

*anno ...  
motti di Maniera che sua  
Tanto al uni*

21

# CHRONICLE — INTERACTIVE AI ANNOTATION FOR HISTORY READING

Yunxi Kong, Yue ( Erica ) Shao



# QUESTION:

Have you ever found yourself reading a history article and just skimming through it because it felt a bit dull or tedious?



# QUESTION:

Have you ever found yourself reading a history article and just skimming through it because it felt a bit dull or tedious?

# YES!

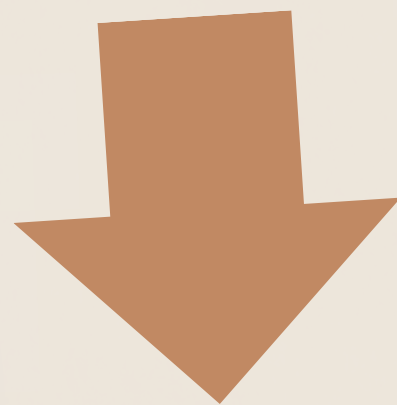
# COMMON EXPERIENCE



# PROBLEM:

How to turn  
history reading

**PASSIVE, BORING**



**INTERACTIVE, ENGAGING**



# LOGIC MODEL

## Inputs

- Vygotsky's Social Constructivism Theory
- Flavell's Metacognitive Learning Theory

## Activities

- Collaborative Annotation Tools
- AI-History Tutor
- AI Insight Summary
- Teacher Dashboard

## Outputs

- Annotation Data
- Engagement Signals
- Confusion Patterns
- Reasoning Evidence

## Outcomes

- Short-term outcomes
- Higher engagement
  - Improved comprehension and questioning skills
- Long-term outcomes
- Stronger historical thinking and evidence-based reasoning
  - Transferable critical literacy across subjects

# VYGOTSKY'S SOCIAL CONSTRUCTIVISM THEORY

## THEORY PRINCIPLE

- 1.** Social Interaction  
Learning through dialogue and collaborative meaning-making
- 2.** Visible Thinking  
Externalize reasoning to make understanding observable
- 3.** Scaffolding  
Timely support from "more knowledgeable others"

## PLATFORM FEATURES

- Shared Annotation**  
Students externalize reasoning by annotating the text
- Peer Interaction**  
View & respond to classmates for collaborative dialogue
- AI History Tutor**  
AI prompts & questions guide students back to text

# The Great Library

Explore history through the eyes of those who lived it.

OPEN

Industrial Revolution  
Field Journal

VOL. 1

OPEN

Voices of the French  
Revolution

VOL. 2

ARCHIVE

Opium War Field  
Journal

VOL. 3

ARCHIVE

Silk Roads & Sea  
Routes

VOL. 4

ARCHIVE

The Age of Discovery

VOL. 5

ARCHIVE

Cold War Frontlines

VOL. 6

ARCHIVE

Decolonization & New  
Nations

VOL. 7

ARCHIVE

Origins of the Digital  
Age

VOL. 8

## ⚡ ANALYSIS REPORT Update

The Industrial Revolution marked a profound shift from rural farming societies to urban industrial ones, driven by new technologies like the steam engine. While it spurred economic growth, created new jobs, and fostered a rising middle class, it also led to significant hardships including harsh working conditions, child labor, and rampant urban pollution for the working class. The era's complex legacy established foundations for modern capitalism and global trade, fundamentally reshaping the world.

### KEY OBSERVATIONS

- The pre-industrial context of primarily rural, farming societies.
- The widespread use of child labor and its demanding nature.
- The dangerous and monotonous working conditions in factories.
- The emergence of the new middle class (bourgeoisie) and its societal impact.
- The origins of environmental issues like pollution and the challenge of sustainability.



### All Logs My Logs Official

**Mike R.** 2025/12/2  
 | "environmental sustainability"  
 So climate change basically started here. Interesting connection.  
 ❤️ 3 Ask

**ME** 2025/12/2  
 | "dangerous and monotonous"  
 Monotonous means boring/repetitive, right? That sounds worse than the danger.  
 ❤️ 1 Ask

**Mr. Thompson** 2025/12/2 OFFICIAL  
 | "new middle class"  
 Crucial Concept: The rise of the Bourgeoisie. This changes politics forever.  
 ❤️ 12 Ask

**Sarah J.** 2025/12/2 OFFICIAL  
 | "Children were part of the labor force"  
 It is crazy to think kids my age were working 12 hours a day.  
 ❤️ 8 Ask

Monotonous means boring/repetitive, right? That sounds worse than the danger.

**Sarah J.**  
 It is crazy to think kids my age were working 12 hours a day.

12

**Sarah J.** 2025/12/2 OFFICIAL  
 | "Children were part of the labor force"  
 It is crazy to think kids my age were working 12 hours a day.  
 ❤️ 8 Ask

← RETURN TO LIBRARY HALL

**Mike R.**

2025/12/2

| *"environmental sustainability"*

So climate change basically started here. Interesting connection.

