The Three Cs of the 2014 GED
Change, Content, & Critical Thinking

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Objectives

- Participants will explore the changes associated with the 2014 GED and become familiar with the skills and content knowledge necessary for students to earn the revised credential.
- Participants will participate in activities that approximate the experience of students, including tasks that require strong reading and writing skills as well as contextual knowledge.
Topics to Explore

- Computer-based Assessments
- New Item Types
- Deeper Content Knowledge
- Common Core State Standards
- Webb’s Depth of Knowledge
- Complexity of Cognitive Tasks
- What is Critical Thinking?
- Close Reading Techniques
- Writing Strategies for Success
“Education is not the learning of facts, but the training of the mind to think.”

-Albert Einstein
Warming Up!

Using your fingers, on a scale of 1-4, please indicate your familiarity with the changes that are taking place regarding the 2014 GED.

- 1 – “Changes? What changes?!“
- 4 – “I feel very confident that I understand the changes that are coming in 2014!”
The New Assessment

- Launches January 2, 2014
- Computer-based test (CBT) delivered at Pearson VUE CBT testing centers
- Content aligned to Career & College Readiness Content Standards
- There are four content areas:
  - Reasoning through Language Arts
  - Mathematical Reasoning
  - Science
  - Social Studies
## What’s Different?

<table>
<thead>
<tr>
<th></th>
<th>2002 Series</th>
<th>2014 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item types include</td>
<td>Item types include multiple-choice, essay, and grid format</td>
<td>Item types include traditional items as well as new, interactive items</td>
</tr>
<tr>
<td></td>
<td>questions</td>
<td></td>
</tr>
<tr>
<td>Assessment is informed</td>
<td>Assessment is informed by Bloom’s Taxonomy</td>
<td>Assessment is informed by Webb’s Depth of Knowledge and the Common Core State Standards</td>
</tr>
<tr>
<td></td>
<td>by Bloom’s Taxonomy</td>
<td></td>
</tr>
<tr>
<td>Paper and pencil test</td>
<td>Paper and pencil test</td>
<td>Computer-based test (CBT)</td>
</tr>
<tr>
<td>Cost is $60</td>
<td>Cost is $60</td>
<td>Cost is $120</td>
</tr>
<tr>
<td>Multiple choice items</td>
<td>Multiple choice items have five options</td>
<td>Multiple choice items have four options</td>
</tr>
<tr>
<td>have five options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scratch paper is</td>
<td>Scratch paper is provided</td>
<td>Test-takers will use a small dry-erase board</td>
</tr>
<tr>
<td>provided</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What’s New?

- There will be four content areas (not five) – the essay is gone!
  - Replaced by new writing tasks on content-area assessments
- The content will be more complex and rigorous
  - Designed to provide evidence of readiness to enter workforce or post-secondary education
  - Students must demonstrate higher-order thinking and reasoning skills
- New assessment will be supported by enhanced reporting
  - Learners will be provided sub-scores to inform future study
  - Sub-scores on the practice test will be supplemented with information and links to instructional materials
CBT & New Item Types

- New assessment content requires new item types to evaluate test-takers’ knowledge and skills
  - Fill-in-the-blank
  - Drag & drop
  - Hot spot
  - Short Answer (SA) and Extended Response (ER)
  - Cloze
- CBT enables measurement of concepts/skills that cannot be fully or appropriately captured by paper-based tests (Bennett 2002; Parshall, Harmes, Davey, & Pashley, 2010)
- CBT also increases the precision and efficiency of the assessment process (Parshall, Spray, Kalohn, & Davey, 2001; van der Linden & Glass, 2000; Wainer, 1990)
CBT Skills Necessary for Success

- Keyboarding Skills
  - Type at a rate sufficient for timed testing (recommended rate is 25+ WPM)
  - Use basic key functions (space bar, return/enter, shift, arrows, delete, backspace, tab)
  - Use the number and punctuation keys
  - Be able to compose a response while typing
    - Student will have a small dry-erase board for outlining and drafting the short-answer and extended-response items
Mouse Skills

- Use the mouse to point to an area or word on the screen
- Use mouse-clicking options (right/left/double click)
- Highlight and select text
- Select items by clicking on them (windows/objects)
- Click on items and drag/drop them to a new location
- Open and close pop-up windows
- Click on and select answers in radio buttons
- Use the mouse to scroll horizontally and vertically
Navigation Skills

- Use screen navigation commands (previous/next)
- Navigate multiple windows
- Navigate toolbars and drop-down menus
- Click through on-screen tabs
- Use undo and redo options
- Mark questions with a “Flag for Review” and return to the section or question as needed
- Utilize the on-screen calculator (TI-30XS)
Fill in the Blank

Mathematical Reasoning - Candidate Name

☑ Answer Explanation  Æ Symbol

Formula Sheet

Type your answer in the box. You may use numbers, symbols, and/or text in your answer.

