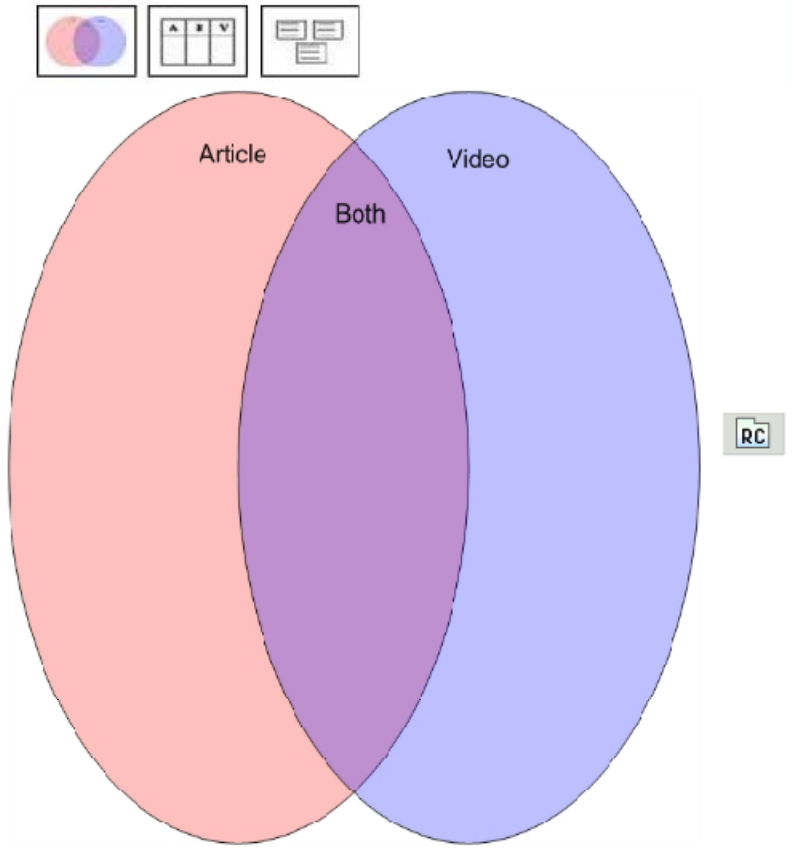
Click on the "Article" tab and review the article "The Mystery of the Baghdad Battery." Notice that details of the article are provided at the bottom of the tab in numbered boxes . To see the details, click the numbered boxes.

Then click on the "Video" tab and watch the video "Ancient Baghdad Battery IRAQ." If you want to read what you hear in the video, click the caption or  button. At the bottom of the video are details of the video . To watch the video details, click on the video buttons.

Compare the information in the article to the information in the video. Think about what information is the **same or similar** in both sources and what information is **new or different** in each source.

Then choose **one** graphic organizer to show the results of your comparison of the article and video sources. You may choose from

1. a Venn diagram 
2. a table 



YOU ARE HERE

1 2 3 4 5

Go Back Go On

Mark for Later Review



# ELA/Literacy: Grade 7 Sample (PARCC)

## SAMPLE ITEM

Below are three claims that one could make based on the article “Earhart’s Final Resting Place Believed Found.”

Claims	Earhart and Noonan lived as castaways on Nikumaroro Island.
	Earhart and Noonan’s plane crashed into the Pacific Ocean
	People don’t really know where Earhart and Noonan died.

**Part A:** Highlight the claim that is supported by the most relevant and sufficient facts within “Earhart’s Final Resting Place Believed Found.”

**Part B:** Click on two facts within the article that best provide evidence to support the claim selected in Part A.

Less Complex



More Complex

	1. Multiple Choice	2. Selection/ Identification	3. Reordering/ Rearrangement	4. Substitution/ Correction	5. Completion	6. Construction	7. Presentation
1A. True/False	2A. Multiple True/False	3A. Matching	4A. Interlinear	5A. Single Numerical Constructed	6A. Open-Ended Multiple Choice	7A. Project	
1B. Alternate Choice	2B. Yes/No with Explanation	3B. Categorizing	4B. Sore-Finger	5B. Short-Answer and Sentence Completion	6B. Figural Constructed Response	7B. Demonstration, Experiment, Performance	
1C. Conventional Multiple Choice	2C. Multiple Answer	3C. Ranking and Sequencing	4C. Limited Figural Drawing	5C. Cloze-Procedure	6C. Concept Map	7C. Discussion, Interview	
1D. Multiple Choice with New Media Distractors	2D. Complex Multiple Choice	3D. Assembling Proof	4D. Bug/Fault Correction	5D. Matrix Completion	6D. Essay and Automated Editing	7D. Diagnosis, Teaching	



