9.3.2	Unit Overview

Engaging in an Inquiry-Based, Iterative Research Process

Text(s)	Students choose texts for research based on their research question/problem. *Model Research Sources:* • "The Brains of the Animal Kingdom" by Frans de Waal (Source #1) • "Animal Minds: Minds of Their Own" by Virginia Morrell (Source #2) • "Think You're Smarter Than Animals? Maybe Not" by Alexandra Horowitz and Ammon Shea (Source #3) • "Monkeys Can Perform Mental Addition" (Source #4) • "Animal Intelligence: How We Discover How Smart Animals Really Are" by Edward Wasserman and Leyre Castro (Source #5)
Number of Lessons in Unit	12

Introduction

In this unit, students continue the research process begun in Unit 1. Students begin to deeply engage in this iterative, non-linear process with the goal of deepening students' understanding of topics of interest. Students continue to learn how to use the inquiry-based research process to gather, assess, read, and analyze sources, while organizing and synthesizing research to make claims about a specific research question or problem.

Students are formally introduced to the research process by creating a Research Portfolio and overviewing the Student Research Plan, a roadmap for students to reflect on their research progress and next steps. Students vet areas of investigation developed in Unit 1 to focus on a specific research question/problem. From there, students learn how to develop specific inquiry questions and choose credible, relevant, and accessible sources by planning for searches, assessing sources, and annotating and taking notes effectively. Through these inquiry steps, students create an initial research frame that guides independent searches. Using the reading skills developed in previous modules and the source assessment skills introduced in this unit, students conduct independent research by using inquiry

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questions to explore and deepen their understanding of their specific research question/problem. As the research process continues, students continually revisit the research frame to analyze their research direction and focus, while assessing and making changes as necessary. As this cyclical and iterative research process evolves, students begin to organize and synthesize their data, make claims about inquiry paths, and eventually craft the research question/problem itself.

There is one formal assessment in this unit; however, students continually reflect on their research progress by journaling about their research progress and next steps using a Research Journal. The End-of-Unit Assessment asks students to develop an Evidence-Based Perspective by writing a one-page synthesis of their personal conclusions and perspective derived from the research (W.9-10.7, W.9-10.9).

Note: This unit suspends Accountable Independent Reading (AIR). Students are held accountable for building a volume of independent reading as they read multiple sources and refine and deepen their understanding of their inquiry topic (research question/problem).

Literacy Skills & Habits

- Assess sources for credibility, relevance, and accessibility.
- Conduct independent searches using research processes including planning for searches, assessing sources, and annotating and recording notes.
- Develop, refine, and select inquiry questions for research.
- Develop and continually assess a research frame to guide independent searches.
- Collect and organize evidence from research to support analysis in writing.
- Make claims about inquiry questions, inquiry paths, and a research question/problem using specific textual evidence from the research.

Standards for This Unit

CCS Standards: Reading	
RI.9-10.1.a	**Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.** **a. Develop factual, interpretive, and evaluative questions for further exploration of the topic(s).**

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RI.9-10.7	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.

CCS Standards: Writing	
W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
W.9-10.4	**Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.**
W.9-10.7	**Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.**
W.9-10.8	**Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.**
W.9-10.9	**Draw evidence from literary or informational texts to support analysis, reflection, and research.**

CCS Standards: Speaking & Listening	
SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts,*

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	and issues, building on others' ideas and expressing their own clearly and persuasively.

CCS Standards: Language	
L.9-10.4. a,c,d	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Note: Bold text indicates standards that will be assessed in the unit.

Unit Assessments

Ongoing Assessment	
Standards Assessed	RI.9-10.1a, W.9-10.4, W.9-10.7, W.9-10.8, W.9-10.9,
Description of Assessment	Varies by lesson but may include completed research tools, responses to quick write questions focused on developing research skills, and vocabulary learned through research as tracked in the Vocabulary Journal.

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End-of-Unit Assessment	
Standards Assessed	W.9-10.7, W.9-10.9
Description of Assessment	• Students submit a completed Research Portfolio with the four sections organized including 1. Defining an Area of Investigation, 2. Gathering and Analyzing Information, 3. Drawing Conclusions, 4. Discarded Material *The Research Journal is also located in the Research Portfolio. • Students write a one-page synthesis of their personal conclusions and perspective derived from their research. Students draw on the research outcomes, as developed in the Organizing Evidence-Based Claims Tools to express their perspective on their respective research question/problem.

Unit-at-a-Glance Calendar

Lesson	Text	Learning Outcomes/Goals
1	Students choose texts for research based on their individual research question/problem.	Students are formally introduced to the research unit and construct a Research Portfolio to house all research previously conducted in Unit 1 and the research materials distributed and gathered in this unit. Additionally, students vet their 2–3 possible areas of investigation (from Unit 1, Lesson 10) to craft a rich and interesting research question/problem to explore throughout the unit.
2	Students choose texts for research based on their individual research question/problem.	Students engage in a research process check-in where they overview the Student Research Plan. The Student Research Plan serves as a guide to the research process and a place to reflect on next steps. Students review inquiry questions from Unit 1 and generate, vet, and refine specific inquiry questions for their research question/problem using a Specific Inquiry Questions Checklist.
3	Students choose texts for research based on	Students learn how to select inquiry questions, plan search location, and choose key words and phrases to conduct effective

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	their individual research question/problem. Model Source: "Animal Minds: Minds of Their Own"	and efficient research. Additionally, students learn how to formally assess sources by analyzing a source's relevance to the inquiry question and its credibility.
4	Students choose texts for research based on their individual research question/problem. Model Source: "Animal Minds: Minds of Their Own"	Students continue to learn how to assess sources more extensively by identifying credible, relevant, and accessible sources to prepare for conducting searches independently. In a classroom with technology access, students learn how to assess the sources they found in the previous lesson's activities and homework by answering in-depth questions to assess their potential sources.
5	Students choose texts for research based on their individual research question/problem. Model Source: "Animal Minds: Minds of Their Own"	Students learn how to close read important sources for selected inquiry questions through annotation and taking notes. Students learn how reading closely for information is different than annotating and taking notes on literary texts.
6	Students choose texts for research based on their individual research question/problem.	Students construct a frame to guide their research by establishing inquiry paths that allow students to explore various aspects of their research question/problem. Students organize, categorize, and refine their inquiry questions by inquiry path and independently develop a detailed, organized Research Frame.
7	Students choose texts for research based on their individual research question/problem.	Students begin conducting searches independently using the Research Frame and associated search tools. This lesson is the first of three lessons during which students conduct sustained, independent research during class. While researching, students consider how to use inquiry questions to drive research while continually assessing sources for credibility and usefulness in

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		answering inquiry questions. This lesson is the first of three independent search lessons that will be assessed using a Conducting Independent Searches Checklist.
8	Students choose texts for research based on their individual research question/problem.	Students continue to conduct searches independently using the Research Frame as a guide, with the associated search tools. This lesson is part two of the independent search process and builds on the previous lesson by focusing students on determining if the research they did is sufficient to address established inquiry paths and questions, and adjusting the search accordingly. Additionally, students are reading sources closely, analyzing details and ideas, and taking notes for each source to determine how it addresses inquiry questions and paths.
9	Students choose texts for research based on their individual research question/problem.	Students continue to conduct searches independently. This lesson is the last in a series of three lessons focused on conducting searches independently. This lesson focuses on all criteria of the research process addressed in the Conducting Independent Searches Checklist. In the lesson's closing, students evaluate their collective independent searches from lessons 7–9 using the Independent Searches Self-Evaluation Tool.
10	Students choose texts for research based on their individual research question/problem.	Students analyze and synthesize their research to make claims about inquiry questions within an inquiry path or the inquiry path question itself. Students complete at least two Forming Evidence-Based Claims Tools for all inquiry paths on the Research Frame. These initial claims are the foundation for the Evidence-Based Perspective students will develop in Lessons 11 and 12.
11	Students choose texts for research based on their individual research question/problem.	Students synthesize their claims (Forming Evidence-Based Claims Tools) from the previous lesson to develop comprehensive claims about each inquiry path in the Research Frame using an Evidence-Based Claims Tools. This work directly prepares students for developing and writing an Evidence-Based Perspective (End-of-Unit Assessment) in the following lesson. Students build on the claims created in the previous lesson to develop comprehensive claims that reflect a deeper understanding of the inquiry paths and the

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		research question/problem itself.
12	Students choose texts for research based on their individual research question/problem.	Students complete the End-of-Unit Assessment by conducting a final review of the Research Portfolio and writing an Evidence-Based Perspective based on the research outcomes from the unit. Students submit the final **Research Portfolio** and the Evidence-Based Perspective. The Evidence-Based Perspective is assessed using a rubric based on the Research Portfolio content.

Preparation, Materials, and Resources

Preparation

- Identify and contact the media specialist/librarian/person best positioned to assist students with conducting research
- Reserve computer lab or classroom with technology and Internet access for all students
- Print and annotate model sources (see page 1)

Materials/Resources

- Binders or Electronic Folders (for the Research Portfolio)
- Access to technology (if possible): interactive whiteboard, document camera, and LCD projector
- Copies of handouts and tools for each student: see materials list in individual lesson plans
- Highlighters
- Smart Board/Document Camera (optional)
- Copies of model source "Animal Minds: Minds of Their Own" for each student

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9.3.2 Lesson 1

Introduction

In this first lesson of the unit, students will be formally introduced to the research unit and continue the research process that began in Unit 1. The teacher will provide an overview of the research process and will engage students in vetting their 2–3 possible areas of investigation (Unit 1, Lesson 10) in order to craft a rich and interesting research question/problem that students will explore throughout the unit.

Students will begin the lesson by learning more about the research process and constructing the **Research Portfolio** to house all research previously conducted in Unit 1 and the research materials that will be distributed and gathered in this unit. Next, using the **Area Evaluation Checklist**, students will vet their 2–3 possible areas of investigation previously drafted in Unit 1, Lesson 10 and will independently select a specific area of investigation or research question/problem. The lesson will conclude with a Quick Write where students discuss their research question/problem and how they crafted it using the **Area Evaluation Checklist** to vet the possible areas of investigation. For homework, students will use the **Pre-Search Tool** from Unit 1 to search for two sources related to the research question/problem drafted in the lesson. Students will prepare to discuss how the two sources connect to the research question/problem for the following lesson.

Standards

Assessed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Addressed Standard(s)	
W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

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Assessment

Assessment(s)
The learning in this lesson will be captured through a Quick Write at the end of the lesson. • Describe how you arrived at your specific research question/problem through the vetting process conducted in the lesson. Explain how the Area Evaluation Checklist led you to crafting and selecting your specific research question/problem.
High Performance Response(s)
A high performance response may include the following: • Through the vetting process in the lesson I selected the research question/problem: How does animal intelligence compare to human intelligence? Grandin argues that normal people do not realize the intelligence animals may possess. Grandin even says that animals may have an "animal genius" similar to autistic savants. The checklist helped me figure out that my other possible areas of investigation were weaker than the animal intelligence topic. The questions for the topic of animal intelligence are deep and will allow for plentiful research, including: How do researchers measure animal intelligence? What kinds of complex decisions do animals make? And what does animal intelligence look like and how is it different from human intelligence? All of these questions will lead to interesting and extensive research as opposed to some of the questions for my other possible areas of investigation. The research question/problem is related to the larger topic of animal intelligence, which is the focus of Grandin's work. Grandin is seeking more information about how animals think and show their own intelligence. My specific research question/problem is related to this topic but I want to know more about animal intelligence and how it compares to human intelligence. Our understanding of human intelligence is wide-ranging, and I think comparing animal intelligence to human intelligence might result in some surprising or interesting findings. I am interested in this area of investigation probably because I like animals. But Grandin made me think about more than just liking animals. What if animals are intelligent? How can we find out if they are and what can we do with this knowledge? I think this information will be extremely interesting, and the different pathways the area of investigation could take will be engaging enough to explore.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• sustained (v.) – kept up or continued, as an action or process

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• self-generated (adj.) – made without the aid of an external agent; produced spontaneously • vetting (v.) – appraising, verifying, or checking for accuracy, authenticity, validity
Vocabulary to teach (may include direct word work and/or questions)
• inquiry (n). – the act of seeking information by questioning • synthesize (v). – to combine into a single unit or unified entity

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text:	
• Standards: W.9-10.7, W.9-10.4	
Learning Sequence:	
1. Introduction to Lesson Agenda	1. 15%
2. Homework Accountability	2. 5%
3. Introduction to Research Process and Resources	3. 25%
4. Vetting Areas of Investigation	4. 40%
5. Quick Write	5. 10%
6. Closing	6. 5%

Materials

- Student copies of the 9.3 Common Core Learning Standards Tool (refer to 9.3.1 Lesson 1)
- Student copies of the Area Evaluation Checklist (at least 3 blank copies for each student) (refer to 9.3.1 Lesson 10)
- Binders or Electronic Folders (for the Research Portfolio)
- Students' 2–3 Areas of Investigation (refer to 9.3.1 Lesson 10, End-of-Unit Assessment, Part 2)
- Student copies of the Pre-Search Tool (refer to 9.3.1 Lesson 8)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	Percentage indicates the percentage of lesson time each activity should take.

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no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
🗨	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction to Lesson Agenda 15%

Begin by reviewing the agenda and sharing the assessed standard for this lesson: W.9-10.7. Students will begin the lesson by learning more about the research process and constructing the Research Portfolio to house all research previously conducted in Unit 1 and the research materials that will be distributed and gathered in this unit. Next, using the Area Evaluation Checklist, students will vet their 2–3 possible areas of investigation previously drafted in Unit 1, Lesson 10 and will independently select a specific area of investigation or research question/problem. The lesson will conclude with a Quick Write in which students will discuss their research question/problem and how they crafted it using the Area Evaluation Checklist to vet the possible areas of investigation.

- Students look at the agenda.

Explain to students that they will be assessed on a new standard: W.9-10.7. Ask students to individually reread standard W.9-10.7 and assess their familiarity with and mastery of the standard on the 9.3 Common Core Learning Standards Tool. Ask students to write down what they think are the large ideas in the standard and discuss with a classmate.

- Students read standard W.9.10.7, write down their ideas, and talk with a classmate.

ⓘ The 9.3 Common Core Learning Standards Tool was distributed in Unit 1, Lesson 1.

Lead a share out of the standard's large ideas.

🗨 Student responses should include the following:

- conduct short as well as more sustained research projects
- answer a question (including a self-generated question) or solve a problem
- narrow or broaden the inquiry when appropriate
- synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation

If necessary, define the words *sustained* (kept up or continued, as an action or process) and *self-generated* (made without the aid of an external agent; produced spontaneously) for students.

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- Students listen.

Ask students to consider the meaning of *inquiry* in the context of the standard.

- Students responses may include the following:
  - The standard is about conducting research, which means looking for information.
  - The verb is "to inquire," which means to look for information.

If necessary, define the word *inquiry* (the act of seeking information by questioning) and explain that the research process taught in this unit is based on inquiry and that questioning will play a vital role in exploring a specific research question/problem.

- Students listen.

Ask students to consider what action, in the context of this inquiry process, does the meaning of the verb *synthesize* ask for.

- The verb appears just before "multiple sources" is mentioned. If you gather information from more than a single source you have to compare, discuss, draw conclusions from multiple sources; this is likely to be what *synthesize* means.

If necessary, define the word *synthesize* (to combine into a single unit or unified entity) and explain to students that after plenty of research, they will draw conclusions or synthesize the research to make claims about the research question/problem. However, this action will come towards the end of the unit, after plenty of research and analysis has been conducted.

- Students listen.

Activity 2: Homework Accountability 5%

Inform students that during Unit 2, they will not be assessed on their Accountable Independent Reading. Instead, homework assessments will be an extension of the learning from the lesson. Students will also be expected to conduct research activities outside of class. They will build a volume of independent reading as they read multiple sources and refine and deepen their understanding of their inquiry topic (research question/problem). Remind students to continue to record new vocabulary words in their vocabulary journals when conducting independent searches for homework.

- Students listen.

ⓘ A formal review of the Unit 1 End-of-Unit Assessment is not conducted here for pacing concerns. Consider distributing the assessed Unit 1 End-of-Unit Assessment to each student for review

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purposes. Considering meeting with students who struggled with the End-of-Unit Assessment as soon as possible to provide extra support.

Activity 3: Introduction to Research Process and Resources 25%

Explain to students that in Unit 2 they will continue the research process begun in Unit 1. Additionally, students will use a set of tools that will help them organize and synthesize the information they gather across sources.

- Students listen.

Remind students that in Unit 1 they already engaged in identifying topics and narrowing down those topics into 2–3 possible areas of investigation. Inform students that in Unit 2, they will narrow down the 2–3 possible areas of investigation even further into a specific research question/problem they will explore through formal research by following multiple steps that will repeat themselves throughout the process. Explain to students that inquiry-based research is cyclical and they will repeatedly refine and redirect their search as they deepen their understanding of the research question/problem (area of investigation).

Begin by discussing the nature of this type of research. Explain to students that researchers follow a general iterative (repetitive) process and use tools and strategies to find, analyze, and organize information from sources that they read. Good researchers follow the data, which enables them to consider multiple points of view. Researchers conduct research not in order to support a point of view that is previously established, but to establish one through discovering new information, developing new ideas and drawing conclusions along the way. Explain to students that there are multiple steps in the process and many of the steps will be repeated; this type of research is not a sequential list of steps but a cyclical and iterative process where new directions and paths could be created at different points in the process.

- Students listen.

Explain to students that research is a form of exploration. They will be taught to use a set of skills like asking questions, conducting inquiries, and gathering reliable information. They will learn how to organize, make connections, and analyze the information they gather. This process will show students how to deepen their understanding of a specific research question/problem.

