

Score Report Insights to Drive Instruction, Part 2: Focus on Mathematical Reasoning and Science

Daphne Atkinson, July 2018

welcome

Session Objectives

- Analyze real GED Ready® and Operational GED® Test Score Reports
- Discuss the why and how of using score reports (as prescriptions) to drive instruction
- Share ideas and resources



How Do YOU Use Score Reports?

GED Ready® - Mathematical Reasoning

My Score: 136
 TOO CLOSE TO CALL
 Test Date: 01/25/2018

How I Can Score Higher

Basic Math

Skill You Can Improve **Publisher Study Recommendations**

<Find the distance between numbers on a number line using absolute value Select your study material from the dropdown above to get study recommendations

<Compare and solve problems with whole numbers, fractions, and decimals

Geometry

Skill You Can Improve **Publisher Study Recommendations**

How I can get on track with my score? Score Report ID: 136103



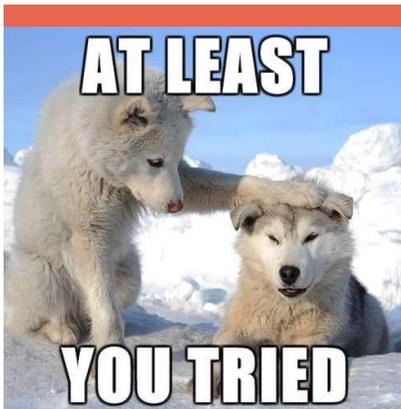
Common Score Report Uses

- Look at the score only...to gauge how far from 145 the score is
- Get a feel for what work needs to be done (in terms of skills and content)
- Compare the GED Ready and GED operational test scores for similarities and differences
- Don't really use the score report—consider the feedback too “generic”

5



So How You Take It From This . . .



There's nothing worse than when a test-taker doesn't pass the test...especially after multiple tries!

6



To This...



7



How? Take Action!

- Review
- Diagnose
- Prescribe

8



Features of the Enhanced Score Report

FEATURE	GED® TEST	GED READY® PRACTICE TEST
My Score	Indicates if a test-taker passed, passed with honors, or scored below passing.	Indicates if a test-taker is likely to pass, too close to call, or not likely to pass the GED® test.
How I Can Score Higher	Shows the skills a test-taker needs to work on before trying again. Includes a personalized study plan with pages and chapters to review in popular study materials.	Shows the skills a test-taker needs to work on before taking the GED® test. Includes a personalized study plan with pages and chapters to review in popular study materials.
What My Score Means	Explains what skills the student successfully demonstrated on the GED® test	Explains what skills the student successfully demonstrated on the GED Ready® practice test.
Review My Written Answers	Available for the RLA test subject. Shows the students' scores for their responses and the skills they need to work on to score higher. Not available for Science, Social Studies, or Math subjects.	Displays the test-taker's written responses to extended response and short answer items. Educators can use the constructed response scoring tools to give test-takers feedback on their responses.

9



What Instructors Need to Know

Resources for Success

10



A GED Ready[®] Score Report: Yellow Zone

7/6/2018

MyGEDB - Score Report

GED Ready[®] - Mathematical Reasoning

My Score: 136

TOO CLOSE TO CALL
Test Date: 01/25/2018

How I Can Score Higher

Basic Math

Skill You Can Improve

- Find the distance between numbers on a number line using absolute value
- Compute and solve problems with whole numbers, fractions, and decimals

Publisher Study Recommendations ⓘ

Select your study material from the dropdown above to get study recommendations

Geometry

Skill You Can Improve

Publisher Study Recommendations ⓘ

11



7/6/2018

MyGEDB - Score Report

Skill You Can Improve

- Construct, and explain data from bar graphs, circle graphs, dot plots, histograms, box plots, tables, scatter plots, and line graphs
- Find the volume and surface area of three-dimensional shapes (Examples: rectangular and right prisms, cylinders, right pyramids). Find the side lengths, radius, or diameter of a three-dimensional figure when given the volume or surface area
- Find the probability of one or more events happening
- Find the side lengths of triangles, rectangles, and polygons when given the area or perimeter

