



How Writing Instruction Can Revolutionize Education

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STATE OPERATED PROGRAMS
CONFERENCE

CHARLOTTESVILLE, VIRGINIA

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This presentation will cover ...

- How writing instruction can boost reading comprehension, analytical abilities, and learning in general
- Why previous approaches to writing instruction have fallen short
- Why it's important for students to write about the content of the core curriculum
- Why it's crucial to modulate the cognitive load writing imposes
- How you can embed manageable, explicit writing instruction in whatever content you're teaching



Is Human Writing Now Obsolete?

ChatGPT: Optimizing
Language Models
for Dialogue

st Newsletters

The Atlantic

TECHNOLOGY

The End of High-School English

I've been teaching English for 12 years, and I'm astounded by what ChatGPT can produce.

By Daniel Herman

The New York Times

Don't Ban ChatGPT in Schools. Teach With It.

OpenAI's new chatbot is raising fears of cheating on homework, but its potential as an educational tool outweighs its risks.

Writing is hard.



But it's not just a skill that can be subcontracted out to a device.



Writing isn't just putting down what you already know.



Writing—if taught well—is also a way of learning.

What can happen if we use ChatGPT as a substitute for learning

- One group practiced math problems with ChatGPT; another didn't .
- ChatGPT group solved 48% of practice problems correctly but scored 17% worse on test of the same math topic.
- Hypothesis: students used AI as a crutch and weren't building the skills that come from solving problems.
- Chat GPT students were overconfident in their abilities.

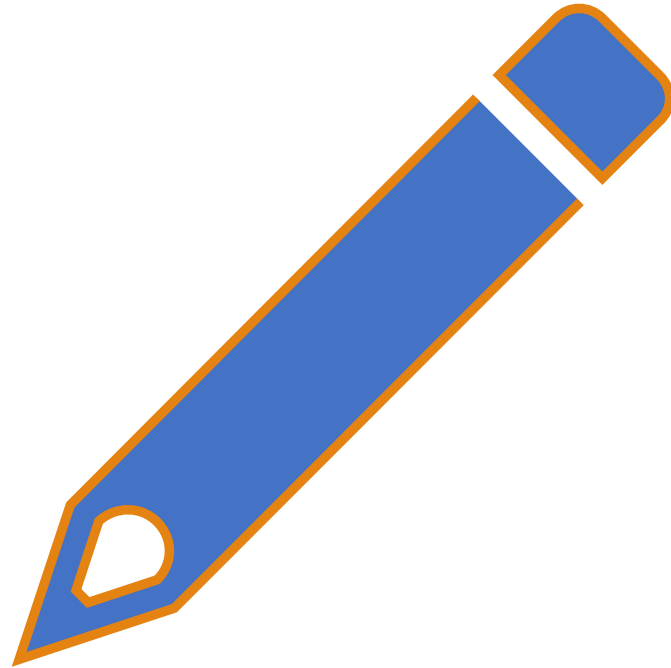
Kids who use ChatGPT as a study assistant do worse on tests

Researchers compare math progress of almost 1,000 high school students

by JILL BARSHAY
September 2, 2024

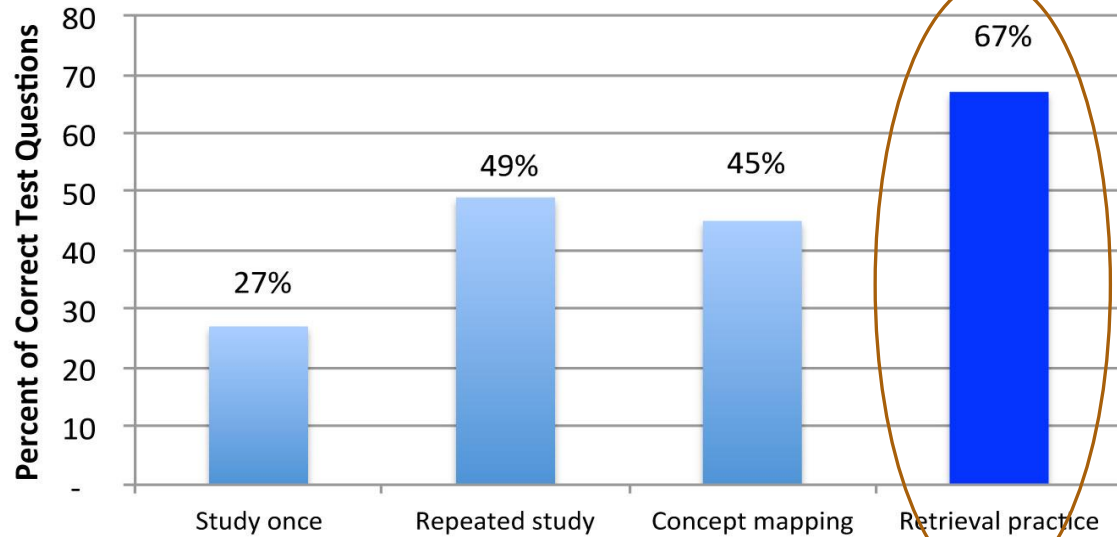


Writing can benefit students in at least 3 ways.



Potential Benefit #1: Enabling Retention of Information/Enhancing Learning

Comparison of Retrieval Practice with
Other Common Learning Methods



Karpicke and Blunt, 2011

The “Free Recall” experiment—
with college students

Restricted access | Research article | First published online March 19, 2020

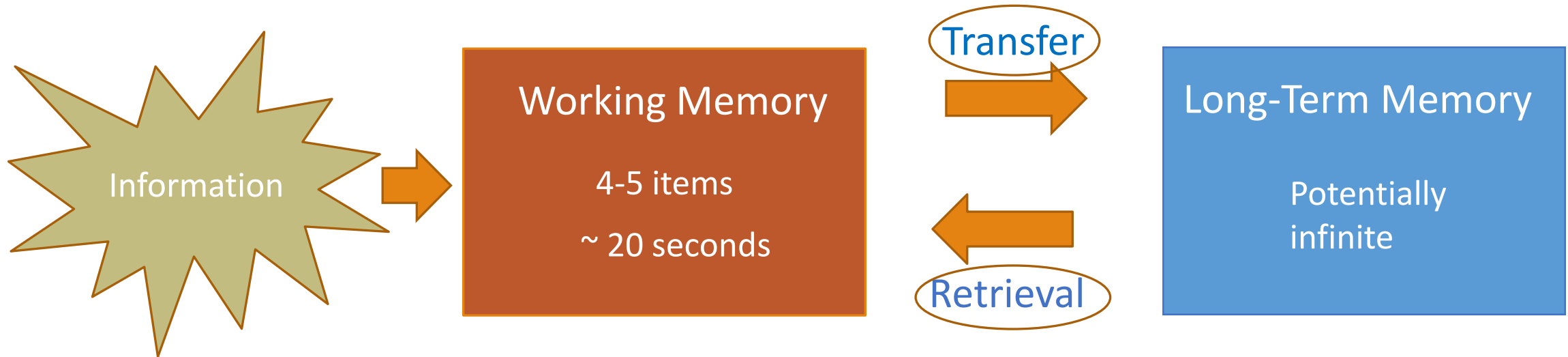
The Effects of Writing on Learning in Science, Social Studies, and Mathematics: A Meta-Analysis

[Steve Graham](#), [Sharlene A. Kiuahara](#), and [Meade MacKay](#) [View all authors and affiliations](#)

Analyzed 56 experimental studies—with K-12 students

“As predicted, writing about content reliably enhanced learning (effect size = 0.30).”

Writing about curriculum content can prevent and/or compensate for gaps in knowledge.



Writing can make knowledge “stickier.”

Benefit #2: Familiarizing students with complex syntax

From *Stellaluna*:

One night, as Mother Bat followed the heavy scent of ripe fruit, an owl spied her. On silent wings the powerful bird swooped down upon the bats. Dodging and shrieking, Mother Bat tried to escape, but the owl struck again and again, knocking Stellaluna into the air. Her baby wings were as limp and useless as wet paper.

From the Declaration of Independence:

When in the course of human events, it becomes necessary for one people to dissolve the political bonds which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

Complex syntax can prevent comprehension.

“Rachel Carson, a scientist, writer, and ecologist, grew up in the rural river town of Springdale, Pennsylvania.”

Researcher: “What do you know about Rachel Carson now?”

