Assessment Literacy for the 21st Century

Vernon G. Gettone
Karen Taylor
Regional UniServ Staff
CTA Instruction and Professional Development
Voices in the Room

As an educator, what do you already know about Assessment Literacy? How do you know it?

- Think about it
- Share at your table

Let's share out

- Select 1 member per table
Assessment Literacy

This Session will give a brief overview of:

- Assessments under the new CAASPP?
- Assessment literacy - what it means and why it matters
- Formative and Summative Assessments?
- Basic Principles of Quality Assessment Practices?
What is Assessment Literacy?

- **How is assessment literacy defined?**
  - Assessment literacy consists of an individual’s understandings of the fundamental assessment concepts and procedures deemed likely to influence educational decisions.

- **What questions are necessary for defining assessment literacy?**
  - What do students need to learn to do better?
  - How do we assess what they need?
  - What specific knowledge or instructional skills do we, as teachers, need to address target areas of student achievement?
  - How will we know if they have achieved their goal?
ETS defines 21st century learning skills as the ability to
- collect and/or retrieve information,
- organize and manage information,
- evaluate the quality, relevance, and usefulness of information, and
- generate accurate information through the use of existing resources.

NCREL identifies broader 21st century skills as
- achieving 21st century learning through digital age literacy,
- inventive thinking,
- effective communication, and
- high productivity.
21st Century skills

The Partnership for 21st century skills:

- emphasize core subjects,
- emphasize learning skills,
- use 21st century tools to develop learning skills,
- teach and learn in a 21st century context,
- teach and learn 21st century content, and
- use 21st century assessments that measure 21st century skills
Characteristics of an assessment literate educator

- Superior knowledge about content and substance of what is to be learned
- Knowledge about learners and learning and a desire to help students develop, improve and do better
- Skills in selecting and creating assessment tasks
- Knowledge of criteria and standards appropriate to assessment tasks
- Evaluative skills and expertise in the analysis and use of assessment information
- Expertise in giving appropriate, targeted feedback
21st Century skills

- **FOCUS:**
  - Students collecting, retrieving, organizing and managing information
  - Students & teachers showing the ability to evaluate the quality, relevance and usefulness of the information
  - Students learning through the use of digital age literacy
  - Teachers expecting students to have inventive thinking
Language and Process for the New Accountability System

- Smarter Balanced Assessment System
- California Assessment of Student Performance and Progress (CAASPP)
What Does this Mean
Why Does Matter

- New Language - Smarter Balanced Assessment Language
- It creates a bridge between standards, assessment and instruction
- Content specifications outline the implications for instruction
- It organize the standards around major construct through the claims
- It expresses what student should learn and be able to do; content specifications outline the evidence that is required of students
Smarter Balanced Assessment System
Summative: College and career readiness assessments for accountability

Teachers and schools have information and tools they need to improve teaching and learning

Digital Library: Tools and resources

Interim: Flexible and open

Common Core State Standards specify K–12 expectations for college and career readiness

All students leave high school college and career ready
Smarter Balanced Assessment System

- **Computer Adaptive Testing** - Based on student responses, the computer program adjusts the difficulty of questions throughout the assessment.
  

- **Performance Task** - Collections of questions and activities that are coherently connected to a single theme or scenario

- **Common Core State Standards** - Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.
  
  [http://www.myboe.org/cogniti/content/file/resources/documents/c0/c0dfba2f/c0dfba2fd06dc240d6e312bbcc00f402f40132034/ExplainingtheCCSS.pdf](http://www.myboe.org/cogniti/content/file/resources/documents/c0/c0dfba2f/c0dfba2fd06dc240d6e312bbcc00f402f40132034/ExplainingtheCCSS.pdf)
Variety of Item Types

- **Selected response item:** It is an exercise for which examinees (students) must choose a response from an enumerated set (multiple choice options) rather than create their own responses or products (performance assessment).

- **Constructed response item:** It is an exercise for which examinees must create their own responses or products (performance assessment) rather than choose a response from an enumerated set (e.g., multiple choices).

- **Technology Enabled:** Enabled items make use of multimedia and interactive elements to stimulate the assessment target measured by an item. Technology-Enabled items either collect responses from students by requiring them to select one or more responses or by producing text or numerals.

