What does “aligned with standards” really mean?

Joseph Parker
David Collins
Expected Outcomes

Accurately determine when instruction, assignments and assessments are “aligned with standards”

Talk confidently with teachers about aligning instruction, assignments and assessments with standards

Effectively support teachers as they learn to align instruction, assignments and assessments with standards
What does “aligned with standards” really mean?

What does “aligned with standards” mean to me?
# Terminology

**Cognitive** involves thinking; a mental action or operation

**Cognitive process** the thinking required by the standard

**Cognitive complexity** the level or type of thinking required by the standard

## Cognitive Processes
- Recall, understand, identify, cite, compare and contrast, calculate, solve, analyze, synthesize, evaluate, create, assess, develop, differentiate

## Bloom’s Taxonomy
- Create
- Evaluate
- Analyze
- Apply
- Understand
- Recall

## Webb’s DOK
- Level 4 Extended Thinking
- Level 3 Strategic Thinking
- Level 2 Skill/Concept
- Level 1 Recall
The Structure of Standards

Compare and contrast two authors’ descriptions of the same historical event.

Cognitive processes

Cognitive complexity (Webb’s DOK Level 2)

Content
What does it mean to be aligned with a standard?

Instruction, assignments and assessments are aligned with a standard if...

...the cognitive processes are the same or similar to what is in the standard AND...

...the cognitive processes are at the same level of cognitive complexity as those in the standard AND...

...the content is the same as what is in the standard.
What does it mean to be aligned with a standard?
What does it mean to be aligned with a standard?

**Example 1**

**Standard**: Differentiate between...

**Instruction**: To tell the difference between...

**Level 2**: ...weight and mass

**Mass** is a measure of how much **matter** something contains.

**Weight** is a measure of how strongly gravity pulls on something.
What does it mean to be aligned with a standard?

Standard

Assignment

Differentiate between...

Recall the definitions of...

...weight and mass

...weight and mass

Level 2

Level 1

Mass is a measure of how much matter something contains.

Weight is a measure of how strongly gravity pulls on something.
Aligned Cognitive Processes

To be “aligned with standards” the cognitive processes must be the same or similar to what is in the standard.

Same = the exact cognitive process identified in the standard

Standard = Graph a linear equation

Instruction = Graph a linear equation

Similar cognitive processes = use different verbs, but require the same mental action

Critique the author’s rationale

Evaluate the author’s rationale

Assess the author’s rationale
Can you find the similar cognitive processes?

Sort these verbs into groups of similar cognitive processes:

Create, Enhance, Explain, Develop, Decompose, Generate, Examine,
Elaborate, Expand, Predict, Draft, Analyze, Produce, Hypothesize.

Groups:
1. Create, Develop, Draft, Generate, Produce
2. Elaborate, Enhance, Expand
3. Explain, Predict, Hypothesize

Pop Quiz 1
Caution

- Verbs, in isolation, may not accurately describe the required cognitive process

Explain key terms related to fiscal policy.

Explain the meanings of key terms related to fiscal policy in your own words.

Explain the interaction among fiscal policy, long- and short-term interest rates, inflation and wage growth.

- Analyze verbs AND content to accurately interpret the required cognitive process
What is cognitive complexity?

Cognitive complexity refers to the **number** and **type** of mental actions required by a task.

- Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.

Cite several pieces of textual evidence...

Level 2

Determine a theme or central idea of a text...

...analyze its development over the course of the text ...

...provide an objective summary of the text.

Level 3
Resource for Determining Cognitive Complexity

Content Complexity
• Provides definitions and examples of the four levels of cognitive complexity used by the State of Florida
• Includes Reading, Writing, Math, Science and Social Studies
• Examples illustrate each of the four levels for each content area

Standards and Access Points
• Cognitive complexity stated for each standard
Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Why was Tommy afraid to tell his parents about what happened after school? Write out your answer and use information from the story to support your answer.

Have you ever been afraid to tell your parents something? Write a brief description of that situation and use real-life examples to explain why you were afraid.
More Practice Identifying Assignments Aligned with Standards

**Standard**

Cite strong and thorough textual evidence to support an analysis of what the text says explicitly as well as inferences drawn from the text.

**Assignment 1**

After reading *Harriet Tubman: Conductor on the Underground Railroad*, write an essay describing what you think was her most important character trait. Provide extensive support for your views from the text. Include explicit and inferred evidence.

