

THE NATURE OF MEMORY

PREPARING STUDENTS FOR REGENTS AND UNIT EXAMINATIONS

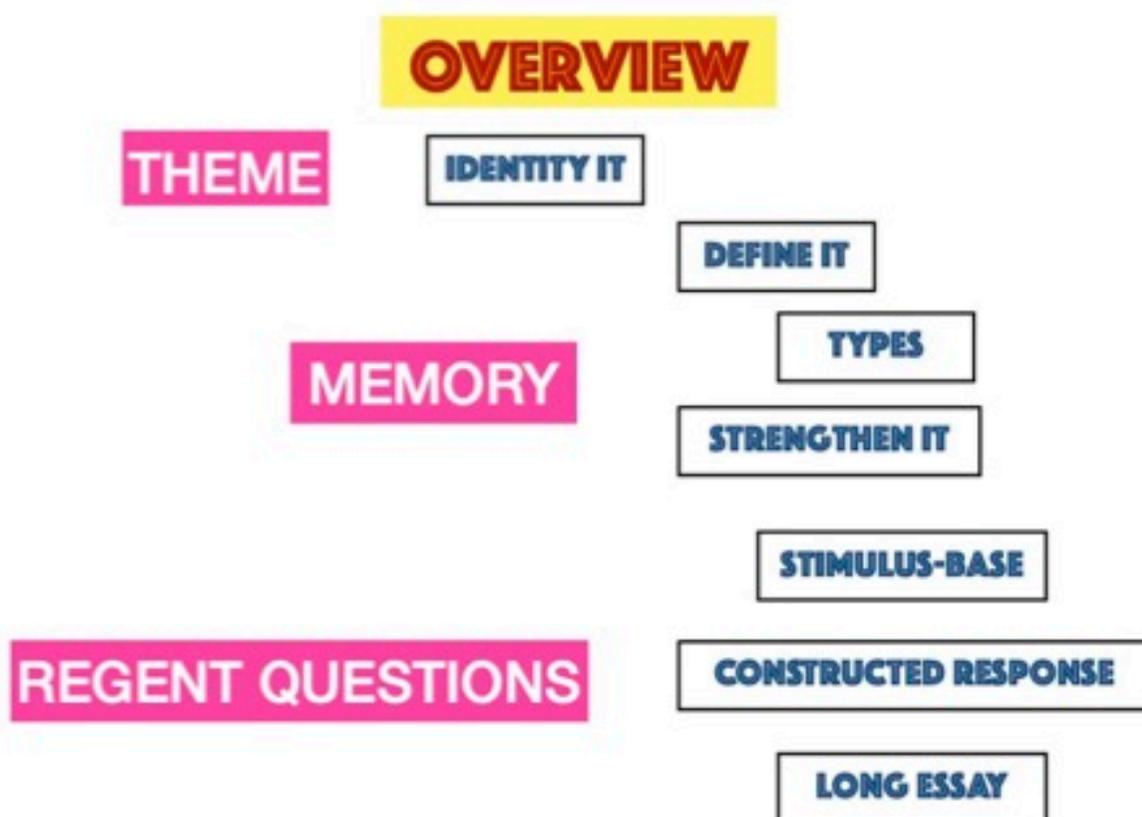
JAMES KILLORAN AND STUART ZIMMER

OVERVIEW

UNIT # 1 WILL DESCRIBE THE MAIN GOAL OF THE PRESENTATION: HOW AN UNDERSTANDING OF HOW MEMORY WORKS WILL AID THE STUDENT IN RECALLING IMPORTANT TERMS, CONCEPTS, AND PROCESSES NEEDED TO PASS REGENTS AND OTHER UNIT EXAMINATIONS.

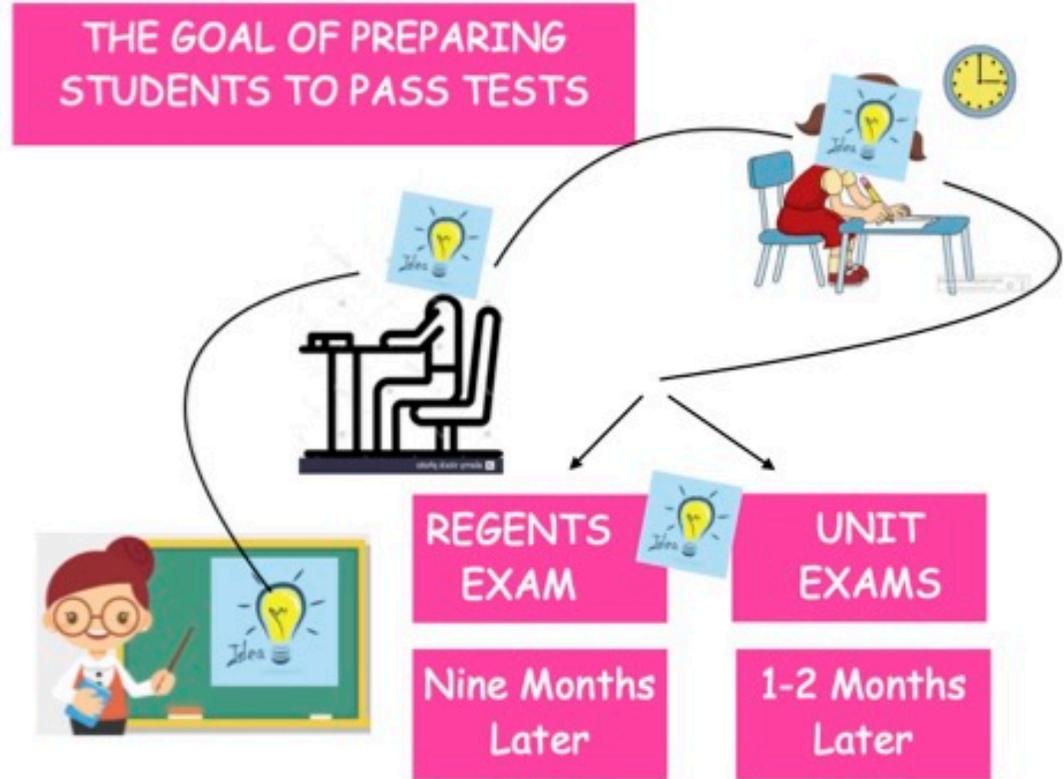
UNIT # 2 WILL DEFINE THE TERM "MEMORY AND HOW MEMORIES ARE FORMED, STORED, AND RECORDED IN OUR BRAINS.