An expression is shown.

$$\sqrt{15} \cdot \sqrt{2}$$

Simplify the expression completely. Leave your answer in radical form.

(NOTE: Click the symbol selector when you need to enter the radical sign.)
A scientist is studying red maple tree growth in a state park. She measured the trunk diameters of a sample of trees in the same month every other year. The tables show the data for two of the trees.

**Tree 1**

<table>
<thead>
<tr>
<th>Year</th>
<th>Trunk Diameter (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18.6</td>
</tr>
<tr>
<td>3</td>
<td>19.2</td>
</tr>
<tr>
<td>5</td>
<td>19.8</td>
</tr>
<tr>
<td>7</td>
<td>20.4</td>
</tr>
<tr>
<td>9</td>
<td>21.0</td>
</tr>
<tr>
<td>11</td>
<td>21.6</td>
</tr>
<tr>
<td>13</td>
<td>22.2</td>
</tr>
</tbody>
</table>

**Tree 2**

<table>
<thead>
<tr>
<th>Year</th>
<th>Trunk Diameter (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11.4</td>
</tr>
<tr>
<td>3</td>
<td>12.0</td>
</tr>
<tr>
<td>5</td>
<td>12.6</td>
</tr>
<tr>
<td>7</td>
<td>13.2</td>
</tr>
<tr>
<td>9</td>
<td>13.8</td>
</tr>
<tr>
<td>11</td>
<td>14.4</td>
</tr>
<tr>
<td>13</td>
<td>15.0</td>
</tr>
</tbody>
</table>

This is the final year in which she will collect data. When her data collection is complete, she will predict future red maple tree growth.

The scientist creates an equation that models her data for each tree so that she can predict the diameter in the future. Complete a linear equation that fits the data for tree 1, where $x$ is the year and $y$ is the trunk diameter, in inches.

Click on the variables and numbers you want to select and drag them into the boxes.

**Equation for Tree 1**

$$y = [\text{__} \times x] + [\text{__}]$$

-0.6 -0.3 0.3 0.6

18.0 18.3 18.6 $x$
Julia wants to spend $100 or less ordering shirts from an online company. The company charges a $5 shipping fee for any order. The inequality $5 + 15n \leq 100$ represents the number of shirts, $n$, Julia can order from the online company. Graph all possible numbers of shirts that Julia can buy.

Click on the number line to plot the point(s).

(NOTE: To remove a point, place the arrow over the point and click the left mouse button.)
The graph shows the level of ibuprofen, $y$ units, in a patient’s bloodstream $x$ hours after the ibuprofen was taken.

The level of ibuprofen in the patient’s bloodstream increased from $\text{Select...}$ hours to $\text{Select...}$ hours.
Deeper Content Knowledge

- Assessment is aligned to the Common Core State Standards (CCSS)
- There are two performance levels
  - High-school equivalency
  - Career and College Readiness
- A variety of item types will measure test-taker requisite knowledge, problem-solving, and critical-thinking skills
- Prior knowledge in the content areas is a MUST
  - This is no longer a “reading test”
- Students must be ready to “read like a detective and write like an investigative reporter.”
  - David Coleman, President of the College Board, Architect of CCSS
“Students need to become strong writers, and to do that, they need expert instruction, time to write, and meaningful opportunities for writing a wide range of information, argument, and narrative texts. They must also become proficient readers of more complex texts, and that means they need expert instruction and opportunities to read a wide range and very deep volume of texts.” (Calkins, Ehrenworth, and Lehman, 2012)
## Instructional Shifts Prescribed by the Common Core

<table>
<thead>
<tr>
<th>Shift 1</th>
<th>Balancing informational &amp; literary text</th>
<th>Students read a true balance of informational texts and literary texts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift 2</td>
<td>Knowledge in the disciplines</td>
<td>Students build knowledge about the world through text rather than the teacher or activities.</td>
</tr>
<tr>
<td>Shift 3</td>
<td>Staircase of complexity</td>
<td>Students read the central, grade-appropriate text around which instruction is centered using close reading.</td>
</tr>
<tr>
<td>Shift 4</td>
<td>Text-based answers</td>
<td>Students engage in rich and rigorous evidence-based conversations about text.</td>
</tr>
<tr>
<td>Shift 5</td>
<td>Writing from sources</td>
<td>Writing emphasizes use of evidence from sources to inform or make an argument.</td>
</tr>
<tr>
<td>Shift 6</td>
<td>Academic vocabulary</td>
<td>Students constantly build the transferable vocabulary they need to access grade level complex texts.</td>
</tr>
</tbody>
</table>