- **Performance Tasks:** The evidence required to support a claim must be collected through a task for which a student performs multiple actions. For each action, a response is provided.
Many experts will tell you that television is bad for you. Yet this is an exaggeration. Many television programs today are specifically geared towards improving physical fitness, making people smarter, or teaching them important things about the world. The days of limited programming with little interaction are gone. Public television and other stations have shows about science, history, and technical topics.

Which sentence should be added to the paragraph to state the author’s main claim?

A. Watching television makes a person healthy.

B. Watching television can be a sign of intelligence.

C. Television can be a positive influence on people.

D. Television has more varied programs than ever before.
There are 105 fourth-grade students at Lincoln School. How many more fourth-grade students than third-grade students are at Lincoln School? Show or explain how you found your answer.
Ms. McCrary wants to make a rabbit pen in a section of her lawn. Her plan for the rabbit pen includes the following:

- It will be in the shape of a rectangle.
- It will take 24 feet of fence material to make.
- Each side will be longer than 1 foot.
- The length and width will measure whole feet.

**Part A**

Draw 3 different rectangles that can each represent Ms. McCrary’s rabbit pen. Be sure to use all 24 feet of fence material for each pen.

Use the grid below. Click the places where you want the corners of your rectangle to be. Draw one rectangle at a time. If you make a mistake, click on your rectangle to delete it. Continue as many times as necessary.

Use your keyboard to type the length and width of each rabbit pen you draw. Then type the area of each rabbit pen. Be sure to select the correct unit for each answer.

[Students will input length, width, and area for each rabbit pen. Students will choose unit from drop down menu.]

<table>
<thead>
<tr>
<th>Length (feet)</th>
<th>Width (feet)</th>
<th>Area (square feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pen 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pen 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pen 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part B**

Ms. McCrary wants her rabbit to have more than 60 square feet of ground area inside the pen. She finds that if she uses the side of her house as one of the sides of the rabbit pen, she can make the rabbit pen larger.

- Draw another rectangular rabbit pen.
- Use all 24 feet of fencing for 3 sides of the pen.
- Use one side of the house for the other side of the pen.
- Make sure the ground area inside the pen is greater than 60 square feet.

Use the grid below. Click the places where you want the corners of your rectangle to be. If you make a mistake, click on your rectangle to delete it.

Use your keyboard to type the length and width of each rabbit pen you draw. Then type the area of each rabbit pen. Be sure to select the correct unit for each answer.

[Students will input length, width, and area for each rabbit pen. Students will choose unit from drop down menu.]
Performance Task

**Student Directions:**

**Part 1 (35 minutes)**

**Your assignment:**
You will read a short story and article, watch a video, review research statistics, and then write an argumentative essay about your opinion on virtual schools.

**Steps you will be following:**
In order to plan and compose your essay, you will do all of the following:
1. Read a short story and article, watch a video, and review research statistics.
2. Answer three questions about the sources.
3. Plan and write your essay.

**Directions for beginning:**
You will now read the sources and watch a video. Take notes, because you may want to refer back to your notes while writing your essay. You can refer back to any of the sources as often as you like.
   • (short story)
   • (article 1)
   • (video)
   • (research statistics)

**Questions**
Use your remaining time to answer the questions below. Your answers to these questions will be scored. Also, they will
Brianna is running for class president. She needs to give a speech to the 4th grade class. Listen to the draft of her speech and then answer the questions that follow.

*(Test-takers listen to an audio version of the following speech.)*

“Hi, My name is Brianna. I am running for class president, and I hope you will vote for me. You know many of my friends said they would. I am involved in many activities, including track and theater. If I am elected, I will hold several fundraisers so that all students in the 4th grade can go on a trip at the end of the year. Also, we can donate a portion of the money to a charity of our choice. If you want a class president who will work hard for you and listen to your needs, please vote for me next week!”

This speech needs to be revised before the student presents it.

Which sentence should be omitted to improve the speech.