♥ 3

🗨 Ask Bot

All Logs

My Logs

Official

**Mr. Thompson**

2025/★/OFFICIAL

| *"new middle class"*

Crucial Concept: The rise of the Bourgeoisie. This changes politics forever.

♥ 12

🗨 Ask Bot

**Sarah J.**

2025/★/OFFICIAL

| *"Children were part of the labor force"*

It is crazy to think kids my age were working 12 hours a day.

♥ 8

🗨 Ask Bot

**Mr. Thompson**

2025/★/OFFICIAL

| *"rural, farming societies"*

Context: Remember that before this, 80% of people lived on farms.

♥ 5

🗨 Ask Bot

**MR. THOMPSON**  
Context: Remember that before this, 80% of people lived on farms.

< Prev Next >  
**T**he Industrial Revolution was a long period of scientific and technological change that began in the late eighteenth century. In just a few generations, it turned many parts of Europe and North America from largely rural, farming societies into urban, industrial ones. Work that had once been done slowly by hand in people's homes was reorganized into large factories powered by new machines.

Before this transformation, most families lived in small villages or on scattered farms. They grew their own food, made their own clothing, and relied on simple tools powered by human or animal strength. A few towns had workshops and markets, but most goods were produced in small quantities and moved only short distances. Life was closely tied to the rhythms of the seasons and the local environment.

+ Add Note

New inventions began to change this pattern. Spinning machines and power looms allowed one worker to produce far more cloth than before. Improved blast furnaces and rolling mills increased the output of iron. The steam engine, first used to pump water out of mines, was also used to power factory machines and to power locomotives and ships. Factories used steam power to produce textiles, iron, and many other goods.

Transportation and communication were transformed. The steam train and telegraph connected distant regions, allowing raw materials to be shipped from remote areas to manufacturing centers and finished products to be shipped around the world.

**ADD ANNOTATION** ✕  
Type your insight...  
Cancel Save

**RESEARCHER LOG**

**READING TASKS**  
33%  
 Add at least 3 notes  
 Use 'Ask Bot' 1 time  
 Generate AI Reflection

**ACTIVITY LOG**

NOTES	FOCUS AREAS
2	"dangerous and monotonous..." (1) "Spinning machines and power looms a..."

Ready to wrap up?  
Generate Reflection

**RESEARCHER LOG**

**READING TASKS**  
0%  
 Add at least 3 notes  
 Use 'Ask Bot' 1 time  
 Generate AI Reflection

**ACTIVITY LOG**

NOTES	FOCUS AREAS
1	"dangerous and monotonous..." (1)

Ready to wrap up?  
Generate Reflection

**ANALYSIS REPORT** Update

The Industrial Revolution marked a profound shift from rural farming societies to urban industrial ones, driven by new technologies like the steam engine. While it spurred economic growth, created new jobs, and fostered a rising middle class, it also led to significant hardships including harsh working conditions, child labor, and rampant urban pollution for the working class. The era's complex legacy established foundations for modern capitalism and global trade, fundamentally reshaping the world.

**KEY OBSERVATIONS**

- The pre-industrial context of primarily rural, farming societies.

Add a field note... ▲

All Logs

My Logs

Official

ME

2025/12/2

| *"dangerous and monotonous"*

Monotonous means boring/repetitive, right? That sounds worse than the danger.

♥ 1

Ask Bot

Hey there! That's a really interesting point you bring up about monotonous work. It's true that "monotonous" means repetitive and boring, which definitely sounds soul-crushing. The article mentions that factory workers faced both "dangerous and monotonous" conditions, and even notes children were used for "highly hazardous tasks." So, while monotony could wear down a worker mentally and emotionally over time, danger often meant immediate physical harm, injury, or even death. These two factors contributed differently to the "grim employment and living conditions" described. Given the context of the Industrial Revolution, what might be some immediate, practical consequences of a job being dangerous compared to just being monotonous?

Ask a follow-up...



Add a field note...



One is harmful to mental health, one is harmful to physical health

That's a great way to put it! You're really honing in on the different impacts. Monotony absolutely could be incredibly damaging to mental health, leading to despair or a sense of worthlessness, while the constant danger clearly threatened physical health

I can't find any evidence

No worries at all, sometimes the details are implied rather than spelled out directly in a short text like this! Let's look closely at the words the article \*does\* use. When it says "working conditions could be **\*\*dangerous\*\***" and specifically mentions "children were used for such **\*\*highly hazardous tasks\*\***," what kinds of immediate physical risks or injuries do those phrases suggest might happen to someone? And then, if "monotonous" means repetitive and boring, what sort of *\*feelings\** or long-term mental state do you think might come from doing the exact same, unstimulating thing, day in and day out, in "grim employment" conditions?