UNIT # 3 WILL SHOW HOW TO INCORPORATE THIS UNDERSTANDING TO HELP ANSWER THE DIFFERENT STYLES OF QUESTIONS ASKED ON REGENTS AND OTHER UNIT TESTS



GOAL

Since the Regents Examinations are given at the end of the school year, a major difficulty for students is to recall important terms, concepts, and processes that were taught as much as nine months earlier. It is the aim of this presentation is to show how understanding how the formation and recall of ideas in the memory process will help students pass these challenging examinations.



KEY

So, what is the key to unlock the means that will enable students to recall information learned at an earlier time period.

Now, what is the “KEY” to achieve this goal?



Let us start by looking at
“HOW MEMORY WORKS”

MEMORY

Memory refers to the processes that are used to acquire, store, retain, and later retrieve information. As we know however, this is not a flawless process. Sometimes we forget or misremember things.



WHAT IS MEMORY

MEMORIES ARE **NOT** STORED IN A FILE CABINET WHERE WE CAN OPEN A DRAWER AND PULL OUT THE RECOLLECTION WE ARE SEARCHING FOR.

MEMORY IS NOT A SINGLE EVENT. IT IS A COMPLEX SYSTEM INVOLVING MANY BRAIN REGIONS AND PROCESSES.

TYPES of MEMORIES

Memories fall into two major major classes: Explicit and Implicit Memories. For our purpose, we will focus on explicit memories.



TYPES OF MEMORIES

MEMORY FOR FACTS AND EVENTS

Explicit Memories



MEMORY FOR HABITS AND SKILLS

Implicit Memories



TYPES OF EXPLICIT MEMORIES

Explicit memories can be divided into two types: Episodic and Semantic. All memories start out as episodic memories. However, overtime they may lead to the development of semantic memories. It is these memories that are the basis for Social Studies examinations.



TYPES OF EXPLICIT MEMORIES

EPISODIC

Episodic memories are tied to a specific time and place such as how you traveled to this conference.



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SEMANTIC

Semantic memories are our memories of facts such as the U.S. President lives in the White House.



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MAKING EPISODIC MEMORIES

SENSORY MEMORIES ARE STORED FOR A FEW SECONDS AT MOST. THEY COME FROM THE FIVE SENSES: HEARING, VISION, TOUCH, SMELL, AND TASTE. THEY ARE STORED ONLY FOR AS LONG AS THE SENSE IS BEING STIMULATED. THEY ARE THEN REPROCESSED AND ASSOCIATED WITH A MEMORY THAT MAY BE STORED IN YOUR SHORT-TERM-MEMORY.

MAKING EPISODIC MEMORIES

INVOLVES SEVERAL AREAS OF THE BRAIN



THESE MEMORIES ARE TIED TO A SPECIFIC TIME AND PLACE.

I VISITED NEW YORK CITY, WHICH WAS LOCATED ON THE HUDSON RIVER.
I VISITED LONDON, WHICH WAS LOCATED ON THE THAMES RIVER,
I VISITED DETROIT, WHICH WAS LOCATED ON THE DETROIT RIVER

CONVERTING EPISODIC MEMORIES

The brain categorises episodic memories that have common elements. For example, if the brain recognizes that a basketball, an apple, the moon, and the a circle share the same shape. It develops the concept "round." The same goes for cities and large bodies of water. From these concepts, the brain creates generalisations that help us to navigate our world.

Sensory memories are stored for a few seconds at most. They come from the

CONVERTING EPISODIC MEMORY TO SEMANTIC MEMORY

Categorization

- Our semantic memory is organized by category. For example, if you see a bunch of pictures of robins, sparrows, and finches, you can quickly recognize that they're all birds.

THESE MEMORIES ARE TIED TO A SPECIFIC TIME AND PLACE.

I VISITED NEW YORK CITY, WHICH WAS LOCATED ON THE HUDSON RIVER.
I VISITED PALERMO, WHICH WAS LOCATED ON THE MEDITERRANEAN SEA
I VISITED DETROIT, WHICH WAS LOCATED ON THE DETROIT RIVER

MAKE A GENERALIZATION

LARGE CITIES ARE LOCATED NEAR BODIES OF WATER

STRENGTHEN SEMANTIC MEMORIES

Our semantic memory is our store of factual knowledge of the world. Our semantic memory is not limited to one part of the brain. So, it is important that we create episodic memories in different ways, resulting in strengthening the memory of the term or concept.



KEY TO STRENGTHEN SEMANTIC MEMORY

“Create episodic memories about the same term or concept in **different ways.**”

WHY?

Because the information in each event is encoded and sent to different parts of the brain in which it is consolidated and transformed into long-term memory.



WRITTEN WAY

Have students write out index cards explaining the main points of the term or concept being studied,

For **TERMS**, have students answer the interrogative words: words that can not be answered with a simple "yes" or "no".

For **CONCEPTS**, have students define the concept and give an example of it.



THE WRITTEN MODALITY



The French Revolution

Where did it happen?

When did it happen?

Who were the main Characters?

Why did he happen?

What were its causes?

What were its effects?

**** Have students create index cards for terms and concepts****

**** Have students read aloud what they have written****

DRAWING MODALITY

Psychologists theorise that drawing can help by engaging more of the visual and motor parts of the brain, which helps create a richer context and experience to help us absorb these concepts and retain



THE DRAWING MODALITY



The French Revolution

Where did it happen?
When did it happen?
Who were the main Characters?
Why did he happen?
What were its causes?
What were its effects?



