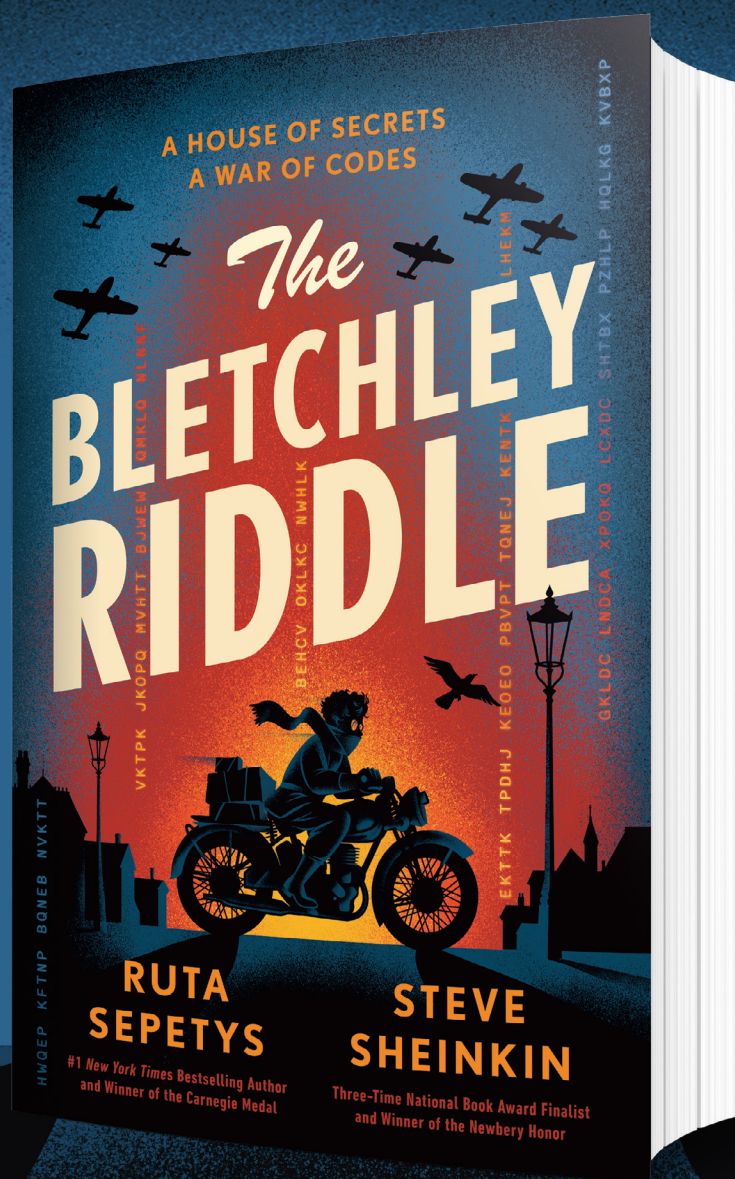


A Lesson Plan and Classroom Activity Guide for



The **BLETCHLEY** **RIDDLE**

9780593527559 | Lexile: HL540L

A MATHICAL BOOK PRIZE WINNER

**A CHILDREN'S BOOK COUNCIL
TEACHER FAVORITE AWARD
SELECTION**

AN ALA ALSC NOTABLE

**10 STATE AWARD READING LISTS
AND COUNTING**

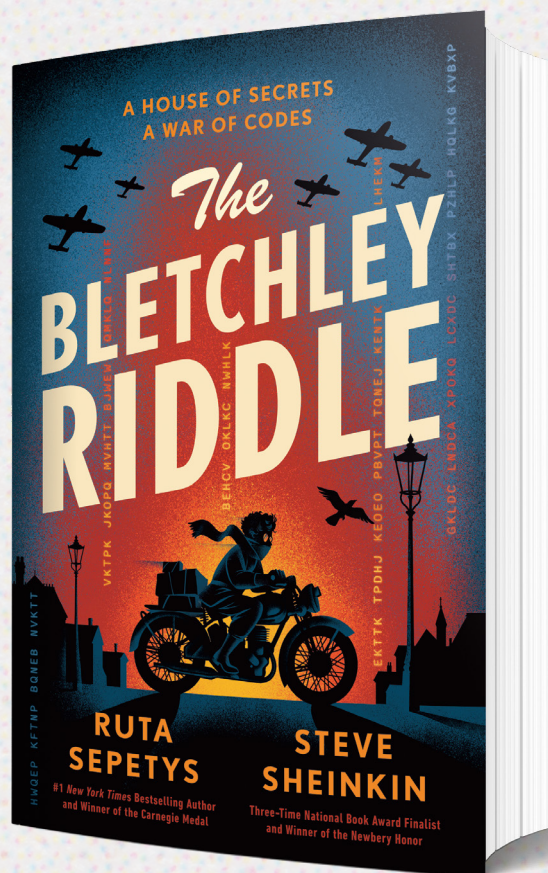


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BONUS GUIDE CONTENT

- Math Lesson: Math Activities and Handouts to Tie in Codebreaking
- Whole Class Reads and Other Ideas

5 STARRED REVIEWS ★★★★★

★ “Thrilling and often hilarious.”

—*Shelf Awareness*, starred review

★ “An enormously entertaining, expertly researched WWII novel with broad appeal.”