Publisher Study Recommendations ⓘ

Basic Algebra

Skill You Can Improve

- Solve inequalities and real-world problems that involve them, and graph the solutions
- Add, subtract, multiply, divide, and factor polynomials [Example: $(x + 8)(x + 4)$; factor $3x^2 + 10x - 8$]
- Create algebraic expressions to represent problem situations or word-to-symbol translations (Example: write an inequality to match a word problem)

Publisher Study Recommendations ⓘ

Graphs and Functions

Skill You Can Improve

Publisher Study Recommendations ⓘ

<https://app.ged.com/portal#/scoreReport?examResultId=9164333>

26

12



7/6/2018 MyGED® : Score Report

Skill You Can Improve	Publisher Study Recommendations
<ul style="list-style-type: none"> •Recognize a function in a table or graph by determining whether or not there is only one output value for each input value •Compare functions that are shown in different ways such as tables, graphs, descriptions, equations •Find the slope of a graph that is made from a problem situation 	

Additional Skills to Work On

Scoring into the Green Zone on the GED Ready® practice test shows that you are likely to pass the GED® test. In order to progress into the Green Zone, consider doing the following:

Strengthen the skills listed in the Red and Yellow Zones and apply them at a satisfactory level of proficiency, with a particular focus on improving the following Yellow Zone skills:

- Compute with rational numbers
- Compute with squares and square roots of positive, rational numbers
- Solve problems involving rational numbers
- Compute unit rates
- Solve two-step, arithmetic, real world problems that involve percents
- Compute the area and perimeter of triangles and rectangles
- Find side lengths of triangles and rectangles, when given area or perimeter
- Compute volume and surface area of rectangular prisms
- Find height or side lengths of rectangular prisms, when given volume or surface area
- Represent, display, and interpret categorical data in bar graphs and circle graphs
- Represent, display, and interpret data involving two variables in tables and the coordinate plane, including scatter plots and graphs

<https://app.ged.com/portal/scoreReport/examResults/6164333> 3/6

13 

The GED Ready® Math Score: 136

Areas for Improvement (a sample)

- Basic Math (e.g. Number lines and problem solving with whole numbers, fractions, and decimals)
- Geometry (e.g. construct and interpret data from various types of graphs; volume and surface area of three dimensional figures; find side lengths, radius or diameter when given the volume or surface area; basic probability; finding side lengths when given area or perimeter)
- Basic Algebra (e.g. multiplying polynomials; solve inequalities; and create basic algebraic expressions to solve problems)
- Graphs and functions

Problem solving

Geometric reasoning

14 

What About the Additional Skills?

- These represent skills that the test-taker was NOT consistent with:
 - Solve problems involving rational numbers
 - Compute unit rates
 - Solve two-step, arithmetic, real world problems that involve percents
 - Compute the area and perimeter of triangles and rectangles
 - Find side lengths of triangles and rectangles, when given area or perimeter
 - Calculate the mean, median, mode, range, and weighted average, and calculate a missing data value, given the average and all the missing data values but one

15



Diagnosis

- An “incidental” math student whose math reasoning abilities stalled after learning the basics.
- Use the Performance Level Descriptors (PLDs) to determine where the student is on the math continuum—as you already know, you can’t add the more complex topics until the foundation is in place.
- Students who are confused by a number line, more likely than not, are not going to be able to plot points on a coordinate plane.
- As you determine how to sequence math content, keep in mind what foundational skills are necessary.

16



But...the Feedback Doesn't Cover What Specific Questions Were Missed

- No, the feedback **summarizes** the skills that are needed to earn a higher score
- And yes, we are *inferring* what's needed based on what was not demonstrated (and here we are talking about **consistency**)

17



Ideally, What Happens Next?

How do we get the biggest bang for the buck with the available time?

- High Impact Indicators (HIIs)
- Performance Level Descriptors (PLDs for Level 1- Not Passing and Level 2 – High School Equivalency)
- And, remember to have students review the Study Guide

18



How to Use PLDs in the Classroom

Use PLDs to:

Tip 1: Assess student's current skill level

Tip 2: Determine when students are ready to test

Tip 3: Shape learning activities

Tip 4: Add perspective to lesson plans

19



Mathematical Reasoning

Mathematical reasoning is the critical skill that enables a student to make use of all other **mathematical** skills. With the development of **mathematical reasoning**, students recognize that mathematics makes sense and can be understood.

