



## High Impact Indicators: A Thematic Approach – Part 2 (Reasoning Through Language Arts, Science, and Mathematical Reasoning)

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### High Impact Indicators A Thematic Approach – Part 2

# Welcome!



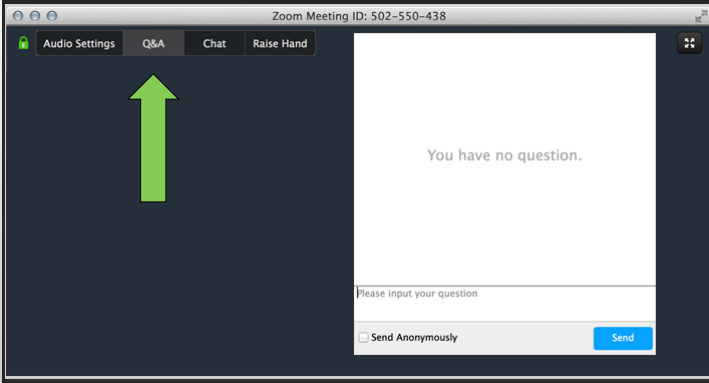
Anne Morgan  
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Webinar Things to Remember

- If you have a question, please type it into the **Q&A** option.



- Attendee microphones will be muted. You will be in **listen only** mode.
- Today's presentation is being **recorded**. It will be archived and available on the IPDAE website within 48 hours.

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Today's Objectives



In this session, we will explore:


- Integration of the RLA High Impact Indicators with related indicators in Science & Mathematical Reasoning
- Alignment of HII to CCR standards and domains & objectives on TABE® 11/12
- An integrated thematic lesson plan and other resources

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## Thematic Approach: First Steps




*Select a theme or skill that is relevant and necessary to student success (Evidence)*

*Research standards, objectives, and lessons that relate to the skill and can be applied in multiple content areas (CCR, GED® test, TABE® 11/12)*

*Design lessons that incorporate contextual real world opportunities for students to engage with the thematic approach (Thematic Lesson Plan)*

5

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## TABE® Blueprints & GED® Assessment Targets

SP4 Evaluating Conclusions with Evidence		
P8, P4, P6, M3, M7, M8	SP4.a Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence	2-3


M3 N7, N9	<b>MP3 Furthering Lines of Reasoning</b> a. Build steps of a line of reasoning or solution pathway, based on previous step or givens. b. Complete the lines of reasoning of others. c. Improve or correct a flawed line of reasoning.	1-3 1-3 2-3
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<b>7.SP.7</b>	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (7.SP.7.a, 7.SP.7.b)	D
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6

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High Impact Indicators




## High Impact Indicators (HIIs)


- Describe the critical thinking skills essential to test-taker success
- May currently receive light coverage during GED® test preparation
- Lend themselves to straight forward instruction
- Represent foundational skills that are the basis for the development of other skills covered in the GED® assessment targets and can be applied in multiple contexts

7

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Social Studies, Mathematical Reasoning  
& Science Related Indicators



High Impact Indicator	Related Indicators from Other Content Areas
<b>R.8.3 Evaluate the relevance and sufficiency of evidence offered in support of a claim. Primarily measured with informational texts.</b>	<p><b>SSP.7a Distinguish among fact, opinion, and reasoned judgment in a primary or secondary source</b></p> <p><b>SP.4a Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence</b></p> <p><b>MP.3c Improve or correct a flawed line of reasoning</b></p>

8

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## The Thematic Approach!

Reasoning Through Language Arts


Social Studies


Science


Mathematical Reasoning

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### Once a theme is selected . . .