**Assignment 2**

After reading *Harriet Tubman: Conductor on the Underground Railroad*, write an essay in which you describe what Tubman might have thought about discrimination against women in today’s society.
More Practice Identifying Assignments Aligned with Standards

Standard

Develop models to describe the atomic composition of simple molecules and extended structures.

Assignment 1

Create a model that depicts the atomic composition of ammonia, methanol and sodium chloride*. You may use drawing, Styrofoam balls with sticks or computer graphics to create your models.

Assignment 2

Explain how simple molecules differ from extended structures in terms of their atomic composition.

Aligned

Not Aligned

*Ammonia and methanol are simple molecules; sodium chloride is an extended structure.
More Practice Identifying Assignments Aligned with Standards

Standard

Assignments Aligned with Standards

Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Assignment 1

Create scale drawings that accurately reflect the dimensions of a football field and basketball court, but fit both on a single sheet of letter size paper. Label your scale so others will know how to interpret your drawing.

Assignment 2

Use the scale drawings to estimate the number of pavers required to pave a rectangular driveway and the deck area around a round swimming pool. Redraw the two scale drawings using a different scale and recalculate the estimates of how many pavers are needed.

Not Aligned

Aligned
Examples/Non-examples

**Instruction:** Teacher uses a “think-aloud” strategy to demonstrate how to analyze the meaning of a text using specific portions of the text to justify that analysis.

**Assignment 1:** Read the article “When the Earth was Flat” and explain how people respond when science contradicts popular beliefs. Justify your explanation by citing specific examples from the text.

**Assignment 2:** Read the newspaper article “How High Could the Tide Go?” and come up with your own explanation for how public opinion about global warming compares to 15th century beliefs that the Earth was flat.

**Assessment:** Read the handout on climate change and select the statements listed below the text that most accurately explain what the text said. Underline the portions of the text that help you determine which statements are accurate.
### Instruction:
Teacher shows examples of “unknown number” multiplication and division problems involving three whole numbers and asks students to come up with different ways to solve them. Students share their solutions and the teacher provides feedback to resolve misconceptions and reinforce valid mathematical thinking.

### In-Class Practice:
Determine the unknown whole number in each of these equations.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6 \times ? = 18$</td>
<td>? = 3</td>
</tr>
<tr>
<td>$? \times 12 = 48$</td>
<td>? = 4</td>
</tr>
<tr>
<td>$7 \times 3 = ?$</td>
<td>? = 21</td>
</tr>
<tr>
<td>$9 \times ? = 63$</td>
<td>? = 7</td>
</tr>
</tbody>
</table>

### Homework:
Determine the unknown whole number in each of these equations.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3 \times ? = 15$</td>
<td>? = 5</td>
</tr>
<tr>
<td>$32 \div ? = 8$</td>
<td>? = 4</td>
</tr>
<tr>
<td>$? \div 6 = 9$</td>
<td>? = 54</td>
</tr>
</tbody>
</table>

### Assessment:
Show all the ways you can express each of these equations:

<table>
<thead>
<tr>
<th>Equation</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>$42 \div 7 = 6$</td>
<td>$7 \times 6 = 42$, $21 \times 2 = 42$</td>
</tr>
<tr>
<td>$3 \times 2 \times 6 = 36$</td>
<td>$9 \times 4 = 36$, $18 \times 2 = 36$</td>
</tr>
<tr>
<td>$14 \times 4 = 56$</td>
<td>$7 \times 8 = 56$, $28 \times 2 = 56$</td>
</tr>
<tr>
<td>$63 \div 7 = 9$</td>
<td>$9 \times 7 = 63$, $18 \times 3 = 63$</td>
</tr>
</tbody>
</table>
What does “aligned with standards” really mean?

What does “aligned with standards” mean to me?

Why is aligning instruction, assignments and assessments with standards important?
Why Aligning With Standards is Important

- **Standard = 50 lbs. x 5 reps**
- **Performance Test = 50 lbs. x 5 reps**
- **Practice with = 25 lbs. x 5 reps**
Describe how the composition and structure of the atmosphere protects life and insulates the planet.