### The Industrial Revolution

Excerpt

*The Industrial Revolution was a long period of scientific and technological change that began in the late eighteenth century. In just a few generations, it turned many parts of Europe and North America from largely rural, farming societies into urban, industrial ones. Work that had once been done slowly by hand in people's homes was reorganized into large factories powered by new machines. Before...*

#### YOUR KEY CONCEPTS

- "rural, farming societies"
- "Children were part of the labor force"
- "dangerous and monotonous" "new middle class"
- "environmental sustainability"

#### Room Rules

- Be polite and respectful.
- Focus on historical evidence.
- Avoid modern political debates.
- Use quotes from the text!

AI History Net-Friend  
Casual tone • Historically careful

AI History Net-Friend  
Casual tone • Historically careful

ME  
What factors led the textile industry to be the first to achieve industrialization?

#### NET-FRIEND

Hey, that's a great question to kick us off! It's super interesting how textiles really spearheaded things.

**\*\*Mini-Fact:\*\*** The article mentions "Spinning machines and power looms" as key new inventions.

These inventions made it possible to produce cloth much faster and cheaper than traditional hand methods. The demand for textiles was already high, so these innovations quickly transformed production and set a pattern for other industries.

What does the article say about how these new machines impacted the speed and cost of production?

Ask a question or share a thought...

AI can make mistakes. Check important info in the text.

Identity: Mr. Thompson

Student

Teacher

SUPERVISOR LOG

### CLASS REGISTER

TOTAL NOTES	ACTIVE STUDENTS
4	3
TEACHER PICKS	
3	
STUDENT PROGRESS	
1 ME	2 notes 33%
2 Sarah J.	1 notes 0%
3 Mike R.	1 notes 0%
COMMON INTEREST AREAS	
1	"...Children were part of the labor force..."
1	"...dangerous and monotonous..."
1	"...environmental sustainability..."

Developing Technology

All Logs My Logs Official

**Mike R.** 2025/12/2 ☆

| "environmental sustainability"

So climate change basically started here. Interesting connection.

♥ 3 ↩ Reply Ask Bot

**ME** 2025/12/2 ☆

| "dangerous and monotonous"

Monotonous means boring/repetitive, right? That sounds worse than the danger.

♥ 1 ↩ Reply Ask Bot

**Mr. Thompson** OFFICIAL ☆

| "new middle class"

Crucial Concept: The rise of the Bourgeoisie. This changes politics forever.

♥ 12 ↩ Reply Ask Bot

**Sarah J.** OFFICIAL ☆

| "Children were part of the labor force"

It is crazy to think kids my age were working 12 hours a day.

♥ 8 ↩ Reply Ask Bot

Add a field note...

# USER TESTING RESULTS

## Participants & methods

- 3 proxy users: 2 graduate students + 1 instructor
- 20-minute think-aloud walkthrough + short interview
- Tasks: read Industrial Revolution article, create notes, ask the AI tutor, switch between Quiet Reading / Discussion

## What worked?

- All users quickly discovered highlight-to-annotate and created notes without instruction
- Overall ease-of-use ratings: 4–5 out of 5

## Pain points & wishes

- Want a bottom “reply bar” to add new comments and replies more freely
- Noticed unlimited “likes” on comments; expect one like per user
- Some feel AI messages are a bit long and would like a separate “Dialogue Room” for extended chat

# FUTURE DESIGN CHANGE

- Fix the like button to allow only one like per user
- Add a bottom-of-page comment box for general reflections and whole-section questions
- Introduce options to collapse or shorten AI replies and move long chats into a dedicated Dialogue Room
- Make Quiet Reading / Discussion modes more visible with a short onboarding overlay