- Select related indicators to maximize skill practice*
- Pull lessons and activities from each content area*




9

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## Recorded webinar on IPDAE website




### High Impact Indicators: A Thematic Approach- Part 1 (Reasoning Through Language Arts and Social Studies)

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## Thematic Lesson Instructional Plan


Create a series of lessons around the central idea of evidence

- Identify evidence (RLA – video introduction, graphic organizers, sample prompts)
- Analyze and assess fact, opinion, reasoned judgment (SS – content activities)
- Evaluate relevance and sufficiency of evidence (RLA, SS, Science – thinking chart, content activities)
- Draw and support conclusions in science or math by assessing the strength or validity of evidence (Science, Math – video introduction, content group activities)



11

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## Thematic Lesson Plan

**GED® Preparation Lesson Plan**


**Module:** GED® Preparation

**Lesson Title:** Evidence is Everywhere! A Thematic Approach to High Impact Indicators, Target Assessments, and Content Standards: GED® Preparation (Adult General Education)

2014 GED® Assessment Targets High Impact Indicator Reasoning Through Language Arts	2014 GED® Assessment Targets Related Indicators from Other Content Areas: Social Studies, Science, and Mathematical Reasoning
Evaluate the relevance and sufficiency of evidence offered in support of a claim (RLA.8.3)	Distinguish among fact, opinion, and reasoned judgment in a primary or secondary source document (SSP.7b)  Evaluate whether a conclusion or theory is supported or challenged by particular evidence (SP.4.a)  Improve or correct a flawed line of reasoning (MP.3.c)

12


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Thematic Lesson Plan


### Objectives of the Thematic Lesson



- Students will: Integrate High Impact Indicators with related indicators from other content areas
- Identify assess and analyze types of evidence in a claim or passage (RLA)
- Define fact, opinion, and reasoned judgment and evaluate sources in a document (Social Studies)
- Assess evidence and evaluate its sufficiency to support a conclusion or solution (Science)
- Identify a faulty line of reasoning and improve or correct it (Mathematical Reasoning)

13


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Thematic Lesson  
Instructional Plan – Types of Evidence

- ❖ Factual
- ❖ Statistics or Data
- ❖ Examples or Anecdotes
- ❖ Expert Testimony
- ❖ Logical Reasoning
- ❖ Emotional Appeal



Type of Evidence	Definition
Factual	Truthful statements that cannot be denied. Statements that the average person may know or which can be proven.
Statistics or Data	Numerical facts; can be presented in raw numbers, percentages, or fractions.
Examples or Anecdotes	Real-life situations, events, or experiences that illustrate a position; anecdotal stories that help explain an author's claim.
Expert Testimony	The observations or conclusion of someone who is considered highly knowledgeable because he/she is an expert in a particular field of study or occupation; someone who has firsthand knowledge and experience.
Logical Reasoning	An explanation which draws conclusions that the reader can understand; a discussion which helps the reader understand or make sense out of facts or examples offered.
Emotional Appeal	Use of sympathy, fear, loyalty, etc., to persuade; manipulates the reader's emotions—ethos, pathos, logos.

14

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## Sample Source Texts from GEDTS

Handout B

Extended Response Stimulus Materials

**Source Material #2**  
Game-based Learning: An Effective Training Strategy  
Janette Morgan, Ph.D., Professor of Business, Saratoga State University  
Innovative Trends in the Workplace

Already a multi-billion-dollar business, game-based learning in the corporate world continues to grow at a steady pace, and is here to stay. Executives are smart — they are not going to waste resources on training methods that don't work. Let's look at some of the advantages of "gamifying" workplace training.

First, many people are "gamers" in their non-work lives, so playing video games is something they are already comfortable with and enjoy. This makes game-based learning in the workplace more attractive and motivating than traditional instruction. And according to the Entertainment Software Association, despite the image of video-game players as teenage boys, "the average gamer is now 37 years old." Further challenging the stereotype, nearly half of gamers are girls or women. Even 29 percent of those over age 50 are getting into the video-game habit. Teenagers and young men, in fact, make up only 15 percent of the over 190 million video-game users in the United States.

Evidence supporting the effectiveness of game-based learning is starting to emerge. Researchers point out that video games have "compelling storylines, attainable challenges, rewards, recognition and control," all of which stimulate learners. A 2012 report on game-based learning notes that "there is research evidence demonstrating positive impact on higher order skills such as decision making and problem solving." The report adds that using video games can also reduce training time, an advantage for both managers and employees.