Drawing taps into multiple modalities — visual, kinesthetic, and semantic— which is superior to tapping into only one. When students draw something, they process it in three different ways, in **effect learning it three times over.**



VISUAL MODALITY

Visual cues help us better retrieve and remember information since our brain is mainly an image processor. In fact, the part of the brain used to process words is quite small in comparison to the part that processes visual images.

VIEWING MODALITY

Have students view a historical video about the term or concept.

STUDENTS RETAIN AS MUCH AS 95% OF THE INFORMATION PRESENTED IN A VIDEO.



OUTLINE MODALITY

Research has shown that making outlines from the text is an effective strategy for helping students recall text information since students were better able to see the relationship among sub-topics and topics.

OUTLINE MODALITY

CHAPTER: UNRESOLVED GLOBAL CONFLICT, 1945-1991

MAJOR TOPIC

I. THE COLD WAR

SUB TOPICS

II. CONFRONTATIONS

A.
B.

MAJOR TOPIC

III. COLLAPSE OF THE SOVIET UNION

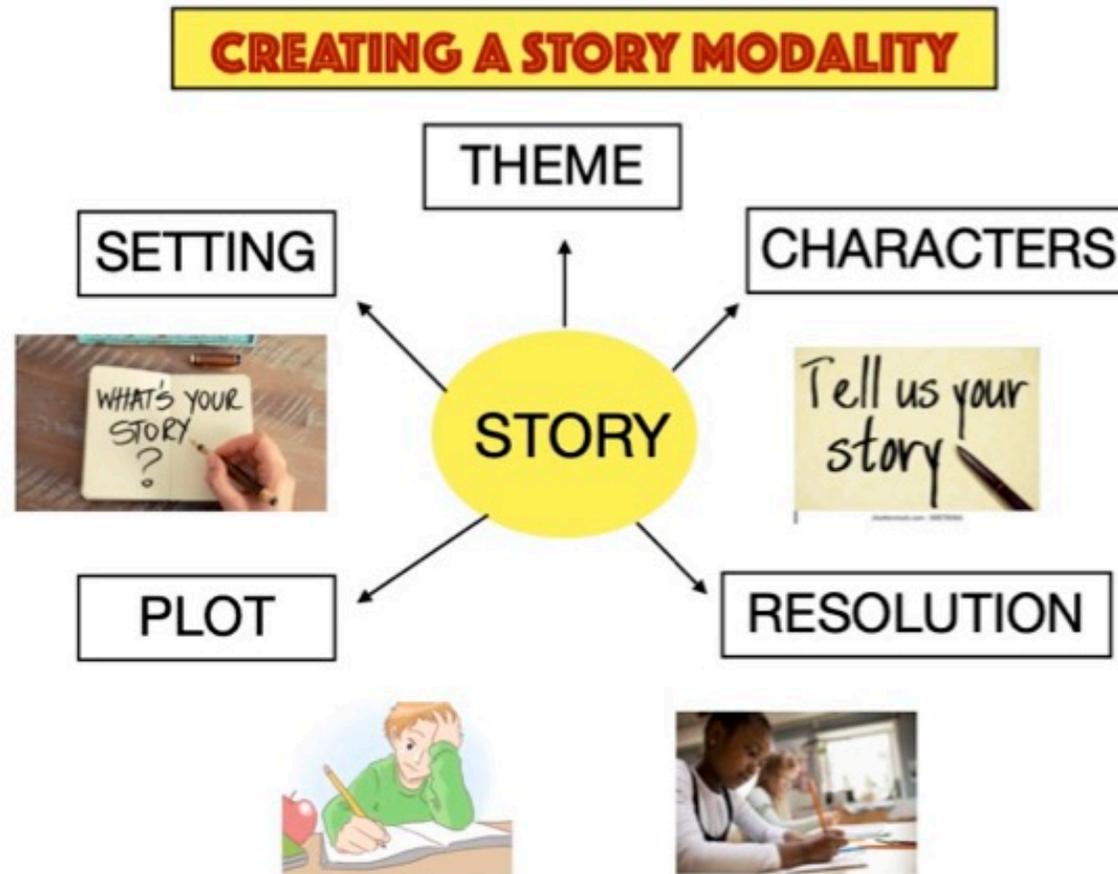
SUB TOPICS

A.
B.
C.
D.



CREATING A STORY

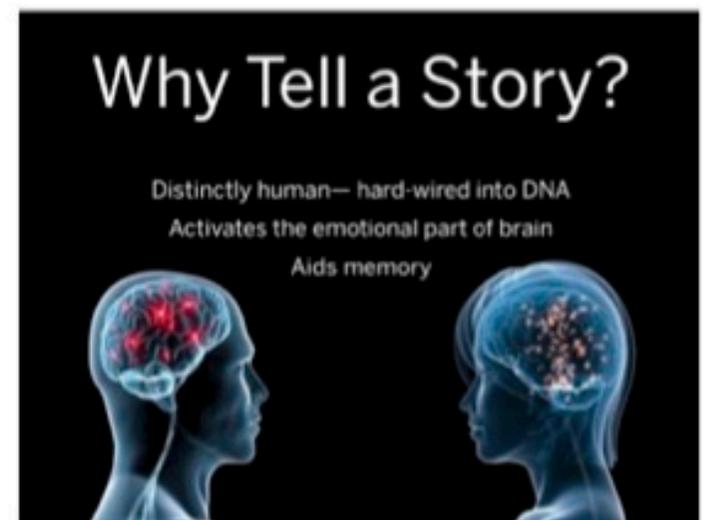
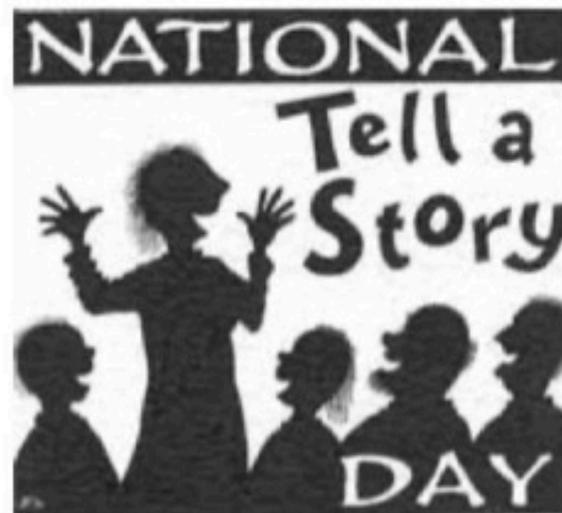
Weaving learning into a story activates the brain positive emotional state and hooks the information into a strong memory template. Jerome Bruner's research suggest that facts are 20 times more likely to be remembered if they are part of a story.