5 Layers
• Exosphere (440 to 6,200 miles)
• Thermosphere (50 to 440 miles)
• Mesosphere (31 to 50 miles)
• Stratosphere (7 to 31 miles)
• Troposphere (0 to 7 miles)

Composition of Troposphere
• 78.09% nitrogen,
• 20.95% oxygen,
• 0.93% argon
• 0.04% carbon dioxide
• Small amounts of other gases.

Create a detailed diagram of the Earth’s atmosphere; label the composition and structure; explain how it protects life and insulates the planet.
How do you know?

Collect Evidence
- Review Lesson Plan
- Sit in on Team Planning Sessions
- Observe Instruction
- Look at Board Configuration
- Analyze Activities, Assignments and Assessments

Our students receive good grades…

...but they perform poorly on the FSA.
**A Simple Tool**

<table>
<thead>
<tr>
<th>In the Standard(s)</th>
<th>What were the cognitive processes?</th>
<th>What content was addressed?</th>
<th>What was the cognitive complexity level of those processes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Cite evidence…</td>
<td>• …evidence to support an analysis of what the text says explicitly as well as inferences drawn from the text.</td>
<td>• Level 2 Basic Application of Skills and Concepts</td>
</tr>
<tr>
<td></td>
<td>• When you cite evidence…</td>
<td>• …evidence to justify your analysis of a text, you pull supporting details that back up your thinking.</td>
<td>• Level 2 Basic Application of Skills and Concepts</td>
</tr>
<tr>
<td>In Instruction</td>
<td>□ Yes □ Partially □ No</td>
<td>□ Yes □ Partially □ No</td>
<td>□ Yes □ Partially □ No</td>
</tr>
<tr>
<td></td>
<td>• With a partner, analyze this passage and support your analysis…</td>
<td>• …your analysis of what the text says explicitly with evidence from the text.</td>
<td>• Level 2 Basic Application of Skills and Concepts</td>
</tr>
<tr>
<td>In Activities</td>
<td>□ Yes □ Partially □ No</td>
<td>□ Yes □ Partially □ No</td>
<td>□ Yes □ Partially □ No</td>
</tr>
</tbody>
</table>
Demonstration Lesson

Standard:

Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.
<table>
<thead>
<tr>
<th>Date</th>
<th>Wednesday, July 19, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell Work</td>
<td>Make a list of “models” you have seen in the classroom, in a book, online or elsewhere.</td>
</tr>
<tr>
<td>Targeted Standard(s)</td>
<td>Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>A <strong>model</strong> is not the real thing, but a representation of it. A <strong>model</strong> helps us understand complex processes by showing us the key parts of the process, their role or function and how they fit together.</td>
</tr>
</tbody>
</table>
The Water Cycle

Why does the hood of a dark blue car get hotter than the hood of a white car?

What makes the water vapor fall as rain?

How does water vapor overcome gravity and rise?
Steps to Developing a Model

1) Define the process and identify the starting point
2) Break the process down into steps or parts
3) Clarify what happens at each step AND any relationships with other steps
4) Decide how you will illustrate the steps of this process
   • Flowchart, diagram, images?
5) Build the model by showing the steps in sequence and the relationships among the steps
6) Check your model by walking through it
   • Does it explain the process fully and accurately?
Examples of Models

- Wind blows across the surface of the ocean
- Energy is transferred from the wind to the water
- The energy travels through the water in a circular motion
- As the depth of the water decreases; a wave rises
- When the depth is half of the diameter of the wave; it breaks
**Water Cycle Rubric**

*Design a model that illustrates the impact of the energy of the sun and gravity on the water cycle.*

<table>
<thead>
<tr>
<th>The model illustrates the impact of…</th>
<th>Not Yet</th>
<th>Acceptable</th>
<th>Superior</th>
</tr>
</thead>
<tbody>
<tr>
<td>…energy from the sun on the water cycle</td>
<td>No indication</td>
<td>Accurate depiction</td>
<td>Accurate depiction and clear explanation</td>
</tr>
<tr>
<td>…gravity on the water cycle</td>
<td>No indication</td>
<td>Accurate depiction</td>
<td>Accurate depiction and clear explanation</td>
</tr>
</tbody>
</table>
## Processing the Demonstration Lesson

### What did you record?

1. For instruction…
2. For the activity…
3. For the assignment…
4. For the assessment…

<table>
<thead>
<tr>
<th>What were the cognitive processes?</th>
<th>What content was addressed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Develop a model…</td>
<td>• ...a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.</td>
</tr>
<tr>
<td>• These are the steps involved in designing or creating a model…</td>
<td>• ...a model is not the real thing, but a representation of it. A <strong>model</strong> helps us understand complex processes by showing us the key parts of the process, their role or function and how they fit together.</td>
</tr>
</tbody>
</table>

**Yes □ Partially □ No**

- Point out (identify)

• ...evidence of the impact of sunlight and gravity in the teacher’s model.
What does “aligned with standards” really mean?