—*Booklist*, starred review

★ “Historical fiction at its best.”

—*The Horn Book*, starred review

★ “A seamlessly entertaining and edifying read.”

—*Publishers Weekly*, starred review

★ “An impressive joint effort . . . with broad appeal to both WWII and mystery enthusiasts.”

—*School Library Journal*, starred review

Classroom Connections: Clues, Codes, & Connections

Clues, codes, and connections! What could be more fun for a middle grade classroom? Award-winning authors Ruta Sepetys and Steve Sheinkin's *The Bletchley Riddle* is a wild ride that incorporates mystery and history in a way that speaks to young people. Infused with fascinating tidbits of real-life historical events and characters, and just the right amount of adventure, mystery and humor, *The Bletchley Riddle* is highly engaging—exactly what students and teachers hope for in a classroom read!

The Bletchley Riddle and its accompanying mini-unit will enhance any middle grade classroom. The educational materials have been designed in a way that they can be integrated seamlessly into teachers' existing academic units. There is so much flexibility with this mini-unit. Teachers, you may choose to conduct the pre-reading lesson and complete the remaining lessons after reading the entire book or conduct the lessons as you read. You may also decide to implement all of the lesson plans or select individual ones that best fit your schedule and your students' needs. The mini-unit encompasses four lesson plans—two geared toward 5th-6th grades and two for 7th-8th grades. But each lesson plan can easily be adapted in language, vocabulary, number/complexity of tasks, and objectives to match your grade level. The activities in this mini-unit encourage text-to-self and text-to-world interplay and activities are aligned with Common Core, Social Justice Standards, and Social Emotional Learning competencies. The lessons are academic and inclusive and are constructed so students can read, write, draw, listen, move, speak, and of course, decode! Each worksheet contains a secret code at the top of the page that connects to the content of that day's lesson. The mini-unit also includes a mystery math worksheet where students will be investigators and code breakers and help solve the mystery surrounding the disappearance of Jakob and Lizzie's mother. *The Bletchley Riddle* is teeming with cross-disciplinary topics, themes, and skill-building that can be comprehensively woven into social studies, math, science, ELA, and art curricula. Like we said: clues, codes, and connections galore!

Individual worksheets and
handouts are linked throughout
the guide, or click to
DOWNLOAD THEM ALL HERE

Discussion Questions

1. The authors sprinkle humor throughout *The Bletchley Riddle*. What role does humor play in this novel set during a war? Why might the authors have included humor? Find evidence while you read.
2. Deception, fear, and trust are important themes in the novel. What are some examples of these themes in the story? Why are people being deceptive? Why are people fearful? Why is trust so difficult? Is there a relationship among deception, fear, and trust? Explain.
3. Lizzie often expresses the importance of being straightforward, yet she is sworn to secrecy. Why do you think the authors purposely intertwine these two opposite ideas?
4. In the novel (and in real life!) the Government Code and Cypher School recruited young mathematicians for intelligence work and children as messengers to support the war effort during World War II. Be sure to read the Historical Note at the back of the book to read more about this. In the past, governments in other countries have also employed children in wartime. How do you feel about young people and children playing such a vital role in war?
5. What is antisemitism? Why is antisemitism dangerous? What role does antisemitism play in the book?
6. What motivates the characters in the book to crack the codes? How do the authors show or reveal their motivations?
7. Willa's disappearance is super mysterious from the very beginning. How do the authors weave flashbacks and foreshadowing (hints!) throughout the novel? How does this literary choice affect our reading of the novel and the developing suspense?
8. Recipes are used to send messages and are central to the action in the mystery surrounding Willa. Why are recipes important in the story? How are recipes important in other ways—in families, in our society, in cultures? If you had to choose one item in your home to pass along a secret message, which item would you choose? Why?
9. Codebreaking is an essential element in supporting the war effort. As you read, list the many code-breaking methods included in the book. Which is your favorite? Why? In chapter 92, Lizzie thinks, "... Sometimes the families we build are just as strong as those we're born into." How and why might codebreaking lead to a close-knit community at Bletchley? Which relationships are created in the novel because of codebreaking? How might each resident's signing of the Secrets Act affect this community?
10. How do the residents of Bletchley feel about the United States delaying their entry into the war? How do we know this?
11. Jakob and Lizzie have a strong sibling relationship that we see develop throughout the plot. Why do you think Jakob was relieved when he thought Lizzie was being sent to the United States (chapter 52)? What is the moment when they go from keeping secrets from each other to working together? What becomes their common mission? What examples can you give to show how they support one another throughout the book, even when they are disagreeing? Think about a time when you have disagreed with someone. Was it difficult to still support them? Explain.
12. What's fact and what's fiction? There are so many instances throughout *The Bletchley Riddle* where readers ask themselves this. The authors conducted heaps and heaps of research to write this book! Challenge yourself to do a little digging and find out which newspaper headlines, pamphlet titles, recipes, and magazine articles are actually, in fact, real.
13. In writing this story, one of the authors' top priorities was to highlight the brave and mostly unknown work of Polish code breakers preceding World War II. Why is it important to hear people's diverse stories and experiences of the same events in history? How difficult do you think it was for code breakers from different countries to trust one another? Did they have a common objective and purpose? Explain.