Ask students to consider what may be some of the purposes for conducting research. Remind them that they already know of at least one researcher, Temple Grandin, whose research serves multiple purposes. Inform students that additionally, many of the sources they will encounter (and end up using to support their claims) will also be based in research.

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- Student responses may include:
  - Grandin did research to help farmers and animals.
  - She researched to find solutions to problems that she saw. For example, animals were being mistreated and slaughtered inhumanely. She used research to find a more humane way of doing things.
  - In some history classes we talk about how historians use research to find more about historical events. They explore topics using primary sources and analyze those to discover how events unfolded.
  - Some journalists write about political campaigns. If they want to learn more about political candidates they examine their records, how they voted in the past and what they said in their speeches.
  - TV shows about nature have a lot of research in them. They begin with investigating potential areas of interest and using what they learn to narrow their investigation. These shows always have a lot of information focused on a specific topic to share with the audience. It seems like the research in these shows is to give people information about a specific topic.

Inform students that throughout the research process they are expected to use a structured organizational system for annotating, recording notes, analyzing sources, and sorting information. As students work though the research steps, they will construct a Research Portfolio consisting of various tools, handouts, checklists, and sources that guide, store, and organize their research and analysis. Explain the sections of the Research Portfolio:

- Section 1: Defining an Area of Investigation – This section stores all the work you do exploring the topic and choosing an area of investigation (research question/problem).
- Section 2: Gathering and Analyzing Information – This section stores all the information you gather throughout your investigation. It also stores your notes and analysis of sources.
- Section 3: Drawing Conclusions – This section stores your Evidence Based Claims about inquiry questions and Inquiry Paths and the personal perspective that you come to at the end of your inquiry.
- Section 4: Discarded Material – This section stores all the sources and analysis that you have discarded throughout your investigation. The purpose of this section is to keep a record of discarded materials until the end of the research process in case you change your mind and want to use them.

ⓘ Consider displaying the Research Portfolio sections for students to see.

Distribute binders and instruct students to create the four sections of the Research Portfolio and place all the research material from Unit 1 in Section 1.

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- Students create the four sections of the Research Portfolio and place the research materials from Unit 1 in Section 1.

ⓘ Consider using a form of electronic folders or other technological media to house the Research Portfolio contents. For teachers who choose to use Google Drive and/or other cloud-based online organizational formats, be sure to display sample folders and sub-folders on a smart board for students to see.

Activity 4: Vetting Areas of Investigation 40%

Share with students that they will be narrowing down the 2–3 areas of investigation crafted in Unit 1, Lesson 10's End-of-Unit Assessment into a research question/problem that will guide their inquiry for the rest of the unit. Explain to students that they will be using an Area Evaluation Checklist to vet their areas of investigation, so they can craft and select a research question/problem that will sustain effective research for the duration of the unit.

- Students listen.

Distribute students' 2–3 possible areas of investigation from Unit 1, Lesson 10 End-of-Unit Assessment.

- Students examine their 2–3 possible areas of investigation from Unit 1, Lesson 10 End-of-Unit Assessment.

ⓘ Unit 1, Lesson 10 End-of-Unit Assessment Part 2 prompt was the following: Articulate in writing 2–3 areas of investigation and describe how and where each area emerged from the Grandin text. Consult the **Tracking Topics Tool** and **Exploring a Topic Tool** as well as notes from the Grandin text.

Inform students that throughout Unit 2, the following research question/problem will be used to model the research process: How does animal intelligence compare to human intelligence? Explain to students that by using the Area Evaluation Checklist, they will learn how to craft and select their own research questions/problems from their Unit 1 areas of investigation. Inform students that this research question/problem is a model only and not an exemplary response to follow or mimic. Remind students they are required to follow their own inquiry as established by the research question/problem they will select in this lesson.

- Students listen.

Distribute a blank Area Evaluation Checklist to each student.

- Students examine a blank Area Evaluation Checklist.

ⓘ Distribute at least 2–3 blank copies of the Area Evaluation Checklist. Students will need to complete a checklist for each area of investigation from the Unit 1, Lesson 10 End-of-Unit Assessment.

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Remind students of the three model areas of investigation from Unit 1, Lesson 10:

- (Topic: Animal Intelligence) Area of Investigation: How does animal intelligence compare to human intelligence?
- (Topic: Laboratory Experiments on Animals) Area of Investigation: What are some benefits to experimenting on animals? Are all experiments harmful to the animal being studied?
- (Topic: Autistic Savants) Area of Investigation: Who are famous autistic savants from history?

  - Students listen.

ⓘ Consider displaying the three model areas of investigation for students to see.

Model for students how to use the Area Evaluation Checklist to vet a model area of investigation from above.

Explain to students that *vetting* means appraising, verifying, or checking for accuracy, authenticity, or validity and that students will be appraising their 2–3 areas of investigation for accuracy and validity using the Area Evaluation Checklist. Inform students the first area of investigation that will be modeled for vetting is the one about animal intelligence.

  - Students listen and following along with the modeling.

ⓘ Consider displaying the Area Evaluation Checklist for students to see the modeling.

Explain to students that the first part of the Area Evaluation Checklist calls for the researcher to clearly articulate his/her area of investigation in a way that others understand and makes sense. The area of investigation should demonstrate that the researcher has a coherent vision of his/her area of investigation. For example: In Unit 1, Grandin argues that many normal people do not realize that animals are intelligent or do not realize how they are intelligent. She even moves beyond discussing intelligence and claims that animals might even have a form of "animal genius." The word "genius" implies intelligence and an intelligence that many "normal" humans do not have. My area of investigation is animal intelligence, or more specifically animal intelligence and its comparison to human intelligence.

  - Students listen and follow along with the modeling.

Explain to students that the second part of the Area Evaluation Checklist calls for the researcher to think about what thoughtful questions are necessary in order to truly explore the area of investigation. These questions should allow for extensive research of the area of investigation but with available resources that are credible or academic in nature. Some of these questions may include:

- How do researchers measure animal intelligence?
- What kinds of complex decisions do animals make?

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- What does animal intelligence look like and how is it different than human intelligence?

Explain to students that the above questions would allow for interesting and rich research in the area of investigation and would contribute to a deeper understanding about it.

- Students listen and follow along with the modeling.

ⓘ Consider engaging students in the model vetting process by asking for additional questions that would lead to an understanding of the model area of investigation.

Explain to students that the third part of the Area Evaluation Checklist calls for an explanation of how the area of investigation is relevant to a larger topic. Remind students that at the beginning of the research process, while reading Grandin's text *Animals in Translation*, the focus on animal intelligence seemed interesting. It was from the broad topic of animal intelligence that the area of investigation was derived, especially after considering Grandin's claim that animals might have genius comparative to humans, like autistic savants. This idea of comparing animal intelligence and human intelligence seems interesting.

- Students listen and follow along with the modeling.

Explain to students that the fourth part of the Area Evaluation Checklist calls for the researcher to illustrate the reason for his/her curiosity and why it would be valuable to explore. Explain to students that if animals have intelligence that is unknown or misunderstood, humans could benefit by finding out more and using this animal knowledge to their advantage. Plus, it would be valuable to find out more about human intelligence by exploring animal intelligence.

- Students listen and following along with the modeling.

Model for students how to craft the potential area of investigation into a problem or overarching question by writing on the bottom of the Area Evaluation Checklist: How does animal intelligence compare to human intelligence? Explain to students that the area of investigation is leading to this idea of comparing human intelligence to animals and that the scope and relevance of the research question problem seems interesting and global enough to provide for good inquiry/research.

- Students follow along with the modeling.

ⓘ Remind students to avoid research problems/questions that lead to yes or no answers since those close rather than open inquiry. For example: Are antibiotics in cattle good or bad for humans? Or Are humans smarter than animals?

ⓘ Consider modeling how to vet one of the other two model areas of investigation from Lesson 10, Unit 1. Students might benefit from seeing multiple areas of investigation vetted to craft the richest research questions/problems possible.

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Instruct students to independently vet their 2–3 areas of investigation from Lesson 10, Unit 1 (End-of-Unit Assessment), using the Area Evaluation Checklist.

- Students independently vet their areas of investigation from the Unit 1 End-of-Unit Assessment using the Area Evaluation Checklist.

Circulate around the room to monitor students' progress.

ⓘ Students will need one Area Evaluation Checklist for each area of investigation, so distribute 2–3 blank checklists to each student.

Explain to students that they should now decide which vetted area of investigation produces the richest and most interesting research question/problem for exploration/research. Instruct students to look at their Area Evaluation Checklists for each area of investigation, specifically focusing on the bottom part of the checklist where the research question/problem was developed.

- Students examine the Area Evaluation Checklist for each area of investigation and select the research problem/question that would be the most interesting or rich to explore/research.

Lead a share out of the students' research questions/problems.

- Student responses may include the following:
  - Many children fail algebra in school, not only autistic children. How can the information that Grandin provides about visual thinkers open a discussion about the instruction of algebra?
  - Grandin's book portrays her ability to understand and therefore help solve problems with cattle. What is the cattle industry's perspective of Grandin's work?
  - Grandin says that "horses are especially good for teenagers." What do studies reveal about the influence of owning horses or dogs and their impact on teenagers?

ⓘ Consider writing students' research questions/problems and their corresponding name on chart paper, so students know who they can rely on for peer support with regards to related research questions/problems.

Activity 5: Quick Write 10%

Instruct students to briefly in writing respond to the following prompt:

Describe how you arrived at your specific research question/problem through the vetting process conducted in the lesson. Explain how the Area Evaluation Checklist led you to crafting and selecting your specific research question/problem.

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- Students independently answer the prompt using today's Area Evaluation Checklists and the selected research question/problem.

ⓘ Display the prompt for students to see, or provide the prompt in hard copy.

- See the High Performance Response at the beginning of this lesson.

Collect the Quick Writes as students finish.

- Students turn in the Quick Write.

ⓘ Consider using the Area Evaluation Checklist to assess the Quick Write.

Activity 6: Closing 5%

Display and distribute the homework assignment. For homework, instruct students to use the Pre-Search Tool from Unit 1 to search for two sources related to the research question/problem drafted in the lesson. Students will prepare to discuss how the two sources connect to the research question/problem for the following lesson.

- Students follow along.

Homework

Use the Pre-Search Tool from Unit 1 to search for two sources related to the research question/problem drafted in the lesson. Prepare to discuss how the two sources connect to the research question/problem for the following lesson.

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9.3.2 Lesson 2

Introduction

In this lesson, students learn how to generate more specific inquiry questions to frame their research. Students were introduced to inquiry questions in Unit 1, but will learn how to craft specific inquiry questions for their formal research question/problem (area of investigation) developed in the previous lesson.

In the beginning of the lesson, students engage in a research process check-in during which they overview the **Student Research Plan**. The **Student Research Plan** serves as a guide to the research process and a place to reflect on next steps. Next, students review inquiry questions from Unit 1 and help generate inquiry questions for their peers' research question/problem. Individually, students then use a **Specific Inquiry Questions Checklist** to vet the inquiry questions brainstormed by their peers and finalize a list of at least five specific inquiry questions that will guide their research. For the lesson assessment students select and submit their two strongest questions. For homework, students continue to craft, vet, and refine five more specific inquiry questions for their research question/problem using the **Specific Inquiry Questions Checklist**.

Standards

Assessed Standard(s)	
RI.9-10.1.a	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. a. Develop factual, interpretive, and evaluative questions for further exploration of the topic(s).
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Addressed Standard(s)	
SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively.

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Assessment

Assessment(s)
Students generate at least five specific inquiry questions that will guide their research. Students turn in two of these questions for assessment purposes. ⓘ This assessment is evaluated using the Specific Inquiry Questions Checklist.
High Performance Response(s)
A High Performance Response may include the following: • The inquiry questions developed depend on the students' specific research problem/question (area of investigation). Teachers can use the Inquiry Questions Checklist criteria to guide their assessment of the students' two specific inquiry questions. • Examples of specific inquiry questions for the model research question/problem: "How does animal intelligence compare to human intelligence?" are the following: o How do researchers measure animal intelligence? o How can animal intelligence be used to benefit humans? o What characteristics do the animal and human brain share? o What kinds of complex decisions do animals make? o What does animal intelligence look like and how is it different from human intelligence? o What animals have "genius-like" qualities and how do we know?

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• factual (adj.) – based on or restricted to facts • interpretive (adj.) – serving to explain or provide the meaning of • evaluative (adj.) – serving to determine the significance, worth, or quality of • cyclical (adj.) – recurring or evolving in cycles
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

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Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text:	
• Standards: RI.9-10.1.a, W.9-10.7, SL.9-10.1	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability	2. 5%
3. Research Process Check-In	3. 5%
4. Inquiry Questions Review	4. 10%
5. Small Group Brainstorm	5. 30%
6. Vetting Specific Inquiry Questions	6. 20%
7. Finalizing Specific Inquiry Questions	7. 20%
8. Closing	8. 5%

Materials

- Student copies of the **9.3 Common Core Learning Standards Tool** (refer to 9.3.1 Lesson 1)
- **Research Portfolio** (students have this)
- Student copies of the **Pre-Search Tool** (refer to 9.3.1 Lesson 8)
- Copies of the **Student Research Plan** for each student
- Copies of the **Specific Inquiry Questions Checklist** for each student

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	Percentage indicates the percentage of lesson time each activity should take.
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
🗨	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

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Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the lesson agenda and assessed standards for this lesson: RI.9-10.1.a and W.9-10.7. Explain that in this lesson, students learn how to generate specific inquiry questions to frame their research. First, students engage in a research process check-in where they overview the Student Research Plan. Then, students work in small groups to help generate inquiry questions for their peers' research question/problem. Using an Inquiry Questions Checklist to vet the inquiry questions brainstormed, students finalize a list of at least five specific inquiry questions that will guide their research. Students turn in two of these specific inquiry questions for assessment purposes.

- Students look at the agenda.

ⓘ Students were introduced to W.9-10.7 in the previous lesson.

Explain that students will be assessed on a new standard: RI.9-10.1.a. Ask students to individually reread standard RI.9-10.1.a and assess their familiarity with and mastery of the standard on the 9.3 Common Core Learning Standards Tool.

- Students read standard RI.9-10.1.a.

ⓘ The 9.3 Common Core Learning Standards Tool was distributed in 9.3.1, Lesson 1.

Explain that this standard is assessed because as part of today's lesson, students will generate and craft a variety of inquiry questions including *factual*, *interpretive*, and *evaluative* questions. As necessary, explain to students the definitions of *factual* ("based on or restricted to facts"), *interpretive* ("serving to explain or provide the meaning of"), and *evaluative* ("serving to determine the significance, worth, or quality of questions").

Explain that later in the lesson students will craft specific inquiry questions that explore their topics through these types of questions.

- Students listen.

Activity 2: Homework Accountability 5%

Direct students to take out the Pre-Search Tool from the previous lesson's homework. Instruct students to form pairs and share two sources they discovered relating to the research question/problem and explain how the two sources connect to the research question/problem.

- Student responses will vary based on individual student's research question/problem. Sample responses might sound like the following:

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- I found an article, "Think You're Smarter Than Animals? Maybe Not," that it is about animals being more intelligent than humans. It fits with my research question/problem because I am looking to compare animal and human intelligence.
- I found an article, "Monkeys Can Perform Mental Addition," that it is about monkeys being able to perform mental math. Monkeys can mentally manipulate representations of numbers to add. This fits with my research question/problem because it is one example of animals that perform the same type of thinking that humans do. This relates to my research question/problem because I am comparing animal and human intelligence.

ⓘ Consider circulating during the partner discussion to monitor students' homework completion.

Activity 3: Research Process Check-In 5%

Explain that students will be tracking the research process at the beginning of most lessons to ensure they understand the research steps, their questions are answered, their concerns are addressed, and progress is made. Instruct students to take out their Research Portfolios.

- Students listen and take out their Research Portfolios.

ⓘ Research Portfolios were developed in the previous lesson.

Distribute the Student Research Plan to each student. Explain that this plan helps them track their research progress by describing the research process outcomes they should see at each step, and supporting students in journaling about their research progress and next steps. Remind students that the research process is iterative and cyclical, as the Research Plan indicates. There are specific steps that are "completed," but many steps in the process will need to be repeated or returned to because research develops and builds on itself and can lead to different paths that may need to be explored.

- Students listen and examine the Student Research Plan.

ⓘ Consider defining the word *cyclical* ("recurring or evolving in cycles") for students so they understand the research process is a cycle and not a linear process.

Instruct students to examine Part 1 of the Student Research Plan. Remind them that some of these research processes were conducted in Unit 1.

ⓘ The research processes addressed in Part 1 of the Student Research Plan will be completed in this lesson and students will journal about their research progress and next steps in the following lesson using the Student Research Plan.

Instruct students to file the Student Research Plan in the front of the Research Portfolio in Section 1.

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Activity 4: Inquiry Questions Review 10%

Instruct students to do a Turn-and-Talk to review inquiry questions (taught in Unit 9.3.1) by answering the following questions.

What is the purpose of asking inquiry questions?

- Student responses may include the following:
  - To guide an exploration of a topic by identifying the various aspects of a topic through questions.
  - To use for pre-searches to find out information you want to know.
  - The inquiry questions can allow you to identify which parts of the topic provide the most relevant and rich information, while also helping identify which parts of the topic may not be useful or pertinent.

What are key components of effective inquiry questions?

- Student responses may include the following:
  - The questions should lead to rich and relevant knowledge and information.
  - They should be questions you want to answer.
  - They are questions that can truly be answered through research.
  - They should be questions that are clear or easily understood.
  - The questions should lead to multiple answers or more questions.
  - They are questions that you do not already know the answer to.

ⓘ **Differentiation Consideration:** If students need help with this review, instruct them to reference the Posing Inquiry Questions Handout from Unit 9.3.1, Lesson 3.