TELLING A STORY

We remember things that are interesting to us, especially things that are out of the ordinary. In addition, stories capture our attention more than other information because they leave a physical and emotional trace in the brain. The act of telling activates the emotional part of the brain.

TELLING A STORY MODALITY



MUSIC MODALITY

Listening to music reactivates areas of the brain associated with memory, reasoning, speech, emotion, and reward. Listening to music doesn't just help is retrieve stored memories, it also helps us lay down new ones.



MUSICAL MODALITY

Music helps to create an emotional connection with an audience while amplifying an overall positive experience. Music is one of the few elements we can actually manipulate in order to create more robust memories.



Have students select an important term or concept and have them match it with a musical selection. Tell them to think about the term or concept while they listen to the music.

Examples

1. Star Spangled Banner // War of 1812
2. La Marseillaise // The French Revolution
3. 16 Tons //The Industrial Revolution //
4. Creation of the United Nation // We are the World
5. We Shall Overcome // Civil Rights Era

MUSIC MODALITY

Creating memories about a common term or concept in different ways results in memory traces in different parts of the brain. These different sites reinforce each other, resulting in better recalling ability.

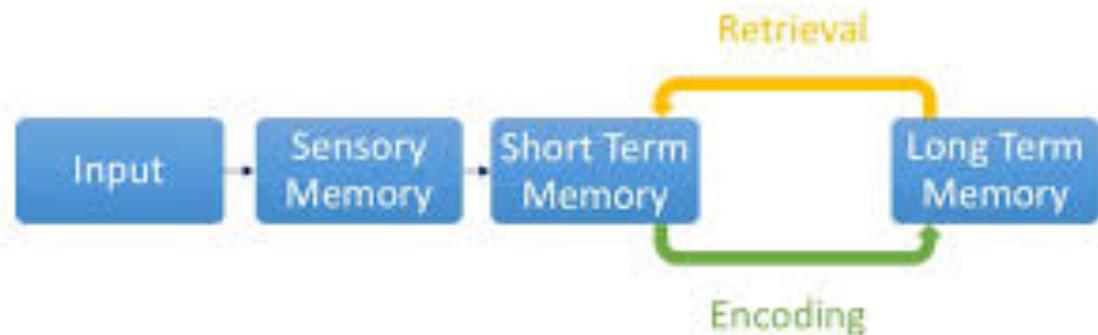
Different Modalities



MEMORY SUMMARY

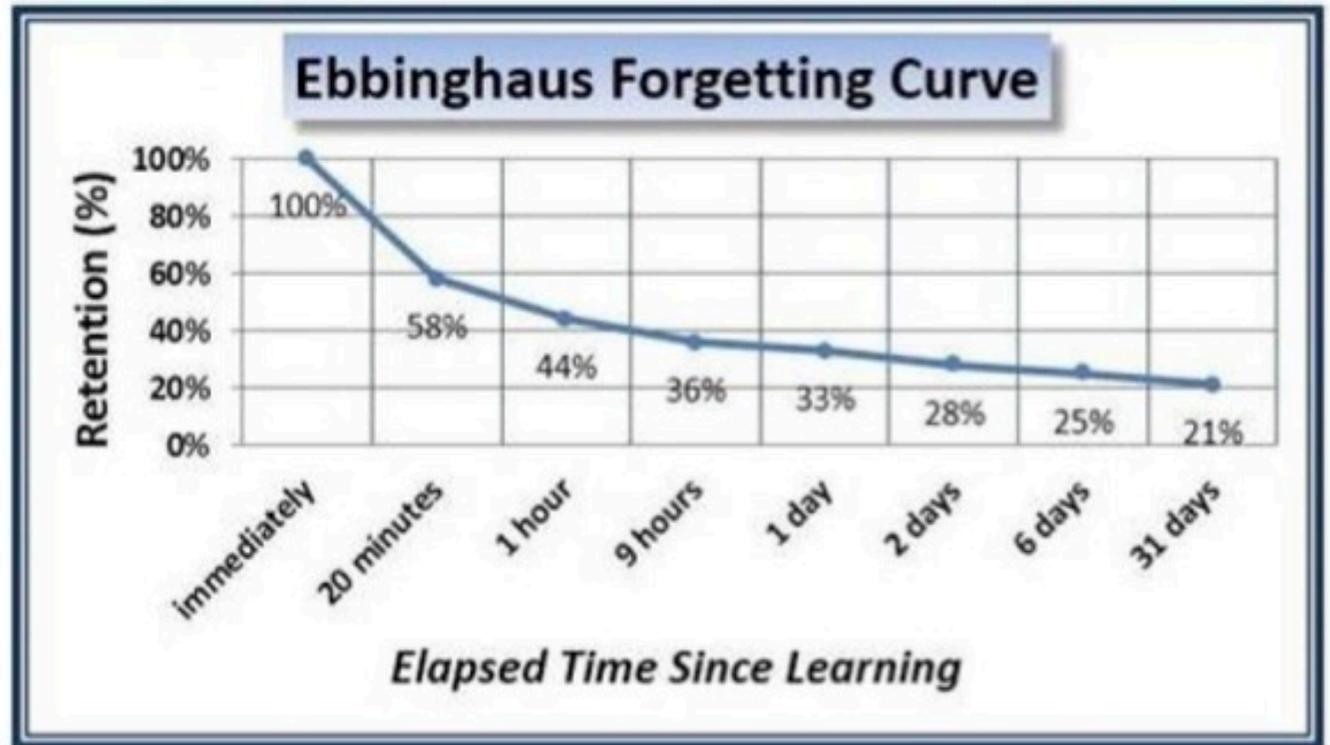
The act of creating a memory is a series of steps. Our bodies detect signals from our senses, which are then converted to short-term memory that can be encoded and sent to long-term memory for possible retrieval.