Lesson #1 | Pre-Reading | Uncovering Clues from the Past

Rationale

The Bletchley Riddle is set in England at the onset of World War II and references many historical people and events. In this lesson, students will explore the causes of WWII and some of the key settings and players involved at the beginning of the war. Examining context in history is essential to help students' foundational understanding as they move through complex historical information in both fiction and nonfiction. Just like the main characters in *The Bletchley Riddle*, through some sly sleuthing of their own, students will analyze historical websites and deconstruct primary sources and their meanings to understand how they fit into the development of the war.

Essential Question

How did past events lead to World War II, and how can we use clues to analyze primary sources to better understand various perspectives of the lead up to the war?

Motivation

Think about a time in your life or in your favorite book or movie when there was an argument between people. What are some reasons why people argue? Share with a partner. Let's think about arguments on a bigger scale—arguments between countries. What are some reasons countries might disagree and argue?

Procedure

The Bletchley Riddle begins on the precipice of World War II. Today, we're going to explore several settings and events leading up to World War II. Sometimes, looking backward helps us understand what comes next. Being a historian is much like being a detective. Have your students jump into some serious investigating just like Jakob and Lizzie!

PART 1 | LOOKING BACKWARD!

- ▶ Divide the class into groups, each group focusing on events leading up to World War II from the list below.
- ▶ Direct your student investigators to research historically factual, educational websites (see suggested links below) or distribute any printed information/summaries you are providing.

Economic Instability, Scapegoating, and Hitler's Rise to Power

[The Role of Economic Instability in the Nazi Rise to Power](#)

[Antisemitism: An Introduction](#)

Hitler's Violation of the Treaty of Versailles

[Nationalism](#)

[Treaty of Versailles](#)

[German Prewar Expansion](#)

Standards/Objectives: 7th/8th Grades

- ▶ [CCSS.ELA-Literacy.RH.6-8.2](#) | Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
- ▶ [CCSS.ELA-Literacy.RH.6-8.1](#) | Cite specific textual evidence to support analysis of primary and secondary sources.
- ▶ [SJS 13: Justice](#) | Students will analyze the harmful impact of bias and injustice on the world, historically and today

Materials Needed:

- ▶ Student notebooks/paper
- ▶ Assorted readings/computer access for internet research
- ▶ Copies of student handout: [Spying on Primary Sources](#)
- ▶ Projector/copies of speeches handouts
- ▶ Copy of *The Bletchley Riddle*

Uncovering Clues from the Past Continued

PART 1 | LOOKING BACKWARD! CONTINUED

Appeasement, the Munich Pact, and the Sudetenland

[World War II: The Munich Pact](#)

[Munich Pact Signed](#)

[Additional Teacher Resource for Planning Purposes | Ideas and Info](#)

Danzig and the Invasion of Poland

[Danzig](#)

[Britain Declares War on Germany](#)

- ▶ Instruct students to create a T-chart in their notes. Label the left side “Facts” and the right side “Effects.”

Facts	Effects

- ▶ Students list 5 facts that they learn about their topic on the left side of their chart and on the right side, how these facts may have pushed countries closer to World War II.

Wrap-Up

Come back together as a whole class for each group to discuss their findings, with the teacher supplementing any necessary information for comprehension.

Follow-up questions:

- ▶ What are some of the major events that led to World War II, and which countries were involved? Who played an essential role?
- ▶ How did the leaders of some of the nations respond or not respond to Hitler’s confrontational moves?
- ▶ Do you think their responses or lack of responses played a role in the advancement of the war? Explain. Focus here on **appeasement** and the decisions made at the meeting in Munich.

PART 2 | SPYING ON PRIMARY SOURCES!

Now that your student investigators have researched some of the events that led up to World War II, let’s have them take a look at the perspectives of those calling the shots. In fact, there were two key British figures who had very different opinions on how to react to Hitler and his demands. In this part of the lesson students will read excerpts of speeches from Neville Chamberlain, prime minister of the United Kingdom at the start of World War II, and Winston Churchill, a very vocal member of Parliament and soon-to-be prime minister of the United Kingdom.

Procedure

- ▶ Ask: Why are primary sources and first-hand accounts important in learning about history?
- ▶ Discuss the importance, authenticity, and originality of primary sources and first-hand accounts.
- ▶ Distribute the [Spying on Primary Sources worksheet](#).
- ▶ Read the introductory paragraph together.

Uncovering Clues from the Past Continued

- Define the term **appeasement**. | giving in to an aggressor to avoid conflict. Have students write the definition in their own words on the lines provided on the [worksheet](#).
- As a class, share everyday examples of appeasement. For example, perhaps when babysitting a demanding, cranky younger sibling, they agreed to give them more time watching television so they would stop crying!
- Introduce the two key figures. | Neville Chamberlain and Winston Churchill.
- Project each speech (or excerpts) and/or provide printed handouts of the speeches to students.

Neville Chamberlain speech | Peace in Our Time

Winston Churchill speech | Disaster of the First Magnitude

- Teacher reads both speeches related to the Munich Pact aloud, with students following along.
- Instruct students to listen for and spy clues (i.e., words, images, phrases) that reveal each speaker's views.
- Give your students a brain break with a little, fun decoding in between the speeches (see [worksheet](#)).
- Partners complete the worksheet, interpreting the clues in the British leaders' words that hint or reveal the speakers' perspectives on the Munich Pact.