Finally, unlike one-time training in a classroom, game-based learning is infinitely repeatable. If employees miss something or need more practice, they can always start the game again, using the feedback provided by the game to gauge their progress. This leads to a sense of accomplishment and creates a supportive learning environment, which is what we all want in an education strategy.

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## Use Graphic Organizers


Source Material #2 Sample Answers

Type of Evidence	Definition	Samples Supporting an Author's Claim
Factual	Truthful statements that cannot be denied. Statements that the average person may know or which can be proven.	Game based learning is a multi-billion dollar business and continues to grow in the corporate world. Many people are already gamers so that they are comfortable with it.
Statistics or Data	Numerical facts; can be presented in raw numbers, percentages, or fractions.	190 million gamers in US. Average gamer is 37 years old. 29% of people over 50 play video games.
Examples or Anecdotes	Real-life situations, events, or experiences that illustrate a position; anecdotal stories that help explain an author's claim.	2012 report notes game based learning's positive impact on decision making and problem solving. Reduces training time.
Expert Testimony	The observations or conclusions of someone who is considered highly knowledgeable because he/she is an expert in a particular field of study or occupation; someone who has first-hand knowledge and experience.	Author has background in business so claims about the advantages of workplace training are credible and relevant.
Logical Reasoning	An explanation which draws conclusions that the reader can understand; a discussion which helps the reader understand or make sense out of facts or examples offered.	Research shows games stimulate learning. Game based learning is repeatable, and provides feedback and practice which gauges progress and leads to sense of accomplishment.
Emotional Appeal	Use of sympathy, fear, loyalty, etc. to persuade; manipulates the reader's emotions — ethos, pathos, logos.	Video games have compelling storylines, challenges, and rewards. Game based learning is attractive and motivating.

16

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## Activities to Differentiate Fact vs. Opinion

A **fact** is a statement that can be tested by experimentation, observation, or research and shown to be true or untrue.


An **opinion** is a person's belief, feeling, or judgment about something. It is a subjective or value judgment, and it cannot be proven.

**EXERCISE 1:**  
Mark statements of **fact** with an **F** and statements of **opinion** with an **O**.

Handout C

- \_\_\_ 1. In 1924, the Model T Ford could be purchased for \$290.
- \_\_\_ 2. The Model T was the most important invention of the first half of the century.
- \_\_\_ 3. By the end of this century, electric cars will be in common use.
- \_\_\_ 4. Couples should be acquainted for at least a year before getting married.

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## Evaluating Sources

**Evaluating Sources:**

Handout D

- 1. Historical Question:** Who was present at the signing of the Declaration of Independence?

**Source 1:** Hollywood movie about the American Revolution made 2001.

**Source 2:** Book written by a famous historian who is an expert on the American Revolution, published in 1999.


**Which do you trust more? Why?**
- 2. Historical Question:** What was slavery like in South Carolina?

**Source 1:** Interview with former slave in 1936. The interviewer is a black man collecting oral histories for the Federal Writers' Project.

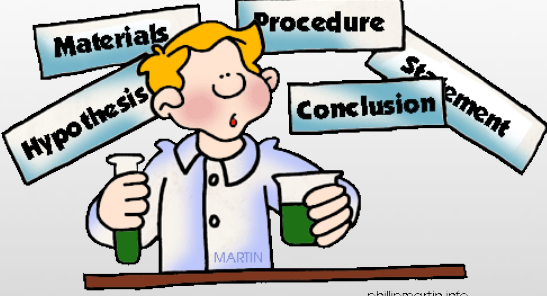
**Source 2:** Interview with former slave in 1936. The interviewer is a white woman collecting oral histories for the Federal Writers' Project.