What does “aligned with standards” mean to me?

Why is aligning instruction, assignments and assessments with standards important?

What percentage of the lessons you observe are aligned with standards?

Elementary = Blue;  Middle = Green;  High = Red     Other = Yellow
Lets Take a Closer Look

Is this percentage the same for...

...elementary, middle and high school teachers?
...all content areas?
...new and experienced teachers?
...teachers who work in teams and teachers who don’t?

How do you explain these differences?
What does “aligned with standards” really mean?

What does “aligned with standards” mean to me?

Why is aligning instruction, assignments and assessments with standards important?

What percentage of the lessons you observe are aligned with standards?

Why aren’t more lessons aligned with standards?
Why plan collaboratively?

- Diverse perspectives produce more and better ideas
- Explaining to others clarifies understanding
- All students benefit from combined expertise of team members
- Strong professional learning
- Reduces teacher isolation
Planning Units and Lessons Aligned with Standards

Identify Units

Optional Steps

Review Themes Running Through the Standards

Plan Connected Lessons That Comprise the Units

Assign Action Items/Reflect on the Process

Study the Standards

Refine Assessments, Activities and Assignments

Integrate Additional Standards

Create Assignment(s)

Think Through Assessments

Plan Instruction and Activities

Assign Action Items/Reflect on the Process
Collaborative Planning Guide

- For use by teams of teachers
- Includes essential and optional elements
- Questions to Consider
- Tasks to Complete
- Aligns assessments, assignments and instruction with standards
Study the Standards

What does the standard require?

What are the big ideas?

What are the precise meanings of the verbs?

What level(s) of cognitive complexity are required to meet the standard?

How can we express the cognitive processes and content in student-friendly terms?
Deconstructing or Unpacking Standards

What does the standard require students to know and be able to do?

- Arguments built upon sound reasoning and with relevant and sufficient evidence are more persuasive.
- We need to be able to identify the argument and specific claims within that argument so we can assess the validity of the argument.
- We need to be able to evaluate the logic of the reasoning behind an argument as well as the strength of the evidence supporting the claims so we can make good decisions about our own position on issues.

What are the big ideas related to the content?

7th Grade Reading Informational Text

Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

1. Arguments built upon sound reasoning and with relevant and sufficient evidence are more persuasive.
2. We need to be able to identify the argument and specific claims within that argument so we can assess the validity of the argument.
3. We need to be able to evaluate the logic of the reasoning behind an argument as well as the strength of the evidence supporting the claims so we can make good decisions about our own position on issues.
Deconstructing or Unpacking Standards

What are the precise meanings of the verbs?

Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

1) To trace an argument and specific claims is to identify each part of the argument and each individual claim in the order in which they appear in the text.
2) To evaluate an argument and specific claims is to determine how persuasive or convincing the argument is and how valid or believable the claims are.
3) To assess the soundness of the reasoning is to evaluate the logic used to make the argument to determine how persuasive or convincing it is.
4) To assess the evidence in terms of relevance and sufficiency is to determine the extent to which the evidence is directly related to the argument and if there is enough evidence of appropriate quality to support the claims made.
Why is identifying the level of cognitive complexity important?

- Helps teachers understand the requirements of the standard
- Makes it easier to align instruction, assignments and assessments with the standard
- Enables teachers to ensure students engage in a wide range of higher-order thinking

What level(s) of cognitive complexity are required to meet the standard?
Deconstructing or Unpacking Standards

How can we express the content and cognitive processes in student-friendly terms?

Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

1) **Argument** is an attempt to persuade others to agree with your point of view or position.
2) **Claims** are statements intended to be accepted as factual.
3) **Reasoning** is the use of logic to build support for an argument.
4) **Evidence** is verifiable information supporting a claim or argument.
5) Something is **relevant** if it is directly related to what is being discussed or studied.
6) Evidence is **sufficient** if there is enough evidence and the evidence is of acceptable quality or validity to be convincing.