# DESIGN ITERATIONS

## The Historical Significance of the Industrial Revolution

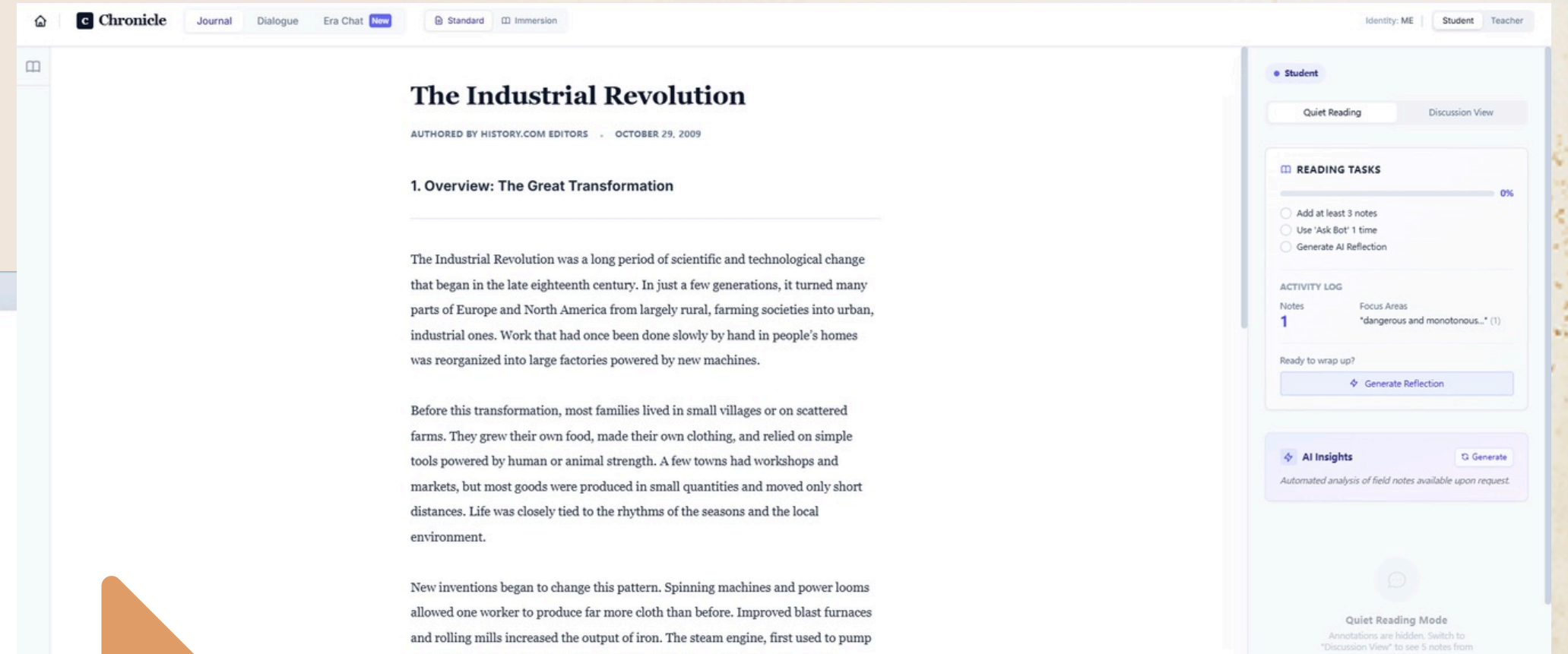
By Historical Research Society | Published October 2024

The Industrial Revolution stands as one of the most pivotal turning points in human history, beginning in Britain during the 1760s before spreading to continental Europe and North America. This revolution transformed not only methods of production but also profoundly impacted social structures, economic models, and people's ways of life. The transition from manual labor to machine-based manufacturing marked humanity's entry into an entirely new era. The invention and application of the steam engine became the most iconic technological breakthrough of this period.

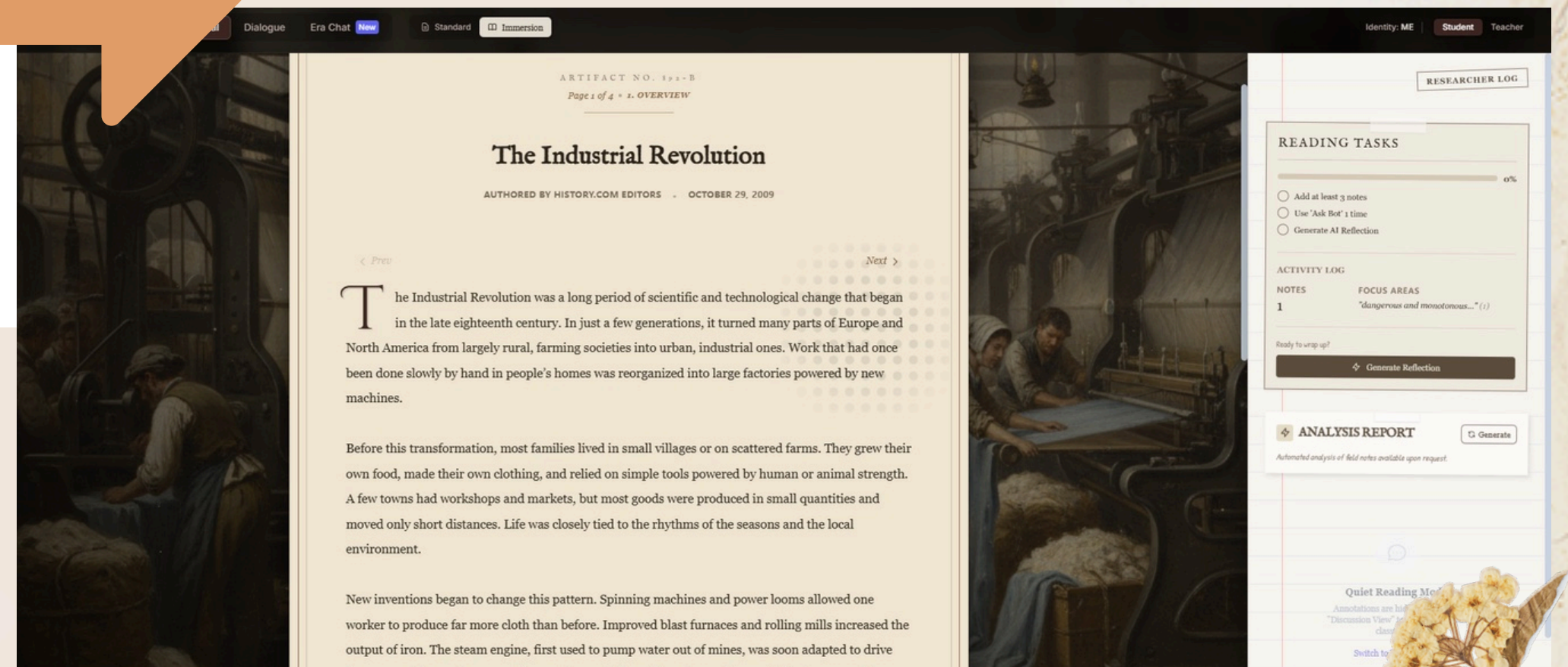
During the Industrial Revolution, the textile industry was the first to achieve mechanization. James Hargreaves' invention of the spinning jenny enabled a single worker to operate multiple spindles simultaneously, dramatically increasing production efficiency. Subsequently, Richard Arkwright's water frame and Samuel Crompton's spinning mule emerged, further advancing the development of the textile industry. These technological innovations not only reduced production costs but also lowered textile prices, allowing more people to enjoy the fruits of industrialization.