Source: www.engageNY.org
# Instructional Shifts Prescribed by the Common Core

<table>
<thead>
<tr>
<th>Shift</th>
<th>Shifts in Mathematics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift 1</td>
<td>Focus</td>
<td>Teachers significantly narrow and deepen the scope of how time and energy is spent in the math classroom.</td>
</tr>
<tr>
<td>Shift 2</td>
<td>Coherence</td>
<td>Principals and teachers carefully connect the learning within and across grades so that students can build new understanding onto foundations built in previous years.</td>
</tr>
<tr>
<td>Shift 3</td>
<td>Fluency</td>
<td>Students are expected to have speed and accuracy with simple calculations; teachers structure class time and/or homework time for students to memorize, through repetition, core functions.</td>
</tr>
<tr>
<td>Shift 4</td>
<td>Deep understanding</td>
<td>Students deeply understand and can operate easily within a math concept before moving on.</td>
</tr>
<tr>
<td>Shift 5</td>
<td>Application</td>
<td>Students are expected to use math and choose the appropriate concept for application even when they are not prompted to do so.</td>
</tr>
<tr>
<td>Shift 6</td>
<td>Dual intensity</td>
<td>Students are practicing and understanding. There is more than a balance between these two things in the classroom – both are occurring with intensity.</td>
</tr>
</tbody>
</table>

Source: www.engageNY.org
Reasoning Through Language arts

- There is a reading comprehension component and a writing component to the RLA test.
- Passages in the reading comprehension section will be between 450-900 words.
- Writing is scored based on these traits:
  - Analysis of arguments and use of evidence
  - Development of ideas and structure
  - Clarity and command of standard English conventions
  - Grammar, usage, capitalization and punctuation
- Test-takers are required to draw evidence from a literary or informational text to support analysis and reflection.
- Extended-response item may take up to 45 minutes to complete.
Mathematical Reasoning

- Quantitative Problem Solving
  - Number sense and computation
  - One-step and multi-step word problems
  - Rate, ratio, and percent word problems
  - Quantitative problems in statistical and geometric measurement
- Algebraic Problem Solving
  - Transforming expressions
  - Solving equations
  - Lines in the coordinate plane
  - Function concepts
- Additionally, students will need to be able to read and locate information within a table and recognize and locate points in a coordinate plane.
Science

• Various item types will assess:
  • Textual analysis and understanding
  • Data representation and inference skills
  • Problem solving with science content
• Each item will be aligned to both one science practice and one content topic
• Focusing themes include: human health and living systems, energy and related systems
Social Studies

• Various items will assess:
  • Textual analysis and understanding
  • Data representation and inference skills
  • Problem solving with social studies content
• Each item will be aligned to both one social studies practice and one content topic
• Focusing themes are development of modern liberties and democracy and dynamic responses in societal systems
A framework for analyzing a wide range of educational materials on the basis of the cognitive demands they require in order for a learner to produce a response to those materials.

Bloom’s Taxonomy was used to develop GED 2002.

Emphasis is on the complexity of the cognitive process that activities (applying, analyzing, creating) requires on the part of the learner.

Roughly 80% of the items across all four content areas will be written to DOK levels 2 & 3.

Roughly 20% will require learners to engage DOK level 1 skills.
## A Comparison

<table>
<thead>
<tr>
<th>Bloom’s Taxonomy</th>
<th>Webb’s Depth of Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Recall</td>
</tr>
<tr>
<td>Comprehension</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Basic application of skill/concept</td>
</tr>
<tr>
<td>Analysis</td>
<td>Strategic thinking</td>
</tr>
<tr>
<td>Synthesis &amp; evaluation</td>
<td>Extended thinking</td>
</tr>
</tbody>
</table>
Webb’s Depth of Knowledge

- **Level One – Recall**
  - Recall of a fact, information, or procedure.

- **Level Two – Application of Skill/Concept**
  - Use of information, conceptual knowledge, procedures, etc. Usually involves two or more steps.

- **Level Three – Strategic Thinking**
  - Requires reasoning, developing a plan or sequence of steps; has some complexity, more than one possible answer.

- **Level Four – Extended Thinking**
  - Requires an investigation; time to think and process multiple conditions of the problem or task.