**Which do you trust more? Why?**

18
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## Forming a Conclusion Science High Impact Indicator



phillipmartin.info


Forming a conclusion is one of the identified steps in the scientific method:

- 1) Description of the propose of the experiment (hypothesis)
- 2) Discussion and explanation of major findings (data/evidence)
- 3) Statement that demonstrates whether or not the hypothesis was supported or not supported

SP.4.a Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence

19


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## My GED® Study Guide – Science

9/15/2018

MyGED® : Study Guide



### Reading for Meaning in Science

**1 Claims and evidence in science**

You'll be presented with science passages and be asked to:


- Find evidence that supports a finding
- Make sense of information that differs between various science sources

Science readings often discuss theories or draw conclusions from evidence that is presented. You should be able to read science passages and identify the evidence that supports the theory, principle, or conclusion that has been drawn.

For example, global climate change is a science topic that is frequently discussed in the news. Articles about this topic generally present evidence as to how humans either *are* or *are not* responsible for the changing climate. It's important for you to be able to read something about climate change and identify the evidence that the authors cite to support their conclusions.

20

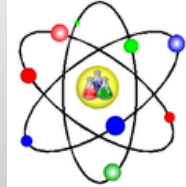
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Important Step – Review

**Scientific Method:** An organized and sequential approach taken to try to solve a problem and involves the following:

- Stating the problem
- Forming a hypothesis
- Testing the hypothesis
- Analyzing the data/evidence
- Forming and supporting a conclusion



21

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Important Step – Prep Activities


Include modifications for different levels

- ✓ Vocabulary
- ✓ Pre-Reading Activities
- ✓ Graphic Organizers
- ✓ Videos/website resources
- ✓ Small and paired groups
- ✓ Practice, practice, practice



22

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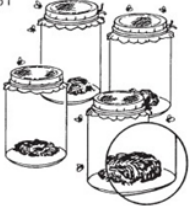
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Science – Conclusions


**Introduction to the Scientific Method**

Long ago, many people believed that living things could come from nonliving things. They thought that worms came from wood and that maggots came from decaying meat. This idea was called spontaneous generation. In 1668, an Italian biologist, Francesco Redi, did experiments to prove that maggots did not come from meat. One of his experiments is shown below.

Group I



Group II




Redi placed pieces of meat in several jars. He divided the jars into two groups. He covered the first group of jars with fine cloth. He left the second group of jars uncovered. Redi observed the jars for several days. He saw flies on the cloth of the covered jars, and he saw flies laying eggs on the meat in the uncovered jars. Maggots appeared only on the meat in the group of jars left uncovered.

**Handout E**

Mr. Hill's Science website- <http://mrscienceut.net>  
<http://www.mrscienceut.net>

23

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Science – Conclusions

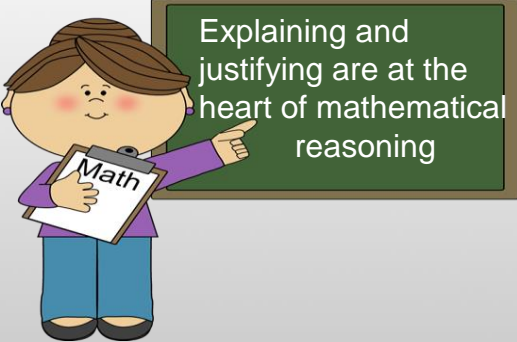
4. How did he test his hypothesis?
  - a. He placed food in two jars, covering one jar and leaving the other uncovered.
  - b. He placed food in two jars and left both jars uncovered.
  - c. He placed food in two jars and covered both jars.
  - d. He put food in one jar and no food in a second jar.
5. What was the variable in his experiment?
  - a. Covering both jars.
  - b. Covering one jar and leaving the other uncovered.
  - c. Leaving both jars uncovered.
  - d. There was no variable in this experiment.
6. What do you think Redi's conclusion was?
  - a. Living things come from other living things.
  - b. Living things are created through spontaneous generation.
  - c. He did not have enough data to arrive at a conclusion.

24

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Reasoning and Evidence in  
Mathematics – MP3




Math Practice 3:  
Construct viable  
arguments and  
critique the  
reasoning of others.

*MP.3c Improve or  
correct a flawed line  
of reasoning*

25

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Reasoning in Mathematics –  
Let's try an activity

**Two Bags of Jellybeans**

I have two bags **A** and **B**. Both contain red and yellow jellybeans.