The Industrial Revolution brought rapid urbanization. Massive numbers of rural people flooded into cities seeking employment opportunities, causing urban populations to surge dramatically. Industrial cities like Manchester and Birmingham grew from small towns into major metropolitan areas with populations of hundreds of thousands within just a

# More Options More Immersive



The screenshot shows the Chronicle website interface. The main article is titled "The Industrial Revolution" and is authored by History.com editors, dated October 29, 2009. The article is divided into sections, with the first section titled "1. Overview: The Great Transformation". The text describes the Industrial Revolution as a long period of scientific and technological change that began in the late eighteenth century. It mentions that work that had once been done slowly by hand in people's homes was reorganized into large factories powered by new machines. The text also notes that before this transformation, most families lived in small villages or on scattered farms, and that new inventions like spinning machines and power looms allowed one worker to produce far more cloth than before. The sidebar on the right contains a "Student" profile, a "Quiet Reading" mode, and a "READING TASKS" section with a progress bar at 0%. The tasks include "Add at least 3 notes", "Use 'Ask Bot' 1 time", and "Generate AI Reflection". There is also an "ACTIVITY LOG" section showing a note titled "dangerous and monotonous..." and a "Generate Reflection" button. At the bottom of the sidebar, there is an "AI Insights" section with a "Generate" button and a note that says "Automated analysis of field notes available upon request."



The screenshot shows an immersive digital experience for the Industrial Revolution. The background is a dark, atmospheric scene of a factory interior with workers and machinery. The central text panel is titled "The Industrial Revolution" and is authored by History.com editors, dated October 29, 2009. The text is the same as in the previous screenshot, describing the Industrial Revolution as a long period of scientific and technological change. The sidebar on the right contains a "RESEARCHER LOG" section, a "READING TASKS" section with a progress bar at 0%, and an "ANALYSIS REPORT" section with a "Generate" button and a note that says "Automated analysis of field notes available upon request."

# DESIGN ITERATIONS

Comments AI Tutor

**AI Content Summary**

Top-rated insights: The Industrial Revolution was indeed a crucial turning point, though we must also consider its social problems and environmental costs. Active discussions: Multiple readers discussed the differential impacts on various social classes.

**HB HistoryBuff** 2 hours ago

This summary is excellent! The Industrial Revolution truly changed the face of the entire world.

12 Reply

**SM StudentMike** 5 hours ago

The invention of the steam engine was truly revolutionary!

8 Reply

**TW TeacherWang** 4 hours ago

Enter your comment or question...

Send

Original Panel

READING TASKS

0%

- Add at least 3 notes
- Use 'Ask Bot' 1 time
- Generate AI Reflection

ACTIVITY LOG

NOTES	FOCUS AREAS
1	"dangerous and monotonous..." (1)

Ready to wrap up?

Generate Reflection

**ANALYSIS REPORT** Generate

Automated analysis of field notes available upon request.

Quiet Reading Mode

Annotations are hidden. Switch to "Discussion View" to see 5 notes from classmates.

Switch to Discussion →

Clear Tasks

**ANALYSIS REPORT** Update

The Industrial Revolution was a period of profound scientific and technological change beginning in the late 18th century, transforming largely rural societies into urban, industrial ones. This era introduced new machines, factory systems, and improved transportation, leading to increased production and the rise of a new middle class. However, it also brought challenging working and living conditions for many, including child labor and environmental issues, fundamentally reshaping global economics and social structures.