A. I am running for class president, and I hope you will vote for me.
B. You know many of my friends said they would.
C. If I am elected, I will hold several fundraisers so that all students in the 4th grade can go on a trip at the end of the year.
D. If you want a class president who will work hard for you and listen to your needs, please vote for me next week!”
Technology-Enhanced

*Collects Evidence through a Non-Traditional Response*

The value of $y$ is proportional to the value of $x$. The constant of proportionality for this relationship is 1. On the grid below, graph this proportional relationship.
2014-15
CAASPP System

Smarter Balanced
– English-language Arts (ELA)
– Mathematics
  • Summative assessments
  • Interim assessments
  • Formative assessment processes (Digital Library)

California Standardized Test (CST) California
Modified Assessment (CMA) California
Alternate Performance Assessment (CAPA)
  • Science
  • Alternate assessments
    – ELA and mathematics (Field Test)

Standards-based Test in Spanish (STS)
  • Reading/language arts
Grade two diagnostics
  • ELA and mathematics
California Assessment of Student Performance and Progress (CASSPP)

- The Summative assessment, Interim Assessment and Digital Library are all part of the CAASPP System

  - **Summative Assessments** - In grades 3 through 8 and 11 for English-language arts (ELA) and mathematics. The Summative Assessments are administered as part of the CAASPP System

  - **Interim Assessments** - Designed to inform and promote teaching and learning by providing information that can be used to monitor student progress toward mastery of the Common Core State Standards

- **EC 60603** defines **formative assessment** as: “Assessment tools and processes that are embedded in instruction and are used by teachers and pupils to provide timely feedback for the purposes of adjusting instruction and to improve learning.”

- **Digital Library** - Consists of tools and practices designed to help teachers utilize formative assessment processes for improved teaching and learning in all grades. These optional resources are available to all K-12

APAC Alternative Performance Assessments for California

- July 2014- State Board of Education directed the CDE to eliminate the CAPA in ELA and mathematics
- April 15- June 10, 2015- field test for all eligible students with significant cognitive disabilities
- Computer-based assessment
- Training Webcast on Wednesday, March 11 at 1:00 (archived for future viewing)
- Science CAPA will still be given in grades 5, 8, and 10 until there is a successor aligned to the NGSS
Relationship of Assessments

- Summative
- Interim (instructional, evaluative, predictive)
- Formative classroom (minute-by-minute, integrated into the lesson)
Webb’s Depth of Knowledge (DOK) Levels

- **DOK 1: Recall & Reproduction**
  - Recall of a fact, term, principle, concept; perform a routine procedure, locate details

- **DOK 2: Basic Application of Skills/Concepts**
  - Use of information, two or more steps with decision points along the way, explain relationships

- **DOK 3: Strategic Thinking**
  - Requires reasoning or developing a plan or sequence of steps, requires decision-making or justification

- **DOK 4: Extended Thinking**
  - An investigation or application to real world; requires time to research, problem solve, and process multiple conditions; could require synthesis of information across multiple sources and/or disciplines
<table>
<thead>
<tr>
<th>Depth of Thinking (Webb) + Type of Thinking (Revised Bloom)</th>
<th>DOK Level 1: Recall &amp; Reproduction</th>
<th>DOK Level 2: Basic Skills &amp; Concepts</th>
<th>DOK Level 3: Strategic Thinking &amp; Reasoning</th>
<th>DOK Level 4: Extended Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remember</td>
<td>Recall, locate basic facts, definitions, details, events</td>
<td></td>
<td></td>
<td>Explain how concepts or ideas specifically relate to other content domains or concepts</td>
</tr>
<tr>
<td>Understand</td>
<td>Select appropriate words for use when intended meaning is clearly evident</td>
<td>Specify, explain relationships</td>
<td>Summarize</td>
<td>Identify central ideas</td>
</tr>
<tr>
<td>Apply</td>
<td>Use language structure (prefix/suffix) or word relationships (synonym/antonym) to determine meaning</td>
<td>Use context to identify word meanings</td>
<td>- Obtain and interpret information using text features</td>
<td>Devise an approach among many alternatives to research a novel problem</td>
</tr>
<tr>
<td>Analyze</td>
<td>Identify the kind of information contained in a graphic, table, visual, etc.</td>
<td>Compare literary elements, facts, terms, events</td>
<td>- Analyze format, organization, &amp; text structures</td>
<td>Analyze multiple sources or texts</td>
</tr>
<tr>
<td>Evaluate</td>
<td>- Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept</td>
<td>- Generate conjectures or hypotheses based on observations or prior knowledge and experience</td>
<td>Develop a complex model for a given situation</td>
<td>Synthesize information across multiple sources or texts</td>
</tr>
<tr>
<td></td>
<td>(Hess, Carlock, Jones, &amp; Walskup, 2009)</td>
<td>- Articulate a new voice, alternate theme, new knowledge or perspective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# MATH DOK Levels