Wrap-Up

Bring the class together. Review the worksheet. In reality, it was Chamberlain's plan that was followed, but Churchill was correct in that it led to war.

- Discuss the varying viewpoints of the British leaders.
- What words, phrases, images clued you into their viewpoint?
- What are their arguments for choosing the path they chose?
- In general, what is the purpose of appeasement? Does appeasing work? Explain. Did it work at the Munich meeting? Explain. As years pass, historians and others have more time to reflect upon and interpret historical events and global leaders' decisions. How might the idea of being on the "right" or "wrong" side of history change or evolve as we're able to learn and understand more about historical events with the passage of time? How might a society's current conditions affect how they interpret history?
- Why was Hitler not happy with the Sudetenland alone? Why did he want more and more land? Explain.
- Jakob explains "Book Code" in chapter 41. See if your students can use their spy brains, the rules of book code, and their copy of *The Bletchley Riddle* to create their own secret message that gives advice to the leaders of Britain regarding the start of World War II (see [worksheet](#)).

Assessments

- Evaluate student dialogue, group work, partner share, whole class discussion.
- Evaluate students' worksheets and analyses.

Extensions

- Consider working on the geography of Europe on the eve of World War II. Have students label the countries of Europe. Have them create a key to color code the countries that sided with Britain (the Allies) and those that sided with Germany (the Axis).
- Identify a current conflict in your world. Focus on the causes of the conflict. What is the perspective of each side involved in the conflict? Discuss the issue with your family or your teacher.

Lesson #2 | A War Fought at Home

Rationale

Although military campaigns and the soldiers fighting in World War II were alluded to in *The Bletchley Riddle*, the heart of this book lies among the citizens of England, specifically those working at Bletchley Park and living in London. Much like Lizzie and Jakob, real-life civilians played a vital role in the war effort. Connecting events from *The Bletchley Riddle* to primary sources, students will explore the government's use of propaganda, the ways civilians actively contributed to the war effort, and the sacrifices they made for the duration of the war.

Essential Questions

How did everyday British citizens play a vital role in World War II, and how did this affect their lives? How and why was propaganda used throughout the war?

Motivation

Lizzie tells us that she has many talents, but keeping secrets is NOT one of them. How well do you keep secrets? Have you ever been told something and then asked to not tell another living soul? How difficult was it for you to keep that secret? Is there ever a time when it is OK to share a secret? When would that be? But how would you know if you are sharing it with the right person? Ugh! Phew! Ugh! Lizzie was right! Secret-keeping is hard!

Procedure

Lizzie and Jakob, everyday citizens, are sworn to secrecy when they sign the Secrets Act. It is imperative that they don't reveal their important work to the wrong people. It is a sacrifice to live such a secret life. They and other citizens frequently encounter a pamphlet, poster, or government order reminding them they are at war and they must be careful who they trust. In this two-part lesson, students will examine actual propaganda messages sent out by the British government and how this affected citizens' lives. Students will also make propaganda posters of their own using actual messages from World War II.

PART 1 | THE SECRETS WE KEEP

Lizzie, Jakob, and everyone at Bletchley Park must obey the Secrets Act. They are frequently reminded of this by the British government through the use of propaganda hanging up around the Park and throughout England where their precarious adventures take them.

- ▶ Ask students what they know about **propaganda**. Define as a class.
 - ◆ Propaganda | Government-issued material, usually presented in an easy-to-read and sometimes humorous way. It is meant to persuade people to think or act in one way or another.
- ▶ Why might governments use propaganda? What are the positives and the negatives of using propaganda?
 - ◆ positive = persuasive, creates positive social change, brings people together
 - ◆ negative = manipulative, could spread misinformation, biased

Standards/Objectives: 7th/8th Grades

- ▶ **CCSS.ELA-Literacy.RI.7.4** | Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.
- ▶ **CCSS.ELA-Literacy.RH.6-8.7** | Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- ▶ **SJS 8: Diversity** | Students will respectfully express curiosity about the history and lived experiences of others and will exchange ideas and beliefs in an open-minded way.

Materials Needed:

- ▶ Copy of *The Bletchley Riddle*
- ▶ Projected or printed image of propaganda poster: *Careless Talk Costs Lives Campaign: Be Careful What You Say*
- ▶ Computer access for internet research
- ▶ Copies of student handout: *Propaganda & Persuasion*
- ▶ Art supplies: paper, colored pencils, markers, crayons

A War Fought at Home Continued

- Ask: What does it mean to **persuade**? Define as a class.
 - To Persuade | To convince someone to think or to do something; usually to get that person to see things the same way you do.
 - Think about how Lizzie persuaded Jakob to tell her some of his secrets. Lizzie is quite persuasive. Can you think of other times when she or other characters were being persuasive?
- Ask: Why did the British government want to persuade its citizens during World War II? Let's explore this a bit more.
- Project or distribute the printed propaganda cartoon:

Careless Talk Costs Lives Campaign: Be Careful What You Say

- Say: In *The Bletchley Riddle*, Lizzie and Jakob search for clues to solve the mystery of the disappearance of their mom. Use the same investigative skills to search for clues in this propaganda poster from World War II to figure out what messages the British government was sending to its citizens.
- As a whole class, discuss:
 - Who is the man pictured in this propaganda poster? How do you know that? What is he doing?
 - What does the caption mean when it says "on the wires"?
 - What specific images or symbols do you see in this poster? Why might the government's artist have used those specific images or symbols? What message do you believe the government is trying to communicate?
 - How and why does the artist use humor to get the government's message across?
 - Do you think this is a poster Lizzie and Jakob may have seen at Bletchley Park? Explain.
 - Explore more details surrounding the Secrets Act. What were the key elements of the act? What was the penalty for breaking the law? How might this poster connect with Lizzie and Jakob having to sign the Secrets Act?