ⓘ Consider reminding students of the language of standard RI.9-10.1.a discussed in the lesson opening. The inquiry questions they develop should seek answers regarding facts, explanation/understanding, and evaluation. There should be several inquiry questions developed in each of these categories.

ⓘ Consider writing notes from the discussion for students to see and apply during the small group brainstorm.

Remind students that, in Unit 1, they posed inquiry questions as an exploratory process to identify general areas of interest and confirm that a topic or area of investigation could be supported through research. The questions were more general in nature. The role and nature of the inquiry questions change now that students have established a research problem/question. The questions become more specific, the "frame" to guide the exploration of the research question/problem. Explain to students that the focus of the following activity, the small group brainstorm, is to generate inquiry questions. Students

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should try to think about specific inquiry questions but the goal of the brainstorm is to generate a large number of questions. Later in the lesson, students will vet the questions for specificity.

- Students listen.

Share with students the model research question/problem from Lesson 1: How does animal intelligence compare to human intelligence?

- Students listen.

Instruct students to form pairs to do a Turn-and-Talk about three possible inquiry questions that might frame effective research for the model research question/problem.

Lead a share out of the possible inquiry questions and write them on the board or chart paper as examples for students to see.

- Student responses may include the following:
  - Do animals think like humans?
  - Can animals make decisions?
  - How can we measure animal intelligence?
  - Why should animal intelligence be explored?
  - What characteristics do animals and humans share when it comes to intelligence?

ⓘ At this point in the lesson, the sample student responses do not need to be ideal inquiry questions yet. Later in the lesson, students will vet questions and refine them into stronger and more specific inquiry questions that yield more than yes/no answers.

Activity 5: Small Group Brainstorm 30%

Inform students they will participate in a small group brainstorm to help them generate inquiry questions that explore as many possible aspects of their individual research question/problem as possible. The goal is for each student to walk away from the brainstorm with a plentiful volume of questions that can later be condensed and refined to frame their specific research question/problem. Remind students that the questions could be seeking factual answers, explanation, understanding, or evaluation, or a combination of some or any of these.

- Students listen.

Explain the directions for the small group brainstorm. Each student in the small group presents their research question/problem to the group. The group then generates as many inquiry questions as possible for that individual student's research question/problem. The student presenting a research

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question/problem records the questions the group has brainstormed. The process continues until all students have presented their individual research question/problem and the rest of the group has brainstormed questions.

- Students listen.

TA*Explain to students that in this lesson, they will continue the work of collaborative discussion outlined in SL.9-10.1, to which students were previously introduced. Remind students these discussion strategies have been taught in previous modules.

SA*Students listen.

Instruct students to transition into small groups and complete the inquiry question brainstorm for each student in the group.

- Student questions will vary; questions brainstormed depend on the students' individual research questions/problems.

ⓘ Students learned about crafting and refining inquiry questions in Unit 1. However, if students struggle during the small group activity to brainstorm effective inquiry questions, consider using the Specific Inquiry Questions Checklist when circulating to support students who are struggling. Recommend that students consider the checklist's criteria when brainstorming possible inquiry questions.

ⓘ Encourage students to build on and borrow questions from each other as they brainstorm. Many research questions/problems may be related since all of the students generated their areas of investigation from the Grandin text in Unit 1.

ⓘ Consider reassuring students that they should not worry about the specificity of the questions right now; for the purpose of the small group brainstorm, students need to help their peers generate as many inquiry questions as possible for their research problem/question.

ⓘ Consider reminding students of the skills inherent in the sub-standards of Standard SL.9-10.1, to which students were previously introduced.

ⓘ Consider placing students in small groups that will remain consistent throughout the module. Form groups ahead of time to maximize the range of different research topics and questions within each group. (For example, one group might consist of a student researching potential causes of autism, the impact of B.F. Skinner on modern psychology, factory farming/slaughterhouses and animal welfare, and the advantages of visual thinking.) The goal of these groups is to create small communities of inquiry/research teams that provide support and are accountable to each other. Students should know about their teammates' research question/problem. Students should share claims and evidence that arise from their individual inquiry and learn from each other's

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research processes, which they may use to potentially refine their own research questions/problem and inquiry questions.

Activity 6: Vetting Specific Inquiry Questions 20%

Transition students into a whole-class structure and distribute the Specific Inquiry Questions Checklist to each student. Explain to students that in this part of the lesson they use the Specific Inquiry Questions Checklist to vet, select, and refine at least five specific inquiry questions from the previous small group brainstorm activity.

- Students listen and examine the Specific Inquiry Questions Checklist.

Model for students how to use the Specific Inquiry Questions Checklist using a question brainstormed in the Inquiry Questions Review Activity (Activity #4).

Instruct students to look at the first question:

- Do animals think like humans?

Model for students how to evaluate the question using the Specific Inquiry Questions Checklist. In relation to the question, "Do animals think like humans?" instruct students to look at criterion #1:

- Does the question have an appropriate scope or purpose? Does it focus on an important aspect of the research question/problem?

Explain to students that this question seems repetitive of the actual research question/problem; the question does not focus on an aspect of the research question/problem. Instruct students to look at criterion #2 on the Specific Inquiry Questions Checklist:

- Is the question useful? Will it lead to meaningful inquiry?

Explain to students that the question is useful and could lead to meaningful inquiry but the scope feels too large. Instruct students to look at criterion #3:

- Is the question answerable through research?

Explain to students that it would be answerable through research. We could find information about animals thinking like humans. Instruct students to look at criterion #4:

- Is your question understandable or clear?

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Explain to students that the question could be refined to be more specific. This question is understandable but still too large, which makes it unclear. What do we want to know specifically about how animals think like humans? Instruct students to look at criterion #5:

- Does your question require multiple answers and possibly more questions?

Explain to students that the question requires a yes/no answer and not multiple answers and so it does not fit this criterion. Instruct students to look at criterion #6:

- Is your question's answer unknown to you?

Explain to students that yes, the answer is unknown. At this point, there is exploring to be completed to find information about animals thinking like humans.

Model for students how to tailor the inquiry question to make it more specific, to focus on an aspect of the model research question/problem, and to make it require more than a yes/no answer. Explain to students that a way to alter the question is to think about the type of answers they want to get. Beginning a question with the word, "Can" requires the answer to be yes/no. Changing the beginning of the question can alter the answer they will get: How do animals show they can remember information?

- Students follow along with the teacher modeling.

Guide students through the Specific Inquiry Questions Checklist to vet the new inquiry question (How do animals show they can remember information?) by having them check off the appropriate categories on their checklist.

- Students independently practice vetting the new inquiry question by using the Specific Inquiry Questions Checklist.

ⓘ Consider having students practice vetting another question from the Inquiry Questions Review Activity (Activity #4) in pairs if students need more support.

Activity 7: Finalizing Specific Inquiry Questions 20%

Explain to students that they will now use the Specific Inquiry Questions Checklist to vet the inquiry questions from the small group brainstorm and finalize at least five questions for assessment purposes.

- Students listen.

Instruct students to individually examine their list of inquiry questions generated from the small group brainstorm activity and use the Specific Inquiry Questions Checklist to select, vet, and refine at least five specific inquiry questions.

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ⓘ This process is appropriate for a lesson assessment because students previously crafted and refined inquiry questions in Unit 1.

Instruct students to choose two of the richest or strongest specific inquiry questions and copy the questions on a separate sheet of paper.

- Students complete the inquiry question assessment.

ⓘ Assess each student's two specific inquiry questions using the language of the Specific Inquiry Questions Checklist to provide feedback.

ⓘ If students struggle with choosing the richest or strongest specific inquiry questions, instruct them to think about choosing the inquiry questions that might lead to the richest inquiry or multiple sources of information.

Collect each student's two specific inquiry questions.

Instruct students to file their five specific inquiry questions in Section 1 (Defining an Area of Investigation) of the Research Portfolio.

Activity 8: Closing 5%

Display and distribute the homework assignment. For homework, instruct students to continue crafting, vetting, and refining five more specific inquiry questions for their research question/problem using the Specific Inquiry Questions Checklist.

- Students follow along.

Homework

Continue crafting, vetting, and refining five more specific inquiry questions for your research question/problem using the Specific Inquiry Questions Checklist.

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Student Research Plan

Research Process	Process Outcomes	Associated Materials
Part 1: Initiating Inquiry	• Generates, selects, and refines inquiry questions to explore topics. • Develops 2–3 areas of investigation from the topic exploration. • Develops inquiry questions about areas of investigation. • Conducts pre-searches of areas of investigation. • Arrives at a research question/problem by vetting areas of investigation. • Generates specific inquiry questions for the research question/problem.	• Topic Tracking Tool • Posing Inquiry Questions Handout • Exploring a Topic Tool • Pre-Search Tool • Area Evaluation Checklist • Specific Inquiry Questions Checklist
Part 2: Gathering Information	• Plans for searches by determining key words/phrases and finding credible and relevant sources. • Assesses sources for credibility, relevance, and accessibility. • Annotates sources and records notes that will help answer the inquiry questions. • Builds an initial Research Frame to guide independent searches. • Conducts searches independently.	• Potential Sources Tool • Assessing Sources Tool • Assessing Sources Handout • Taking Notes Tool • Research Frame • Conducting Independent Searches Checklist • Independent Searches Self-Evaluation
Part 3: Organizing and Synthesizing Inquiry	• Organizes, connects, and synthesizes evidence to develop evidence-based claims about inquiry questions and inquiry paths. • Further organizes, connects, and	• Forming Evidence-Based Claims Tool • Organizing Evidence-Based Claims Tool • Evidence-Based Claims

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Research Process	Process Outcomes	Associated Materials
	synthesizes evidence-based claims about inquiry paths and the research question/problem itself. • Reviews and synthesizes the research to develop a written evidence-based perspective.	Criteria Checklist • Evidence-Based Perspective Rubric

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Specific Inquiry Questions Checklist

Name:		Class:		Date:	

Research Question/Problem (Area of Investigation):

Question #1: _____

Question #2: _____

Question #3: _____

Question #4: _____

Question #5: _____

Criteria	Q1	Q2	Q3	Q4	Q5
1. Does the question have an appropriate scope or purpose? (Does it focus on an important aspect of the research question/problem?					
2. Is the question useful? Will it lead to meaningful inquiry?					

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Criteria	Q1	Q2	Q3	Q4	Q5
3. Is the question understandable or clear?					
4. Is the question answerable through research?					
5. Does the question require multiple answers and possibly more questions?					
6. Is your question's answer unknown to you?					

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9.3.2 Lesson 3

Introduction

In this lesson, students continue to refine their inquiry questions as they begin to frame their research by planning for independent searches. Students learn how to select inquiry questions, plan search locations, and use key words and phrases to conduct effective and efficient research. Additionally, students learn how to begin formally assessing sources by analyzing a source's relevance to the inquiry question and its credibility.

Students begin the lesson by engaging in a research project check-in where they overview their **Student Research Plan** and informally journal about their research progress and next steps. The teacher models how to plan effective searches by selecting inquiry questions, planning where to look for sources, and choosing key words or phrases that target an effective and efficient search. Additionally, students discuss how these steps can contribute to finding credible and relevant sources. Students then transition into searching for relevant and credible sources using key words or phrases from their selected inquiry question and recording notes on a **Potential Sources Tool**. The learning in this lesson is assessed with a Quick Write in which students analyze three sources for relevance and credibility, explaining how they found the sources as well. For homework, students continue to conduct preliminary searches for one inquiry question, using the **Potential Sources Tool** to find three more potential sources. Students will prepare to discuss the preliminary search results in the following lesson.

Standards

Assessed Standard(s)	
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
Addressed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

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Assessment

Assessment(s)
The learning in this lesson is captured through a Quick Write at the end of the lesson. Students answer the following prompt based on their preliminary search for relevant and credible sources: • Choose three sources from today's work and discuss how they meet the criteria of being credible and relevant sources. Additionally, discuss the inquiry questions, locations, and key words or phrases that led you to the discovery of the three credible and relevant sources. ⓘ The assessment is evaluated using the following criteria: 1. Uses inquiry questions to drive research and identify sources. 2. Assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question.
High Performance Response(s)
A High Performance Response may include the following: • The search words I used were taken from my selected inquiry question: What does animal intelligence tell us about human intelligence? I typed the phrase "human and animal intelligence" into a search engine. I realized this phrase was too broad so I tried the phrase "comparing human and animal intelligence." There were many credible and relevant sources to choose after typing in this phrase. I started with an NBC essay, "The 10 Smartest Animals: How do humans compare to other intelligent creatures?" This essay is about smart animals and comparisons to human intelligence, so it is relevant to my search. NBC seems to be a credible source since it is an important TV network. The second source is a science magazine, *Scientific American*. I selected it because it states the opposite point of view of the NBC essay: "Subtle refinements in brain architecture, rather than large-scale alterations, make us smarter than other animals." I want to find more than one perspective regarding my research question/problem, so this essay is important. I then tried a different phrase. I asked, "Are animals smart?" The results were mostly new. In *National Geographic*, a credible source, I found a relevant article: "Animals Minds: Minds of Their Own," by Virginia Morell. Both *Scientific American* and *National Geographic* are reputable sources because their writing uses credible research to support their articles, and our media specialist told the class about these two sources when we conducted pre-searches in Unit 1.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)

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• authoritative (adj.) – substantiated or supported by documentary evidence and accepted by most authorities in a field • plagiarism (n.) – act or instance of using or closely imitating the language and thoughts of another author without authorization and the representation of that author's work as one's own, as by not crediting the original author • credible (adj.) – worthy of belief or confidence; trustworthy
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text:	
• Standards: W.9-10.8, W.9-10.7	
• Text: "Animal Minds: Minds of Their Own," by Virginia Morell	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 10%
2. Homework Accountability and Research Process Check-In	2. 15%
3. Planning for Searches	3. 30%
4. Conducting Research	4. 30%
5. Quick Write	5. 10%
6. Closing	6. 5%

Materials

- Student copies of the **9.3 Common Core Learning Standards Tool** (refer to 9.3.1, Lesson 1)
- **Research Portfolio** (students have this)
- At least two blank copies of the **Potential Sources Tool** for each student (refer to 9.3.1 Lesson 8)
- Computers with Internet connection (one for each student)
- Smart Board/Document Camera (optional)

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Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	**Percentage indicates the percentage of lesson time each activity should take.**
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
❍	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction of Lesson Agenda 10%

Begin by reviewing the agenda and the assessed standard for this lesson: W.9-10.8. Explain that students begin with a research project check-in during which they overview their Student Research Plan and informally journal about their research progress and next steps. The teacher then models how to plan for effective searches by selecting inquiry questions, planning where to look for sources, and choosing key words or phrases that target an effective and efficient search. Students discuss how these steps can contribute to finding credible and relevant sources. Students then search for relevant and credible sources using key words or phrases from their selected inquiry question and recording notes on a Potential Sources Tool.

- ▸ Students look at the agenda.

Explain that students will be assessed on a new standard: W.9-10.8. Ask students to read standard W.9-10.8 individually and assess their familiarity with and mastery of the standard on the 9.3 Common Core Learning Standards Tool. Ask students to write down what they think are the large ideas in the standard and discuss in pairs.

- ▸ Students write down their ideas about standard W.9.10.8 and discuss it in pairs.

Lead a discussion about the standard's large ideas. Ask students to consider in their responses how the standard relates to their current research work.

- ❍ Student responses should include the following:
  - We are starting our own research and this standard is about gathering information from sources to conduct the research.
  - *Authoritative* must mean (because of the noun *authority*) that the information is from a credible or academic source. The research has to come from a location that has authority regarding the topic.

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- We need to assess every source to see if it corresponds to our research question/problem. The source needs to be relevant by answering an aspect of the research question/problem or the research question/problem itself.
- And it is important not to cheat or plagiarize (say that an idea is ours when it is not).

If necessary, define the words *authoritative* ("substantiated or supported by documentary evidence and accepted by most authorities in a field") and *plagiarism* ("an act or instance of using or closely imitating the language and thoughts of another author without authorization and the representation of that author's work as one's own, as by not crediting the original author").

ⓘ In the next unit, Unit 3, students will learn more about the importance of and how to avoid plagiarism when they write (citation).

Explain to students that the standard W.9-10.8 works together with W.9-10.7 to guide the type of research students will conduct in this unit.

- Students listen.

ⓘ Standard W.9-10.7 was introduced in Lesson 1.

Activity 2: Homework Accountability and Research Process Check-In 15%

Instruct students to take out their Lesson 2 homework. Direct students to form pairs and discuss how they refined their five specific inquiry questions using the Specific Inquiry Questions Checklist.

- Responses will vary, but will include information like the following: The small group brainstorm from Lesson 2 began with more simple questions that were not specific enough but they gave me a general idea of where my questions could go. I then added to the questions brainstormed to give them more specificity and to ensure they required multiple answers and relevance to my inquiry question/problem. For example, I started out with questions like: Can animals make decisions? I realized that this question needed more specificity and required a yes/no answer. So I changed the question to give it more of a focus and to ensure that the answer would require multiple answers as discussed on the Specific Inquiry Questions Checklist

Ask student pairs the following question:

What role do questions play in the research process?

- Student responses may include the following:
  - Questions play an important role in research by showing you the different aspects of the research question/problem.

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- They allow you to think about the variety of ways in which you can approach your question/problem.

Instruct students to take out the Student Research Plan in the front of the Research Portfolio. Remind students that they received the Student Research Plan in the previous lesson. Explain that the purpose of the plan is to help students track their research progress by informally assessing completed research activities and planning next steps in a research journal. Remind students that the research process is iterative and cyclical, as the Research Plan suggests; there are specific steps that are not "completed" after one time. Journaling about the research process will help students track where they are in this iterative process.

- Students listen.