THE PATH TO LONG-TERM MEMORY



MEMORY LOSS

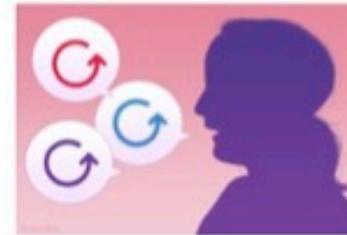
Our brains operate a strict "use it" or "lose it" policy. On average, 50% of information is forgotten after one hour, 70% in 24 hours, and 75% of information is lost in a week. Our brains need to make room for memories of more "immediate use."



STRENGTHENING MEMORY

STRENGTHENING MEMORY

EVERY TIME YOU
REINFORCE YOUR
LEARNING, THE
INFORMATION
IS BECOMING
MORE FAMILIAR
TO YOU. THIS
THUS REDUCES
THE RATE OF
M E M O R Y
REDUCTION



The more times you recall the information, the stronger the memory becomes. What starts out as an experience eventually becomes knowledge—information you can access at will.

And that is the goal of all learning.

REVIEW

When information you have learned is repeated or used, it is gradually transferred from short-term memory to long-term memory. To accomplish this transfer, you need to review it repeatedly over several intervals.

REVIEWING AFTER SEVERAL CHAPTERS

TASK 1: Review Important Terms, Concepts, and People

TASK 2: Review the Historical Content of Each Chapter via Outlines

TASK 3: Review your Index and Drawing Cards

TASK 4: Review the historical videos

TASK 5: Review your stories and musical selections.

TESTING REVIEW

When students come to recall what they have learned, but realise that there are some gaps in their memory, they can test themselves. This "mental challenge" is an interactive activity that will strengthen the



TESTING AS A MEANS FOR LEARNING

Psychologists have known for a long time that testing is actually one of the most effective ways to learn.

Rather than rereading a chapter that they have already read, students are much better off by asking a friend to test them on the material.

SUMMARY

So, following are three ways you can improve your memory and fight the "forgetting curve." All of them reinforces the idea of the **GENERATION EFFECT**: To read something is not enough. You need to generate it yourself.



THREE KEYS FOR EFFECTIVE LEARNING



Use Different Modalities

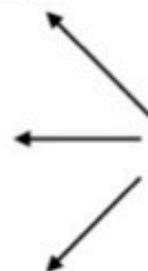


Spreading out review over time



Frequent Testing

**Principles
Of
Involvement**



GENERATION
EFFECT

INVOLVEMENT

INVOLVEMENT

INVOLVEMENT

INVOLVEMENT

INVOLVEMENT

INVOLVEMENT

INVOLVEMENT

If you want to
teach
somebody a
TRUTH,
situate them
so that they
will discover it
themselves.

Jose Ortega y Gasset

**BE A GUIDE FROM THE SIDE
NOT A SAGE FROM THE STAGE**



INVOLVEMENT IS THE KEY



knowing about the
the principles of
memory formation
help one pass the
State Regents
Examinations?

The next section
will show you how!



WHAT IS TESTED
The Regents
Examinations
test students
about their
knowledge of
the TERMS and
CONCEPTS as
expressed in
the STATE
STANDARDS.

SO, WHAT IS TESTED ANYWAY?

Content

TERMS

NEOLITHIC
REVOLUTION

WORLD WAR II

JULIUS CAESAR

CONCEPTS

IMPERIALISM

FEUDALISM

Process

ABILITY TO ANALYZE

TO MAKE COMPARISONS

TO IDENTIFY CAUSES AND EFFECTS

ABILITY TO SYNTHESIZE

TO MAKE INFERENCES

TO MAKE SUMMARIES

ABILITY TO EVALUATE

TO SUPPORT A POSITION

STYLE OF QUESTIONS

The Regents Examination uses three styles of questions to test students knowledge of the **TERMS** and **CONCEPTS** expressed in the State Standards. Each style addresses a different skill that is necessary for student to have in order to answer the three style of questions.

HOW CONTENT/PROCESS ARE TESTED

STIMULUS-BASED TYPE

CONSTRUCTED-RESPONSE TYPE

A LONG ESSAY TYPE

LET US LOOK AT THE FIRST TYPE

THE STIMULUS-BASED TYPE

THERE ARE 28 STIMULUS-BASED ITEMS

TYPES OF STIMULUS

There are 28 stimulus questions on the examination. The graphic shows the major types used on the test. Each stimulus has its own unique structure that students must understand. Let us look at two such stimulus to expand on this point,

TYPES OF STIMULUS

Maps	Political Cartoons
Bar Graphs	Line Graphs
Pie Charts	Tables
Timelines	Reading Passages



INTERPRETING CIRCLE GRAPHS

Circle graphs are used to show comparisons. Knowing the three main elements of a circle graph will help students answer the examination questions about circle graphs. During the term, make sure the students review the the major elements of each type of stimulus.