Official Secrets Act 1911

The Official Secrets Acts and Official Secrecy

- Would you sign the Secrets Act if you found yourself in a similar situation as Lizzie and Jakob? Explain. If you were a government official during World War II, would you require employees to sign the act? Explain.
- Pair/Share! | Now, turn to a partner and discuss the following:
 - What was the artist's purpose for using Hitler specifically in this poster? Does using Hitler send a stronger message? If yes, how?
 - How does this poster give us some insight on the technology of the time? How would this poster be different if it were created in today's world?

Wrap-Up

- Come back together as a whole class.
- Pair/Share partners report their thoughts from their discussions.
- Imagine what it would be like to live every day worrying about who to trust and who was safe to speak with. How might this have affected everyday citizens in London during WWII?



A War Fought at Home Continued

PART 2 | PROPAGANDA EVERYWHERE!

Besides encouraging citizens to keep secrets, the government asked everyday people to do their part in the war effort in other ways. Small actions like planting a garden or recycling metal items had a big impact on fighting the Germans.

- ▶ Introduce your students to several key government propaganda programs the British government created to encourage civilians to support the war effort:

Dig for Victory | encouraged people to grow their own food in what they referred to as “Victory Gardens”

Save the Wheat—Help the Fleet | encouraged food rationing | also known as the ‘Kitchen Front’

Come into the Factories | urged women to take jobs in the factories to help in the war efforts

Save Paper Waste and Win with Tin | asked people to recycle household waste to be remade into munitions and other war materials

Buy War Bonds | encouraged citizens to buy bonds to raise money for the war

Careless Talk Costs Lives! | warned citizens to be careful who they spoke to

- ▶ Distribute the [Propaganda & Persuasion worksheet](#).
- ▶ Students conduct their own research to examine *actual* propaganda posters used by the British government to encourage its citizens to support the war effort. Suggested links below to support your favorite websites.

PART 1 | THE SECRETS WE KEEP CONTINUED

Teacher Resources

[Second World War National Archives Propaganda Posters](#)

[Imperial War Museum's Propaganda Collection](#)

[11 Amazing Home Front Posters From The Second World War](#)

[Posters - Second World War](#)

- ▶ Students work with a partner to choose one poster from their research and complete the first table on the worksheet, searching for clues and images that persuade citizens to participate and do their part to support the war effort.
- ▶ Give your students a brain break with a little, fun decoding in between the activities ([see worksheet](#)).
- ▶ Next, students will create their own propaganda poster. Using the second table on the worksheet to assist their planning, partners collaborate to choose a government program from their research (e.g., Dig for Victory, Win with Tin, secrecy, rationing, conservation) to create their own, new propaganda poster.

Wrap-Up

- ▶ Students present their posters. Consider visiting another classroom where students use their posters to teach a mini-lesson on propaganda.
- ▶ Review how everyday citizens were affected by participating in these government programs.
- ▶ Separate from propaganda and government programs, how else were people affected by World War II (think Mrs. Tilbury, Colin, Gran).

Assessments

- ▶ Evaluate student dialogue during group work, partner share, whole class discussion.
- ▶ Evaluate students' worksheets and poster presentations.

Extension

Propaganda is everywhere! Have students look for propaganda at home. When watching television or visiting the library or grocery store, can your students find messages from the local or national government? Have students share their findings in class.

Lesson #3 | Changes in Technology

Rationale

In this lesson, students will examine the technological aspects of the world wars side by side. Although the two wars were only twenty-one years apart, the advancements made in technology, including codebreaking and weaponry, were astonishing. Jakob acknowledges and appreciates the technology and hard work that came before him by the code breakers, one of them being his dad as he retells the story to Dilly Knox. And the level to which the people of Bletchley Park and London prepare for German attacks is a clear indication of the technological advancements made from the first world war to the second. Through historic photographs, your students will be transported back in time to see these technological elements of World War I and witness their evolution by World War II. To finish the lesson, students will experiment with some of this technology when creating their own codes.

Essential Questions

How does the technology of World War I compare with that of World War II? How did advancements in technology make World War II more destructive than World War I?

Motivation

Think of today's phones. What features do they have? What functions do they have besides making a phone call? Now, show your students a photo of a rotary phone or any phone older than a smartphone. What differences do you see? What do you think the older phone was able to do and not able to do? Can you even imagine a time before the phone was invented? Watch the following video from the Imperial War Museum:

[The Map Room at the Cabinet War Rooms](#)

What was the Beauty Chorus? Why were these telephones so important? What other everyday technological items can you compare for their function and importance to our lives?