Instruct students to focus on Part 1 of the Student Research Plan and write a few sentences about their research progress and next steps based on the process outcomes described in Part 1.

- Responses will vary, but will include information like the following: I was able to narrow down the many topics surfaced in Grandin's text to a few areas of investigation that I thought were worth exploring. But I quickly realized with my pre-searches that researching areas like the history of autistic savants was not going to prove interesting and did not lend itself to many inquiry questions. Instead, I chose animal intelligence compared to human intelligence because it is going to provide many paths to explore as revealed in my variety of specific inquiry questions that I was able to develop in Lesson 2.

ⓘ Consider having students write in a notebook or on a separate sheet of paper for the research journal. Students can file the research journal in the Research Portfolio, along with the Vocabulary Journal.

ⓘ While students are writing, consider distributing the previous lesson's assessment with feedback so students can use this information for the reflection journal. Then students can file the assessment in their Research Portfolios for later use.

ⓘ The purpose of the research journal is to keep students accountable to the research process; fidelity to the process is vital if students are to conduct effective and efficient research. Providing students with an opportunity to reflect on the research process will help them build a foundation for inquiry that will take place in subsequent modules.

Instruct students to file the Student Research Plan in the front of their Research Portfolio and to organize the previous lesson's homework and assessment in Section 1.

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Activity 3: Planning for Searches 30%

Explain to students that they are ready to plan for effective searches to conduct formal research now that they have established a research question/problem and crafted specific inquiry questions.

Inform students that when planning for effective inquiry-based research, there are several steps to follow:

- Select an inquiry question to focus on
- Determine where to look for sources
- Choose key words or phrases to begin the search

Remind students that in the pre-search activities they identified a variety of sources. In today's class they are going to be looking for *credible* and *relevant* sources for their specific research question/problem, using the steps for planning effective and efficient research mentioned above.

Define the word *credible* ("worthy of belief or confidence; trustworthy"). Explain to students that credible sources are sources that have proven their worth through peer review and extensive research on a topic. Credible sources have employed the same inquiry methods of research that the students are currently conducting.

- Students listen.

ⓘ Consider reminding students that they learned the word *relevance* in 9.3.1 Lesson 9.

Ask students the following questions:

What are some of the sources you identified in your pre-search?

- Student responses may include the following:
  - articles
  - interviews
  - speeches
  - videos
  - charts
  - blogs

Did some sources seem more credible than others? How did you decide which were more credible than others?

- Student responses may include the following:
  - If I find material about autism in a medical journal, it is probably credible because medical researchers have to conduct extensive research to be published in a medical journal.

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- A government study about meat and antibiotics in cattle is probably credible because the government has performed lengthy research or experiments on the topic.
- If I am looking for studies where numbers are important (for example, how many cows die in the chutes), if an article does not provide data, it might not be as credible as an article that provides actual research data.

ⓘ Advise students to ask the teacher, librarian, or media specialist if they are not certain about the credibility of a source.

Explain to students that the planning they do today for effective and efficient searches will guide them to sources that are more credible and relevant. The Potential Sources Tool will then help students to further assess sources for credibility and relevance.

▸ Students listen.

ⓘ Consider informing students that today's lesson is an introduction to assessing sources and the following lesson will go more in-depth on this skill.

Share with students that effective and efficient searches begin with a focus. The type of research they are conducting in this unit is inquiry-based, so the specific inquiry questions students develop for the overarching research question/problem will guide the research focus.

Explain to students that the first step in planning for an effective and efficient search is to select an inquiry question to focus the research.

Explain to students a few guidelines for selecting inquiry questions to focus research:

- Move from general inquiry questions to specific.
- Move from questions that are easily answered to more complex questions with more interesting answers.
- Remember that the questions are always evolving and you can move from one question to another if the research takes you there.

▸ Students listen.

Model for students how to select inquiry questions by displaying the following three model questions (from the previous lesson) for students to see:

- How do researchers measure animal intelligence?
- What characteristics do the animal and human brain share?
- What animals have "genius-like" qualities and how do we know?

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Explain to students that the question "What characteristics do the animal and human brain share?" is the best question to focus the research because it is specific enough to generate concrete answers, but general enough to generate rich information. The first question may be too large and complex, while the third question's focus exclusively on "genius" seems too specific as a starting point.

- Students examine the three model questions and follow along with the modeling.

Explain that the second step in planning a good search is to determine the best sources for finding the information about the inquiry question. Give students the following questions to help them select and locate the right sources:

- What is the area of my search and where could I find credible sources? If I am looking at autism, then the field is developmental disorders. I will search in either that section of the library or an online source or website that specializes in developmental disorders.
- What type of information am I looking for and what type of sources should I be looking for? If I am looking at the rise or decline in autistic populations, I will need numbers, so I am looking for reports. If I am looking at the significance of an historical event, I will need to look at magazines or books that specialize in that time period.

Remind students that the location of the source is important in guiding students to credible and relevant sources.

Display the model inquiry question discussed previously: What characteristics do the animal and human brain share?

- Students examine the model inquiry question.

Ask students the following questions:

Under which topics does my search fall, and where might I find credible information for this search?

- Students responses may include:
  - biology
  - science
  - intelligence
  - medicine
- Credible information might be found on specialized websites and in specific sections of the library associated with medicine and biology.

What type of information am I looking for, and what sort of sources should I be looking for?

- Students responses may include the following:

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- I am looking for facts on comparing human and animal brains, so I might look for journals and magazines that focus on neuroscience or biological psychology.
- I am also looking for how the animal and human brain are alike so there might be credible experiments and reports that have conducted this type of research.

Explain the third step in planning a good search: selecting the best key words and phrases for the online search. Demonstrate an online search with key words and phrases using this model question: How do researchers measure animal intelligence? Conduct two searches as described below, and display the online search for all students to see. Instruct students to take brief notes on the results.

- Enter the search phrase: current research on animal intelligence
- Examine results of the search.
- Change the search phrase: How do researchers measure animal intelligence?
- Examine results of the search.
  - Students listen and take notes.

ⓘ Consider using a smart board or document camera to display the search results.

Instruct students to form pairs to discuss the differences they see between the two searches and results.

ⓘ Alternate between the two searches, giving students an opportunity to compare results. Provide students with time to take brief notes.

What differences did you notice between the results of the two searches?

- Student responses may include:
  - In the first search there are different types of sources: a magazine, *Scientific American*; an animal rights organization, PETA; and a TV station, NBC. These three seem like credible sources to read because they all have authority regarding the topic. *Scientific American* and PETA both focus on science research and animals respectively.
  - In the second search, some of the results are different. The most interesting that could be a very good source and did not appear in the first search is the article from *National Geographic*.

Point to several other important results. At the top of the search page students see the phrase "Scholarly articles for assessing human intelligence." Introduce the students to Google Scholar. Explain to them that it will help direct their search towards credible sources.

- Students examine the search results.

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Go back to the original search page and point to the .edu sources. Inform students that .edu usually means that this is a university site and therefore is often a credible source because university professors conduct extensive research before publishing documents.

Inform students that substituting a key word with a synonym (word that means the same) leads to more and sometimes different results. Remind them that they can also ask questions:

- Enter the search words: Are animals smart?
- Examine the results of the search.

What do you notice about the search results?

- Students responses may include:
  - The search words seem similar but because you used the word *smart,* some of the results were different.
  - This resulted in some credible sources including: *National Geographic* and PBS (Public Broadcasting Service).

Remind students that they can use the information they have on the original page to search the source directly rather than open the one link. For example:

- Search for Scientific American site.
- Enter search phrase: animal intelligence
- Search Result: The first of a two-part interview with anthropologist Carel Van Schaik about the role of culture in boosting intelligence in animals. (The interview is available both in audio and in print.)

Show another example:

- Search for the National Geographic site.
- Enter search phrase: animal intelligence
- Result, an article: "Animals Minds: Minds of Their Own," by Virginia Morell.

Ask students:

What makes these sources both relevant and credible?

- Both sources seem credible because they have numerous essays and articles about nature and animals. They are relevant since both publications have information about animal intelligence.

Ask students to think of an example of a source that may make a source unreliable or not credible.

- Student responses may include the following:

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- Teachers tell us not to use encyclopedia when we write papers. I think that this is because here we are not just looking for background but studies and research that other people do.
- Then there is Wikipedia. It is not always clear who writes the essays, so potentially they may not be credible.

Explain to students that they can find out how long these publications have existed. This fact usually points to credibility. Also, the author's profession is important: Is he/she a scientist or a professor in college? Has the author published a study in the field? The answers to these questions may identify a credible source or exclude one that is not credible.

- Students listen.

Activity 4: Conducting Research 30%

Explain that in this part of the lesson, students practice finding credible and relevant sources using key words/phrases from their research question/problem and specific inquiry questions. Distribute blank Potential Sources Tool to each student.

Model how to use the Potential Sources Tool by using the source from the previous activity. On the top left, number the source (begin with 1). Record basic information:

- Title: "Animal Minds: Minds of Their Own"
- Location: *National Geographic* online http://ngm.nationalgeographic.com/2008/03/animal-minds/virginia-morell-text
- Author: Virginia Morell
- Text Type: Article
- Publication Date: March 2008

ⓘ Consider displaying the Potential Sources Tool for students to see.

Read aloud the first two paragraphs of the article (from "In 1977 Irene Pepperberg, a recent graduate of Harvard University, did something very bold" to "that it is able to acquire information about the world and act on it").

- Students listen and follow along in their copy of the text.

Instruct students to turn their attention back to the Potential Sources Tool. In the second part of the Potential Sources Tool write the following comments for students to see:

The article is relevant because it is about researching animals' intelligence, which is my focus inquiry question. Also, it seems credible because at the beginning the writer cites a study conducted by a Harvard scientist, which shows the writer is looking at research to compose the article.

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ⓘ A completed Model Potential Sources Tool is in included at the end of the lesson; consider distributing to students for support.

Instruct students to independently search for credible and relevant sources for one inquiry question by following the steps for planning a search:

- Select an inquiry question on which to focus.
- Determine where to look for sources.
- Choose key words or phrases to begin the search.
  - Students independently conduct searches for one of their inquiry questions.

ⓘ Consider placing students in small heterogeneous groups that will remain consistent throughout the module, or using the groups established during the previous lesson. Form groups ahead of time to maximize the range of different research topics and questions within each group. (For example, one group might consist of a student researching potential causes of autism, the impact of B.F. Skinner on modern psychology, factory farming/slaughterhouses and animal welfare, and the advantages of visual thinking.) The goal of these groups is to create small communities of inquiry/research teams that provide support and are accountable to each other. Students should know about their teammates' research question/problem. Students should share claims and evidence that arise from their individual inquiry and learn from each other's research processes, which they may use to potentially refine their own research questions/problem and inquiry questions.

Remind students to record basic information about the source in the Potential Sources Tool. They are not expected to read the text closely at this point. The purpose of this tool is to help students locate the source again later. Instruct students not to fill in the bottom part where they rank the source, since they will be assessing sources more formally in the following lesson.

  - Students record basic search information on the Potential Sources Tools.

ⓘ Students need access to computers with Internet capacity for research purposes. Prepare for the lesson ahead of time by reserving space in classrooms with technology access for all students.

ⓘ Consider using the media center or library for this lesson so students have access to librarians or media center teachers.

ⓘ Circulate around the room to support students as they engage in this preliminary research process.

Activity 5: Quick Write 10%

Instruct students to respond briefly in writing to the following prompt:

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Choose three sources from today's work and discuss how they meet the criteria of being credible and relevant sources. Additionally, discuss the inquiry questions, locations, and key words or phrases that led you to the discovery of the three credible and relevant sources.

Remind students to use the Short Response Checklist and Rubric to guide their written responses.

ⓘ Display the prompt for students to see, or provide the prompt in hard copy.

- Students independently answer the prompt using the lesson's Potential Sources Tools and the preliminary research conducted in the lesson.

- See the High Performance Response at the beginning of this lesson.

Activity 6: Closing 5%

Display and distribute the homework assignment. Distribute additional Potential Sources Tools to each student. For homework, instruct students to continue to conduct preliminary searches for one inquiry question, using the Potential Sources Tool to find three more potential sources. Students will prepare to discuss the preliminary search results in the following lesson.

Homework

Continue to conduct preliminary searches for one inquiry question, using the Potential Sources Tool to find three more potential sources. Prepare to discuss the preliminary search results in the following lesson.

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9.3.2 Lesson 4

Introduction

In this lesson, students continue to learn how to assess sources more extensively. Students were introduced to the practice in Lesson 3 by beginning to identify credible and relevant resources. In this lesson, they go deeper and learn why it is important to assess sources and how to identify credible, relevant, and accessible sources to prepare for conducting searches independently.

The teacher models the next steps in assessing sources using the **Assessing Sources Handout** and returning to the **Potential Sources Tool** from Lesson 3. In a classroom with technology access, students learn how to assess the sources they found in the previous lesson's activities and homework by answering in-depth questions. Independently, students use the **Assessing Sources Tool** to assess one source for credibility, relevance, accessibility and interest. For homework, students continue looking for three more sources based on selected inquiry questions from Lesson 2. Students rate the sources on the **Potential Sources Tool** using the **Assessing Sources Handout and Tool**. Additionally, students record new vocabulary from these preliminary searches in the Vocabulary Journal.

Standards

Assessed Standard(s)	
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
Addressed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
L.9-10.4.a, c, d	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

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	c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Assessment

Assessment(s)
The learning in this lesson will be captured through a Quick Write at the end of the lesson. Students will answer the following prompt: • Choose two sources from your Potential Sources Tool and, using the Assessing Sources Tool work, discuss your evaluation of them. Why did the sources earn their specific rates for accessibility, credibility, and relevance? Explain using information from your sources, your inquiry questions, and the criteria outlined on the Assessing Sources Handout. • Based on today's work, what are your next steps? Are you going to need to find more sources? What sources do you need to look for? What holes remain in your research so far? ⓘ This assessment will be evaluated using the Assessing Sources Tool.
High Performance Response(s)
A high performance response may include the following: • Source #3: "Think You're Smarter Than Animals? Maybe Not," by Alexandra Horowitz and Ammon Shea, *The New York Times*, August 20, 2011. I was able to find this article from *The New York Times*. When I read the first few lines it became clear that the article is relevant to my research because the authors begin by making the statement: "Humans have long been fascinated by animal intelligence" which relates to my area of investigation regarding animal intelligence. I know that *The New York Times* is a well-known newspaper that people trust and the writers have extensive credentials and use research to support their writing. I even Googled *The New York Times*, and I found out that it has been publishing since 1851. Additionally under the title of the article, it offers information about the two authors. Both of them have published before and Alexandra Horowitz has written a book about dogs and their intelligence. When I read the first part closely, I saw that this article is actually a review of a few studies that analyze animal behavior. This type of article, a review of studies, can lead me to other sources as well. I am not sure I can get these other studies online, but I will try. I concluded that this review is very relevant to my research. I will certainly rate it high for all categories because I understood the text, it's extremely relevant to my research question/problem, and the authors are credible as revealed in their background on animal

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intelligence.

- Source #4: "Monkeys Can Perform Mental Addition," a science news report. At first I was not sure if this article was credible. There is no author. But then I read carefully what is written under the title and I realized that the source is probably credible because they are researchers from Duke University. I think that usually one can trust universities because universities have a stake in producing quality research. The title is what drew me to this report at first; it directly suggests that animals, in this case, monkeys, can perform intelligent acts, like addition. I was also interested in reading on because in my question, I ask about how scientists can measure animal intelligence. Overall, I rank this source high for credibility and accessibility. It seems short, and the information is limited, so for richness I will only rank it medium.
- Next Steps: I will try to find some of the sources that these two articles reference. I may need some help in the library. If I cannot find these, I will continue to search for sources that discuss actual experiments that show how scientists measure intelligence. I think that these types of sources will help me write a strong essay. I should also make a greater effort to find essays that may disagree with the idea that you can compare animal to human intelligence to have a different perspective.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• credentials (n.) – evidence of authority • extensive (adj.) – far-reaching, broad, comprehensive, or thorough
Vocabulary to teach (may include direct word work and/or questions)
• accessibility (adj.) – easy to approach, enter, read, or use

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text: • Standards: W.9-10.8, W.9-10.7, L.9-10.4.a, c, d • Text: "Animal Minds: Minds of Their Own" by Virginia Morell (paragraphs 1–2)	
Learning Sequence: 1. Introduction to Lesson Agenda	1. 5%

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2. Homework Accountability	2. 10%
3. Assessing Sources: Next Steps	3. 30%
4. Assessing Sources Independently	4. 40%
5. Quick Write	5. 10%
6. Closing	6. 5%

Materials

- Student copies of the **Potential Sources Tool** (refer to 9.3.1 Lesson 8)
- Copies of the **Assessing Sources Handout** for each student
- Copies of the **Assessing Sources Tool** for each student
- Copies of the article "Animal Minds: Minds of Their Own" by Viginia Morell (excerpt) for each student

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	**Percentage indicates the percentage of lesson time each activity should take.**
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
💬	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction to Lesson Agenda 5%

Begin by reviewing the agenda and the assessed standard for this lesson: W.9-10.8. Students learn how to assess the sources they found in the previous lesson's activities and homework by answering in-depth questions to assess their potential sources. Independently, students use the Assessing Sources Tool to assess one source for credibility, relevance, accessibility, and interest.

- ▸ Students look at the agenda.

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Activity 2: Homework Accountability 10%

Instruct students to take out their Potential Sources Tool from the homework assignment from Lesson 3. Direct students to form pairs and discuss the results of the research they conducted at home by explaining the inquiry question selected, the search location, and key words/phrases used to find the three potential sources that are credible and relevant.