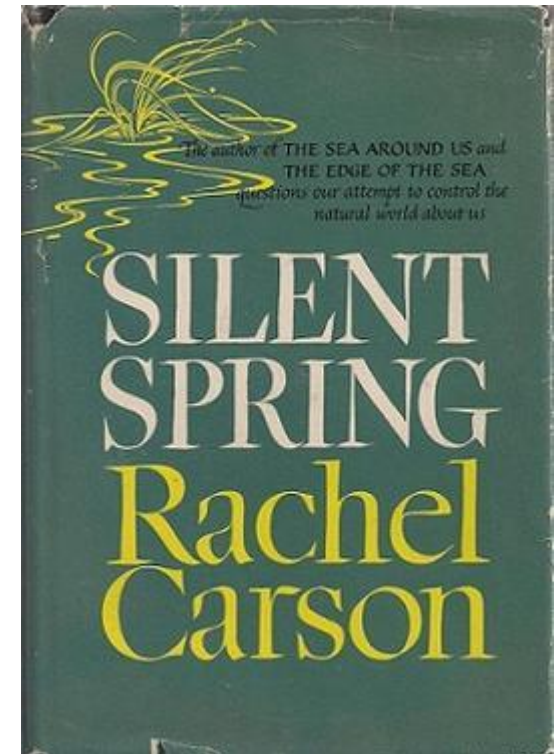
Student: “They grew up together in the same place.”

Source: Scott and Balthazar, *Perspect Lang Lit*. 2013 Summer; 39(3): 18–30.

Long-term, large-scale study:

Fewer than 10% of 8th-graders can “evaluate complex syntax.”

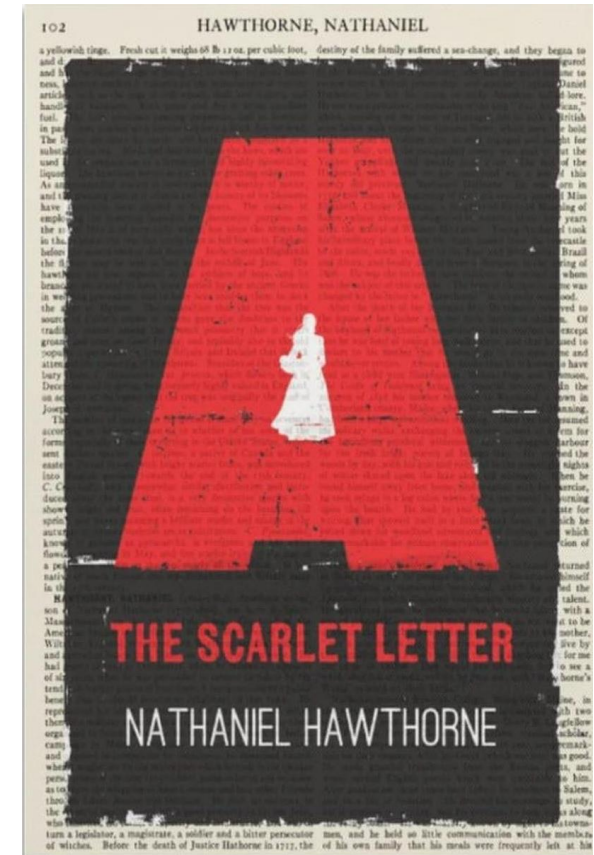
Reardon, Valentino & Shores 2012 (ECLS-K data)



Even college students struggle to understand complex syntax.

Amanda Claybaugh, Harvard English professor:
“The last time I taught ‘The Scarlet Letter,’ I discovered that my students were really struggling to understand the sentences as sentences—like, having trouble identifying the subject and the verb.”

N. Heller, *The End of the English Major*, *The New Yorker*, 2.27.23



Benefit #3: Building analytical abilities

When we write we are:

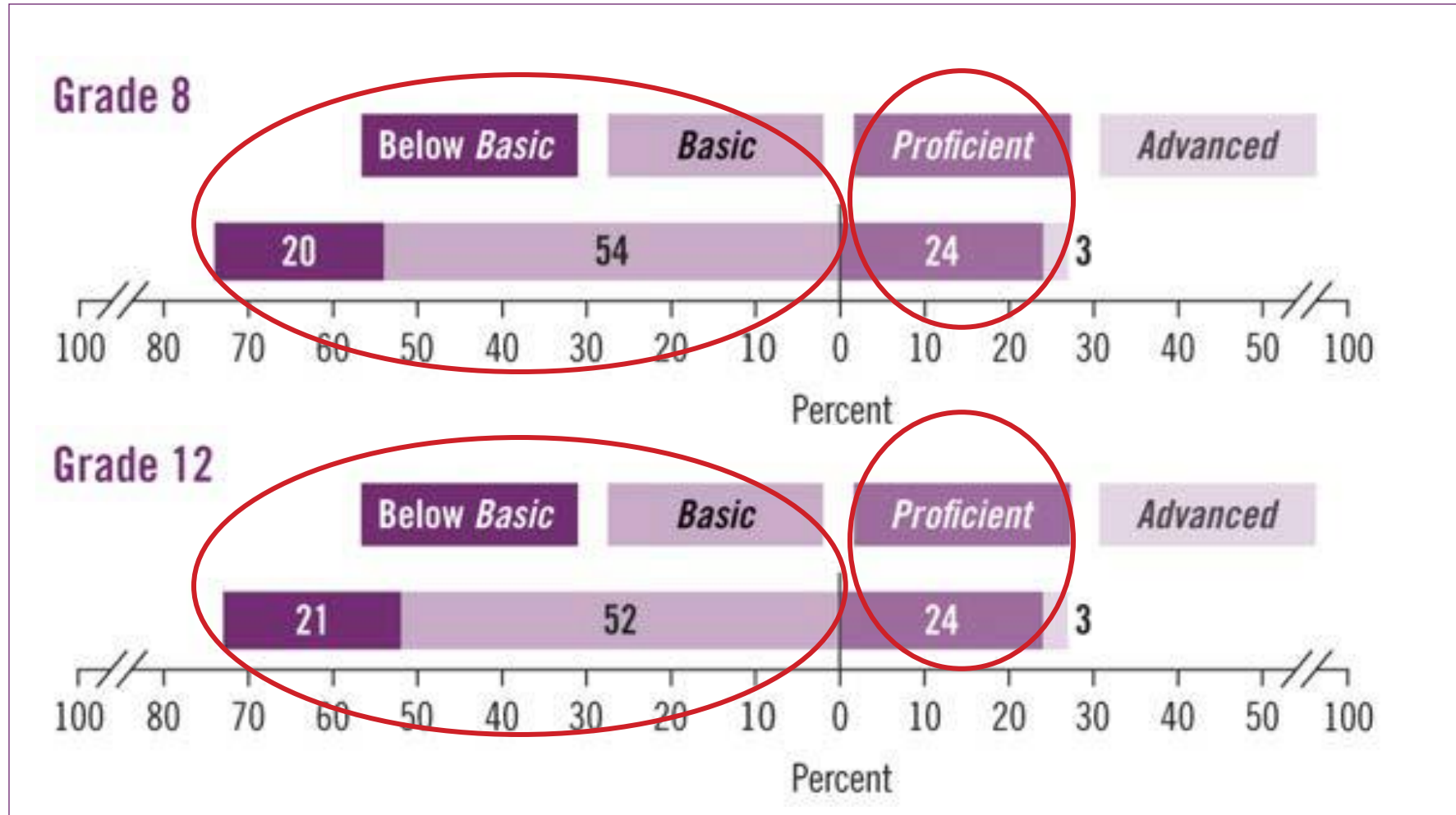
- Finding the main idea and supporting details
- Making inferences
- Comparing and contrasting
- Connecting claims to evidence
- Etc.



BUT: most students aren't getting these benefits—and they're not learning to write well either.