Procedure

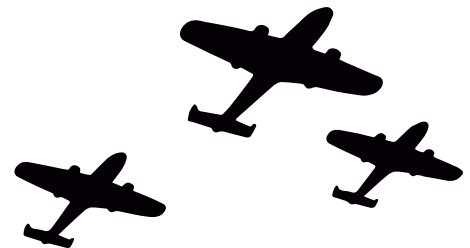
The Bletchley Riddle frequently mentions the notion of the Blitz. This term was used during both world wars to describe the bombing of England by the Germans. Frightfully, Lizzie and Jakob are in London during one of these attacks. You can reread the imagery at the beginning of chapter 88 to set the stage of how it might have felt to be the target of a German attack. Thank goodness Lizzie and Jakob are able to seek shelter in a basement and get out of London in one piece. They are needed back at Bletchley Park to break codes to help bring this war to an end!

Standards/Objectives: 5th/6th Grades

- ▶ **CCSS.ELA-Literacy.RST.6-8.9** | Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- ▶ **SEL Social awareness** | The abilities to understand the perspectives of and empathize with others, including those from diverse backgrounds, cultures, and contexts.
- ▶ **SJS 8: Diversity** | Students will respectfully express curiosity about the history and lived experiences of others and will exchange ideas and beliefs in an open-minded way.

Material Needed:

- ▶ Copy of *The Bletchley Riddle*
- ▶ Copies of the [Can You Spy the Changes worksheet](#)
- ▶ Copies of the [Make Your Own Cipher Template](#)
- ▶ Scissors
- ▶ Paper Fasteners
- ▶ Student Notebooks (for writing their own codes)



Changes in Technology Continued

PART 1 | TAKE COVER!

- ▶ Distribute the *Can You Spy the Changes worksheet*.
- ▶ Using the front of the worksheet, have students make observations of the planes and tanks of World War I and World War II.

Discussion points:

- ◆ Focus on the technological advances made between the wars and how those changes made the war a lot more destructive and scarier for soldiers and civilians. Consider projecting the images of the technological changes from the worksheet and asking students what they can guess/infer from the images.
 - The people of England knew how dangerous a German attack would be so they prepared themselves for the worst. Referred to as the Blitz, after the German strategy called **Blitzkrieg**, London was the central target of the German bombing.
 - Make connections with the new technology and London's preparations in *The Bletchley Riddle*. How does more advanced technology in warfare require more safety measures and preparations? How might this also have affected everyday people's emotions on the ground?
 - In chapter 31, the end of chapter 81, and the beginning of chapter 88 of *The Bletchley Riddle*, Lizzie describes some of the ways London prepares for the Blitz. Think about it like preparing your home for a hurricane or blizzard, only much worse! It is only natural to feel scared in a situation such as this one.
- ▶ These were worrisome times for people all over Europe, but code breakers were hard at work trying to predict and eventually prevent German attacks. Let's explore the technology shifts in codebreaking and get down to spy business using the back of the *Can You Spy the Changes worksheet*.
- ▶ Complete the Cryptology section of the worksheet.

Discussion points:

- In chapter 18, Jakob describes a cipher and how it works. The Caesar shift and many variations of the cipher were used throughout history, including both world wars. The cipher on the worksheet is just one example of a cipher.
- At the end of that same chapter, Jakob introduces the Enigma, which he refers to as the enemy. What might he mean by this? He continues in chapter 19 to explain how the Enigma turns one letter into another, but with the different rotors there are over a million ways to set up the Enigma to create a code! No wonder Jakob and his friends are working so hard to decipher German messages!
- ▶ After your students make their observations by looking at all of the devices on the worksheet, ask them to think about how the addition of new technology affects the complexity of code writing (and breaking!).

Discussion points:

- New technology took code-making from simple ciphers to machines that made codes for humans! Think about this: With the cipher wheel you examined on the worksheet there are a lot of combinations to try to figure out, but once you figure out the alignment, the rest of the letters fall into place. Simple, right? However with the Enigma, the addition of technology made it so there were multiple rotors (wheels with letters) plus a plugboard (panel for plugging in circuits that would swap letters) that greatly increased the number of combinations the Germans could use to make their code . . . and that made it much more difficult for Jakob and the others at Bletchley Park to crack! Phew!

Wrap-Up

- ▶ From the worksheet and our discussion today, how would you describe the changes in technology from World War I and World War II?
- ▶ Consider doing some research on the number of casualties in World War I and II.

Changes in Technology Continued

- How did the advancements in technology cause such an increase in the number of people who died, both soldiers and civilians, from World War I to World War II?

How Has War in the Air Changed Over Time?

- Consider conducting some research to discover some of the positive breakthroughs in medical technology made in World War II that helped save many lives. Other questions to consider asking:
 - Seems like new technology only brought about more devastation. But there were actually some encouraging developments. What positive impacts came out of new technology?

The Scientific and Technological Advances of World War II

Medical Improvements Saved Many Lives During World War II

PART 2 | A CODE-ALLY AWESOME TOOL

Now that students have explored how technology used in battle has advanced, making the war more destructive while bringing about some new positive discoveries, it's time to take a deeper dive into the more behind-the-scenes kind of technology—ciphers! Unlike Jakob and the others working at Bletchley, we will not be making our own Enigma machine. However, with some simple materials found around your classroom, your students will be able to make their own working ciphers!