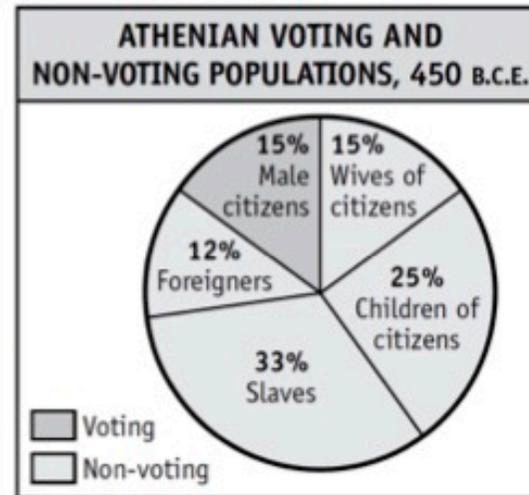
INTERPRETING CIRCLE GRAPHS

Circle graphs, or pie charts as they are sometimes called, are often used to show the relationship between a whole and its parts. Sometimes more than one circle graph is used to show comparisons.

KEYS TO UNDERSTANDING A CIRCLE GRAPH

There are three main elements to understanding the information in a circle graph.

- **Title.** Tells you the main topic of the graph.
- **Legend.** A legend indicates what each slice represents. In many pie charts a legend is not needed since the information is shown on the slices themselves, as in this graph.
- **Size of the Slices.** Each slice shows the relationship of one of the parts to the whole pie. The pie represents 100% of something. If you add all the slices together, they will total 100%. The size of each slice tells you the relative size of each part of the circle graph.



Let's see how well you understand circle graphs by answering these questions:

7. Which was the largest non-voting group in ancient Athens?
 1. wives of citizens
 2. children of citizens
 3. slaves
 4. foreigners
8. Which statement about ancient Athens can be drawn from the circle graph?
 1. Athens was the most populous city-state of ancient Greece.
 2. Athenians enjoyed living in their city-state.
 3. Foreigners made up the largest group in ancient Athens.
 4. The majority of Athenians were barred from voting in elections.

READING PASSAGES

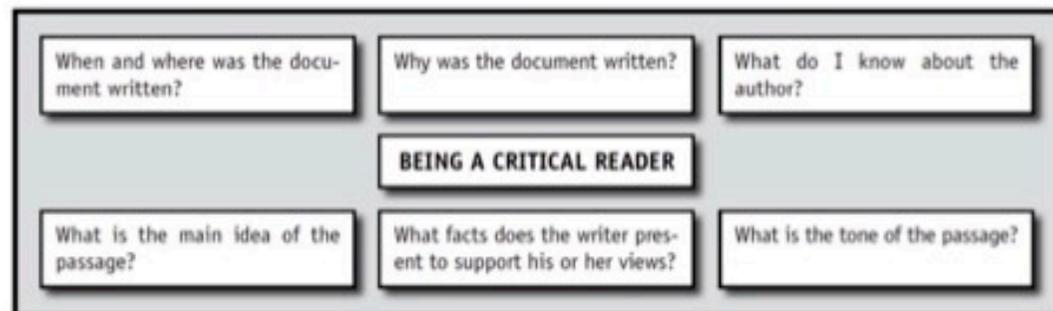
The most used stimulus style is the reading passage since it is also presented in the constructed Response, the Enduring Issue, and Civic Essays. The graphic lists some questions that a student should ask about each document they are asked to analyze. Their answers will help them answer the questions asked about the document.

READING PASSAGES

BEING A CRITICAL READER

Sometimes a document will give you information about the writer's background. This can often help you to understand the writer's position or purpose in writing his or her ideas.

The following are questions you should ask yourself when reading a written document.



MAIN IDEA

"Finding the Main Idea" is the most common question asked on reading passages. So, have the students ask the three questions in the graphic about every document they read.

FINDING THE MAIN IDEA

When you read a document, it is very important that you grasp the main idea the author is making in the document. In fact, one of the most common questions you will find is a question that deals with something about the main idea of the passage. To support the main idea, an author often provides facts, examples, and other details. To find the main idea of a document, you might wish to keep the following procedure in mind:

UNLOCKING THE ANSWER

- 🔑 **First**, carefully read the document. Think about what is happening in the document. See if you can determine the particular topic or subject the various paragraphs are focused on.
- 🔑 **Next**, see if you can think of a *single sentence* that would express what is happening in the document. This sentence or two should reveal the main idea of the document. Sometimes it helps to create a short restatement in your mind. To create this mental summary, restate the main idea leaving out unimportant details.
- 🔑 **Finally**, look at the answer choices. Pick the answer that is closest to your mental sentence expressing the document's *main idea*. Answers that focus on a specific detail rather than the overall idea will **not** be correct. If you are still unsure of the correct answer, it might be a good idea to reread the passage quickly.

CONSTRUCTED RESPONSE

There will be two examples of the Constructed Response Style question in which students will examine two documents. The students will be asked three questions on each set of documents. Question #1 will ask about the historical/geographical nature of a document. Question 2 will ask about the reliability of the other document, while question 3 will about the relationship

CONSTRUCTED-RESPONSE TYPE

Two Examples on Regents

QUESTION #1 HISTORICAL OR GEOGRAPHICAL CIRCUMSTANCES

(OUTLING / TABLE OF CONTENT)
(TIME AND PLACE)

QUESTION #2 RELIABILITY OR CREDIBILITY OF STIMULUS

(QUESTIONS ON FEELINGS)

QUESTION# 3 CAUSATION OR COMPARISON

(QUESTIONS ON MAIN IDEA)

QUESTION #1 ON CRS

Question 1 tests the student's ability to answer a historical question or a geographical question. If it a historical question, the student is asked to describe how the specific happenings in the document fits in with the general historical happenings in that time period. So, we suggest that students make an outline at the end of each chapter listing the major topics and their sub-topics, so that they will better be able to see how the specific idea, event, or development fits into the general time period.