2011 NAEP Writing Results

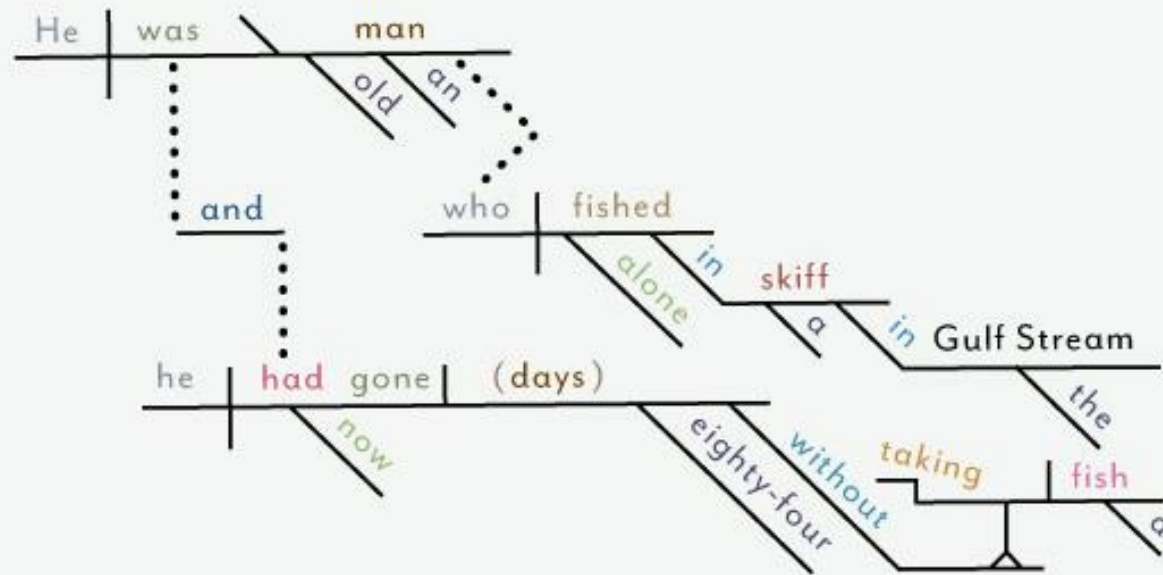


27% of all students tested: Proficient+

~73% of all students: Basic and ↓ Basic

He was an old man who fished alone in a skiff in the Gulf Stream
and he had gone eighty-four days now without taking a fish.

Hemingway, *The Old Man and the Sea*



The Traditional Approach: Grammar Rules, Sentence Diagramming



Small Moments

Going to the beach → Building a sandcastle

The carnival → Riding a roller coaster

Playing at recess → Climbing the rockwall

Birthday Party → Hitting the piñata

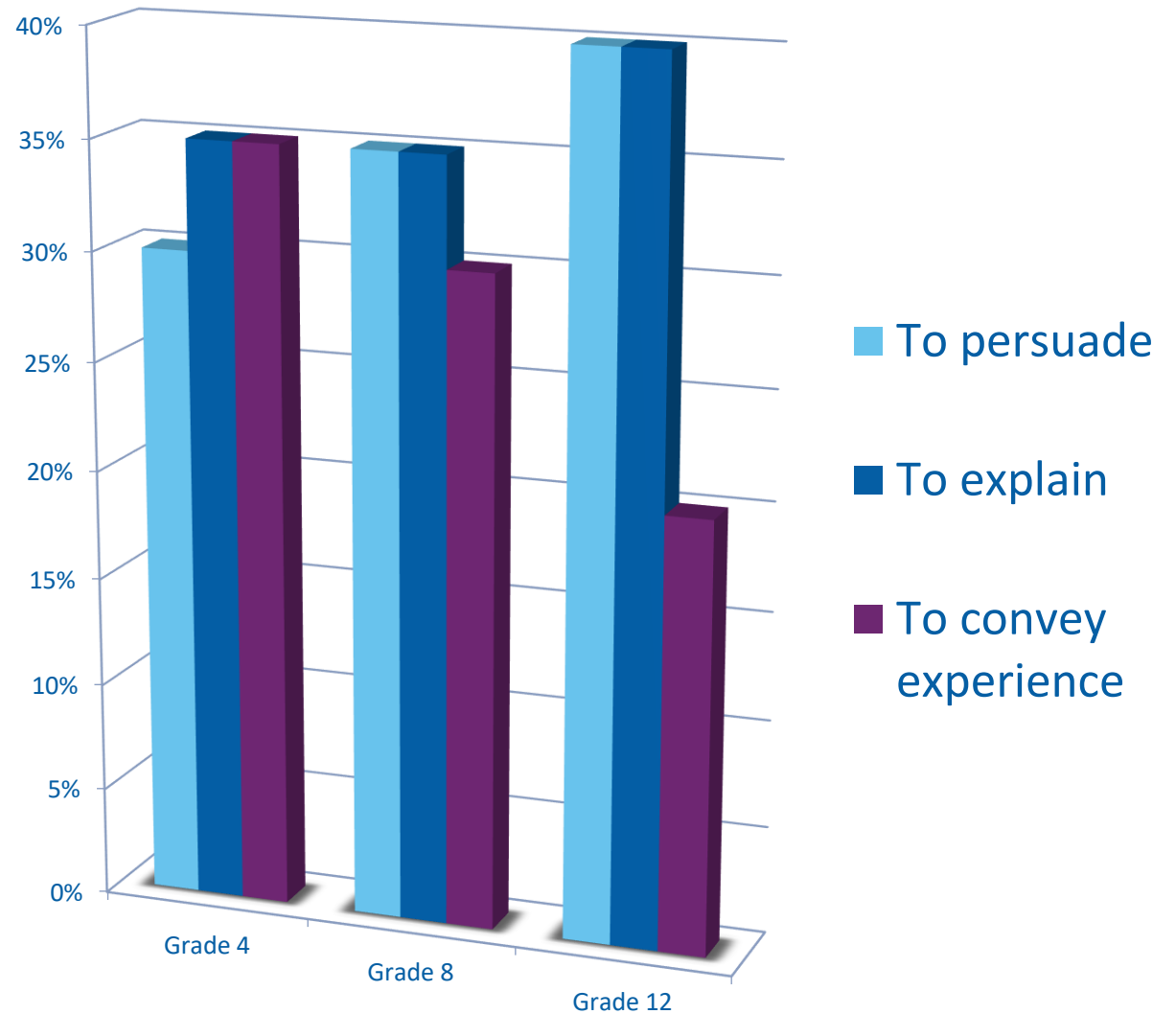
Play date with friends → Trampoline jumping

Going to school → When Clifford stopped by

The Newer
Approach:
Writer's
Workshop

Writing standards have gotten more rigorous.


But how can teachers enable students to *meet* the standards?



What the standard approaches overlook, #1: Writing should be tied to the knowledge we want to build.


Name _____

Opinion Writing



Skittles

or

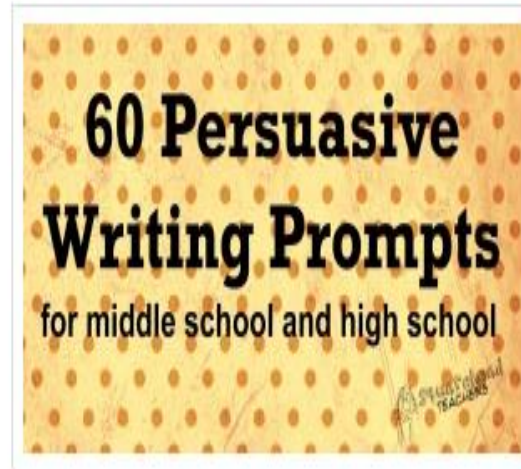


M and M's

Do you like Skittles or M and M's?

I like _____

because _____



1. Convince your parents to raise your allowance.
2. Should at least two years of foreign language classes be required for high-school graduation?
3. Should there be a dress code at your school?

If students are learning about the Civil War, they should be *writing* about the Civil War.



What the standard approaches overlook, #2: Writing is the hardest thing we ask students to do.

Working Memory

4-5 items

~ 20 seconds

“Cognitive load” = the burden placed on working memory


Inexperienced writers may be juggling:

- Letter formation
- Spelling
- Word choice
- Organization
- Content
- The peculiar syntax & vocabulary of written language
- All of this creates “cognitive load”—and stress

Open-ended or complex writing prompts can be overwhelming for inexperienced writers—at any grade level.

Lesson 4: Target Task Date

How does the tiny seed survive? Give multiple reasons.

				
---	--	--	--	--

It takes a long time to grow because it has to wait for the sun to come out. It has to wait for the rain to come down. It has to wait for the soil to be good. It has to wait for the wind to blow. It has to wait for the earth to be warm.

The “free recall” experiment at the elementary level

College students:

Could recall 81% of the concepts they’d read about.