- Student responses will vary by individual research question/problem but may sound like the following:
  - I selected the inquiry question: How do animals show their "thinking" in experiments?
  - I couldn't figure out a specific location to search so I searched on Google for the following key phase: animals and thinking.
  - I could not find any relevant or credible sources, so I tried searching Google by typing in the actual inquiry question and found three potential sources.

Activity 3: Assessing Sources: Next Steps 30%

Introduce the Quick Write assessment (1. Choose two sources from your Potential Sources Tool and, using the Assessing Sources Tool work, discuss your evaluation of them. Why did the sources earn their specific rates for accessibility, credibility, and relevance? Explain using information from your sources, your inquiry questions, and the criteria outlined on the Assessing Sources Handout. 2. Based on today's work, what are your next steps? Are you going to need to find more sources? What sources do you need to look for? What holes remain in your research so far?) Explain that this is the lesson assessment and the focus for this activity.

- Students read the assessment and listen.

ⓘ Display the Quick Write assessment for students to see.

Explain to students that the previous lesson's work focused on planning for searches and beginning to examine sources for relevancy and credibility. Explain that today's work focuses on assessing sources more deeply to ensure that sources are accessible, credible, relevant, and worth researching. Explain that it is important to assess sources first before reading them closely so students do not waste time on reading sources that do not contribute to a deeper understanding of the research question/problem.

- Students listen.

Instruct students to keep out their Potential Sources Tools from the previous activity and lesson. Distribute the Assessing Sources Handout and ask students to read it.

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Ask students to do a Turn-and-Talk about the Potential Sources Tool and the Assessing Sources Handout by considering the following questions:

What details are similar in the tool and the handout?

What details are different?

How do these differences inform your understanding of assessing sources?

Lead a share-out to ensure that students realize that the Assessing Sources Handout leads to a deeper or more extensive assessment of the sources.

- Students responses may include the following:
  - The Potential Sources Tool asks for general information or first impressions.
  - The Assessing Sources Handout asks for many more details about every section. For example in the Potential Sources Tool, all I have to do is just write the date, but in the Assessing Sources Handout I also have to think about how the date of publication is relevant to my research.
  - Another type of detail that the Assessing Sources Handout goes more in depth is the "scope and richness" part. I think that requires me to read the text a lot closer than just a quick scan or read.

ⓘ Consider defining the word *extensive* ("far-reaching, broad, comprehensive, or thorough") for students.

Distribute the Assessing Sources Tool to each student and instruct them to put the Potential Sources Tool aside for now. Instruct students to have the Assessing Sources Tool and Assessing Sources Handout side by side on their desks.

Explain to students that the Assessing Sources Tool is a replica of the Assessing Sources Handout and is a place for students to record their assessment of sources using the Assessing Sources Handout. Model how to use the Assessing Sources Tool by using the article from the previous lesson, "Animal Minds: Minds of Their Own" by Virginia Morrell. Distribute an excerpt from the article to each student.

- Students listen and examine the article excerpt.

Read aloud the first two paragraphs of the article (from "In 1977 Irene Pepperberg, a graduate student" to "about the world and act on it?") and instruct students to consider the top section (Assessing a Source Text's Credibility) of the Assessing Sources Tool as they listen. Remind them that even though

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they have already recorded some of the information in the Potential Sources Tool, the Assessing Sources Tool requires a deeper assessment of the source.

- Students follow along with the read aloud and consider the top section of the Assessing Sources Tool.

Model for students how to complete the top section of the Assessing Sources Tool using the excerpt just read aloud by writing the following notes on a Model Assessing Sources Tool. Show students how to use the Assessing Sources Handout to complete the Assessing Sources Tool.

- Students follow along with the modeling.

Assessing a Source Text's Credibility			
Publisher	**Date**	**Author**	**Type**
• National Geographic publishes many articles about science topics like animal intelligence. • The publisher has a stake in producing articles that are supported by real research since it is considered an academic nonfiction magazine.	• March 2008 • The date indicates that the information is current. • The topic seems to have a longer history as indicated by the research date first discussed in the opening paragraph (1977), but 2008 is relatively recent so there might be current research in the article.	• It says at the end of the article that the author, Virginia Morell, is a science writer who often writes for National Geographic. • It seems that she is not a scientist but someone who has a general interest in the topic. • The author gets paid to write the article but that seems to be it.	• This is an article. It is an informational text that includes reporting on studies. • The purpose of this article is to illustrate the intelligence of animals and therefore relates to the research question, How does animal intelligence compare to human intelligence?

ⓘ Consider displaying the model Assessing Sources Tool for students to see the notes.

ⓘ Explain to students that some of the questions, for example the "economic stake" or "political stake" may not always be relevant and leaving it open is okay. Consider reminding students that "economic stake" was relevant, for example, in Gradin's work since many farmers benefitted from her discoveries.

ⓘ Consider defining the word *credentials* ("evidence of authority") for students. Inform students that this word relates to the idea of authoritative resources discussed in standard W.9-10.8.

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Model for students how to complete the second section of the Assessing Sources Tool using the Assessing Sources Handout as a guide by writing the following notes on a model tool.

- Students follow along with the modeling.

Assessing a Source Text's Accessibility and Interest Level	
Accessibility to You as a Reader	**Interest and Meaning for You as a Reader**
• The text seems accessible. The reference to dogs and people makes it easier to relate to. • The short paragraphs help. • From this excerpt it seems that I will comprehend the whole essay because I understand most of the words and I can look up the rest that I do not understand.	• Very interesting. I always thought parrots only repeat people and now it seems they actually think for themselves. • One of my inquiry questions was: How do scientists measure animal intelligence? This essay addresses this question directly.

ⓘ Inform students that at this point they do not have to address the Inquiry Path question and that later in the unit they will be looking closely at the concept.

Ask students the following question:

What could the word *accessibility* mean based on the questions and answers just modeled?

- It means how easy it is to read, comprehend, or approach.

Model for students how to complete the bottom section (Assessing a Source Text's Relevance and Richness) of the Assessing Sources Tool by using the Assessing Sources Handout as a guide.

- Students follow along with the modeling.

Assessing a Source Text's Relevance and Richness		
Relevance to Topic & Purpose	**Relevance to Area to Investigation**	**Scope and Richness**
• This article provides information about animal intelligence and specific experiments used to measure animal intelligence. • Since my research involves	• It deals with measuring animal intelligence and therefore relates to my area of investigation and several inquiry questions. • The inquiry questions that this article might help me answer are:	• This is a long article (10 pages). I skimmed the article first and I realized that she talks about human intelligence and the way that Darwin approaches it.

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Assessing a Source Text's Relevance and Richness		
Relevance to Topic & Purpose	**Relevance to Area to Investigation**	**Scope and Richness**
both human and animal intelligence it will help my research because it will give me more insight into animal intelligence. • Since the article is from a credible source and reputable studies are used to support the information then I can assume that the information is accurate.	How do scientists measure animal intelligence? and Which animals do scientists study?	• The article provides a lot of details, especially discussing a variety of experiments. • Most of the texts about animal intelligence use studies to support their point of view.

ⓘ Consider introducing the practice of skimming. It is an important skill to teach at this stage of the process. It serves two important purposes: it allows the reader to quickly identify if a source is relevant and it also enables the reader to select excerpts rather than read every word when completing tools like the Potential Sources Tool.

Activity 4: Assessing Sources Independently 40%

Instruct students to put aside the excerpt and take out one of their Potential Sources Tools from the previous lesson. Remind students that in the previous lesson they did not complete Step 3 of the tool. Today, following the assessment of sources, they will complete this section.

- Students put aside the excerpt and take out one of their Potential Sources Tools from the previous lesson.

Instruct students to independently assess one of the sources from the Potential Sources Tool using the Assessing Sources Handout as a guide and by completing an Assessing Sources Tool.

- Students locate a source and assess it by completing the Assessing Sources Tool.

ⓘ See the end of the lesson for model student responses.

Instruct students to then complete Step 3 in the Potential Sources Tool for the source just assessed.

- Students individually complete Step 3 in the Potential Sources Tool for the source they just assessed.

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ⓘ Students need access to their sources. Unless students are able to print material, this activity will take place either in the library or a classroom with computers. Consider having the school's librarian and/or media specialist help students use the technology. However, since students will need to annotate material in later lessons, printing the material is recommended.

ⓘ Circulate around the room to monitor student progress. Check that students are using the Assessing Sources Handout when they assess their sources. Make sure they go back to the Potential Sources Tool and complete Step 3.

Activity 5: Quick Write 10%

Instruct students to briefly respond to the following prompts:

Choose two sources from your Potential Sources Tool and, using the Assessing Sources Tool work, discuss your evaluation of them. Why did the sources earn their specific rates for accessibility, credibility, and relevance? Explain using information from your sources, your inquiry questions, and the criteria outlined on the Assessing Sources Handout.

Based on today's work, what are your next steps? Are you going to need to find more sources? What sources do you need to look for? What holes remain in your research so far?

Remind students to use the Potential Sources Tool and Assessing Sources Tool to guide their written responses.

ⓘ Display the prompt for students to see, or provide the prompt in hard copy.

- Students independently answer the prompt using the Potential Sources Tool and the Assessing Sources Tool work from the previous activity.
- See High Performance Response at the beginning of the lesson.

ⓘ This assessment will be evaluated using the Assessing Sources Tool.

Activity 6: Closing 5%

Display and distribute the homework assignment. Distribute additional Assessing Sources Tools to each student. For homework, instruct students to continue looking for three more sources based on selected inquiry questions from Unit 2, Lesson 2. Instruct students to rate the sources on the Potential Sources Tool using the Assessing Sources Handout and Tool. Additionally, students will record vocabulary from these preliminary searches in the vocabulary journal.

- Students follow along.

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- ⓘ Consider instructing students to use notebooks or additional paper for the vocabulary journal. The notebook or additional paper can be kept in the Research Portfolio throughout the research process.
- ⓘ Instruct students to print hard copies of sources to bring to the following lesson, if possible.
- ⓘ Consider drawing students' attention to their application of standard L.9-10.4.a,c,d by using context to make meaning of a word; consulting reference materials to clarify its precise meaning; verifying the preliminary determination of its meaning.

Homework

Continue looking for three more sources based on selected inquiry questions from Unit 2, Lesson 2. Rate the sources on the Potential Sources Tool using the Assessing Sources Handout and Tool. Additionally, record vocabulary from these preliminary searches in the Vocabulary Journal.

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ASSESSING SOURCES

ASSESSING A SOURCE TEXT'S CREDIBILITY

Look at the information you can find about the text in the areas below, and consider the following questions to assess a source text's credibility:

PUBLISHER	DATE	AUTHOR	TYPE
• What is the publisher's relationship to the topic area? • What economic stake might the publisher have in the topic area? • What political stake might the publisher have in the topic area?	• When was the text first published? • How current is the information on the topic? • How does the publishing date relate to the history of the topic?	• What are the author's qualifications/ credentials relative to the topic area? • What is the author's personal relationship to the topic area? • What economic/political stakes might the author have in the topic area?	• What type of text is it: explanation, informational article, feature, research study, op/ed, essay, argument, other? • What is the purpose of the text with respect to the topic area?

ASSESSING A SOURCE TEXT'S ACCESSIBILITY AND INTEREST LEVEL

Consider your initial experience in reading the text, how well you understand it, and whether it seems interesting to you:

ACCESSIBILITY TO YOU AS A READER	INTEREST AND MEANING FOR YOU AS A READER
• Am I able to read and comprehend the text easily? • How do the text's structure and formatting either help or hinder me in reading it? • Do I have adequate background knowledge to understand the terminology, information, and ideas in the text?	• Does the text present ideas or information that I find interesting? • Which of my Inquiry Paths will the text provide information for? • Which inquiry questions does the text help me answer? How?

ASSESSING A SOURCE TEXT'S RELEVANCE AND RICHNESS

Using your Research Frame as a reference, answer the following questions:

RELEVANCE TO TOPIC & PURPOSE	RELEVANCE TO AREA OF INVESTIGATION	SCOPE AND RICHNESS
• What information does the text provide on the topic? • How might the text help me accomplish the purpose for my research? • Does the text provide accurate information?	• How is the text related to the specific area I am investigating? • Which of my paths of inquiry might the text provide information for? • Which inquiry questions might the text help me address? How?	• How long is the text and what is the scope of the topic areas it addresses? • How extensive and supported is the information it provides? • How does the information in the text relate to other texts?

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Assessing Sources Tool

Name:		Class:		Date:	

Assessing a Source Text's Credibility			
Publisher	**Date**	**Author**	**Type**

Assessing a Source Text's Accessibility and Interest Level	
Accessibility to You as a Reader	**Interest and Meaning for You as a Reader**

Assessing a Source Text's Relevance and Richness		
Relevance to Topic & Purpose	**Relevance to Area of Investigation**	**Scope and Richness**

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Model Assessing Sources Tool (for Source #2)

Name:		Class:		Date:	

Assessing a Source Text's Credibility			
Publisher	**Date**	**Author**	**Type**
• National Geographic publishes many articles about science topics like animal intelligence. • The publisher has a stake in producing articles that are supported by real research since it is considered an academic nonfiction magazine.	• March 2008 • The date indicates that the information is current. • The topic seems to have a longer history as indicated by the research date first discussed in the opening paragraph (1977), but 2008 is relatively recent so there might be current research in the article.	• It says at the end of the article that the author, Virginia Morell, is a science writer who often writes for National Geographic. • It seems that she is not a scientist but someone who has a general interest in the topic. • The author gets paid to write the article but that seems to be it.	• This is an article. It is an informational text that includes reporting on studies. • The purpose of this article is to illustrate the intelligence of animals and therefore relates to the research question, How does animal intelligence compare to human intelligence?

Assessing a Source Text's Accessibility and Interest Level	
Accessibility to You as a Reader	**Interest and Meaning for You as a Reader**
• The text seems accessible. The reference to dogs and people makes it easier to relate to. • The short paragraphs help. • From this excerpt it seems that I will comprehend the whole essay because I understand most of the words and I can look up the rest that I do not understand.	• Very interesting. I always thought parrots only repeat people and now it seems they actually think for themselves. • One of my inquiry questions was: How do scientists measure animal intelligence? This essay addresses this question directly.

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Assessing a Source Text's Relevance and Richness		
Relevance to Topic & Purpose	**Relevance to Area of Investigation**	**Scope and Richness**
• This article provides information about animal intelligence and specific experiments used to measure animal intelligence. • Since my research involves both human and animal intelligence it will help my research because it will give me more insight into animal intelligence. • Since the article is from a credible source and reputable studies are used to support the information then I can assume that the information is accurate.	• It deals with measuring animal intelligence and therefore relates to my area of investigation and several inquiry questions. • The inquiry questions that this article might help me answer are: How do scientists measure animal intelligence? And another one is: Which animals do scientists study?	• This is a long article (10 pages). I skimmed the article first and I realized that she talks about human intelligence and the way that Darwin approaches it. • The article provides a lot of details, especially discussing a variety of experiments. • Most of the texts about animal intelligence bring studies to support their point of view.

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9.3.2 Lesson 5

Introduction

In this lesson, students learn how to close read important sources for selected inquiry questions through annotation and taking notes. Students learn how reading closely for information is different than annotating and taking notes on literary texts.

Students begin the lesson by engaging in a research project check-in where they review the **Student Research Plan** by journaling about their own research progress and next steps. Then, using the model source, "Animal Minds: Minds of Their Own," by Virginia Morell, the teacher discusses and models how to use an inquiry question to annotate for information and how to record notes using the **Taking Notes Tool**. Independently, students annotate their sources and record key information by completing a **Taking Notes Tool**.

To assess their learning in this lesson, students choose one annotated source and corresponding **Taking Notes Tool** and discuss briefly in writing how the information in the source and the tool address a specific inquiry question/problem. For homework, students annotate and take notes on a **Taking Notes Tool** from two more sources from the previous lesson's **Potential Sources Tools**. Additionally, students continue to record vocabulary from these preliminary searches in the Vocabulary Journal.

Standards

Assessed Standard(s)	
W.9.10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
Addressed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
L.9-10.4.a, c, d	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies.

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	a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Assessment

Assessment(s)
The learning in this lesson will be captured through a Quick Write at the end of the lesson. Students will answer the following prompt based on their Taking Notes Tools: • Choose one annotated source and corresponding Taking Notes Tool and discuss how the information in the source and tool address a specific inquiry question or component of the research question/problem. • Students will turn in one completed Taking Notes Tool. ⓘ This assessment will be evaluated using the following criteria: 1. Assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question. 2. Marks key information in sources, takes notes of initial impressions and identifies additional research needs. 3. Reads sources closely, analyzes details and ideas, and records notes for each source to determine how it addresses inquiry questions.
High Performance Response(s)
A high performance response may include the following: • Source #1's information specifically addresses the inquiry question: How do researchers measure animal intelligence? The source discusses how parrots, through verbal communication, are showing "higher mental abilities." The researcher says that she went against convention and conducted experiments on parrots because of their talking abilities. It is through this communication that the parrot is showing its "good memory" and understanding of symbols. This type of research, teaching parrots how to talk and recognize symbols and relationships between words and ideas, is revealing how research can measure animal intelligence. • Students will also be evaluated on the Taking Notes Tool: See a sample tool at the end of the lesson.