<table>
<thead>
<tr>
<th>Depth of Thinking (Webb) + &quot;Type of Thinking (Revised Bloom)&quot;</th>
<th>DOK Level 1: Recall &amp; Reproduction</th>
<th>DOK Level 2: Basic Skills &amp; Concepts</th>
<th>DOK Level 3: Strategic Thinking &amp; Reasoning</th>
<th>DOK Level 4: Extended Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remember</strong></td>
<td>Recall conversions, terms, facts</td>
<td>Specify, explain relationships</td>
<td>Use concepts to solve non-routine problems</td>
<td>Related mathematical concepts to other content areas, other domains</td>
</tr>
<tr>
<td><strong>Understand</strong></td>
<td>Evaluate an expression</td>
<td>Make basic inferences or logical predictions from data/observations</td>
<td>Use supporting evidence to justify conjectures, generalize, or connect ideas</td>
<td>Develop generalizations of the results obtained and the strategies used and apply them to new problem situations</td>
</tr>
<tr>
<td>Follow simple procedures. Calculation, measure, apply a rule (e.g., rounding)</td>
<td>Solve routine problem applying multiple concepts or decision points</td>
<td>Solve a one-step problem</td>
<td>Explain reasoning when more than one response is possible</td>
<td>Explain phenomena in terms of concepts</td>
</tr>
<tr>
<td>Apply algorithms or formula</td>
<td>Retrieve information to solve a problem</td>
<td>Translate between representations</td>
<td>Design investigation for a specific purpose or research question</td>
<td>Initiate, design, and conduct a project that specifies a problem, identifies solutions, paths, solves the problem, and reports results</td>
</tr>
<tr>
<td>Solve linear equations</td>
<td>Select appropriate graph and organize &amp; display data</td>
<td>Categorize data, figures</td>
<td>Use reasoning, planning, and supporting evidence</td>
<td>Analyze multiple sources of evidence or data sets</td>
</tr>
<tr>
<td>Make conversions</td>
<td>Interpret data from a simple graph</td>
<td>Organize, order data</td>
<td>Translate between problem &amp; symbolic notation when not a direct translation</td>
<td>Analyze multiple sources of evidence or data sets</td>
</tr>
<tr>
<td><strong>Analyze</strong></td>
<td>Retrieve information from a table or graph to answer a question</td>
<td>Select appropriate graph and organize &amp; display data</td>
<td>Compare information within or across data sets or texts</td>
<td>Compare information within or across data sets or texts</td>
</tr>
<tr>
<td><strong>Evaluate</strong></td>
<td>Identify a pattern/trend</td>
<td>Interpret data from complex graph</td>
<td>Analyze and draw conclusions from data, citing evidence</td>
<td>Apply understanding in a novel way, provide argument or justification for the new application</td>
</tr>
<tr>
<td><strong>Create</strong></td>
<td>Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept</td>
<td>Generate conjectures or hypotheses based on observations or prior knowledge and experience</td>
<td>Develop an alternative solution</td>
<td>Synthesize information across multiple sources or data sets</td>
</tr>
<tr>
<td><strong>(Hess, Carlock, Jones, &amp; Walkup, 2009)</strong></td>
<td></td>
<td></td>
<td></td>
<td>Design a model to inform and solve a practical or abstract situation</td>
</tr>
</tbody>
</table>
Cognitive Rigor Matrix

<table>
<thead>
<tr>
<th>Remember</th>
<th>Understand</th>
<th>Apply</th>
<th>Analyze</th>
<th>Evaluate</th>
<th>Create</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grade 08 Mathematics Sample CR Item C1 TH**

What is the distance between (0, 0) and (8, 15) on the xy-coordinate plane?