20



6/15/2018 MyGED® : Study Guide

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GED Study Guide

+
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MATH

What you need to know about the GED® Math Test

- 1

You should be familiar with arithmetic and math concepts, measurements, equations, and applying math concepts to solve real-life problems.
Remember, the math test is not a memorization test! You'll have access to a formula sheet that gives you information like how to calculate the area for different shapes.
- 2

This study guide and the example questions in it will help you get an idea of what's going to be on the test.
- 3

You don't need to know everything in this guide!
If you want to see how close you are to passing, the GED Ready® official practice test is a great way to help you determine if you're ready.

21

Analysis of Math Challenges

In Mathematical Reasoning, items require:

- Application and development of quantitative and algebraic reasoning skills
 - Grounded in real-world examples
 - Beyond rote application of formulas and/or procedural steps
 - The “why” and “how” of math
- Strong critical reading and thinking skills
 - What is the question asking?
 - What heuristics can I use?
 - Is the answer reasonable?

22

Productive vs. Non-Productive Beliefs

Unproductive Beliefs	Productive Beliefs
Students can learn to apply mathematics only after they have mastered the basic skills.	Students can learn mathematics through exploring and solving contextual and mathematical problems.
The role of the student is to memorize information that is presented and then use it to solve routine problems on homework, quizzes, and tests.	The role of the student is to be actively involved in making sense of mathematics tasks by using varied strategies and representations, justifying solutions, making connections to prior knowledge or familiar contexts and experiences, and considering the reasoning of others.
An effective teacher makes the mathematics easy for students by guiding them step by step through problem solving to ensure that they are not frustrated or confused.	An effective teacher provides students with appropriate challenges, encourages perseverance in solving problems, and supports productive struggle in learning mathematics.

Effective Teaching and Learning. (2014). In *Principles to Actions : Ensuring mathematical success for all* (p. 11). Reston, VA: NCTM.



23

Productive vs. Non-Productive Beliefs

Unproductive Beliefs	Productive Beliefs
Mathematics learning should focus on practicing procedures and memorizing basic number combinations.	Mathematics learning should focus on developing understanding of concepts and procedures through problem solving, reasoning, and discourse.
Students need only to learn and use the same standard computational algorithms and the same prescribed methods to solve algebraic problems.	All students need to have a range of strategies and approaches from which to choose in solving problems, including, but not limited to, general methods, standard algorithms, and procedures.
The role of the teacher is to tell students exactly what definitions, formulas, and rules they should know and demonstrate how to use this information to solve mathematics problems.	The role of the teacher is to engage students in tasks that promote reasoning and problem solving and facilitate discourse that moves students toward shared understanding of mathematics.

Effective Teaching and Learning. (2014). In *Principles to Actions : Ensuring mathematical success for all* (p. 11). Reston, VA: NCTM.



24

Getting Started with Content

GED

Relationships Between the High Impact Indicators and Other Indicators

The High Impact Indicators are a list of the skills assessed on the GED® test that, if emphasized in instruction, can help students make a significant impact on student skills and performance. This document shows the relationship between the high impact indicators and other indicators assessed on the GED® test. Adult educators can use this resource to make instructional plans that address the maximum number of skills in the test that they have available with students. Providing instruction in a single high impact indicator area can help students broaden and deepen their skills, leading them to apply those skills in multiple ways and in a variety of contexts across all of the content areas covered by the GED® test.

Note: High impact indicators appear in **BOLD** type.