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Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• analyze (v.) – to examine carefully and critically in detail so as to bring out the essential elements or give the essence of
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text: • Standards: W.9-10.8, W.9-10.7, L.9-10.4.a, c, d • Model Source Text: "Animal Minds: Minds of Their Own," by Virginia Morell	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability/Research Process Check-In	2. 15%
3. Annotating and Taking Notes on Rich Sources	3. 40%
4. Annotating and Taking Notes Independently	4. 25%
5. Quick Write	5. 10%
6. Closing	6. 5%

Materials

- Copies of the **Taking Notes Tool** for each student
- **Research Portfolios** (students have these)
- Student copies of **Potential Sources Tool** (refer to 9.3.1 Lesson 8)
- Printed Sources (from the previous lesson's searches and homework)
- Student copies of model source, "Animal Minds: Minds of Their Own" (refer to 9.3.2 Lesson 4)

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Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	**Percentage indicates the percentage of lesson time each activity should take.**
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
🗨	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and the assessed standard for this lesson: W.9-10.8. Explain that students will begin the lesson by engaging in a research project check-in where they will review the Student Research Plan by journaling about their own research progress and next steps. Then, using the model source, "Animal Minds: Minds of Their Own," by Virginia Morell, the teacher will discuss and model how to use an inquiry question to annotate for information and how to record notes using the Taking Notes Tool. Independently, students will annotate their sources and record key information by completing a Taking Notes Tool.

- ▸ Students look at agenda.

Activity 2: Homework Accountability/Research Process Check-In 15%

Instruct students to take out the homework from the previous lesson and form pairs to discuss the sources they discovered and the sources' ratings according to the Assessing Sources and Potential Sources Tools. Instruct students to specifically share one successful search and one obstacle they may have encountered conducting research at home, based on their tools.

- ▸ Students form pairs and discuss the homework from the previous lesson by sharing one successful search and one obstacle.

Lead a brief share out of students' research experiences.

- 🗨 Students responses may include the following:
  - My biggest challenge is the long essays that I find. How do I manage to read all of them?

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- I learned how to skim and that helps with the long essays; I am making progress there. I am able to read closely the parts that help answer my inquiry research questions.
- I find the ideas interesting, but how do I remember the details?
- I highlight stuff that I like or find interesting.
- My challenge is finding answers to my inquiry questions.
- Answering all the questions on the Assessing Tools Handout can be time-consuming.
- I found a source and the title looked good but it turned out it was not about my topic at all. It was also written in academic language I could not understand.

ⓘ Students are likely to encounter similar experiences; hearing from peers will reassure them that researchers go through similar challenges. In this formal research process, a conversation among the students will alert both students and the teacher to possible obstacles that might need addressing.

Distribute the previous lesson's assessment (with feedback).

- Students examine the teacher's feedback on the previous lesson's assessment.

ⓘ The previous lesson's assessment was the following:

- Choose two sources from your Potential Sources Tool and using the Assessing Sources Tool work, discuss your evaluation of them. Why did the sources earn their specific rates for accessibility, credibility, and relevance? Explain using information from your sources, your inquiry questions, and the criteria outlined on the Assessing Sources Handout.
- Based on today's work, what are your next steps? Are you going to need to find more sources? What sources do you need to look for? What holes remain in your research so far?

Instruct students to take out the Student Research Plan from their Research Portfolios.

ⓘ The Student Research Plan should be located in the front of each student's Research Portfolio.

Instruct students to review the Research Plan, Part 2 where it discusses planning for searches (Lesson 3) and assessing sources (Lesson 4). Instruct students to use the previous lesson's homework and assessment to journal about their research progress and next steps.

ⓘ Instruct students to continue the Research Journal started in Lesson 3; students can write on separate sheets of paper or in a notebook and keep the Research Journal in the Research Portfolio.

- Students review the Student Research Plan and write in their Research Journals.

- Student responses will vary by individual research question/problem but look for students to use the language of the Student Research Plan when reflecting on their research progress and next steps.

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Instruct students to file the Student Research Plan in the front section of the Research Portfolio and organize the tools from the previous lesson in Section 2: Gathering and Analyzing Information.

Ask students to take out the printed sources and the Potential Sources Tools from the previous lesson's homework.

- Students file away their Research Plans and take out the printed sources and the Potential Sources Tools from the previous lesson's homework.

ⓘ The printed sources and Potential Sources Tools will be needed for the next activity.

Activity 4: Annotating and Taking Notes on Rich Sources 40%

Introduce the Quick Write assessment (choose one annotated source and corresponding Taking Notes Tool and discuss how the information in the source and tool address a specific inquiry question or component of the research question/problem). Explain to students that this is the lesson assessment and the focus for this activity.

- Students read the assessment and listen.

ⓘ Display the Quick Write assessment for students to see.

Share with students that once researchers have identified and assessed several sources that have relevant, credible, and accessible information, they begin reading the texts closely. Close reading for the purpose of gathering and analyzing information is often done in two steps: annotating and taking notes. Remind students of the standard that is assessed in this lesson (W.9-10.8) and discuss how the standard states, "assess the usefulness of each source in answering the research question." Both annotating and taking notes aid in further assessing the usefulness of each source. Students have preliminarily assessed their sources by skimming. Now students will read their sources closely to determine if a source is truly useful in addressing an aspect of the research question/problem.

- Students listen.

Inform students that they will begin by focusing on how to annotate informational text. Explain to students that annotating informational text for research purposes is different than annotating literature.

Explain to students that when conducting research they annotate for:

- Key words and concepts
- Information that will answer inquiry questions

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- Initial impressions of the information
- Areas for possible further exploration
- Connections to other sources

Explain to students that annotating informational text for research may be different but the annotations codes used in previous modules remain the same.

Review the annotation codes from the previous modules:

- Box or circle unfamiliar words and phrases and rewrite a word or phrase you might have figured out
- Star (*) important or repeating ideas
- Put a question mark (?) next to a section you are questioning or confused about
- Use an exclamation point (!) for areas that remind you of another text or ideas that strike you or surprise you in some way

Remind students that besides using the codes, marking the text with thinking related to the codes is important.

- Students listen.

Introduce two new annotation codes specifically for informational text:

- Underline areas that represent major points. Use vertical lines in the margin to denote longer statements that may be too long to underline.
- Use numbers in the margin to indicate a sequence of points to trace the development of an argument.
  - Students listen.

ⓘ Consider displaying all annotation codes for students to see.

Distribute an excerpt from the model source "Animal Minds: Minds of Their Own," by Virginia Morell and read the excerpt aloud from "'That's why I started my studies with Alex,' Pepperberg said" to "And Alex the parrot turned out to be a surprisingly good talker." Instruct students to follow along.

- Students follow along, reading silently.

Explain that you will annotate this text for a specific inquiry question: How do researchers measure animal intelligence? Model how to annotate the informational text by coding and writing thoughts directly on the text, pausing after each annotation, and explaining the choice.

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- Star near "They were clearly a team." – An interesting comment; the relationship between the researcher and the parrot; "team" implies that they are equal.
- Exclamation point and star near "and because of their work, the notion that animals can think is no longer so fanciful." – The study will succeed in proving that animals can think.
- Underline the sentence: "Certain skills are considered key signs of higher mental abilities: good memory, a grasp of grammar and symbols, self-awareness, understanding others' motives, imitating others, and being creative." – These are key details about what scientists look for when measuring animal intelligence; this information directly connects to my inquiry question.
- Box around the word "ingenious experiments." – Unsure about what the word *ingenious* means but maybe new or interesting experiments is what it is saying.
- Star near "Bit by bit, in ingenious experiments, researchers have documented these talents in other species." – Researchers are able to see intelligence in animals that humans share. This might contribute to how they measure animal intelligence.
- Exclamation point near "Alex the parrot turned out to be a surprisingly good talker." – The parrot is a good talker; an important detail since the researcher was able to teach the parrot, revealing that animals can exhibit intelligences like learning how to communicate.

  - Students listen and follow along with the modeling.

ⓘ Consider creating an annotated text in advance and distributing copies to the students for support.

ⓘ Consider displaying the model annotation notes for students to see.

Instruct students to form pairs and practice annotating the model source by reading from "Thirty years after the Alex studies began" to "Nevertheless, this is not the same thing as having an animal look up at you, open his mouth, and speak." Remind students to mark their thinking directly on the source, next to their coding, and to keep the inquiry question in mind as they annotate: How do researchers measure animal intelligence?

  - Students form pairs and annotate the model source.

ⓘ **Differentiation Consideration:** Consider giving students highlighters to annotate.

Lead a brief share out of the annotation practice to confirm that students identify important details, record initial impressions, establish connections, and identify other areas of research.

  - Student responses may include the following:

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- Star near "She let the store's assistant pick him out because she didn't want other scientists saying later that she'd deliberately chosen an especially smart bird for her work." – The researcher is trying to prove her authority or credibility. This shows the actual source is credible because of the researcher's own integrity.
- Box around the word "futile." – I think this word means that it was not going to succeed or achieve anything.
- Star near "most researchers thought Pepperberg's interspecies communication study would be futile." – The researcher was encountering resistance; this comment also reminds me of the opposition to Grandin's ideas. I wonder how she will measure the animal's intelligence?
- Write the number 1 near "Nevertheless, this is not the same thing as having an animal look up at you, open his mouth, and speak." – It sounds like the researcher is going to prove animal intelligence through the parrot's talking as opposed to other researchers who have yet to do this with other animals. This seems to be her first point.

Share with students that they will now analyze the annotation just completed and write key details and their own thinking about those details. Explain that this is the beginning of analyzing the research and that taking notes is the next step in the close reading process.

- Students listen.

ⓘ Consider defining *analysis* for students ("to examine carefully and critically in detail so as to bring out the essential elements or give the essence of").

Distribute the Taking Notes Tools to each student.

Model using the Taking Notes Tool with students. Ask students to write the inquiry question in the top portion of the tool: How do researchers measure animal intelligence? Instruct students to record the source number as it appears on their Potential Sources Tool under the column marked "Reference." Explain that students should try to write where the detail comes from in the actual text. Model for students by writing "Source #1 and Paragraph #4." Remind students that when writing research papers they have to cite sources. Inform them that in Unit 3 they will learn more about how to cite sources, but they will need to know the source and the page number for all the research information for right now.

- Students follow along with the modeling.

Explain the next two columns of the tool by modeling how to record notes on the Taking Notes Tool. Inform students that one of the richest and most interesting details for the inquiry question "How do researchers measure animal intelligence?" came from paragraph four, where it described the characteristics of intelligence that researchers are looking for. Model for students by writing the textual detail under the column "Details." Explain that the "Comments" section is for commenting on that

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textual detail by thinking about (analyzing) how it relates to the inquiry question or the overarching research question/problem.

Reference	Details	Comments
Source #1 and Paragraph #4	"Certain skills are considered key signs of higher mental abilities: good memory, a grasp of grammar and symbols, self-awareness, understanding others' motives, imitating others, and being creative."	These are characteristics scientists look for when measuring animal intelligence. Humans also have these abilities or characteristics. So, researchers are comparing the same "intelligences" between humans and animals when conducting animal intelligence research.

- Students follow along with the modeling.

ⓘ **Differentiation Consideration:** Consider sharing another model example if time allows.

Instruct students to form the same pairs from the previous annotation activity and practice completing one detail and comment for the model source from the annotation previously completed on a Taking Notes Tool.

- Student responses may include the following:

Reference	Details	Comments
Source #1 and Paragraph #8	"Nevertheless, this is not the same thing as having an animal look up at you, open his mouth, and speak."	This source is proving animal intelligence through a parrot talking. This is one way to measure animal intelligence: verbal communication.
Source #1 and Paragraph #6	"She let the store's assistant pick him out because she didn't want other scientists saying later that she'd deliberately chosen an especially smart bird for her work."	The researcher's study on the parrot is credible. This is credible research that shows animal intelligence.

ⓘ Circulate around the room and monitor student progress.

Activity 5: Annotating and Taking Notes Independently 25%

Instruct students to select one of their sources (from the previous lesson's Potential Sources Tools) and begin close reading by annotating and taking notes using the Taking Notes Tool.

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Explain to students that to write successful essays they need many notes that are rich in content. If they read an essay or an article they originally thought was relevant, but once they read it closer they find very little to annotate, they should determine that it is not rich enough and move on to the next source.

- Students select one of their sources and begin close reading by annotating and taking notes using the Taking Notes Tool.

ⓘ Circulate and confirm that the students are annotating and then taking notes. Make sure they do not skip the annotation step.

ⓘ Students need hard copies of their sources in order to annotate. Students should have brought these to the lesson as directed in the previous lesson's homework.

ⓘ Remind students to keep all the annotated sources and Taking Notes Tools in Section 2 of the Research Portfolio.

Activity 6: Quick-Write 10%

Instruct students to respond briefly in writing to the following prompt:

Choose one annotated source and corresponding Taking Notes Tool and discuss how the information in the source and tool address a specific inquiry question or component of the research question/problem.

ⓘ Display the prompt for students to see, or provide the prompt in hard copy.

- Students independently answer the prompt using the annotated sources and Taking Notes Tools from the lesson.

- See the High Performance Response at the beginning of this lesson.

Instruct students to turn in one completed Taking Notes Tool and the Quick Write.

ⓘ Consider assessing each Quick Write using the Taking Notes Tool collected with it.

Activity 6: Closing 5%

Display and distribute the homework assignment. Distribute additional Taking Notes Tools to each student. For homework, instruct students to annotate and take notes on a Taking Notes Tool for two more sources from the previous lesson's Potential Sources Tools. Additionally, students will continue to record vocabulary from these preliminary searches in the Vocabulary Journal.

- Students follow along.

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ⓘ IN*Consider drawing students' attention to their application of standard L.9-10.4.a,c,d by using context to make meaning of a word; consulting reference materials to clarify its precise meaning; verifying the preliminary determination of its meaning.

Homework

Annotate and take notes on a Taking Notes Tool for two more sources from the previous lesson's Potential Sources Tools. Additionally, continue to record vocabulary from these preliminary searches in the Vocabulary Journal.

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Name.....

Inquiry Question/Path .....

REF.	DETAILS	COMMENTS
Source # and location in the source:	I record details, ideas, or information that I find in my sources that help me answer my inquiry questions:	I explain the reason why I think they are important, and write personal comments:

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TAKING NOTES

Name Sample Student Responses

Inquiry Question/Path How do researchers measure animal intelligence?

REF.	DETAILS	COMMENTS
Source # and location in the source:	I record details, ideas, or information that I find in my sources that help me answer my inquiry questions:	I explain the reason why I think they are important, and write personal comments:
Source #2 and Paragraph #4	"Certain skills are considered key signs of higher mental abilities: good memory, a grasp of grammar and symbols, self- awareness, understanding others' motives, imitating others, and being creative."	These are characteristics scientists look for when measuring animal intelligence. Humans also have these abilities or characteristics. So, researchers are comparing the same "intelligences" between humans and animals when conducting animal intelligence research.
Source#2 and Paragraph #8	"Nevertheless, this is not the same thing as having an animal look up at you, open his mouth, and speak."	This source is proving animal intelligence through a parrot talking. This is one way to measure animal intelligence: verbal communication.
Source #2 and Paragraph #6	"She let the store's assistant pick him out because she didn't want other scientists saying later that she'd deliberately chosen an especially smart bird for her work."	The researcher's study on the parrot is credible. This is credible research that shows animal intelligence.
Source #1, Second Page	"Experiments with animals have long been handicapped by our anthropocentric attitude: We often test them in ways that work fine with humans but not so well with other species. Scientists are now finally meeting animals on their own terms instead of treating them like furry (or feathery) humans, and this shift is fundamentally reshaping our understanding."	This is saying that animal intelligence research design has to be from the animal's point of view. This is what Grandin was saying in Animals in Translation; animals are different than humans and research must think about that.

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9.3.2 Lesson 6

Introduction

In this lesson, students construct a frame (**Research Frame Tool**) to guide their research by establishing inquiry paths that allow them to explore various aspects of their research question/problem. Students group their inquiry questions thematically and then frame their research formally using the **Research Frame Tool**.

Students begin the lesson by refining inquiry questions from Lesson 2, based on search results from Lessons 3–5. The teacher introduces the concept of inquiry paths by modeling how to group inquiry questions thematically. The teacher then shows students how to complete a **Research Frame Tool** as a way to plan research using grouped inquiry questions. Students organize, categorize, and refine their inquiry questions by inquiry path and independently develop a detailed, organized Research Frame. For homework, students select one to two of their strongest inquiry questions to begin pursuing through independent research by following the research steps outlined in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) using the appropriate tools for each of the search activities. Additionally, students should continue to add new vocabulary learned through the research process to the Vocabulary Journal.

Standards

Assessed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Addressed Standard(s)	
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism, and following a standard format for citation.
L.9-10.4 a-d	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies.

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	a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Assessment

Assessment(s)
The learning in this lesson will be captured through the completion of the Research Frame Tool. Students will submit completed Research Frames during the lesson's closing. ⓘ This assessment will be evaluated using the criteria articulated in the High Performance Response below.
High Performance Response(s)
A High Performance Response may include the following: • See the model Research Frame Tool located at the end of the lesson. Use the following criteria to assess individual student's Research Frames: • Are the inquiry paths high-level? • Is there a range of inquiry paths regarding content and coverage of the research question/problem? • Are the inquiry paths distinct from one another? • Do the inquiry paths seem to be equally important? • Do the questions within the inquiry paths vary and address appropriate scope and utility?

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• thematically (adv.) – in a manner characterized by a unifying or dominant idea • static (adj.) – showing little or no change; lacking movement
Vocabulary to teach (may include direct word work and/or questions)
• None*

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*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text: • Standards: W.9-10.7, W.9-10.8, L.9-10.4.a, c, d	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability	2. 10%
3. Inquiry Paths and the Research Frame	3. 35%
4. Research Frame Tool: Independent Work	4. 40%
5. Closing	5. 10%

Materials

- Copies of the **Research Frame Tool** for each student
- Research Portfolios (students have these)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	Percentage indicates the percentage of lesson time each activity should take.
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
🗨	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

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Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and the assessed standard for this lesson: W.9-10.7. Explain that students begin the lesson by refining inquiry questions from Lesson 2, based on search results from Lessons 3–5. The teacher then introduces the concept of inquiry paths by modeling how to group inquiry questions thematically. The teacher shows students how to complete a Research Frame Tool as a way to plan/frame research using grouped inquiry questions. Students then organize, categorize, and refine their inquiry questions by inquiry path and independently develop a detailed, organized Research Frame.