- **A** 7 units
- **B** 8 units
- **C** 17 units
- **D** 23 units

1a. \( BC = \) 
1b. \( AC = \) 
1c. \( AB = \)
Cognitive Rigor Matrix

What are the implications for instruction?
Implications for Instruction

Cognitive Rigor Matrix

- How Bloom’s
Implications for Instruction

Classroom Lesson: Identify CCSS content standards and cluster headings

Do you have a lesson that you feel aligns to the identified standards and cluster headings? If so...
- Content Specifications: Find the corresponding assessment target(s)

Classroom Task: What will the evidence of a proficient student look like?
- Content Specifications: Does the evidence descriptor from the assessment target(s) match? Make adjustments, if needed.

Classroom Task: What is the cognitive process and demand required of the students?
- Cognitive Rigor Matrix: Identify the DOK level aligned to the task. Make adjustments if needed
**ELA Claims**

**Overall Claim for Grades 3-8**
“Students can demonstrate progress toward college and career readiness in English language arts and literacy.”

**Overall Claim for Grade 11**
“Students can demonstrate college and career readiness in English language arts and literacy.”

<table>
<thead>
<tr>
<th>Claim #1</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Students can read closely and analytically to comprehend a range of increasingly complex literary and informational texts.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Claim #2</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Students can produce effective and well-grounded writing for a range of purposes and audiences.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Claim #3</th>
<th>Speaking and Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Students can employ effective speaking and listening skills for a range of purposes and audiences.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Claim #4</th>
<th>Research/Inquiry</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Students can engage in research and inquiry to investigate topics, and to analyze, integrate, and present information.”</td>
<td></td>
</tr>
</tbody>
</table>
### Math Claims

#### Overall Claim for Grades 3-8
“Students can demonstrate progress toward college and career readiness in mathematics.”

#### Overall Claim for Grade 11
“Students can demonstrate college and career readiness in mathematics.”

<table>
<thead>
<tr>
<th>Claim #1</th>
<th>Concepts &amp; Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Claim #2</th>
<th>Problem Solving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Claim #3</th>
<th>Communicating Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Claim #4</th>
<th>Modeling and Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.”</td>
</tr>
</tbody>
</table>
Claims 2, 3, & 4: Relevant Verbs

Claim 2
- Problem Solving
  - Understand
  - Solve
  - Apply
  - Describe
  - Illustrate
  - Interpret
  - Analyze

Claim 3
- Communicating Reasoning
  - Understand
  - Explain
  - Justify
  - Prove
  - Derive
  - Assess
  - Illustrate
  - Analyze

Claim 4
- Modeling & Data Analysis
  - Model
  - Construct
  - Compare
  - Investigate
  - Build
  - Interpret
  - Estimate
  - Analyze

- Summarize
- Represent
- Solve
- Evaluate
- Extend
- Apply
Cluster Headings, Claims, & Assessment Targets

TARGET A Description of Evidence: Tasks for this target will require students to identify and represent proportional relationships in various formats (tables, graphs, equations, diagrams, verbal descriptions) and interpret specific values in context. (See 7.G Target E for possible context.) Other tasks will require students to compute unit rates, including those associated with ratios of fractions.

Multistep problems involving ratio and percent will be assessed by tasks in Claims 2 and 4.
Achievement Level Descriptors (ALDs)

- Smarter Balanced has also developed a set of initial, policy *achievement level descriptors* (ALDs) for English language arts/Literacy (ELA/Literacy) and mathematics that are aligned with the Common Core State Standards (CCSS) and the Smarter Balanced assessment claims. The purpose of these descriptors is to specify, in content terms, the knowledge and skills that students display at four levels of achievement (i.e., Level 1, Level 2, Level 3, and Level 4), which in some contexts may also be described qualitatively in terms such as “novice, developing, proficient, advanced” or others.
Implications for Instruction

Classroom Lesson: Identify CCSS content standards and cluster headings

Do you have a lesson that you feel aligns to the identified standards and cluster headings? If so...
  • Content Specifications: Find the corresponding assessment target(s)

Classroom Task: What will the evidence of a proficient student look like?
  • Content Specifications: Does the evidence descriptor from the assessment target(s) match? Make adjustments, if needed.

Classroom Task: What is the cognitive process and demand required of the students?
  • Cognitive Rigor Matrix: Identify the DOK level aligned to the task. Make adjustments if needed

Task Evidence: What is the task evidence that is collected from students?
  • ALDs: What ALD level matches with the student evidence? Make adjustments, if needed.