>

Reasoning Through Language Arts – High Impact Indicators

High Impact Indicator	Related Indicators from Other Content Areas
RI.1.1. Order sequences of events in texts. Distinguish and measure time in a process.	<p>SP.3.2. Reason from data or evidence to a conclusion.</p> <p>SP.3.3. Make a prediction based upon data or evidence.</p> <p>SP.1.1. Read a variety of texts.</p> <p>SP.1.2. Analyze cause-and-effect relationships and multiple causation, focusing on the relationship between social processes and the influence of ideas.</p> <p>SP.1.3. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.4. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.5. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.6. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.7. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.8. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.9. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p> <p>SP.1.10. Compare differing social, historical, economic, scientific, technical, functional, and/or aesthetic features in literary, informational, and/or graphic texts in differing contexts.</p>

High Impact Indicators

All of the indicators listed in the GED® Assessment Target indicators describe the critical thinking skills essential to test-taker success in college, career training, and the workforce. However, those we are highlighting in the **High Impact Indicators** may be useful for educators to emphasize in their instruction.

We selected the following skills as High Impact Indicators because:

- They represent particular **foundational skills** that are the basis for the development of other skills covered in the GED® Assessment Targets and have **broad applications** that can be applied in multiple contexts.
- They are a **good fit for classroom instruction** because they are not complicated but are important for students to know and use.
- GED® testing data suggests that **educators may not be currently focusing on these skills** in their GED® test preparation.

While focused classroom instruction on these High Impact Indicators may quickly and positively impact your students' test performance, **educators should note that the High Impact Indicators are not more important than the rest of the indicators.** Proficiency with all of the indicators is essential for test takers to perform well on the GED® test.

Reasoning Through Language Arts – High Impact Indicators

Revised 2016 GED® Test Performance Level Descriptors: Level 2 (Pass/High School Equivalency: 145-164)

Reading	Mathematics	Science	Writing
<p>Reading involves understanding and analyzing what is written. It includes identifying the main purpose of a text, identifying the author's point of view, and identifying the author's purpose. It also includes identifying the main idea and supporting details, and identifying the author's tone and mood.</p> <p>Level 2: The test taker can identify the main purpose of a text, identify the author's point of view, and identify the author's purpose. The test taker can identify the main idea and supporting details, and identify the author's tone and mood.</p>	<p>Mathematics involves understanding and applying mathematical concepts and procedures. It includes identifying the main purpose of a text, identifying the author's point of view, and identifying the author's purpose. It also includes identifying the main idea and supporting details, and identifying the author's tone and mood.</p> <p>Level 2: The test taker can identify the main purpose of a text, identify the author's point of view, and identify the author's purpose. The test taker can identify the main idea and supporting details, and identify the author's tone and mood.</p>	<p>Science involves understanding and applying scientific concepts and procedures. It includes identifying the main purpose of a text, identifying the author's point of view, and identifying the author's purpose. It also includes identifying the main idea and supporting details, and identifying the author's tone and mood.</p> <p>Level 2: The test taker can identify the main purpose of a text, identify the author's point of view, and identify the author's purpose. The test taker can identify the main idea and supporting details, and identify the author's tone and mood.</p>	<p>Writing involves understanding and applying writing concepts and procedures. It includes identifying the main purpose of a text, identifying the author's point of view, and identifying the author's purpose. It also includes identifying the main idea and supporting details, and identifying the author's tone and mood.</p> <p>Level 2: The test taker can identify the main purpose of a text, identify the author's point of view, and identify the author's purpose. The test taker can identify the main idea and supporting details, and identify the author's tone and mood.</p>



Just a Couple of Strategies for the Classroom

- Teach a simple approach to solving word problems by using real world examples
- Teach multiple ways to solve problems
- Focus on the WHY to give reasoning skills a boost