OUTLINE MODALITY

CHAPTER: UNRESOLVED GLOBAL CONFLICT. 1945-1991

MAJOR TOPIC

I. THE COLD WAR

SUB TOPICS

II. CONFRONTATIONS

A.
B.

MAJOR TOPIC

III COLLAPSE OF THE SOVIET UNION

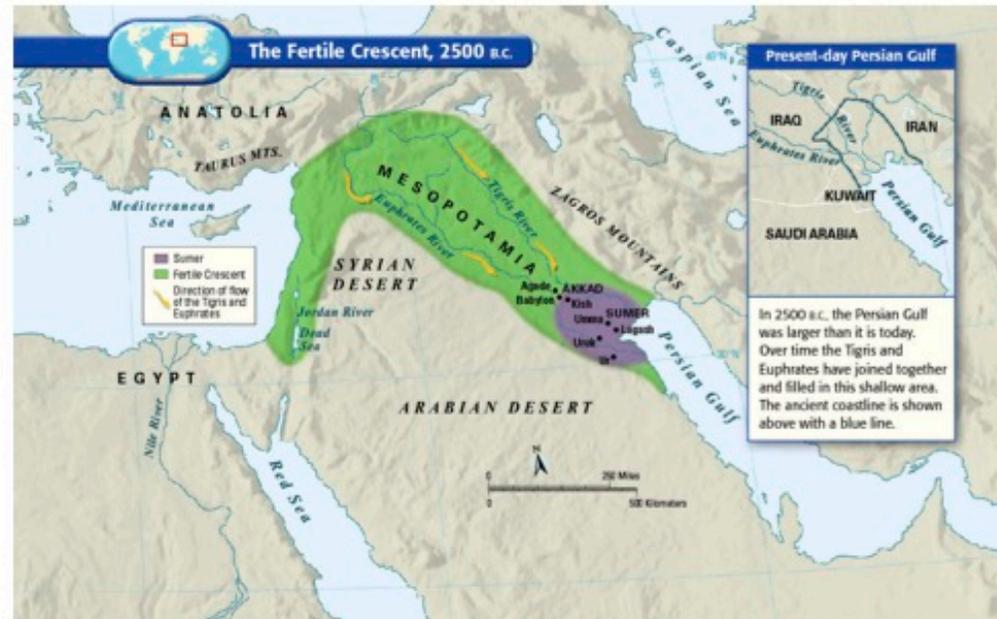
SUB TOPICS

A.
B.
C.
D.



QUESTION #1 ON CRS

If it a geography question, the student is asked how a geographical condition in the area affects the event, idea, or development in the document. So, we suggest that at the beginning of each chapter, show a map of the area being discussed and how its geographical features affects the social, political, and economic conditions in the area.



RELIABILITY QUESTION

Examples of BIAS are never DIRECTLY stated. Have students look for the "load words."

If a viewpoint is stated, then it is a Point of View. Students should ask WHO (what Audience) is the document written for.

As for PURPOSE, have students answer the question of "why was the document written."

Constructed-Response Question # 2

Let us look at Question #2. This question is on both sets of the CRQ Question.

Question 2 asks you to analyze document 2 by providing information about the document's bias, or point of view, or audience, or purpose.

Students fill out the type
for any ANY Document they read

TYPE	LOOK FOR
BIAS	LOAD WORDS BOTH SIDES
POINT OF VIEW	OPINION
AUDIENCE	WHO
PURPOSE	WHY

THIRD QUESTION

The third question tests the student's ability to see a relationship between two documents. The first relationship the examination ask students to identify and explain a cause in one document that led to an effect in the other document.

QUESTION #3 CAUSE & EFFECT

The third question focuses on both documents #1 and #2 by asking about a causal relationship between the documents.

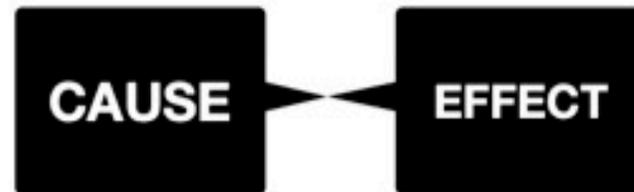
HINT:

Your task is to explain or show how a cause in one document led to an effect in the another document. You must go beyond just identifying them. Be sure to use evidence from both documents showing the causal relationship between the document.

HINT: Have students use a Graphic Organizer

DOCUMENT #1

DOCUMENT #2



QUESTION #3

TURNING POINT

The third question focuses on both documents #1 and #2 by asking you to identify a turning point associated with both documents 1 and 2.

HINT:

A turning point is the cause in one document that brought about an effect in the other document. It is called a "turning point" if the cause (**be it a major event, idea, or historical development**) brought about a significant change, be it local, regional, national, or global.

HINT: Have students use a *Graphic Organizer*

DOCUMENT #1

DOCUMENT #2

CAUSE

**MAJOR
EFFECT**

COMPARISONS

The examination may ask similarity or difference between the two documents. Make sure students use evidence from both documents.

QUESTION #3 SIMILARITIES DIFFERENCES

The third question focuses on both documents #1 and #2 by asking about a similarity or different relationship between the documents.

HINT:

Your task is to explain or show how there are similarities or differences. You must go beyond just identifying them. You must explain how they are similar or different using evidence from both documents

HINT: Have students use a Graphic Organizer

DOCUMENT #1

DOCUMENT #2

Similarities
Or
Differences

Similarities
Or
Differences

LONG ESSAY STYLE

The 10 Grade Regent Long Essay asks students to identifying and define an enduring issue that is a topic from at least three out of five documents. The difficulty is that the Enduring Issue is not **DIRECTLY** expressed. Think of the issue as a general concern rather than a specific event. For example, an apple, banana, and an orange are all specific example of a general concept "FRUIT"

LONG ESSAY STYLE

IDENTIFYING AND DEFINING AN ENDURING ISSUE



ENDURING ISSUE ESSAY

Since there are many parts to this question, we suggest that the tasks be presented in small comprehensive units and then keep reviewing the many parts to the question.