4th graders:

Could recall only 9% of the concepts they’d read about.



Why the difference?

4th-graders needed to devote more working memory capacity to **WRITING**.

With more guidance—or less writing—children’s recall improved.

🔒 Restricted access | Research article | First published online March 19, 2020

The Effects of Writing on Learning in Science, Social Studies, and Mathematics: A Meta-Analysis

[Steve Graham](#), [Sharlene A. Kiuahara](#), and [Meade MacKay](#) [View all authors and affiliations](#)

Analyzed 56 experimental studies—with K-12 students

“As predicted, writing about content reliably enhanced learning (effect size = 0.30).”

At the same time, 18% of the studies found a **NEGATIVE** effect.



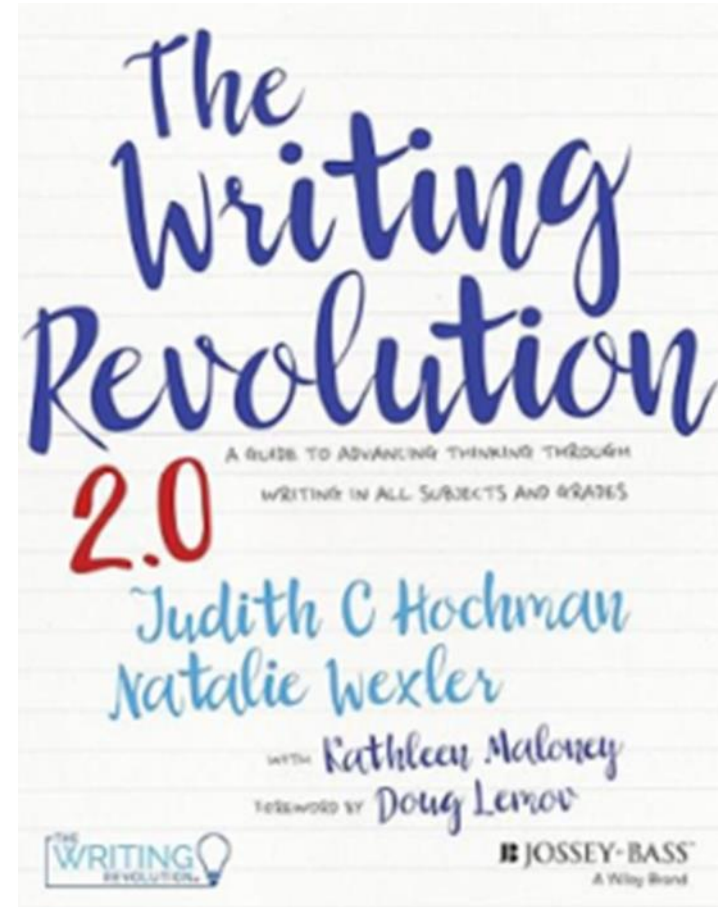
Writing imposes so heavy a cognitive load that many students will need more than:

- Mentor texts
 - “Knowing that” vs “knowing how”
- Connecting writing to the content they’re learning about

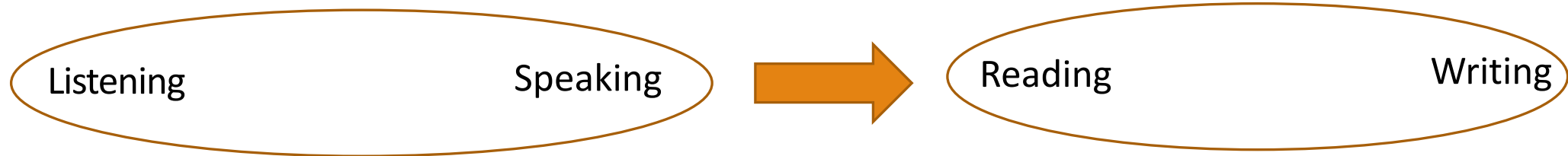


How can we ensure kids learn to write—and use writing to build knowledge?

1. Embed writing activities in the content of the core curriculum.
2. Teach grammar & conventions in the context of students' own writing.
3. Modulate cognitive load.



One way to modulate cognitive load:
Have students write about content they've learned about.



Another way to modulate cognitive load: “deliberate practice”

- Give students practice with manageable chunks of a process.
- Provide prompt, targeted feedback.
- When students have grasped one chunk, move on to one that’s harder.
- With basic skills in long-term memory, students have more capacity for higher-order thinking.



With writing, what chunk should we begin with?

Sentences. Here's why:

- Sentences free up space in working memory for “desirable difficulties.”
- Sentences are the building blocks of all writing.
- Sentences make it easier to teach grammar and conventions.
- Sentence activities can identify specific gaps in knowledge or comprehension.
- Sentence activities can familiarize students with complex syntax.



Sentence Combining can help with complex syntax.

Give students several simple sentences. E.g.:

- Rachel Carson was a scientist.
- Rachel Carson was a writer.
- Rachel Carson was an ecologist.
- Rachel Carson grew up in Springdale, Pennsylvania.

Have students convert the simple sentences into one complex sentence:

Rachel Carson, a scientist, writer, and ecologist, grew up in Springdale, Pennsylvania.

Even better: Familiarize students with complex syntax AND reinforce knowledge.

- Teach students what an appositive is (a phrase describing a noun), using familiar content.
- After students have learned about Rachel Carson, give them this sentence to complete:

Rachel Carson, _____, grew up in Springdale, Pennsylvania.

Sentence-level skills that can be stored in long-term memory through practice:



- The concept of a sentence (fragments, run-ons)
- Different sentence types (statement, question, etc.)
- Conjunctions (because, but, so)
- Sentence complexity (subordinating conjunctions, appositives)

What makes a sentence a sentence?

5. Only one of the following sentences is correct. Select it.

- A) A great film.
- B) A great film is.
- C) Fascinating films.
- D) Enjoyed the film.
- E) **She watched a great film.**

6. Only one of the following sentences is correct. Select it.

- A) **He scowled.**
- B) The silent crowd.
- C) The silent and unhappy crowd.
- D) Scowled at the screen.
- E) The silent crowd scowled at the camera and.

- ~ 2000 students in England in ~4th grade
- Question #5: 91% got the right answer
- Question #6: Only 13% got the right answer
- Students were focusing on surface features—like length

Many sentence activities can build skills AND knowledge.

1. F welcomes newcomers from faraway countries

The Statue of Liberty welcomes newcomers from faraway countries.

2. F the “mother of exiles”

The “mother of exiles,” a famous monument, holds a torch with a welcoming glow.

3. S the “mighty woman” stands in the new york harbor

The “mighty woman” stands in the New York Harbor.

The New Colossus

BY EMMA LAZARUS

Not like the brazen giant of Greek fame,
With conquering limbs astride from land to land;
Here at our sea-washed, sunset gates shall stand
A mighty woman with a torch, whose flame
Is the imprisoned lightning, and her name
Mother of Exiles. From her beacon-hand
Glows world-wide welcome; her mild eyes command
The air-bridged harbor that twin cities frame.
“Keep, ancient lands, your storied pomp!” cries she
With silent lips. “Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tost to me,
I lift my lamp beside the golden door!”

Conjunctions: Because, But, and So

The Indus River was helpful to the people of Mohenjo-daro because _____.

The Indus River was helpful to the people of Mohenjo-daro, but _____.

The Indus River was helpful to the people of Mohenjo-daro, so _____.



Possible Responses

The Indus River was helpful to the people of Mohenjo-daro because it gave them water to grow crops.

The Indus River was helpful to the people of Mohenjo-daro, but it often flooded their houses.

The Indus River was helpful to the people of Mohenjo-daro, so they had a special ceremony to pray to it.



but

change of direction



Although

While

Even though

However

On the other hand

so

cause → effect



Therefore

As a result

Since

Consequently

Thus

Writing can build knowledge across the curriculum—e.g., in math

Although fractions are like decimals, they are written differently.

$$0.25 = \frac{1}{4}$$

Sentence Expansion in Science



They make good barriers.

What:lipids.....

Where:around cells.....

Why:non-polar.....

Expanded sentence:

Lipids make good barriers around cells because they
are non-polar.

Appositives in Social Studies

Appositive: a Greek city-state

(T.S.) Athens, a Greek city-state, valued education and democracy.

Appositive: a great philosopher

(T.S.) Socrates, a great philosopher, created a method of questioning.