- Using the [Make Your Own Cipher template handout](#), students cut out each circle, place the smaller circle on top of the larger circle, and clasp together by poking a hole in the center with a paper fastener.
- Turn the wheel to any position. Once in that position, have students make note of the letter the asterisk * lines up with. That will be the best way for them to keep track of the current code they are creating.
- Instruct students that the inner circle will be used as their “true” alphabet (the shaded top line in the diagram below). To write their coded message, students will write the letter that lines up with the true letter of their message. Have students look at Jakob’s instructions in chapter 18 for further assistance.
- In code, instruct them to write one fact they learned from this lesson about the changes in technology.
- Give students time to set up their ciphers and create coded messages with a partner to share with classmates. To avoid confusion, guide students to write their non-coded message first! Then they can create the coded message using their wheel as they choose to align it. Have them hide their original message so their classmates don’t see it. Your little spies and code makers are hard at work!
- For an extra challenge, instruct them NOT to tell their classmates where they set the * on their cipher. This extra bit of secrecy increases the difficulty. In chapter 38, recall how Jakob observes other code breakers mumbling, demonstrating short tempers, and even throwing things out of pure aggravation. Now Jakob’s and other code breakers’ frustration makes more sense!
- Swap coded messages with classmates. Could they solve your code using their ciphers?!

For example:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	!	*	\$	#
Z	!	*	\$	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y

HZF# TJPM JRI *J\$# = MAKE YOUR OWN CODE

Changes in Technology Continued

Wrap-Up

- ▶ Think about all the technology around you—from computer-animated movies to websites that tell you what time and place you can go see that movie. How do all websites and computers work? How does artificial intelligence (AI) work? What coding goes into today's drone technology used for war? These are all very complicated questions, but much of the answers come from code. Computer scientists and web designers program codes to create what we use everyday. For the remainder of the day, make a list of all the things you see and use that might have hidden code behind them. Something that we take for granted because it makes our lives easier, is actually quite complex! What other jobs in today's world use code to produce devices that we use everyday?

Additional Resources

[Before Bletchley Park | The Code Breakers of the First World War](#)

Assessments

- ▶ Evaluate student dialogue, group work, partner share, whole class discussion.
- ▶ Evaluate students' worksheets and coded messages/facts.

Extension

Technology changes so fast! Although you may not remember seeing drastic changes, I bet your parents, grandparents, or caretakers do!

- ▶ Set up an interview with an older person in your family, a close friend of the family, or a trusted adult in your community. Ask them if they can recall the technology of their childhood. Did they have a personal computer or a typewriter? A non-smart phone or a rotary phone? Did they play video games at home or in an arcade? Did video games even exist?! Just like being a good spy, being a good historian is about being a good listener. Ask, listen, document. How has technology changed in just a few decades, and how has that affected our lives?



Lesson # 4 | Give Credit Where Credit is Due

Rationale

What a wild ride full of secrets, spies, mysteries, and danger! Although *The Bletchley Riddle* doesn't bring World War II to an end in the plotline, the war ended with an Allied victory thanks to the work of hardworking code breakers, like Jakob and the others at the Park. In this lesson, we will look behind the scenes at the "geese that laid the golden eggs and never cackled," as Winston Churchill called the code breakers. The code breakers worked tirelessly throughout the war in secret. Let's unravel the mystery surrounding the men and women who worked at Bletchley and around the world, who fought World War II off the battlefields, by giving them the credit they deserve and learning more about their important work and its impact. (Fun Factoid: By the end of World War II, 75% of the workforce at Bletchley Park were women!)

Essential Questions

Who were the real people behind the codebreaking at Bletchley Park and other parts of the world, and how did their work affect the war?

Motivation

Have you ever stayed to watch ALL of the credits after a movie? There are hundreds of names. What jobs do they have? Would the making of some of your favorite movies even be possible without these seemingly unknown people?

Procedure

Like those "unseen" movie employees, the code breakers from Bletchley Park and other nations fighting for the Allied powers, remained behind the scenes during the war, but unlike the movies, these behind-the-scenes people worked in complete secrecy by order of the government. In fact, they weren't allowed to talk about what they worked on at Bletchley for another thirty years after the war ended! That's a long time to keep a secret. But lucky for us some of them finally told their stories. And now we get to do some investigating to find out who they were and what they did to help bring World War II to an earlier end.

- ▶ Set up the classroom in five stations before students arrive. Each station, or "Hut" as they were called at Bletchley Park, will consist of a photo and a piece of poster paper both hanging on the wall. Each station will be designated to a code breaker and/or mathematician whose work before, during, or after the war affected the outcome of the war. Some of these notable individuals may include

- | | |
|-------------------|-------------------|
| ◆ Alan Turing | ◆ Henryk Zygałski |
| ◆ Gordon Welchman | ◆ Jerzy Różycki |
| ◆ Dilly Knox | ◆ Mavis Batey |
| ◆ Marian Rejewski | ◆ Margaret Rock |

(Refer to the Historical Note at the back of the book for more information.)