**KEY OBSERVATIONS**

- The societal shift from rural, farming communities to urban, industrial centers.
- The harsh realities of child labor and dangerous, monotonous working conditions in factories.
- The emergence of a new middle class (the bourgeoisie) and its significant political and social impact.
- The long-term environmental consequences and the origins of modern struggles with sustainability.

All Logs My Logs Official

**Mike R.** 2025/12/2

"environmental sustainability"

So climate change basically started here. Interesting connection.

3 Ask Bot

**ME** 2025/12/2

Add a field note...

More Detailed Classification

Identity: Mr. Thompson Student Teacher

SUPERVISOR LOG

**CLASS REGISTER**

TOTAL NOTES	ACTIVE STUDENTS
3	3

TEACHER PICKS

3

STUDENT PROGRESS

1 Sarah J.	1 notes	0%
2 ME	1 notes	0%
3 Mike R.	1 notes	0%

COMMON INTEREST AREAS

- 1 "...Children were part of the labor force..."
- 1 "...dangerous and monotonous..."
- 1 "...environmental sustainability..."

Teacher Dashboard

# DESIGN ITERATIONS

Comments AI Tutor

the evidence?

**You** Who is James Hargreaves?

**AI** Excellent inquiry! Let's examine the evidence: What facts, examples, or quotes does the author provide? How do they help us understand this historical period?

**You** Could you just tell me the answer?

**AI** Great question! In historical analysis, we often work with interpretations based on evidence rather than simple right or wrong answers. What does the text tell us? How can we support our understanding with specific details from the passage? Different historians might interpret this differently—what's your interpretation based on the evidence?

Enter your comment or question...

Send

👍 ❤️ 😊 💡 📖

Chronicle Journal Dialogue Era Chat New

## The Industrial Revolution

Excerpt

*The Industrial Revolution was a long period of scientific and technological change that began in the late eighteenth century. In just a few generations, it turned many parts of Europe and North America from largely rural, farming societies into urban, industrial ones. Work that had once been done slowly by hand in people's homes was reorganized into large factories powered by new machines. Before...*

YOUR KEY CONCEPTS

- \*rural, farming societies\*
- \*Children were part of the labor force\*
- \*dangerous and monotonous\*
- \*new middle class\*
- \*environmental sustainability\*

**Room Rules**

- Be polite and respectful.
- Focus on historical evidence.
- Avoid modern political debates.
- Use quotes from the text!

Ask a question or share a thou

Ask AI Questions  
Directly  
Under Any Annotation

All Logs **My Logs** Official Teacher

**ME** 2025/12/2

"dangerous and monotonous"

Monotonous means boring/repetitive, right? That sounds worse than the danger.