Reading and Reasoning Process

First Read: Read for Understanding

Second Read: Identify a Problem-Solving Process

Third Read: Solve the Problem and Check for Reasonableness

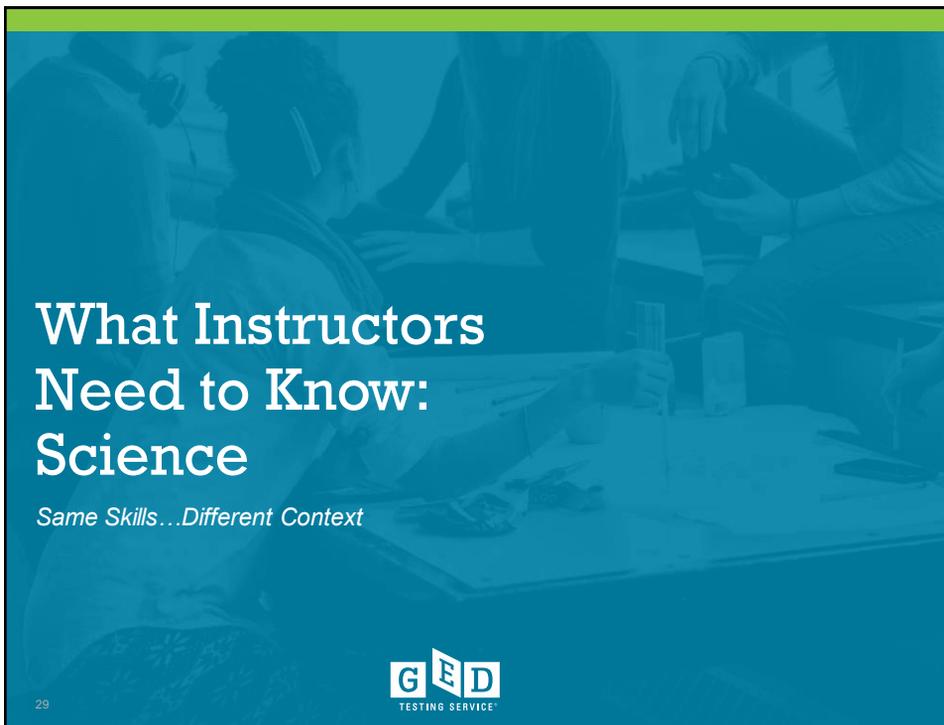
Miller, P. and Koesling, D. "Mathematics Teaching for Understanding: Reasoning, Reading, and Formative Assessment. Danvers, MA



And What About Our “Too Close to Call” Test-Taker?

- The Math test score was 135—completely in line with the feedback from the GED Ready® exam
- The operational exam feedback identified overlapped with the areas needing improvement on the GED Ready®—Basic Math, Geometry, Basic Algebra, Graphs & Functions...
- Sound familiar?





What Instructors Need to Know: Science

Same Skills...Different Context

29



Overview of Science Test



- Content
 - Life Science – 40%
 - Physical Science – 40%
 - Earth and Space Science – 20%
- Themes
 - Human Health and Living Systems
 - Energy and Related Systems
- Science Practices – reasoning and thinking scientifically
- Question types – Technology-enhanced items

30



7/6/2018 MyGED®: Score Report

GED Ready® - Science

My Score: 141
TOO CLOSE TO CALL
Test Date: 04/12/2018

How I Can Score Higher

Reading for Meaning in Science

Skill You Can Improve	Publisher Study Recommendations
•Understand symbols, terms, and phrases in science	Select your study material from the dropdown above to get study recommendations
•Understand and explain information from science readings	

Designing and Interpreting Science Experiments

Skill You Can Improve	Publisher Study Recommendations
•Understand and apply science theories and processes	

31 

7/6/2018 MyGED®: Score Report

Skill You Can Improve	Publisher Study Recommendations
•Decide whether conclusions are supported by data	
•Make predictions based on data	
•Identify and improve hypotheses for scientific investigations	

Using Numbers and Graphics in Science

Skill You Can Improve	Publisher Study Recommendations
•Use numbers or symbols to display science information (Examples: use chemical symbols for elements or provide a numeric answer from interpreting a graph or chart)	
•Apply science formulas (Example: $s = d/t$)	
•Explain different ways in which scientific information is presented (Examples: tables, charts, diagrams)	

32 

Additional Skills (Selected)

- Identify and refine hypotheses for scientific investigations
- Pull specific evidence from a written source to support a finding or conclusion
- Make a prediction based on data or evidence
- Make judgments about whether theories or conclusions are supported or challenged by data or evidence
- Express scientific information or findings using numbers or symbols
- Understand and explain written scientific presentations

33



GED Ready® Science Score: 141 Areas for Improvement

- Reading for Meaning in Science
- Designing and Interpreting Science Experiments
- Using Numbers and Graphics in Science