  ▪ DOK Level 4 is beyond the scope of the 2014 GED but it’s not a bad idea to have students practice Level 4 tasks!

DOK: One Verb, Three Levels

- DOK 1- Describe three characteristics of metamorphic rocks. (Requires simple recall)

- DOK 2- Describe the difference between metamorphic and igneous rocks. (Requires cognitive processing to determine the differences in the two rock types)

- DOK 3- Describe a model that you might use to represent the relationships that exist within the rock cycle. (Requires deep understanding of rock cycle and a determination of how best to represent it)
LOW – Level One

- Identify the correct meanings of grade-level appropriate words.
- Locate details in a text.
- Locate details on a graph, chart, or diagram.
- Recognize the correct order of events in a text.
- Identify figurative language in a text.
MODERATE – Level Two

- Interpret the information found in text features (graphs, charts, diagrams, sub-headings).
- Identify cause-and-effect relationships.
- Determine an author’s main purpose or perspective.
- Draw conclusions, make inferences.
- Determine the correct meaning of words with multiple meanings in context.
HIGH – Level Three

- Analyze the use of figurative language in a text.
- Evaluate strong versus weak arguments in a text.
- Analyze cause and effect relationships.
- Determine the reliability and validity of information within and across texts.
- Determine an author’s perspective and describe how it affects the text.
- Show how text features (graphs, charts, diagrams, etc.) contribute to a text.
Can you recall______?
When did ____ happen?
Who was ____?
How can you recognize______?
What is_____?
How can you find the meaning of______?
Can you recall______?
Can you select_____?
How would you write___?
What might you include on a list about______?
Who discovered___?
What is the formula for______?
Can you identify___?
How would you describe___?

Source: Depth of Knowledge – Descriptors, Examples and Question Stems for Increasing Depth of Knowledge in the Classroom. Developed by Dr. Norman Webb and Flip Chart developed by Myra Collins.
DOK Questioning – Level Two

- Can you explain how ____ affected ____?
- How would you apply what you learned to develop ____?
- How would you compare ____?
- Contrast______?
- How would you classify______?
- How are______alike? Different?
- How would you classify the type of______?
- What can you say about______?
- How would you summarize______?
- How would you summarize______?
- What steps are needed to edit______?
- When would you use an outline to ____?
- How would you estimate______?
- How could you organize______?
- What would you use to classify______?
- What do you notice about______?

Source: Depth of Knowledge – Descriptors, Examples and Question Stems for Increasing Depth of Knowledge in the Classroom. Developed by Dr. Norman Webb and Flip Chart developed by Myra Collins.
DOK Questioning – Level Three

- How is ____ related to ____?
- What conclusions can you draw _____?
- How would you adapt_____to create a different_____?
- How would you test_____?
- Can you predict the outcome if____?
- What is the best answer? Why?
- What conclusion can be drawn from these three texts?
- What is your interpretation of this text?
- Support your rationale.
- How would you describe the sequence of____?
- What facts would you select to support_____?
- Can you elaborate on the reason____?
- What would happen if____?
- Can you formulate a theory for___?
- How would you test___?
- Can you elaborate on the reason___?

Source: Depth of Knowledge – Descriptors, Examples and Question Stems for Increasing Depth of Knowledge in the Classroom. Developed by Dr. Norman Webb and Flip Chart developed by Myra Collins.
Activity: Guess the DOK!

- Design an experiment to determine if temperature has an effect on the amount of sugar that can be dissolved in a glass of tea. Identify the materials needed, formulate your hypothesis, and describe the steps you will take in conducting your experiment.
- Level Three!
- Why? It involves reasoning, predicting, and planning with an understanding of scientific methodology.
Activity: Guess the DOK!

- Explain the process of photosynthesis.
- Level Two!
- Why? Because it involves recall of simple definitions and terms, as well as explaining a process.
A giant panda eats 83 pounds of bamboo per day. How many pounds of bamboo will a giant panda eat in 7 days?

- Level One!
- Why? Only requires a single calculation.
Jose had 64 baseball cards. He gave 12 cards to his sister. Then he divided the remaining cards equally among his four friends. How many cards did each of his friends get?

Level Two!