Appositive: a series of contests

(T.S.) The Olympics, a series of contests, were held in honor of the Greek gods.

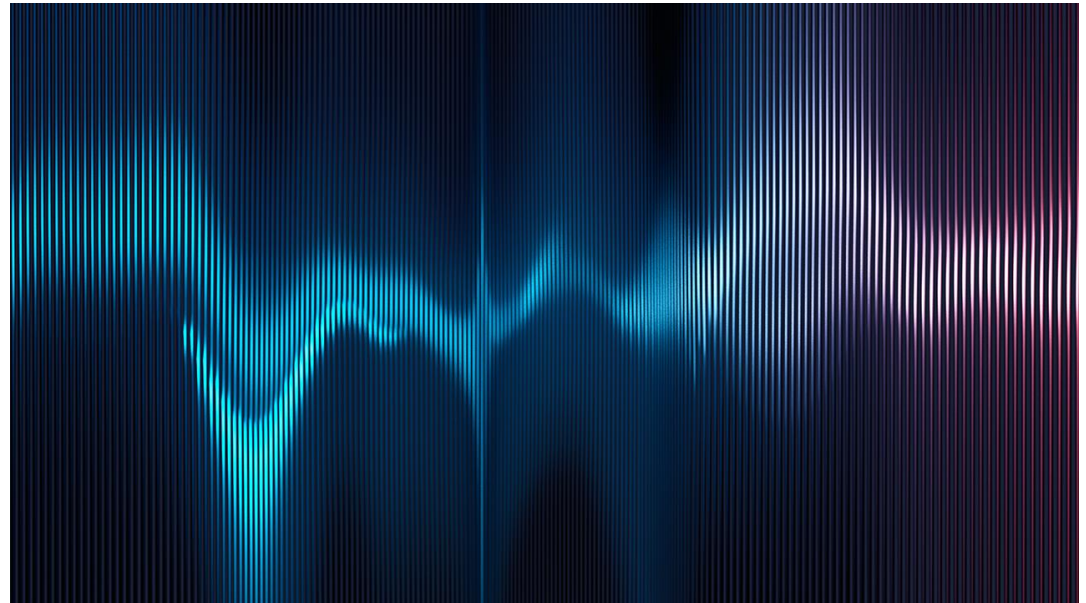


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Sentence activities can also be done orally as a whole-class activity.

You can't see sound waves because they are invisible.

You can't see sound waves, but you can hear them .

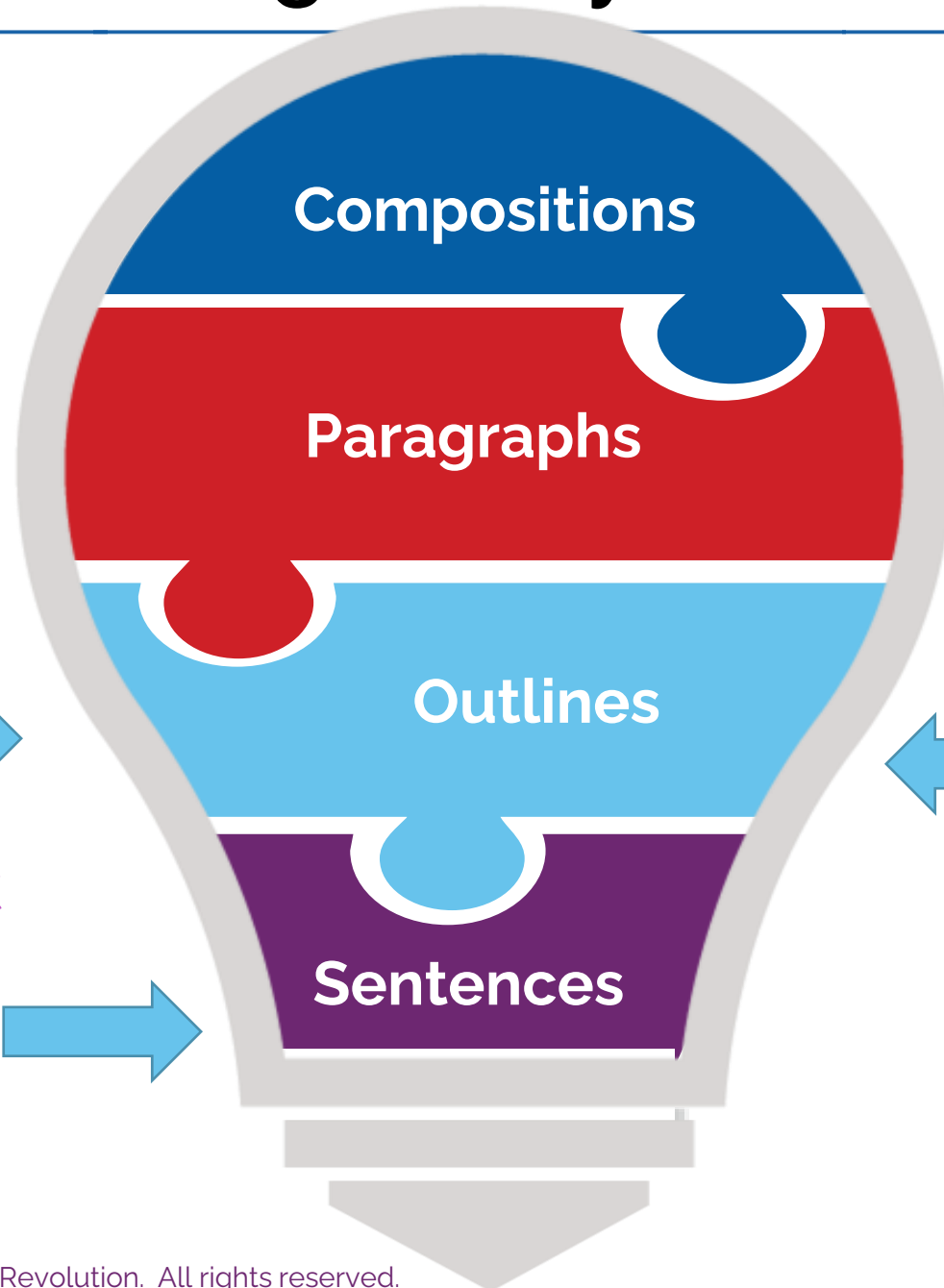


This method goes beyond sentences



Creating an outline is itself a knowledge-building activity.

But sentence-level work lays the foundation for independent writing at length.



A linear outline modulates cognitive load.

Single Paragraph Outline → Paragraph

T.S. Jackie Robinson, the first Black professional baseball player, was a trailblazer.

1. 1947/broke "color line"/ BK Dodgers

2. talent + perseverance → admiration

3. success → awards / ex. MVP + Hall of Fame

4. modeled nonviolent tactics → integration

C.S. Jackie Robinson will always be remembered for his talent and courage.

Jackie Robinson, the first Black professional baseball player, was a trailblazer. In 1947, he broke the baseball "color line" by joining the Brooklyn Dodgers. His talent and perseverance resulted in admiration from fans. Since Robinson achieved great success, he won many awards. For example, he was selected as MVP and inducted into the Hall of Fame. In addition, he modeled nonviolent tactics, which inspired integration in other professional sports. Jackie Robinson will always be remembered for his talent and courage.

Two approaches to teaching summarizing

WRITER'S WORKSHOP/UNITS OF STUDY

- Skills in the foreground
- Brief explanation and modeling of skill
- Independent practice of skills with limited guidance

THE WRITING REVOLUTION

- Content in the foreground
- Process broken into chunks
- Repeated modeling and group practice of each chunk
- Independent practice when students are ready

A lesson in “Summarizing Narrative Nonfiction” (from Units of Study for Teaching Reading, 3rd grade)

Step 1: Naming the skill(?)

Identifying through-line(s) in biographies

“Today I want to teach you that when readers read a true story about a person, they usually know from the start why the person is famous. They know the end of the story. This clues readers into the details that will turn out to be important.”

LeBron James



Step 2: Demonstrating the skill(?)

“Teach students that readers ... can also think about how particular parts of the text fit into the overarching storyline.”

Ezra Jack Keats



Step 3: Guiding students to practice the skill(?)