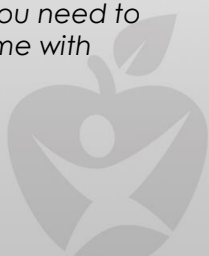
There are more red jellybeans in bag **A** than in bag **B**.

If I choose one jellybean from each bag I am more likely to choose a red one from bag **A** than from bag **B**.

Ensure the students understand the problem by asking:


*Your task is to decide if the statement is true/*

*Once you have made a decision, you need to convince me with reasoning.*



26


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Reasoning in Mathematics  
Probability – True, False, Unsure & WHY?

**Card Set: True, False Or Unsure?**

**A.**  
If you roll a six-sided number cube and it lands on a six more than any other number, then the number cube must be biased.



**F.**  
Scoring a total of three with two number cubes is twice as likely as scoring a total of two.




Try not to make suggestions that move students towards a particular approach or answer.

Instead ask questions to clarify their thinking.

Students need to understand their task is to make a reasoned decision and then to try to justify their answer with evidence- by drawing a diagram, working out probabilities or writing a description of what they believe.

27


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Debrief after the lesson


**Sample Debriefing Questions**

- Define different types of evidence.
- Give a real world example of a statement of factual evidence vs one with emotional appeal.
- What is the difference between a fact and an opinion?
- Describe some evidence you can use to evaluate the validity or truthfulness of a claim.
- Describe the possible outcomes in evaluating evidence to form a conclusion.
- How can you correct a faulty line of reasoning or assess data in a math problem?



28

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## IPDAE Resources

**A Few Websites in Science to Get You Started!**

**ABC Science.** News, video clips, games, and lots of activities for the science classroom from the American Broadcasting Company.  
<http://www.abc.net.au/science>

**Annenberg: The Habitable Planet.** The Habitable Planet is a multimedia course for high school teachers and adult learners interested in studying environmental science. The Web site provides access to course content and activities developed by leading scientists and researchers in the field.  
<http://www.learner.org/courses/envsci/index.html>


**Annenberg Science in Focus: Force and Motion.** Explore science concepts in force and motion and come away with a deeper understanding that will help you engage your students in their own explorations. With science and education experts as your guides, learn more about gravity, friction, air resistance, magnetism, and tension through activities, discussions, and demonstrations.  
<http://www.learner.org/channel/workshops/force>

**BBC Science.** From space to the human body to, this interactive site allows learners to discover many different facets of science. <http://www.bbc.co.uk/sn>

**Cells Alive.** This site can be used by teachers and students. Lots of great interactivity and resources on the basics of cells. <https://www.cellsalive.com/notfound.htm>

**Discovery Channel.** The website has lots more information than even the channel. Lots of interactivity with excellent videos, interactivity, and high-level games. <http://www.discovery.com>

Get your resources  
from IPDAE.  
No need to recreate  
the wheel!



**Resources for the GED® and ABE Math Classroom**

**PROBABILITY**


**Interactive sites for Education.** Lower level math activities  
<http://interactivesites.weebly.com/probability.html>

**Math is Fun.** High School Statistics and Probability Common Core Standards-games, puzzles, worksheets  
<https://www.mathsisfun.com/links/core-high-school-statistics-and-probability.html>

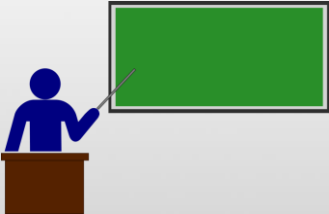
**Khan Academy**  
<https://www.khanacademy.org/math/statistics-probability>

**Home School Math-** Online games and resources for probability  
<https://www.homeschoolmath.net/online/probability.php>

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## So to review . . .



- Use High Impact Indicators and related indicators to teach thematically
- Identify a common thread or skill that is found in related indicators
- Starting with the RLA or reading skills seems to set the stage to add the other related indicators more easily
- Select texts and prompts that contain a viewpoint the author wants the reader to accept

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**Please complete this quick survey.**

32



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33

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