Why? This is a multi-step problem requiring a student to make a decision on how to approach the computations.
Now, more than ever, critical thinking is a crucial skill necessary for all students and citizens. The ability to think critically, read closely, and write clearly will be measured on the 2014 GED.
The Importance of Critical Thinking
Critical thinking is the ability to think clearly and rationally. It includes the ability to engage in reflective and independent thinking. Someone with critical thinking skills is able to do the following:

- understand the logical connections between ideas
- identify, construct and evaluate arguments
- detect inconsistencies and common mistakes in reasoning
- solve problems systematically
- identify the relevance and importance of ideas
- reflect on the justification of one's own beliefs and values
## Critical Thinking Success Strategies

<table>
<thead>
<tr>
<th>Identifying key definitions</th>
<th>Distinguishing fact from opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying ambiguity</td>
<td>Identifying assumptions</td>
</tr>
<tr>
<td>Identifying variables</td>
<td>Identifying values</td>
</tr>
<tr>
<td>Formulating questions</td>
<td>Noting missing evidence</td>
</tr>
<tr>
<td>Defining issues or problems</td>
<td>Identifying relationships</td>
</tr>
<tr>
<td>Sequencing information</td>
<td>Comparing and contrasting</td>
</tr>
<tr>
<td>Recognizing patterns</td>
<td>Cause and effect</td>
</tr>
<tr>
<td>Using analogies</td>
<td>Identifying main ideas</td>
</tr>
<tr>
<td>Determining credibility</td>
<td>Summarizing information</td>
</tr>
</tbody>
</table>
Teaching Critical Thinking

- Mnemonic devices help!
- CLUES:
  - Consider the source and the audience
  - Lay out the argument, values, and assumptions
  - Uncover the evidence
  - Evaluate the conclusion
  - Sort out the implications
Teaching Critical Thinking

- Mnemonic devices help!
- CLEAR:
  - Claims
  - Logical Structure of Argument
  - Evidence
  - Assumptions
  - AlteRnative Arguments
Critical Tips for Critical Thinking

- Use explicit instruction and model your process so thinking is transparent.
- Utilize graphic organizers and concept maps.
- Require students to interact with prior knowledge.
  - “Why do you suppose?”
  - “What can you conclude, based on the evidence?”
- Ask students to use their own words to state an idea or provide a definition.
- Require students to defend their answers!
“To be ready for college, workforce training, and life in a technological society, students need the ability to gather, comprehend, evaluate, synthesize, and report on information and ideas, to conduct original research in order to answer questions or solve problems, and to analyze and create a high volume and extensive range of print and non-print texts in media forms old and new.”

Close, analytic reading stresses engaging with a text of sufficient complexity directly and examining meaning thoroughly and methodically, encouraging students to read and reread deliberately. Directing student attention on the text itself empowers students to understand the central ideas and key supporting details. It also enables students to reflect on the meanings of individual words and sentences; the order in which sentences unfold; and the development of ideas over the course of the text, which ultimately leads students to arrive at an understanding of the text as a whole.

How to Read Closely

- **A Checklist for Close Reading:**
  - **Grammar** How are the sentences constructed? What is the relationship between the chosen words?
  - **Word choice** What words did the author choose to express their thought? Why did they choose these specific words?
  - **Figures of speech** What does the author do to add imagination to their language? Look at usage of metaphors, similes, and other similar devices.
  - **Literary devices** What does the author use to deepen their meaning? Consider literary devices like symbolism, imagery, hyperbole, personification, etc.
  - **Tone** What is the attitude of the writer, and how does it impact the general mood of the text? How do they feel about the subject that they are speaking on? This is revealed through a combination of the above elements.

Need a mnemonic? **Great Women Fight Like Tigers!**
Reading Tips

- Use graphic organizers! Before, during, after!
- Include primary sources in your instruction.
- Spend time helping students grapple with the text.
- Make themes and big ideas transparent.
- Use “quick writes” as meaning making activities.
- Require text-based answers in your assignments and assessments.
“Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.”

Writing Strategies

• Writing is scored based on these traits:
  • Analysis of arguments and use of evidence
  • Development of ideas and structure
  • Clarity and command of standard English conventions
  • Grammar, usage, capitalization, and punctuation

• Test-takers are required to draw evidence from a literary or informational text to support analysis and reflection.

• Use graphic organizers to determine argument and evidence when analyzing a passage; also use when constructing a written response.
Writing Strategies

- Teach strategies for planning, revising, editing (POWER/TOWER)
- Write summaries of texts
- Sentence combining practice
- Thesis frames
  - “Considering the arguments of __________, the evidence supports __________”
- Engage in prewriting activities
- Provide models of effective writing
Resources

- GED Testing Service’s Assessment Guide for Educators
- GED Testing Service: GED® 2014 Item Samplers
- Common Core State Standards
- Webb’s Depth of Knowledge Guide
- Common Core Instructional Shifts (EngageNY)
Thank You!

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References