- Students listen.

Activity 2: Homework Accountability 10%

Instruct students to take out the homework from the previous lesson, which was: Annotate and take notes on a Taking Notes Tool from two more sources from the previous lesson's Potential Sources Tools. Additionally, record vocabulary from these preliminary searches in the Vocabulary Journal.

- Students take out their homework.

Instruct students to form pairs with a classmate for a Turn-and-Talk about the annotation and taking notes processes. Specifically, instruct pairs to discuss two details from the close reading of at least one source by discussing how the details address a selected inquiry question.

- Students do a Turn-and-Talk.

ⓘ Consider circulating during the Turn-and-Talk to monitor students' discussions.

Lead a brief share out of students' discussions.

- Student responses will vary by individual research question/problem. An example response may sound like the following:
  - In Source # 1, the author says, "Certain skills are considered key signs of higher mental abilities." This detail is important for addressing my inquiry question about measuring animal intelligence; researchers measure animal intelligence using these characteristics.
  - In Source # 1, the author points to the hard work that the researcher did in order to establish the credibility of the study. This is okay for establishing credibility of the source, but I need more about animal intelligence.

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Activity 4: Inquiry Paths and the Research Frame 35%

Introduce students to the Research Frame. Explain that based on what they learned about conducting independent searches (planning for searches, assessing sources, and annotating sources/recording notes), students will now construct a Research Frame to guide the independent searches they will do in the next three lessons (Lessons 7–9). The Research Frame is a formal plan or guide used to list potential inquiry paths and corresponding inquiry questions. Explain that before they can build the Research Frame, students need to refine the inquiry questions developed in Lesson 2 based on the research they have done thus far.

- Students listen.

Instruct students to take out their specific inquiry questions from Lesson 2.

ⓘ These are located in Section 1 of the Research Portfolio.

Ask students to reflect on the preliminary searches conducted in Lessons 3–5 by thinking about the search results in relation to the specific inquiry questions. Instruct students to consider the following questions:

How do the preliminary search results affect your current inquiry questions?

What new inquiry questions are emerging as a result of the preliminary searches? What inquiry questions might need to be eliminated already?

How can the inquiry questions be refined to reflect the search results?

- Students listen.

Instruct students to apply the guiding questions just discussed and refine the specific inquiry questions from Lesson 2.

- Students work independently to refine their inquiry questions from Lesson 2.

ⓘ Consider referring students back to the vetting process taught in Lesson 2 if students need more support.

Explain to students that the next step is to categorize the refined inquiry questions into inquiry paths. Explain that an inquiry path is an overarching problem or question that organizes your research questions.

- Students listen.

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Explain that inquiry questions can be grouped *thematically.* Ask students to define the word *thematically* using the root word. Remind students that they should look for common themes or patterns among the various inquiry questions.

ⓘ **Differentiation Consideration:** If students cannot define the word *thematically* using the root, consider providing them with the root *theme* and asking them how it helps define the word.

Explain to students that they must first group the questions thematically to create an inquiry path. Then they can label this inquiry path with an overarching question.

- Students listen.

Display the following model inquiry questions:

- What technology is used to measure animal intelligence?
- How is animal intelligence measured differently for various kinds of animals?
- To what extent are animal experiments valid if they do not take place in the animal's natural environment?
- What does animal intelligence tell us about human intelligence?
- Where does our perspective on animal intelligence come from?

- Students examine the model inquiry questions.

Model for students how to analyze the inquiry questions for common themes or patterns. Explain to students that the first three questions focus on experiments and measuring animal intelligence. The last two questions seem to focus on the human perspective of animal intelligence research. Suggest that the inquiry path for the first three questions might be: How is animal intelligence measured or researched? Explain to students that this is an aspect of the research question/problem because in order to compare animal intelligence to human intelligence it is important to know the animal intelligence is measured. Inform students that the inquiry path for the last two questions might be: Why research animal intelligence?

- Students follow along with the modeling.

Instruct students to determine themes or patterns among their inquiry questions and categorize them accordingly. Instruct students to write possible inquiry path questions/problems for the categorized inquiry questions.

- Students work independently to create and record inquiry paths from their inquiry questions.

- Student responses will vary by individual research question/problem and research conducted. See the Model Research Frame Tool at the end of the lesson for sample responses.

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ⓘ Students can do this by physically arranging questions on their desk or using paper to take notes.

Distribute blank Research Frame Tools to each student.

- Students examine the blank Research Frame Tool

Model for students how to complete the Research Frame Tool. On the top, under "Topic," write "animal intelligence" and under "Area of Investigation" write the question: "How does animal intelligence compare to human intelligence?"

- Students follow along with the modeling.

ⓘ The area of investigation is the same as the research question/problem.

Instruct students that the next step is to group their inquiry questions (areas of investigation) thematically and then create an inquiry path by giving the path a title that is expressed in the form of a question or a problem.

- Students listen.

Model how to begin completing the Research Frame Tool using the model inquiry questions and inquiry paths discussed above.

- Students follow along with the modeling.

Instruct students to label each Inquiry Path with a reference number once they have created a Research Frame. This reference number will be important in subsequent lessons for aligning various sources to one Inquiry Path.

- Students listen.

Activity 5: Research Frame Tool: Independent Work 40%

Instruct students to complete a Research Frame Tool independently by grouping or categorizing inquiry questions by themes or patterns, labeling each group with an Inquiry Path question or problem, and writing reference numbers for the Inquiry Paths. Inform students that they will submit the Research Frame for assessment today. When they get them back in the next lesson, they will file them in Section 2: Gathering and Analyzing Information of their Research Portfolios.

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- Students independently complete a Research Frame Tool.

ⓘ Circulate, offering students help with this task. Confirm that they grasp each step and that they are grouping their inquiry questions thematically. Some students may be tempted to first come up with the path and then group their questions accordingly. Point out that when they do that, they ignore their own research and their paths will not be motivated by their findings. Some students may still have problems organizing their questions; you may choose to group these students with classmates who are researching similar topics to work together to form inquiry paths.

ⓘ Consider reminding students that the Research Frame is not *static* ("showing little or no change; lacking movement"). The Research Frame will continue to evolve as the research evolves with future searches. Remind students this is the iterative and cyclical nature of inquiry-based research.

Activity 6: Closing 10%

Display and distribute the homework assignment. For homework, instruct students to select one to two of their strongest inquiry questions to begin pursuing through independent research by following the research steps outlined in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) using the appropriate tools for each of the search activities. Additionally, students should continue to add new vocabulary learned through the research process to the Vocabulary Journal.

- Students follow along.

ⓘ Consider drawing students' attention to their application of standard L.9-10.4.a, c, d by using context to make meaning of a word; consulting reference materials to clarify its precise meaning; verifying the preliminary determination of its meaning.

Distribute additional search tools (Potential Sources Tool, Assessing Sources Tool, Taking Notes Tool) for the homework.

Instruct students to select and copy one to two of their strongest inquiry questions from the Research Frame Tool and to record these on a separate sheet of paper to take home for homework purposes.

- Students select and copy one to two of their strongest inquiry questions from the Research Frame Tool.

Collect initial Research Frame for assessment purposes.

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Homework

Select one to two of your strongest inquiry questions to begin pursuing through independent research by following the research steps outlined in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) using the appropriate tools for each of the search activities. Additionally, continue to add new vocabulary learned through the research process to the Vocabulary Journal.

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Name ..... Topic .....

Area of Investigation .....

INQUIRY PATH	INQUIRY PATH	INQUIRY PATH
Reference: IP #	Reference: IP #	Reference: IP #
Name this Inquiry Path in the form of a brief description or question:	Name this Inquiry Path in the form of a brief description or question:	Name this Inquiry Path in the form of a brief description or question:
List all the questions in this Inquiry Path:	List all the questions in this Inquiry Path:	List all the questions in this Inquiry Path:

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RESEARCH FRAME

Name Sample Student Response **Topic** Animal Intelligence

Area of Investigation How does animal intelligence compare to human intelligence?

INQUIRY PATH	INQUIRY PATH	INQUIRY PATH
Reference: IP # 1	**Reference: IP #** 2	**Reference: IP #** 3
Name this Inquiry Path in the form of a brief description or question: How is animal intelligence measured?	**Name this Inquiry Path in the form of a brief description or question:** How do animals display intelligence?	**Name this Inquiry Path in the form of a brief description or question:** Why research animal intelligence?
List all the questions in this Inquiry Path:	**List all the questions in this Inquiry Path:**	**List all the questions in this Inquiry Path:**
What technology is used to measure animal intelligence? What experiments could be used to reveal animal intelligence? How is animal intelligence measured differently for various kinds of animals? How have our attempts to measure animal intelligence evolved over time? Is it possible to measure animal intelligence without anthrophormizing animals? How do animals show their "thinking" in experiments? To what extent are animal experiments valid if they do not take place in the animal's natural environment? How do we measure the difference between instincts and higher thinking?	How do we define animal intelligence? How are behavior and intelligence related? What animal is the most "intelligent"? What is the difference between instincts and thoughts? What are some ways that animals show they are making decisions? Does behavior imply thought? How do animals show they are thinking? What qualities of intelligence do animals share with humans? Do animals have the capacity for language? Is learning a sign of intelligence? What does animal intelligence look like and how is it different than human intelligence?	How can animal intelligence be used to benefit humans? How do humans view animal intelligence research? Where does our perspective on animal intelligence come from? How do humans use animal intelligence research? What does animal intelligence tell us about human intelligence? What can animal intelligence research tell us about humans with disabilities? How does of our understanding of animal intelligence affect the way we treat animals?

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9.3.2 Lesson 7

Introduction

In this lesson, students begin conducting searches independently using the **Research Frame** (created in Lesson 6) and associated search tools. This lesson is the first of three lessons in which students conduct sustained, independent research during class. While researching, students consider how to use inquiry questions to drive research and continually assess sources for credibility and usefulness in answering inquiry questions.

This lesson is the first of three independent search lessons that is assessed using a **Conducting Independent Searches Checklist**. The **Conducting Independent Searches Checklist** serves as an assessment tool for the teacher while also focusing students on specific aspects of the search process for each independent searches lesson. Two criteria serve as the focus for each independent searches lesson (Lessons 7–9). For Lesson 7, the focus is criteria #1 and #2, Lesson 8's focus is criteria #3 and #4, and Lesson 9's focus is criteria #5 and #6. The teacher provides feedback on the two specific criteria for each conducting independent searches lessons using the **Conducting Independent Searches Checklist**.

Students begin the lesson by engaging in a research process check-in during which they update their **Student Research Plan**. The teacher introduces students to the **Conducting Independent Searches Checklist**, and students conduct research using the steps that they were introduced to in previous lessons. For homework, students continue conducting searches independently, following the steps taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) and add to the Vocabulary Journal the new vocabulary learned through the research process.

Standards

Assessed Standard(s)	
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
Addressed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry

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	when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
L.9-10.4 a, c, d	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Assessment

Assessment(s)
The learning in this lesson will be captured through individual students' completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame.
High Performance Response(s)
A High Performance Response may include the following: • See model tools in Lessons 3–5 for High Performance Responses. ⓘ Use Criteria #1 and #2 on the Conducting Independent Searches Checklist to assess and give feedback on the student's completed research tools.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• None.*
Vocabulary to teach (may include direct word work and/or text-dependent questions)
• None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

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Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text:	
• Standards: W.9-10.8, W.9-10.7	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability and Research Check-In	2. 15%
3. Conducting Independent Searches Checklist	3. 15%
4. Independent Searches	4. 55%
5. Closing	5. 10%

Materials

- **Research Portfolios** (students have these)
- Student copies of the **Research Plan** (in their **Research Portfolio**)
- Copies of the **Conducting Independent Searches Checklist** for each student
- Student copies of the **Research Frame** (refer to 9.3.2 Lesson 6)
- Copies of the **Potential Sources Tool** for each student (refer to 9.3.1 Lesson 8)
- Student copies of the **Assessing Sources Handout** (refer to 9.3.2 Lesson 4)
- Copies of the **Taking Notes Tool** for each student (refer to 9.3.2 Lesson 5)
- Computers with Internet connection (one for each student)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	Percentage indicates the percentage of lesson time each activity should take.
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
💬	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

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Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and the assessed standard for this lesson: W.9-10.8. This lesson is the first of three independent search lessons that are assessed using a Conducting Independent Searches Checklist. This list serves as an assessment tool for the teacher while also focusing students on specific aspects of the search process for each independent searches lesson (Lessons 7–9). Two criteria serve as the focus for each independent searches lesson. Students begin the lesson by engaging in a research process check-in during which they update their Student Research Plan. Then the teacher introduces students to the Conducting Independent Searches Checklist and students conduct research using the steps that they learned in previous lessons.

- Students look at the agenda.

Activity 2: Homework Accountability and Research Check-In 15%

Instruct students to take out the Lesson 6 homework which was the following: Select one to two of your strongest inquiry questions to begin pursuing through independent research by following the research steps outlined in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) using the respective tools for each of the search activities. Additionally, continue to add new vocabulary learned through the research process to the Vocabulary Journal.

- Students take out the Lesson 6 homework.

Instruct students to Turn-and-Talk with a classmate, discussing one credible and useful source they found related to one of the inquiry questions and two new vocabulary words learned through the source.

- Student responses will vary by students' individual research question/problem. Student responses may include the following:
    - I found a new source called "Animal Minds: Minds Of Their Own" that was credible and useful in answering my inquiry question: How are behavior and intelligence related? I found a passage about chimpanzees that is interesting: "In the wild, a chimpanzee may use four sticks of different sizes to extract the honey from a bee's nest. And in captivity, they can figure out how to position several boxes so they can retrieve a banana hanging from a rope." This source shows me that chimpanzees create tools and can problem-solve or change their behavior based on the environment.
    - I have learned two new vocabulary words through the source: "Animal Minds: Minds of Their Own." One word is *primates*. I have heard this word before but never knew its

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meaning. I was able to figure out the meaning from the text where it describes chimpanzees and then uses the word *primates* to describe them.

ⓘ Consider circulating during the pair discussion to monitor student responses.

Instruct students to take out the Student Research Plan from the front of their Research Portfolio.

- Students take out their Student Research Plans.

Distribute the previous lesson's assessment, the Research Frames, with feedback, to each student and instruct students to examine the feedback.

- Students examine the feedback on the Research Frame.

Instruct students to review the Research Plan Part 2, where it discusses annotating and taking notes on sources (Lesson 5) and building a Research Frame (Lesson 6). Instruct students to use the previous lesson's homework and assessment (Research Frame) to journal about their research progress and next steps.

- Students review the Student Research Plan, Part 2 and use the previous lesson's homework and assessment to journal about their research progress and next steps.

- Student responses will vary by individual research question/problem but look for students to use the language of the Student Research Plan when reflecting on their research progress and next steps.

ⓘ Instruct students to continue the Research Journal started in Lesson 3. Students can write on separate sheets of paper or in a notebook and keep the Research Journal in the Research Portfolio.

Instruct students to file the Student Research Plan in the front section of the Research Portfolio and organize the materials from the previous lesson in Section 2: Gathering and Analyzing Information.

Activity 3: Conducting Independent Searches Checklist 15%

Share with students that this lesson begins a series of three lessons in which students will conduct independent searches during class time and for homework. Inform students that each independent searches lesson (Lessons 7–9) will have a different focus but will include all the steps of the research process taught in previous lessons.

- Students listen.

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Display and distribute the Conducting Independent Searches Checklist. Explain to students that the Conducting Independent Searches Checklist synthesizes all the criteria for an effective search in one list. Explain to students that for each independent searches lesson (Lessons 7–9), students will focus on two criteria to assess their research progress. Inform students that for this lesson, criteria 1 and 2 will be the focus. However, this does not mean that all the research steps should not be completed; all of the criteria are important in conducting effective research. Remind students that the skills inherent in the criteria were taught throughout the previous lessons.

- Students examine the Conducting Independent Searches Checklist.

Instruct students to read the criteria in the Conducting Independent Searches Checklist and then Turn-and-Talk in pairs about the criteria. Instruct the pairs to consider the criteria's specific actions and any questions or clarification needed.

- Student responses will vary but listen for students to use the language of the Conducting Independent Searches Checklist while discussing.

Lead a discussion of the criteria's specific actions and questions/clarification needed.

- Criterion #1: Uses inquiry questions to drive research and identify sources.
  - The criterion's action is that the inquiry questions should drive the research. We should be searching for sources that provide information related to our inquiry questions. The research is based on inquiry or answering questions to gain a deeper understanding of the research question/problem.
- Criterion #2: Continually assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question.
  - This criterion is describing how to assess sources by using the Potential Sources and Assessing Sources Tools introduced in earlier lessons. It is important to quickly get rid of any sources that are not credible, accessible, or useful.
- Criterion #3: Determines if information is sufficient to address established inquiry paths and questions in the Research Frame and adjusts the search accordingly.
  - This criterion's action is describing how to assess the research and if there is enough to answer inquiry questions or address Inquiry Paths. Sometimes new questions will emerge and some questions will need to be eliminated based on the direction of the research. Sometimes additional sources will need to be explored.
- Criterion #4: Reads sources closely, analyzes details and ideas, and records notes for each source to determine how it addresses inquiry questions and paths.

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- This criterion's action is about selecting key sources to read closely for information that addresses select inquiry questions and paths.