# ARCTIC TREK

Track down the answers  
**Over the ice**

ATC21S

Companies

Countries

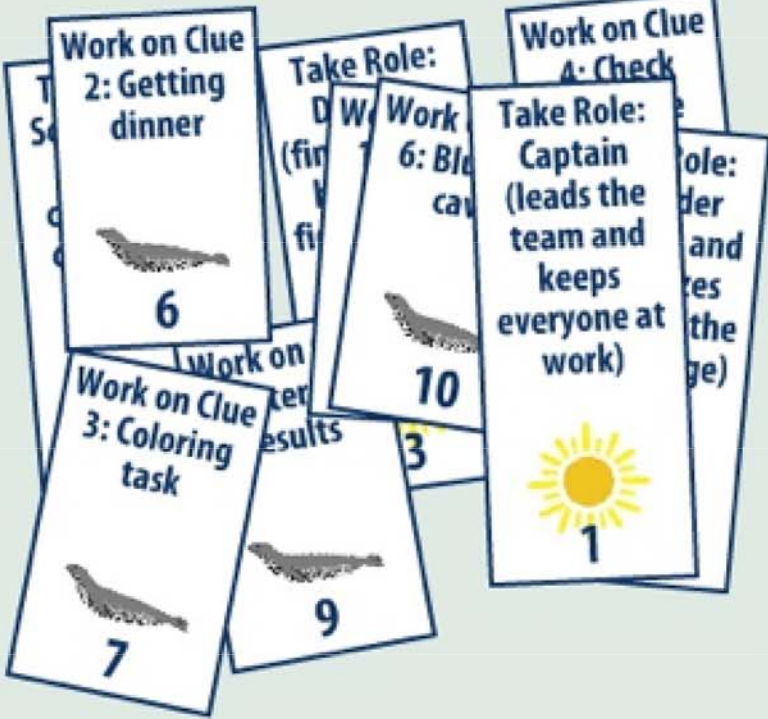
Developers

Back

Task id: task60

Next

Work with your team to decide who will do what:

Person 1	Person 2		Person 3	Person 4



GLOBAL SECOND LANGUAGE CHAT

*Conversation Partners*  
**Meet me**  
**Meet my world**



Source: K. Scalise, ATC21S Project, [www.atc21s.org](http://www.atc21s.org)