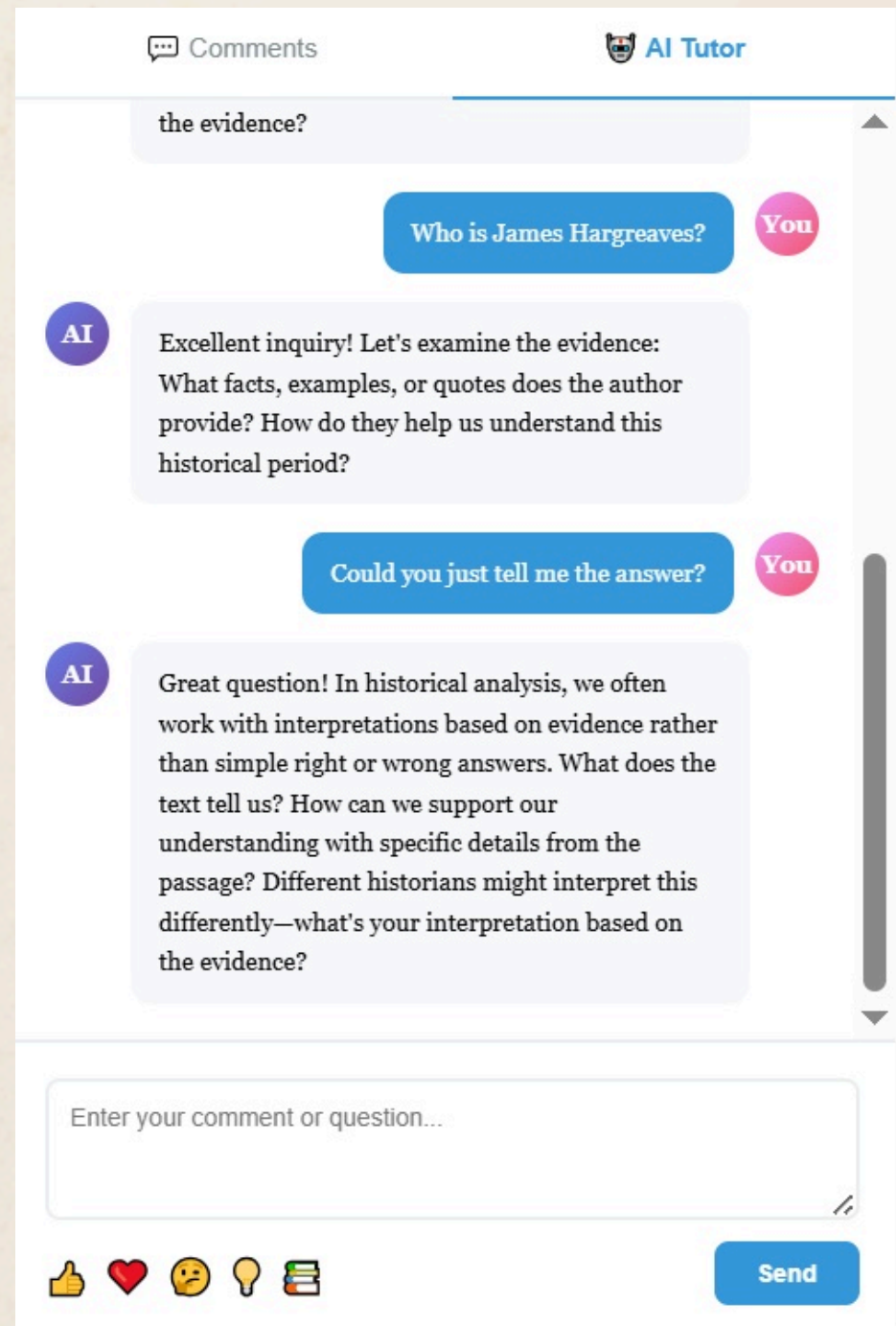
❤️ 1 Ask Bot

Hey there! That's an interesting point you're making about monotonous work. You're right, "monotonous" definitely means boring and repetitive, which can be really draining. The article also specifically points out that children were often used for "highly hazardous tasks." It's tough to say which is "worse" because they affect people in different ways—one is a constant grind on your spirit, while the other is an immediate threat to life and limb. Thinking about the segment, what specific examples does the article give that might make "dangerous" seem particularly severe, especially when you consider the impact on workers like children?

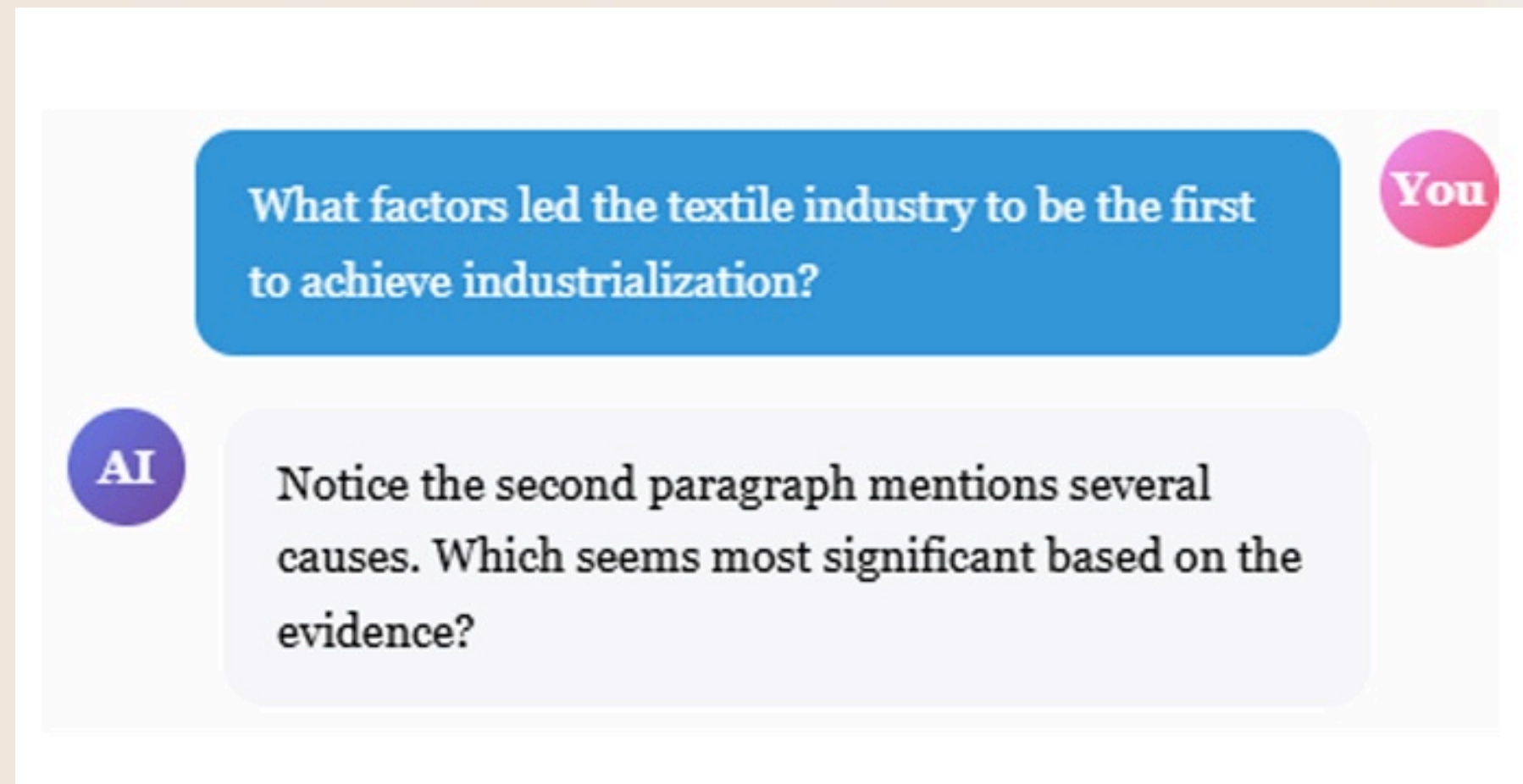
Add a field note...