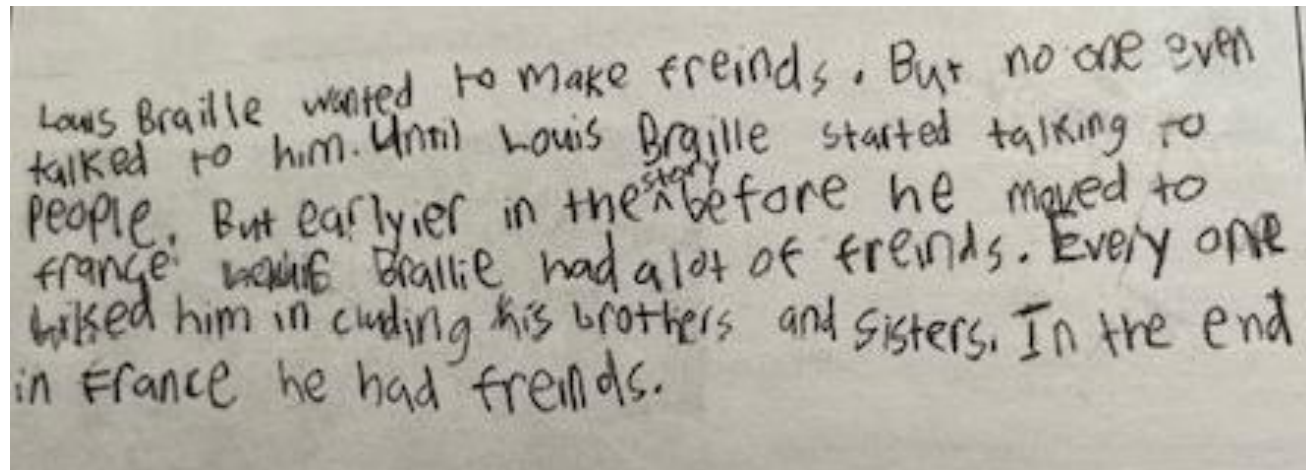
Teacher: “In a good summary, it’s important to include the important details only, to leave out the unimportant.”



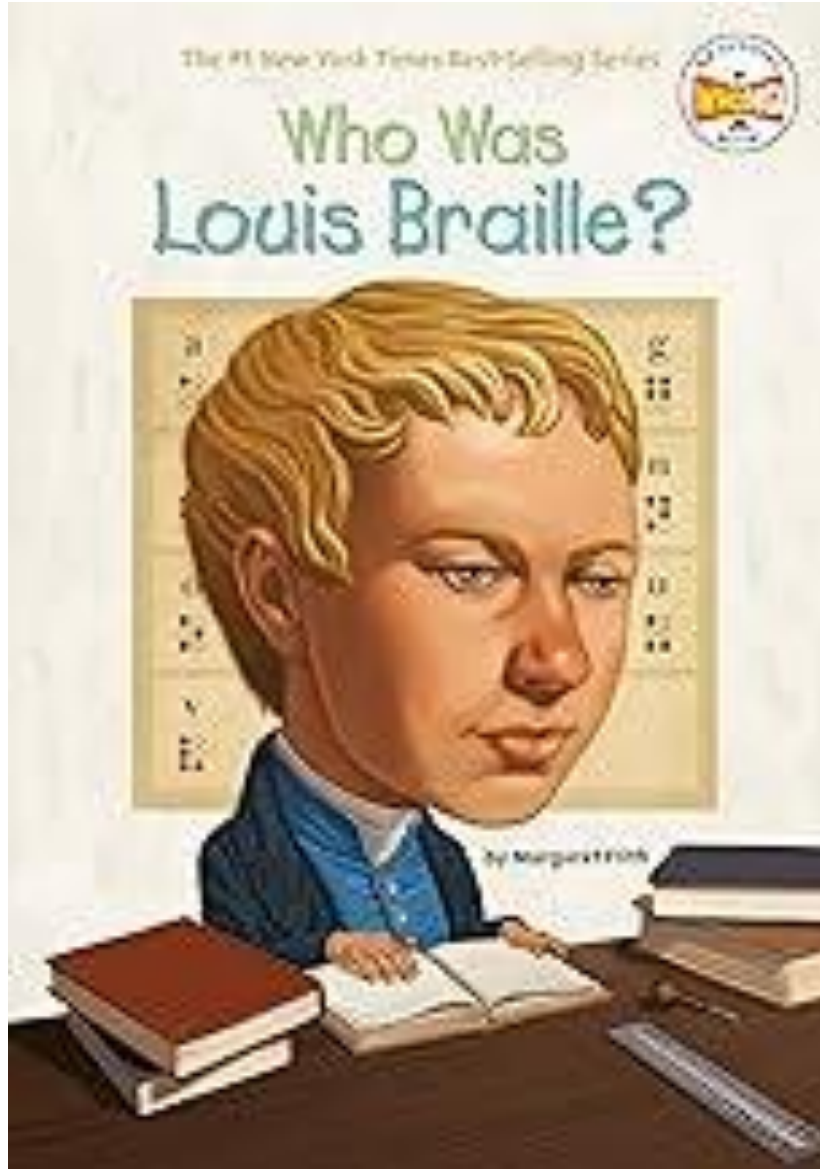
Step 4: Students analyze and revise their written summaries in small groups.

They “identify one person’s work that is especially strong and talk about why it is strong.”

Exemplar student response:



Louis Braille wanted to make freinds. But no one even talked to him. Until Louis Braille started talking to people. But earlyier in the ^{story} before he moved to france. Louis Braille had a lot of freinds. Every one liked him in cluding his brothers and sisters. In the end in France he had freinds.



The Writing
Revolution:
Common *content*
in the foreground

Ensure students understand what a sentence is.

1. F when he was three years old

Louis Braille went blind when he was three years old.

2. F a school for blind students

Louis's parents sent him to a school for blind students.

3. S the books were heavy and hard to read

The books were heavy and hard to read.



Continue explicit instruction and guided practice with:

- Sentence expansion
- Sentence types
- Simple conjunctions (because, but, so)
- Subordinating conjunctions (Although, Since, If, etc.)
- Transitions
- Appositives
- Sentence-combining

Then: the Summary Sentence

Who/What: Louis Braille

(did/will do) What: invented a new way for blind people to read

When: 15 years old

Why: existing method did not work well

How: ingeniously



Summary Sentence:

When he was 15 years old, Louis Braille ingeniously invented a new way for blind people to read because the existing method did not work well.

Eventually: The Single-Paragraph Outline

T.S. When he was 15 years old, Louis Braille ingeniously invented a new way for blind people to read because the existing method did not work well.

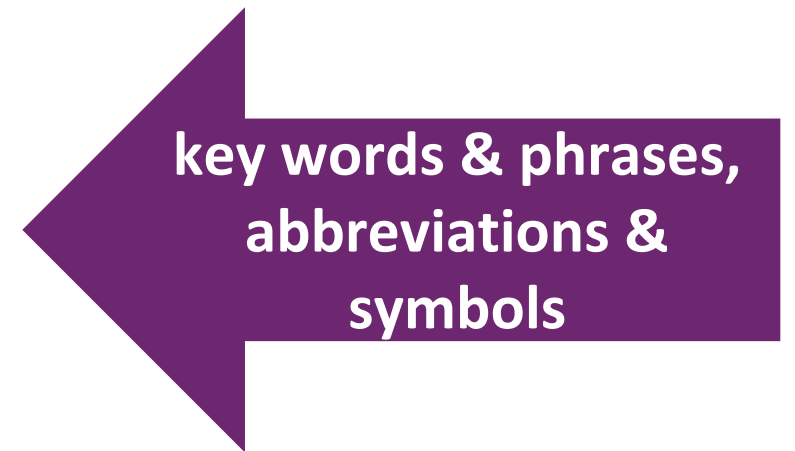
1.

2.

3.

4.

C.S. _____



Distinguish a topic sentence from details



_____ Rural communities have lots of open land with few buildings and people.

_____ An urban community is in a crowded city with tall buildings and many businesses.

T.S. There are different kinds of communities in our state.

_____ In a suburban community, there are many houses and apartments.

Given a topic sentence, generate details:



T.S. Spiders are interesting creatures.

1. hatch from eggs in sac

2. weave webs or hide to hunt insects

3. some insects, frogs, birds

4. few poisonous, most don't hurt people

C.S. _____

babies

food

predators

danger

Points to bear in mind ...