Standards/Objectives: 5th/6th Grade

- ▶ **CCSS.ELA-Literacy.RI.5.2** | Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
- ▶ **CCSS.ELA-Literacy.W.5.7** | Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
- ▶ **SEL: Self-Management** | The abilities to manage one's emotions, thoughts, and behaviors effectively in different situations and to achieve goals and aspirations.

Materials Needed:

- ▶ Copy of *The Bletchley Riddle*
- ▶ Photographs of code breakers
- ▶ Poster paper
- ▶ Copies of *Give Credit Where Credit is Due* worksheet
- ▶ Access to laptops or computers with the internet
- ▶ Sticky notes

Give Credit Where Credit is Due Continued

The Research Race!

- ▶ Divide the class into groups, giving each group a pad of sticky notes, and clue them in on the details of the race.
 - ◆ Students will be using historically accurate websites or teacher-provided summaries of each of the individuals you selected for each station for this activity and writing their findings on the sticky notes. (Teacher resources below to help you get started.)
 - ◆ When the teacher says “On your mark, get set, to the Huts!”, each group will work quickly to read through the material to discover four facts about each code breaker.
 - ◆ For a little guidance, consider having students search for clues that relate to the following, but feel free to add your own!
 - where the code breaker was from (city, country)
 - what their job was (cryptanalyst/code breaker, mathematician)
 - what was their contribution to the war effort (cracked a specific code, built a machine, deciphered secret enemy messages)
 - an interesting fact of students’ choosing
 - ◆ Just like the code breakers at Bletchley Park needed to work swiftly before the Germans launched Operation Sea Lion, groups will have to determine the best strategy for quick and accurate collaboration to win the race!
 - ◆ As they write a fact on their sticky note, a designated group member will quickly affix the sticky note to the poster near that code breaker’s photo. Students will continue to gather information and stick the facts on the poster paper until time is called (perhaps 20 minutes depending on your class’ needs).
- ▶ For added competition and learning, go beyond four facts! Give each group different colored sticky notes and after time is called, see which color had the most facts posted. “Go Team (insert color)!!!”
- ▶ After the race, distribute the [Give Credit Where Credit is Due worksheet](#).

Gallery Walk!

- ▶ In their groups, students will complete the worksheet walking around to each Hut, gathering information based on the sticky notes posted to each station’s poster. They will fill in at least four different facts they learned from reading all the facts posted on their classmates’ poster papers.
- ▶ In the box on their worksheet, students may sketch a picture of their code breaker. You may also choose to have small printed photos of each individual for the students to tape or glue to the box.

Wrap-Up

- ▶ As a whole class, discuss their findings.
- ▶ How and why could the work done at Bletchley Park be considered part of the STEM field?
- ▶ Who do you think was the most interesting code breaker? Why?
- ▶ Do you think the work of any one code breaker was more important than another’s? Or was working as a collective group necessary to help bring the war to an end? Explain.
- ▶ Further, discuss the importance of collaboration in being able to complete this activity with their peers. Did they come up with a smart strategy to get the work done together as a group? What were some challenges? What benefits were there in working with a group?
- ▶ Celebrate the Research Race and Gallery Walk by having some coded fun! Have students use *The Bletchley Riddle’s* back of the book content to find the cipher provided and unlock the mystery title for the worksheet!

Give Credit Where Credit is Due Continued

Resources:

Bletchley Park Facts for Kids

Alan Turing and the Hidden Heroes of Bletchley Park

Who Were the Codebreakers?

The Women Code Breakers of World War II

Code Girls: The Untold Story of the American Women Code Breakers of World War II

The Female Code-Breakers Who Were Left Out of History Books

How Alan Turing Cracked the Enigma Code

Poland's Overlooked Enigma Codebreakers

Gordon Welchman

Mavis Batey

Rejewski & Enigma

Code Girls Facts for Kids

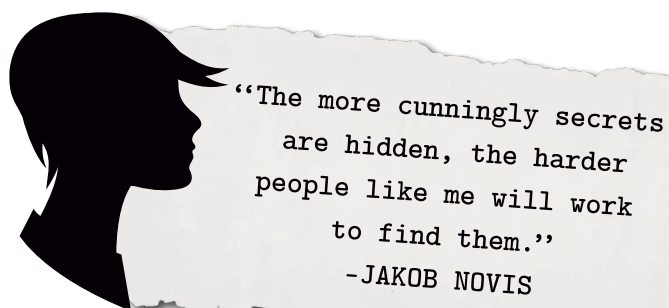
Assessments:

- ▶ Evaluate student dialogue, group work, partner share, whole class discussion.
- ▶ Evaluate students' [worksheets](#) and posters/notes.

Extension:

Do code breakers have a place in today's world? In the language of computers, coding is how humans speak to and tell computers and robots what to do! How is computer coding similar to the coding done at Bletchley Park? How is it different? Find a website that has simple programming instructions and try to write your own computer code. Here are some below to add to your favorites!

- ▶ <https://www.kodable.com/schools-and-districts#k-12>
- ▶ <https://www.rodocodo.com/free-coding-game-for-kids/>
- ▶ <https://www.coderkids.com/blog/top-10-free-coding-programs-for-kids>



"Allow me to explain something. I'm lying. And surprisingly, I'm quite good at it."
-LIZZIE NOVIS



BONUS!

Math Lesson: Math Activities and Handouts to Tie in Codebreaking