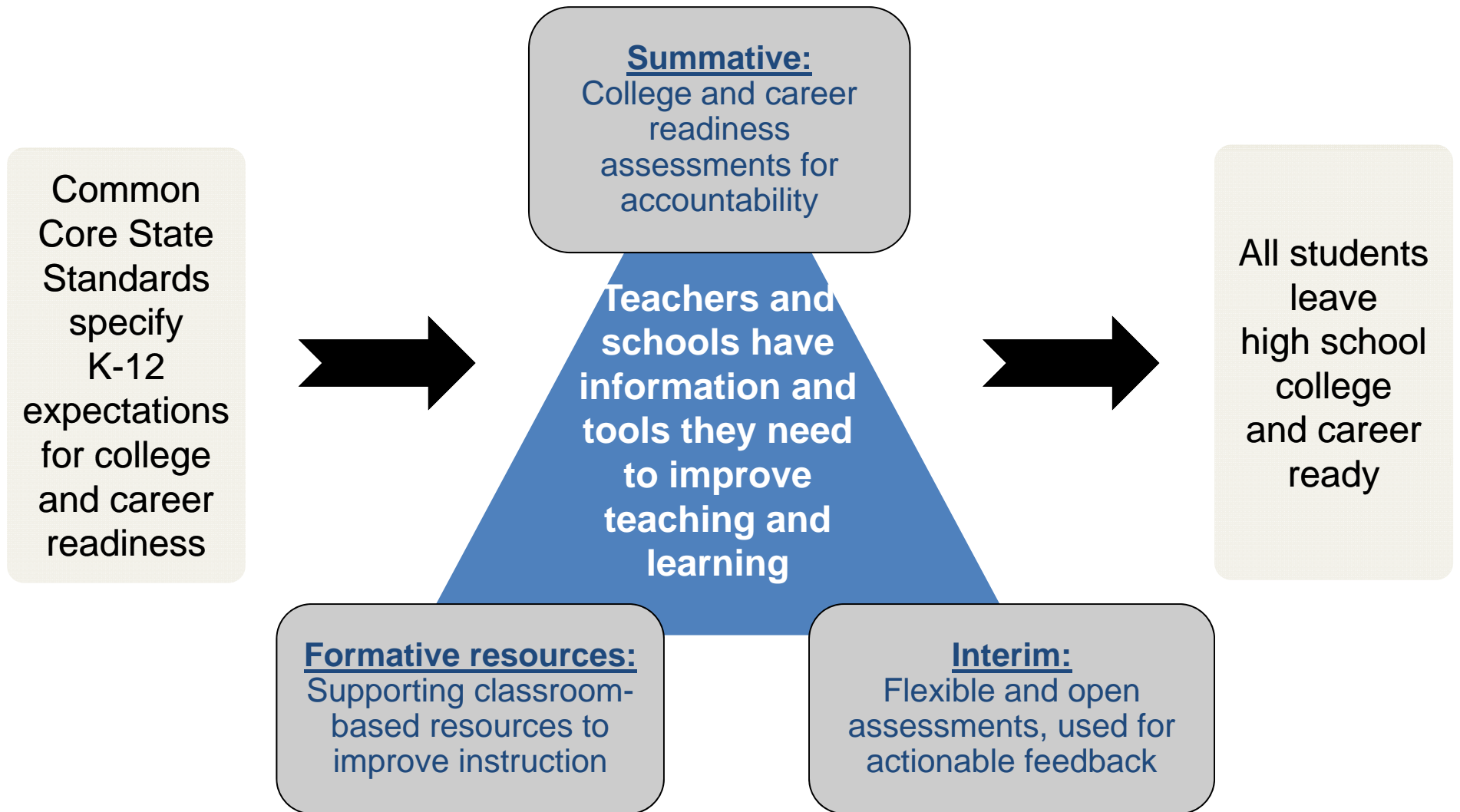
Source: Kristen DiCerbo, Senior Research Scientist, Center for Digital Experience And Analytics, Pearson Educational Measurement, 2012 Colloquium on Large-scale Assessments Learning from Advanced Assessments, Denver, Colorado.