# DESIGN ITERATIONS



← V1 Meaningless Scaffolding



↑ V2 Better But Not Enough



# DESIGN ITERATIONS

## After Setting up an API Key

Comments AI Tutor

the evidence?

Who is James Hargreaves? You

AI Excellent inquiry! Let's examine the evidence: What facts, examples, or quotes does the author provide? How do they help us understand this historical period?

Could you just tell me the answer? You

AI Great question! In historical analysis, we often work with interpretations based on evidence rather than simple right or wrong answers. What does the text tell us? How can we support our understanding with specific details from the passage? Different historians might interpret this differently—what's your interpretation based on the evidence?

Enter your comment or question...

Send

👍 ❤️ 😊 💡 📖

AI History Net-Friend  
Casual tone • Historically careful

ME Who is James Hargreaves?

NET-FRIEND  
Hey there! That's a great question to kick things off.

**\*\*Mini-Fact:\*\*** The article mentions the "spinning machines" as one of the new inventions that changed patterns of production.

This highlights how individual inventors developed new technologies that drastically increased output, a core part of the Industrial Revolution's transformation. Can you find other specific inventions or machines mentioned in the text that changed how goods were made?

ME Could you just tell me the answer?

NET-FRIEND  
Gotcha, I hear you!

**\*\*Mini-Fact:\*\*** This article actually focuses more on the \*types\* of inventions rather than naming specific inventors.

It talks about "spinning machines" and even the "spinning jenny," but it doesn't mention James Hargreaves by name. The text highlights how these new machines made production much faster and cheaper. What other specific technological advancements does the article credit with transforming transportation?

V3  
More Accurate  
More Intelligent



# DESIGN ITERATIONS

What factors led the textile industry to be the first to achieve industrialization?

You

AI

Notice the second paragraph mentions several causes. Which seems most significant based on the evidence?



AI History Net-Friend  
Casual tone • Historically careful

V3  
More Instructive  
More Supportive  
(like a friend)

MR. THOMPSON

What factors led the textile industry to be the first to achieve industrialization?

NET-FRIEND

Hey, that's a great question to kick us off! It's super interesting how textiles really spearheaded things.

**\*\*Mini-Fact:\*\*** The article mentions "Spinning machines and power looms" as key new inventions.

These inventions made it possible to produce cloth much faster and cheaper than traditional hand methods. The demand for textiles was already high, so these innovations quickly transformed production and set a pattern for other industries.

What does the article say about how these new machines impacted the speed and cost of production?



# GROUP'S REFLECTION

## 1. **Learning outcomes**

Did students actually learn more?

We plan to use short pre- and post-reading assessments focused on evidence-based reasoning in history. Rubrics will score how well students cite the text, explain cause and effect, and connect events to broader themes. Comparing gains across classes and over time will show whether Chronicle improves disciplinary thinking rather than just making reading feel nicer.

## 2. **Engagement and behavior**

How are students using the tool?

We will track log data such as number of annotations per student, diversity of pages annotated, frequency of AI-tutor questions, and time spent in Quiet Reading versus Discussion. Patterns in these metrics can reveal whether students are only “clicking through” or actually engaging in sustained discussion and rereading.

## 3. **Equity and classroom dynamics**

Who benefits and who is silent?

Future evaluations will look at participation distribution across different students, especially quieter or lower-achieving readers.

We will compare annotation and AI-use patterns by student group to see whether GenAI tools narrow or widen gaps in participation, and whether teachers can use the data to intentionally bring more voices into the conversation.

## 4. **Perspectives on GenAI**

Opportunities and challenges

This semester showed us that GenAI can scaffold close reading, generate follow-up questions, and reduce teachers' workload for giving individual feedback. At the same time, we became more aware of challenges such as AI verbosity, hallucinations, and the risk that students may rely on AI answers instead of the text. Our future work on metrics and design will focus on keeping AI as a transparent “thinking partner,” not a shortcut that replaces human judgment.

*...morte di Maniera che va  
Tanto q' uni*

21

# THANK YOU !!