ESSAY WRITING TYPE



- *Breakdown to Small Comprehensive Tasks
- *Constant Review of the Tasks

10th Grade TASK 1: Identifying the Enduring Issue:

Part # 1

- Step # 1 Determine the main topic.
- Step # 2 Select three Documents that are similar.
- Step # 3 Find a term that is Common to at least three Documents.
- Step # 4 Is the issue Enduring?

Part # 2

- Step # 1 Defining the Enduring Issue

TASK 2: Argue Why the is Issue is Significant:

Part # 1

- Step # 1 How has the Issue Affected People.
- Step # 2 How the Issue has been Affected by People.

Part # 2

- Step # 1 Argue How the Issue has Endured Over time
- Step # 2 Use Outside Information

SMALL UNITS

We suggest that after each chapter in your social studies book, you present a small part of the question. Future chapters build up on answering the question till all the parts are covered.

ESSAY WRITING TYPE



- *Breakdown to Small Comprehensive Tasks
- *Constant Review of the Tasks

10th Grade TASK 1: Identifying the Enduring Issue: Chapter # 1

Part # 1

Step # 1 Determine the main topic.

Step # 2 Select three Documents that are similar.

Chapter # 2

Step # 3 Find a term that is Common to at least three Documents.

Step # 4 Is the issue Enduring?

Chapter # 3

Step # 1 Determine the main topic.

Step # 2 Select three Documents that are similar.

Step # 3 Find a term that is Common to at least three Documents.

Step # 4 Is the issue Enduring?

GRAPHIC ORGANIZER

STUDENTS SHOULD USE A GRAPHIC ORGANIZER TO LAY OUT THEIR THOUGHTS ABOUT THE TASKS ASKED OF THEM. THIS GRAPHIC ORGANIZER CAN THEN BE USED TO WRITE THEIR ESSAY.

1. Briefly indicate the problems or challenges you found in that document.

Document 1: Impact of Agric. Revol.	Document 2: Agric. Mechanization	Document 3: Agric. Production Graph
Document 4: Green Revolution: Rewards	Document 5: Green Revolution: Risks	

2. Which broad, general issue encompasses at least three of these problems and challenges?

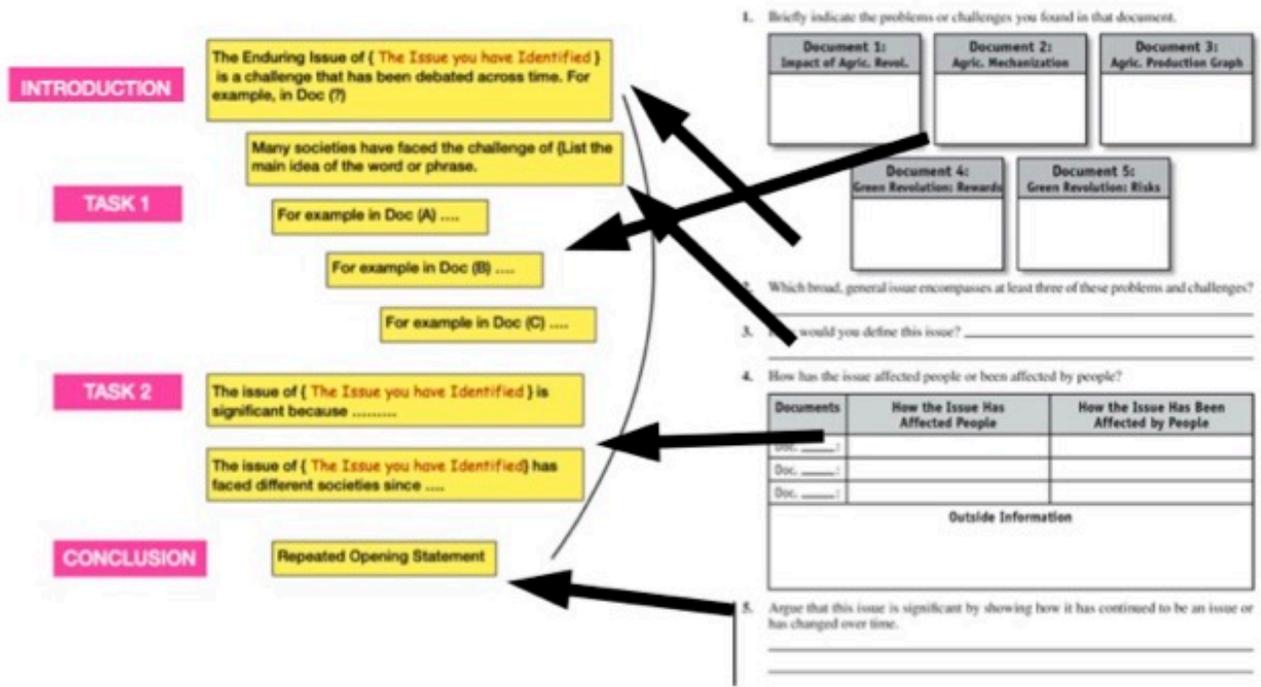
3. How would you define this issue? _____

4. How has the issue affected people or been affected by people?

Documents	How the Issue Has Affected People	How the Issue Has Been Affected by People
Doc. _____:		
Doc. _____:		
Doc. _____:		
Outside Information		

5. Argue that this issue is significant by showing how it has continued to be an issue or has changed over time.

**WRITING
THE
ESSAY
USE THE
GRAPHIC**



COMBATING THE FORGETTING CURVE

USE ALL OF YOUR SENSES

In 2015, a research paper found that because your senses act in close connection, using all of them can help strengthen your brain.

SIMPLIFY THE LEARNING

Use graphic organizers, diagrams, and color codes

USE SPACED LEARNING

Every time you reinforce your learning, the information is becoming more familiar to you. Regularly coming back to information will solidify it in your head.

CHALLENGE YOUR MEMORY

Test yourself

IMPLEMENT THE GENERATION EFFECT

As our brain "operates a strict use it or lost it policy," the generation effect forces you to act on the information. You've then used it and encoded it, thus decreasing the chances of falling down the steep forgetting curve.