**Validity** is the extent to which something is accurate and true in terms of the real world.
Deconstructing or Unpacking Standards

How can we express the content and cognitive processes in student-friendly terms?

Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

1) To trace something can mean to follow a path or trail to see where it goes. Ex. He traced the paw prints in the dirt until he found the lost puppy.
2) To evaluate something is to judge its value. Ex. I’m going to evaluate your work so I can assign a grade.
3) To assess something is to judge it’s value. It is a synonym for evaluate. Ex. I’m going to assess your work so I can assign a grade.
Why create “student-friendly” descriptions of key terms?

- Dictionary Definitions
  - Designed to take up as little space as possible
  - Structured to classify or define rather than explain
  - Example: *abrupt* = happening without warning

- Student-friendly Descriptions
  - Designed to explain and provide an example
  - Structured as a sentence that illustrates the word’s meaning and usage.
  - Example: An *abrupt* change or action is very sudden, often in a way that is unpleasant.
How to Write “Student-friendly” Descriptions

Use the word in a sentence that explains its meaning and shows how the word is used.

<table>
<thead>
<tr>
<th>Word</th>
<th>Dictionary Definition*</th>
<th>Student-friendly Descriptions**</th>
</tr>
</thead>
<tbody>
<tr>
<td>dignity</td>
<td>The quality or state of being worthy of honor and respect</td>
<td>If someone behaves or moves with <strong>dignity</strong>, they are serious, calm and controlled.</td>
</tr>
<tr>
<td>inclined</td>
<td>Having a desire</td>
<td>If you say you are <strong>inclined</strong> to have a particular opinion, you mean you have this opinion, but you do not feel strongly about it.</td>
</tr>
<tr>
<td>overlook</td>
<td>To fail to see</td>
<td></td>
</tr>
<tr>
<td>threat</td>
<td>The act of showing an intention to do harm</td>
<td></td>
</tr>
</tbody>
</table>

*dDK Merriam-Webster Children’s Dictionary (2008); **Collins COBUILD Illustrated Basic Dictionary (Roehr and Carroll, 2010) From Marzano and Sims (2013)*
# How to Write “Student-friendly” Descriptions of Cognitive Processes

Use the word in a sentence that explains its meaning and shows how the word is used.

<table>
<thead>
<tr>
<th>Cognitive Process</th>
<th>Student-friendly Descriptions of Cognitive Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyze</td>
<td>If you <strong>analyze</strong> something, you break it into parts and look at each part closely so you can better understand it.</td>
</tr>
<tr>
<td>Compare and contrast</td>
<td></td>
</tr>
<tr>
<td>Cite</td>
<td>When you <strong>cite</strong> something, you refer to it directly and describe or mention where you found it (e.g., the source).</td>
</tr>
<tr>
<td>Assess</td>
<td></td>
</tr>
<tr>
<td>Determine</td>
<td>When you <strong>determine</strong> something, you identify or decide what it is. If you're asked to <strong>determine</strong> an author’s point of view, you would study what the author wrote and identify his/her point of view.</td>
</tr>
</tbody>
</table>
Scaffolding Learning So All Can Master Rigorous Standards

Scaffolding

- Changes the cognitive load of the task by adding support for learner’s efforts
- Is intentionally withdrawn
- Provides clear direction, reduces confusion
- Gives students a starting point or structure to organize their thinking
- Provides a model students can refer to
- Ensures all students master the same standard
Scaffolding vs. Differentiation
Scaffolding Strategies

Modeling, think-alouds, partial solutions, graphic organizers, outlines

Pre-teaching vocabulary; text structure signal words; student-friendly descriptions

Clear learning targets or expectations; extended group discussions

Text-dependent questions; repeated readings, collaborative reading, marking the text
Quick Review

Look. I’m swamped! I don’t think I should have to plan with a team when it’s so much more efficient to plan on my own.

The API said my assignments were not “aligned with standards.” What did she mean by that?

What are the structural components of a typical standard?
Follow-up Assignment

Assemble a team; share what you learned plus the tool

Use data from tool to develop a plan to improve alignment with standards

Create a plan to assess and improve alignment with standards

Ask teachers to self-assess and make changes; then assess alignment schoolwide

Set expectations and allow teachers time to study “aligned with standards”