- **Model** a new strategy for students **orally**, using **familiar content**.
- Guide students to **practice** the strategy **orally** and **collectively** before having them do it independently.
- Embed writing activities in **content** you're teaching.
- When planning activities, write out **anticipated student responses**.
- Make sure students have the **content knowledge** they need.
- **Differentiate** activities for different ability levels but use the same content.
- **Return** to strategies that have already been covered.
- Consider taking an **online course** offered by The Writing Revolution organization.

Also: weave writing activities into
content-area instruction.



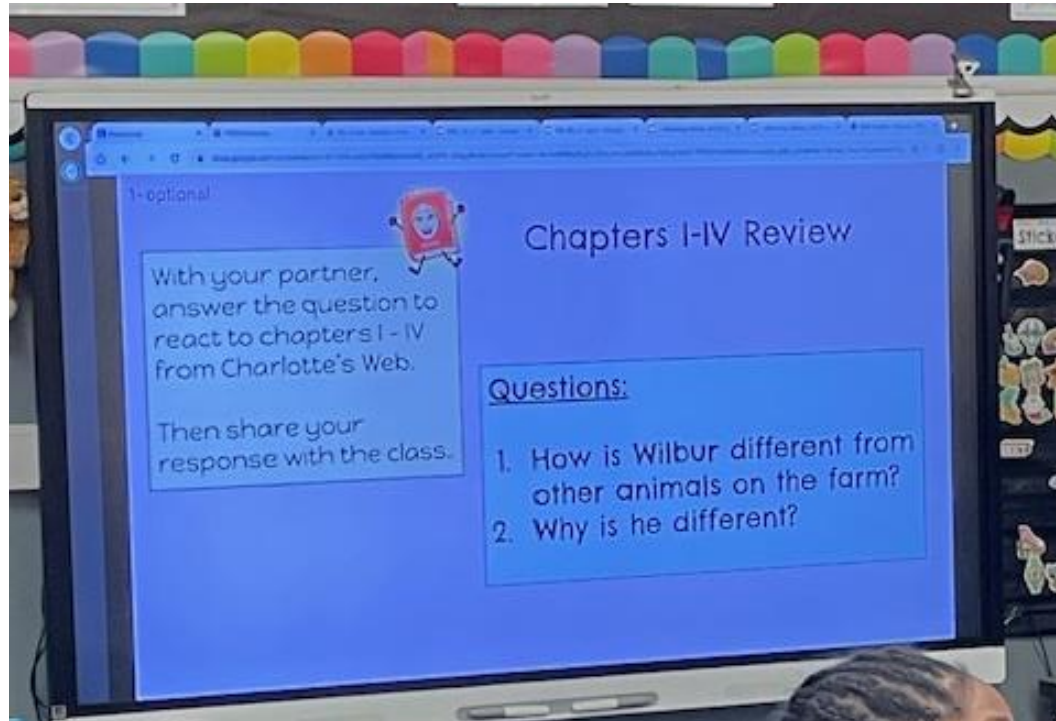
This isn't just a way
of teaching writing.

It's a way of *teaching*.

Charlotte's Web, 3rd Grade
Monroe, Louisiana



Cassidy Burns



T: So, keeping that idea about how Wilbur is different from those other animals, I want to take you into this next activity.

Let's just review, we have our three favorite conjunctions that we've practiced all year long. ...

Because, But, and So

2- workbook page 74

Because tells why or gives a reason.
But is used to show a change of direction.
So tells the result, or effect, of something.

Always check each sentence for:

- Capital letter at the beginning of the sentence.
- Proper nouns are capitalized
- Commas are used correctly
- Punctuation at the end of the sentence
- Correct content

because, but, & so

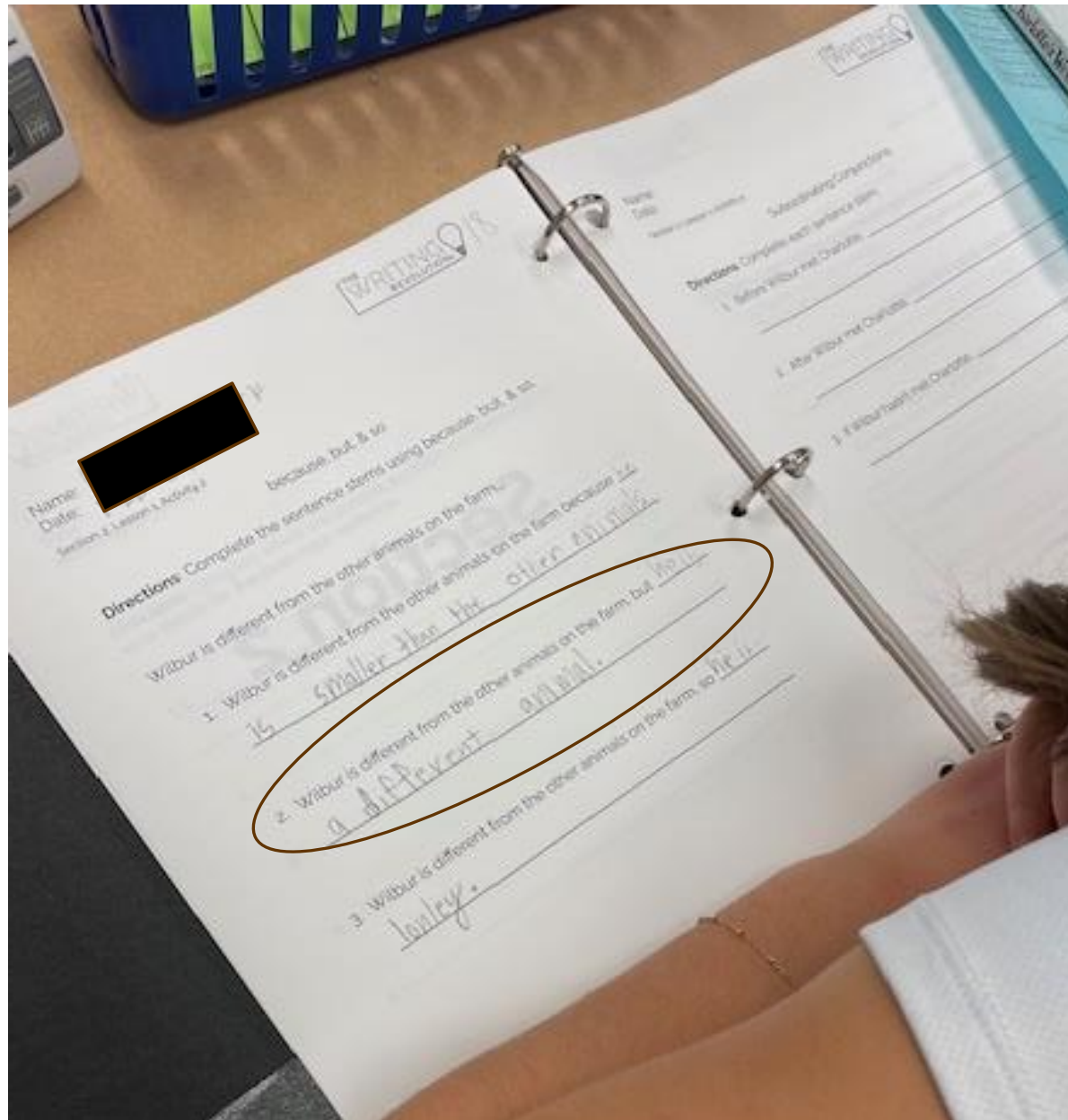
Directions: Complete the sentence stems using because, but, & so

Wilbur is different from the other animals on the farm...