Close Reading

Scientific Method

Math in Science

34



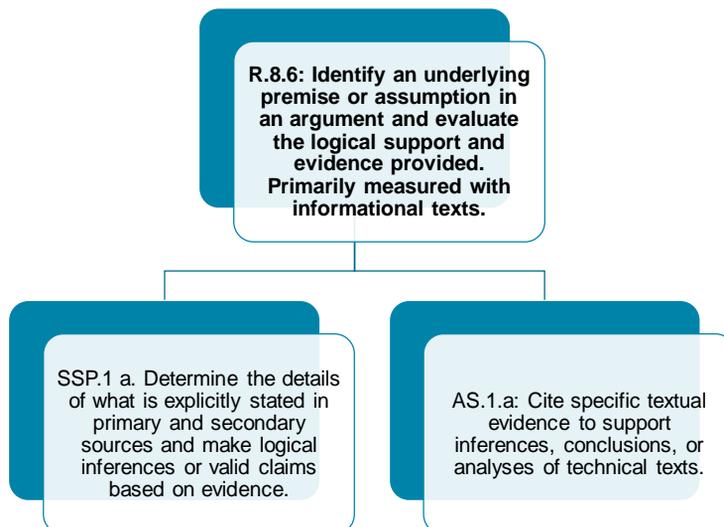
Diagnosis

- Transform into a proficient reader—being able to sort through the structure of text to extract important details, evidence, and facts
- Develop close reading skills (an essential)
- Practice engaging with Science texts (noticing, wondering, questioning, relating, thinking, and on occasion, arguing)
- Practice “reading between the lines” (aka inference)

35



Explore the Relationships



36



How Did Our Test-Taker Fare with Operational Testing?

- GED® Science test score: 143
- The operational exam feedback identified the following areas as needing improvement
 - Reading for Meaning in Science
 - Designing and Interpreting Science Experiments
 - Using Numbers and Graphics in Science
- Sound familiar? It should...the same feedback from the GED Ready®!

37



Questions for Reflection

What Can YOU Take Away from this Session?

38



Questions to Ask Yourself...and Your Colleagues

- What are the key ingredients in skill development?
- What are some of the most effective ways to prompt persistence especially in students who struggle with reading, writing, or mathematical reasoning?
- How can I bring these elements to the classroom?

39



A Few Takeaways...

40



Key Takeaways

- One size doesn't fit all...and probably won't even fit most.
- Please unlearn the notion that there is **ONLY** one right way—whether it is writing, problem-solving, or thinking critically.
- Once is not enough—if that were true, we would have legions of experts!
- Flow with the plateaus—learning and skill development are not linear.
- Remember that *learning* is both iterative and integrative. This will enable you to expect the best and have your students deliver their best.

41



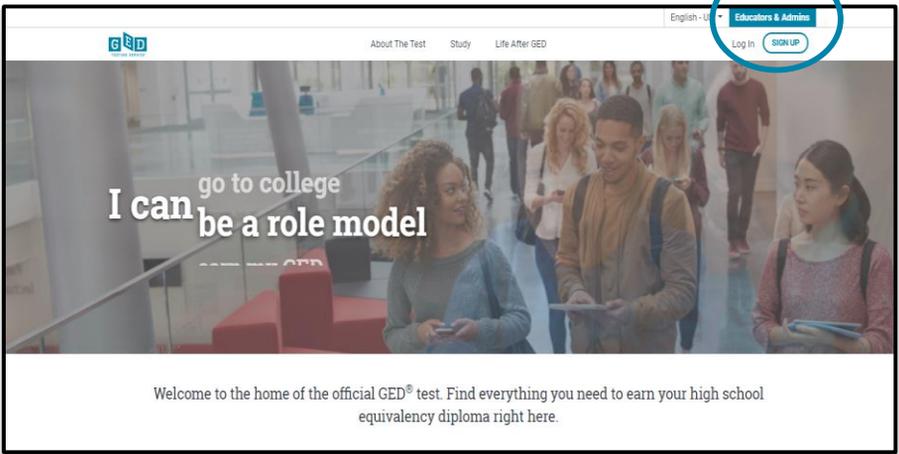
“ *Expect everything and attach to nothing.* ”

— Carrie Campbell

42



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43



44





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45