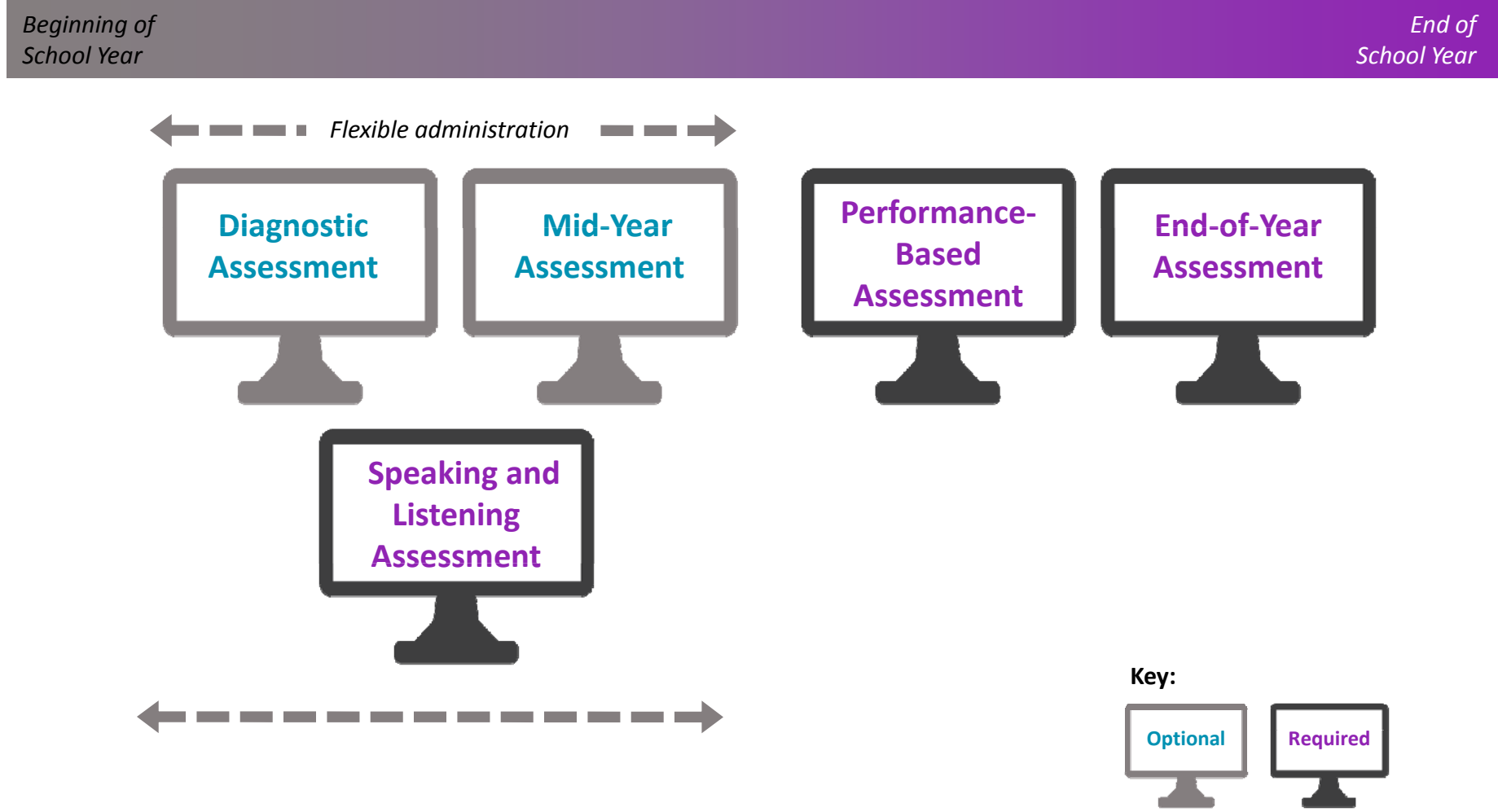


Source: Kristen DiCerbo, Senior Research Scientist, Center for Digital Experience And Analytics, Pearson Educational Measurement, 2012 Colloquium on Large-scale Assessments Learning from Advanced Assessments, Denver, Colorado.

# “Meet the Future”: SBAC Example



# A Similar Example Could Be Composed from PARCC Elements



# SBAC Example

## **‘Core package’ bundle that all members receive as base**

- Summative assessments, including item bank, administration platform and further item development
- Rules, standards and procedures to certify comparability across states and ensure reliability and scoring consistency
- Reporting and analytics, research and validity studies and peer review documentation
- Membership services and communications
- Additional technical support for state accountability systems

# SBAC Example

- Consortium gets items from a combination of vendor and state procurement
- Opportunities for states to participate in item development and review
- About a third of the sustaining budget is expected to be devoted to item and content development, including development of new item types
- Smarter will establish rules, standards and procedures to certify item development bodies
- Will develop procedures for “incubating” new item types

*TEA Recommendations: (Source: K. Scalise TEA paper)*

1. States should press for adoptions that provide utility while meeting U.S. standards of reliability, validity, acceptability, fairness, and access for every student.
2. Even a small influx of state innovation (working through the consortia sustainability pathways and mechanisms such as in the SBAC example) will make a huge difference in achieving the potential of the future for our students.
3. While high quality evidence is important, seeking avenues for the instructional relevance of evidence, e.g. *USE* of evidence, will support learning outcomes.
4. DON'T lock down around any particular era of technology.
5. Look to Next Gen science assessment upcoming as well, e.g. next slide better understanding cognition.



# Science. Learning Progressions

“Assessment should help determine where a student can be placed along a sequence of progressively more “scientific” understandings of a given core idea that by definition includes successively more sophisticated applications of practices and cross-cutting concepts. This is an unfamiliar idea in the realm of science assessments, which have more often been viewed as simply measuring whether students know particular grade-level content.” – Jim Pellegrino, 2013, “Proficiency in Science: Assessment Challenges and Opportunities”