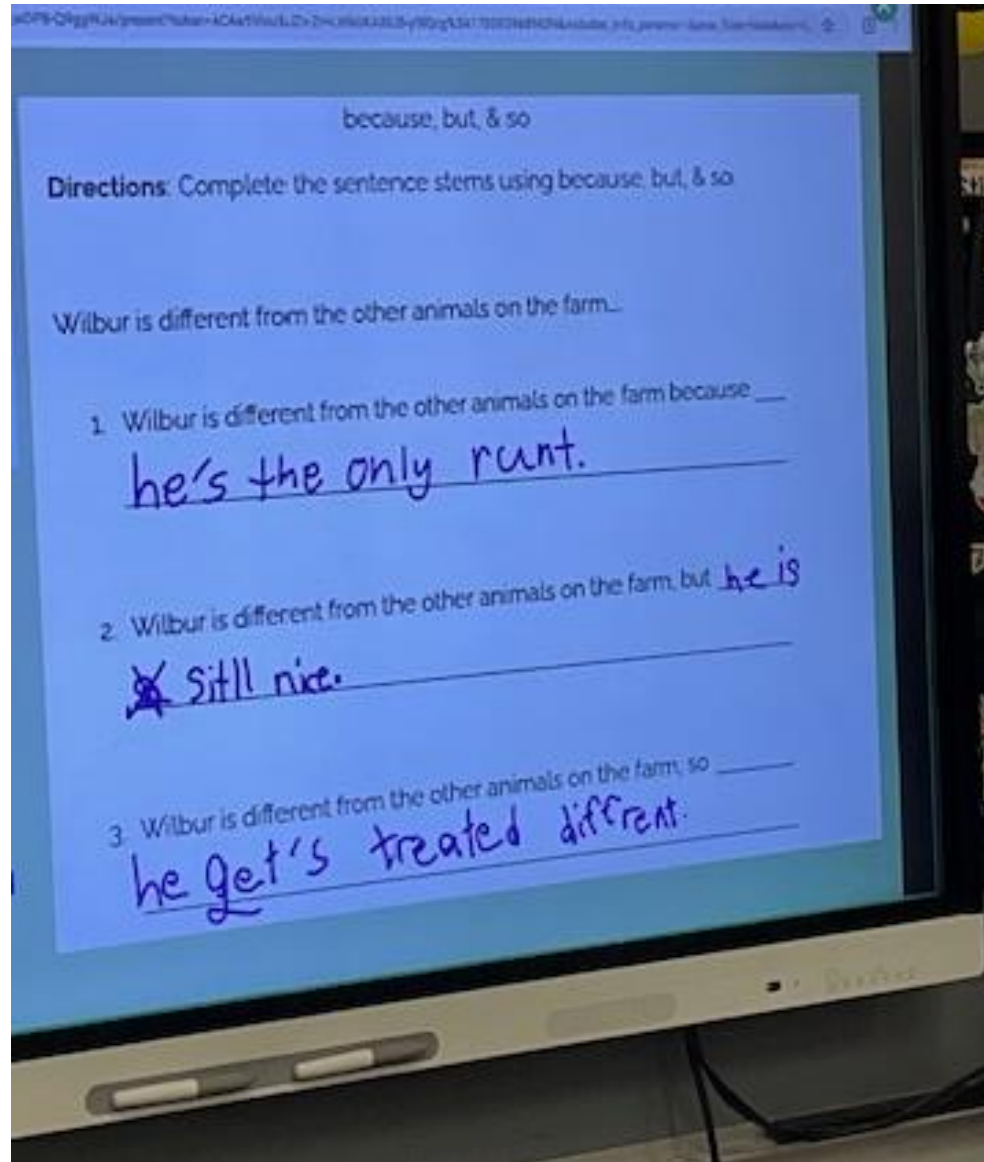
1. Wilbur is different from the other animals on the farm because _____

2. Wilbur is different from the other animals on the farm, but _____

3. Wilbur is different from the other animals on the farm, so _____



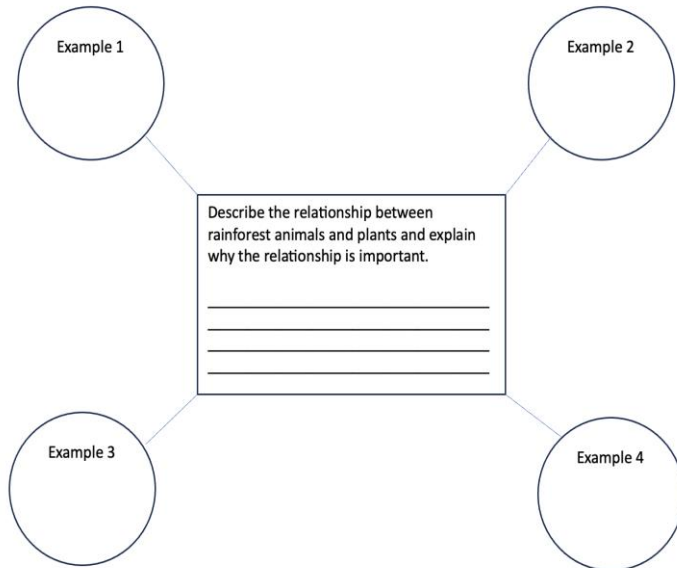
T: Is that a change of direction?
So, we want something opposite
... Those ideas are almost the
same.



- The completed sentence stems become a basis for further discussion.
- T briefly points out errors in spelling and punctuation and has students correct them.

“Revolutionizing” Existing Materials

Original activity:



Revolutionized activity:

Directions: Using key words and phrases, write details for the given topic sentence.

T.S. Rainforest animals and plants are highly dependent on each other.

ants 1.

Orchid bees 2.....

Capuchin monkeys 3.....

tree frogs 4.....

Caveat: This method only works if the curriculum is focused on CONTENT—not comprehension skills.



Writing instruction can have dramatic effects—even at the high school level.



Newsletters

The Atlantic

U.S.

The Writing Revolution

For years, nothing seemed capable of turning around New Dorp High School's dismal performance—not firing bad teachers, not flashy education technology, not after-school programs. So, faced with closure, the school's principal went all-in on a very specific curriculum reform, placing an overwhelming focus on teaching the basics of analytic writing, every day, in virtually every class. What followed was an extraordinary blossoming of student potential, across nearly every subject—one that has made New Dorp a model for educational reform.

Danny's Writing: Before The Writing Revolution



Topic: Explain why we study the past.

We study the past because
it's good to learn about things that happen
years ago. In history we learn all about
the past. We learn about wars that
happened years ago, how many people died, generals,
what countries were in them. The past
~~is full of people~~



Danny's SPO in March



T.S. The Aztecs, a complex civilization, developed in Mesoamerica.

Location 1. 1325 / Mexico / Tenochtitlan = Capital city

Religion 2. Polytheistic / cannibalistic + human sacrifice

Achievements 3. built Pyramids + chinampas = floating parcels of land

Fall 4. Hernan Cortes = Spanish conquistador + outside armies → destruction of Aztecs

c.s. Overall, the Aztecs had a significant impact.

Danny's Paragraph



topic sentence

appositive

The Aztecs, a complex civilization, developed in Mesoamerica. They created ^a vast empire in current-day Mexico with Tenochtitlan as their capital. The Aztecs were polytheistic.

subordinating conjunction

Although they were cannibalistic and practiced human sacrifice, the Aztecs had many achievements.

emphasis transition

In particular, they built great pyramids and made chinampas, which were floating parcels of land to farm on.

change of direction transition

However, Hernan Cortes, a spanish

concluding transition

conquistador, led a group of outside armies to take over their land, which led to the destruction of the Aztec empire. Overall, the Aztecs had a

concluding sentence

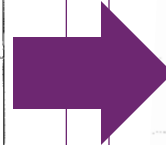
significant impact.

Danny's Outline and Argumentative Essay



Topic: Conquest of the Americas
 Thesis Statement: While some view the conquest of the Americas as a positive event, without question, it had a negative impact.

Main Idea	Details
¶1. Introduction	G.S. history/controversy Sp. St. debate = Sp. conquest Th. St. pros vs. (neg)
positive ↓ ¶2. T.S.	domestic animals = horse's sheep + cattle + pigs intro alphabet + new ideas = law + sci. conquest → cult. diffusion (ex crops) (Doc A) econ. new business + trade (Doc B)
negative ↓ ¶3. T.S.	Columbus → genocide + cruelty + slavery diseases killed millions C. America / A.S. → 2 million (Doc C) forced/convert to Christianity → torture + murder
¶4. Conclusion	Rephrase Th. St. conquest = brutal New Sp. St. disease + abuse New G.S. debated for years



Throughout history, there have been many controversies. One such debate is over the Spanish conquest of the Americas. While some view the conquest of the Americas as a positive event, without question, it had a negative impact.

Some claim that the Americas benefitted from the Spanish conquest. First, the Spanish introduced domesticated animals such as horses, sheep, cattle and pigs, to the Native Americans. In addition, the Spanish introduced the alphabet and new ideas in law and science. The conquest of the Americas led to the spread of



Thank you!

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