- Criterion #5: Makes decisions about the research direction based on reviews of annotation and notes and relevance to inquiry questions/paths. This may include discontinuing inquiry paths and adding inquiry paths/questions.
  - This criterion's action is about deciding which inquiry paths and questions have been addressed by the research and making decisions about where to go with the research.
- Criterion #6: Marks key info in sources, takes notes of initial impressions, identifies additional research needs, and inserts codes to link to inquiry paths.
  - This criterion's action is about annotating and taking notes on key sources, but also beginning to analyze those sources for how they answer the selected inquiry question. This criterion also contributes to changes in research direction that might take place.

ⓘ These are responses to look for. Consider generating follow-up questions as necessary. Look for essential understanding of the criterion's action, its nonlinear nature, and the repetitive practices that research calls for.

ⓘ Students will not need to complete the Conducing Independent Searches Checklist; it is for teacher accountability purposes only.

Activity 4: Independent Searches 55%

Explain to students they will now transition to independent searches. Remind students they will be assessed on Criteria #1 and #2 on the Conducting Independent Searches Checklist. Remind students of the research steps (planning for searches, assessing sources, annotating, and taking notes).

Transition students to independent searches. Distribute extra tools as needed to each student.

- Students transition to independent searches.

ⓘ Consider displaying the search steps from Lessons 3–5 for students to see.

ⓘ Consider using the media center or library for this lesson so students have access to librarians or media center teachers.

ⓘ Students will need access to computers with Internet capacity for research purposes. Prepare for the lesson ahead of time by reserving space in rooms with technology access for all students.

Circulate around the room to support students as they engage in the research process. Ask students to consult the Conducting Independent Searches Checklist as a reminder of the various components of the research process.

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- Students independently search for sources using the Research Frame and the steps from earlier lessons (planning for searches, assessing sources, annotating, and taking notes).

ⓘ Place students in heterogeneous groups of four or five that will remain consistent throughout the module. Consider forming groups ahead of time to maximize the range of different research topics and questions within each group. The goal of these groups is to create small communities of inquiry/research teams that provide support and accountability to each other. Students should know about their teammates' topics, research questions, central claims, etc. Students should share claims and evidence that arise from their individual inquiry and learn from each other's research processes, which they may use to potentially refine their own inquiry topics and questions.

Remind students to organize all search materials in their Research Portfolios, Section 2.

ⓘ Remind students to continue considering print and non-text media when researching and to think about how visuals or auditory media can provide information or demonstrate information in ways different from text.

Activity 5: Closing 10%

Inform students that the assessment will be based on Criteria #1 and #2 outlined in the Conducting Independent Searches Checklist.

- Students listen.

Collect the completed research tools from the lesson, including the Potential Sources Tools, Assessing Sources Tools, Taking Notes Tools, and a current Research Frame.

- Students turn-in the completed research tools from the lesson.

Display and distribute the homework assignment. For homework, instruct students to continue conducting searches independently, following the steps taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) and add to the Vocabulary Journal the new vocabulary they learned through the research process.

- Students follow along.

ⓘ Distribute additional tools as needed. Students should bring in annotated sources and completed research tools as evidence of their independent research.

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ⓘ Consider drawing students' attention to their application of standard L.9-10.4.a,c,d by using context to make meaning of a word; consulting reference materials to clarify its precise meaning; verifying the preliminary determination of its meaning.

Homework

Continue conducting searches independently, following the steps taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) and add to the Vocabulary Journal any new vocabulary you learn through the research process.

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Conducting Independent Searches Checklist

Name:		Class:		Date:	

Conducting Independent Searches Criteria	Teacher Feedback
1. Uses inquiry questions to drive research and identify sources.	
2. Continually assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question.	
3. Determines if information is sufficient to address established inquiry paths and questions in the Research Frame and adjusts the search accordingly.	
4. Reads sources closely, analyzes details and ideas, and records notes for each source to determine how it addresses inquiry questions and paths.	
5. Makes decisions about the research direction based on reviews of annotation and notes and relevance to inquiry questions/paths. This may include discontinuing inquiry paths and adding inquiry paths/questions.	
6. Marks key info in sources, takes notes of initial impressions, identifies additional research needs, and inserts codes to link to inquiry paths.	

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9.3.2 Lesson 8

Introduction

In this lesson, students continue to conduct searches independently using the **Research Frame** as a guide, with the associated search tools. This is the second lesson of the independent search process and builds on the previous lesson by focusing students on determining if the research surfaced is sufficient to address established inquiry paths and questions while adjusting the search accordingly. Additionally, students are reading sources closely, analyzing details and ideas, and taking notes for each source to determine how it addresses inquiry questions and paths.

Students begin by using the previous lesson's assessment, with teacher feedback, to assess their current search process by making strategic decisions about changes, additions, and deletions to the **Research Frame**. As a result, students update their **Research Frame** as needed. Students continue to independently research, using the steps previously taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes). For the lesson assessment, students turn in all completed research tools, including **Potential Sources Tools**, **Taking Notes Tools**, and a current **Research Frame**. For homework, students continue conducting searches independently, following the steps taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes) and add to the **Vocabulary Journal** any new vocabulary learned through the research process.

Standards

Assessed Standard(s)	
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
Addressed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
L.9-10.4.a,	Determine or clarify the meaning of unknown and multiple-meaning words and phrases

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c, d	based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Assessment

Assessment(s)
The learning in this lesson is captured through individual student's completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame.
High Performance Response(s)
A high performance response may include the following: • See the tools in Lessons 3–5 for model responses. ⓘ The research tools will be assessed using the Conducting Independent Searches Checklist (refer to 9.3.2 Lesson 7). Complete feedback for Criteria #3 and #4 on the checklist for each student based on their research tools.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
o None.*
Vocabulary to teach (may include direct word work and/or questions)
o None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

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Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards: o Standards: W.9-10.8, W.9-10.7, L.9-10.a, c, d	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability	2. 10%
3. Research Check-In	3. 15%
4. Independent Searches	4. 60%
5. Closing	5. 10%

Materials

- **Research Portfolios** (students have these)
- Student copies of the current **Research Frame** (refer to 9.2.3 Lesson 6)
- Computers with Internet connection (one for each student)
- Student copies of the **Assessing Sources Handout** (refer to 9.3.2 Lesson 4)
- Student copies of the **Potential Sources Tool** (refer to 9.3.1 Lesson 8)
- Student copies of the **Taking Notes Tool** (refer to Lesson 9.3.2 Lesson 5)
- Student copies of the **Conducting Independent Searches Checklist** (refer to 9.3.2 Lesson 7)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	Percentage indicates the percentage of lesson time each activity should take.
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
💬	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

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Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and sharing the assessed standard for this lesson: W.9-10.8. in this lesson, students use the previous lesson's assessment, with teacher feedback, to assess their search process by making strategic decisions about changes, additions, and deletions to the Research Frame. Students continue to independently research, using the steps previously taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes). Additionally, students turn in all completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame to close the lesson.

- Students look at the agenda.

Activity 2: Homework Accountability 10%

Instruct students to take out the independent research completed for the previous lesson's homework and the Conducting Independent Searches Checklist from the previous lesson.

- Students take out their completed research and the Conducting Independent Searches Checklist.

Instruct students to Turn-and-Talk in pairs about Criteria #1 and #2 on the Conducting Independent Searches Checklist by discussing two examples from the homework (independent research) that best exemplify these criteria.

- Student responses will vary based on their individual research but listen for students to use the language of Criteria #1 and #2 from the Conducting Independent Searches Checklist.

ⓘ Criterion #1 on the Conducting Independent Searches Checklist is the following: Uses inquiry questions to drive research and identify sources. Criterion #2 on the Conducting Independent Searches Checklist is the following: Continually assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question.

ⓘ Students were introduced to the Conducting Independent Searches Checklist in the previous lesson.

ⓘ Consider circulating during the partner discussion to monitor students' research progress and hold students accountable for homework completion.

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Activity 3: Research Check-In 15%

Distribute the previous lesson's completed research tools and Conducting Independent Searches Checklist (with teacher feedback on Criteria #1 and #2 only) to each student. Instruct students to examine the materials.

- Students examine the previous lesson's completed research tools and Conducting Independent Searches Checklist (with teacher feedback on Criteria #1 and #2 only).

ⓘ The Conducting Independent Searches Checklist (Criteria #1 and #2) was used to assess the completed research tools. Prepare for the lesson ahead of time by giving feedback on the checklist (Criteria #1 and #2) for each student, based on individual student's completed research tools.

Remind students that this type of inquiry-based research is cyclical and nonlinear. Sometimes new paths will develop and some paths will be abandoned depending on where the research takes you. Instruct students to reflect on their research from the previous lesson's homework and assessment by thinking about how their Research Frame should change or stay the same. Instruct students to Turn-and-Talk in pairs about the following questions:

What inquiry paths deserve more attention and further development?

Which inquiry paths need to be discontinued or abandoned?

What new inquiry questions are emerging?

What new inquiry paths are emerging?

- Students listen and Turn-and-Talk in pairs about the reflection questions.
- Student responses will vary based on the individual student's research question/problem. However, listen for students to discuss changes, additions, and deletions to inquiry questions/paths.

ⓘ Consider modeling changes, additions, and deletions to the model Research Frame that was developed in Lesson 6 if students need more support.

Instruct students to independently revise/refine their Research Frames based on the previous pair reflection.

- Students independently revise/refine their Research Frame.

ⓘ Students can write their revisions directly on their current Research Frame, on an additional Research Frame, or another sheet of paper.

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ⓘ Some students may not need to alter their Research Frame as a result of their research. This is okay as long as the research is sufficient in supporting the current Research Frame. Consider having these students peer review each other's Research Frames and research notes/tools to ensure no alterations are necessary.

Instruct students to organize and file all research and associated materials in the Research Portfolio (Section 2: Gathering and Analyzing Information).

- Students organize and file all research and associated materials in Section 2 of the Research Portfolio.

Activity 4: Independent Searches 60%

Remind students of the search steps from Lessons 3–5 (planning for searches, assessing sources, annotating sources, and taking notes). Also remind students that at the end of this lesson they will be assessed on Criteria #2 and #3 on the Conducting Independent Searches Checklist. Transition students to independent searches.

- Students listen and transition to independent searches.

ⓘ Consider displaying the search steps from Lessons 3–5 for students to see.

ⓘ Consider using the media center or library for this lesson so students have access to librarians or media center teachers.

ⓘ Students will need access to computers with Internet capacity for research purposes. Prepare for the lesson ahead of time by reserving space in rooms with technology access for all students.

Circulate around the room to support students as they engage in the research process. Consider using the Conducting Independent Searches Checklist to monitor students' progress as they research.

- Students independently search for sources using their current Research Frame and the steps from Lessons 3–5 (planning for searches, assessing sources, annotating sources, and recording notes).

ⓘ Place students in heterogeneous groups of four or five that will remain consistent throughout the module. Consider forming groups ahead of time to maximize the range of different research topics and questions within each group. The goal of these groups is to create small communities of inquiry/research teams that provide support and accountability to each other. Students should know about their teammates' topics, research questions, central claims, etc. Students should share claims and evidence that arise from their individual inquiry and learn from each other's research processes, which they may use to potentially refine their own inquiry topics and questions.

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ⓘ Remind students to continue considering print and non-text media when researching and to think about how visuals or auditory media can provide information or demonstrate information in ways different from text.

Activity 5: Closing 10%

Collect the completed research tools, including Potential Sources Tools, Taking Notes Tools, and the current Research Frame.

- Students turn in all completed research tools along with their current Research Frames.

ⓘ Assess the completed research tools by completing a Conducting Independent Searches Checklist for each student (Criteria #3 and #4 only).

Instruct students to organize this lesson's research in the Research Portfolio.

- Students organize this lesson's research mainly in Section 2 of their Research Portfolios.

Display and distribute the homework assignment. For homework, instruct students to continue conducting searches independently, following the steps taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes). Additionally, instruct students to add new vocabulary to their Vocabulary Journal by writing about the following:

- Describe where you encountered the word/phrase in the research and why it is proving problematic.
- Discuss how you tried to figure out the meaning of the word/phrase.
- Confirm the word's meaning as it is used in the research text using a reference source (dictionary, encyclopedia, etc.).

ⓘ Consider reminding students to use any of the vocabulary strategies introduced in Unit 1: Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. Verify the meaning of the word or phrase (by checking the inferred meaning in context or in a dictionary). Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical). How do changes in prefixes and suffixes affect word meaning? Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses) to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.

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ⓘ Students are expected to read a variety of texts, including appropriately challenging texts with some words they will not necessarily understand. At least one source should be challenging/above grade level in order to provide quality vocabulary for the vocabulary journaling process.

Homework

Continue conducting searches independently, following the steps taught in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes). Additionally, add new vocabulary to the Vocabulary Journal by writing about the following:

- Describe where you encountered the word/phrase in the research and why it is proving problematic.
- Discuss how you tried to figure out the meaning of the word/phrase.
- Confirm the word's meaning as it is used in the research text using a reference source (dictionary, encyclopedia, etc.).

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9.3.2 Lesson 9

Introduction

This lesson is the last in a series of three lessons focused on conducting searches independently. This lesson focuses on Criteria #5 and #6 of the research process addressed in the **Conducting Independent Searches Checklist**. As in Lesson 8, students use the previous lesson's assessment, with teacher feedback, to assess their current search process by making strategic decisions about changes, additions, and deletions to the **Research Frame**. As a result, students update the Research Frame as needed. Students continue to independently research, using the steps previously taught in Lessons 3–5 (plan searches, assess sources, annotate sources, and record notes).

For the lesson assessment, students turn in all completed research tools for the lesson, including **Potential Sources Tools**, **Taking Notes Tools**, and a current Research Frame. For homework, students continue conducting searches independently, following the steps outlined in Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes). Additionally, students organize their research by inquiry paths in the **Research Portfolio**.

Standards

Assessed Standard(s)	
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
Addressed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

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Assessment

Assessment(s)
The learning in this lesson will be captured by the following: • Students turn in the lesson's completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame. ⓘ Assess the tools by completing a Conducting Independent Searches Checklist (refer to 9.3.2 Lesson 7) for each student using Criteria #5 and #6.
High Performance Response(s)
A high performance response may include the following: • See the tools in Lessons 3–5 for model responses.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• None.*
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text: • Standards: W.9-10.8, W.9-10.7	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability and Research Check-In	2. 20%
3. Independent Searches	3. 60%
4. Closing	4. 15%

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Materials

- Student copies of the **Conducting Independent Searches Checklist** (refer to 9.3.2 Lesson 7)
- **Research Portfolios** (students have these)
- Student copies of the **Research Frame** (refer to 9.3.2 Lesson 6)
- Student copies of the **Potential Sources Tool** for each student (refer to 9.3.1 Lesson 8)
- Student copies of the **Assessing Sources Handout** (refer to 9.3.2 Lesson 4)
- Student copies of the **Taking Notes Tool** (refer to 9.3.2 Lesson 5)
- Computers with Internet connection (one for each student)
- Copies of the **Independent Searches Self-Evaluation Tool** for each student (optional activity)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	**Percentage indicates the percentage of lesson time each activity should take.**
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
❝	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and sharing the assessed standard for this lesson: W.9-10.8. In this lesson, students use the previous lesson's assessment, with teacher feedback, to assess their current search process by making strategic decisions about changes, additions, and deletions to the Research Frame. Students continue to independently research, using the steps previously taught in Lessons 3–5 (plan searches, assess sources, annotate sources, and record notes). Additionally, students turn in all completed research tools from the lesson, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame.

▸ Students look at the agenda.

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Activity 2: Homework Accountability and Research Check-In 20%

Instruct students to take out the independent research completed for the previous lesson's homework and the Conducting Independent Searches Checklist.

Instruct students to Turn-and-Talk with a classmate about Criteria #3 and #4 on the Conducting Independent Searches Checklist by discussing two examples from the homework (independent research) that best exemplify these criteria.

- Student responses will vary based on their individual research but listen for students to use the language of Criteria #3 and #4 from the Conducting Independent Searches Checklist while discussing.

ⓘ Criterion #3 on the Conducting Independent Searches Checklist is the following: Determines if information is sufficient to address established inquiry paths and questions in the Research Frame and adjusts the search accordingly. Criterion #4 is the following: Reads sources closely, analyzes details and ideas, and takes notes for each source to determine how it addresses inquiry questions and paths.

ⓘ Students were provided with a Conducting Independent Searches Checklist in Lessons 7 and 8.

ⓘ Consider circulating during the pair discussion to monitor students' research progress and to hold students accountable for homework completion.

Distribute the previous lesson's assessment (completed research tools) and the Conducting Independent Searches Checklist (with teacher feedback on Criteria #3 and #4 only) to each student. Instruct students to examine the materials.

- Students examine the previous lesson's assessment (completed research tools) and the Conducting Independent Searches Checklist (with teacher feedback on Criteria #3 and #4 only).

ⓘ The Conducting Independent Searches Checklist (Criteria #3 and #4) was used to assess the completed research tools. Prepare for the lesson ahead of time by giving feedback on the checklist (Criteria #3 and #4) for each student, based on individual students' completed research tools.

Inform students that today is the concluding lesson on independent searches. Remind students they will continue to research outside of class for homework. Share with students that they will be reflecting on the previous lesson's homework and assessment materials by thinking about how their Research Frame should change or stay the same before beginning to conduct more independent research in this lesson.

- Students listen.

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Instruct students to reflect on the following questions by revising/refining their Research Frame accordingly:

What inquiry paths deserve more attention and further development?

What inquiry paths need to be discontinued or abandoned?

What new inquiry questions are emerging?

What inquiry questions can be discontinued or abandoned?

- Students reflect on the previous questions by revising/refining their Research Frame accordingly.

ⓘ Consider reminding students to use their completed research and teacher feedback, based on the previous lessons' assessments (Lessons 7 and 8) to support their revisions.

ⓘ Students can write their revisions directly on the current Research Frame, on an additional Research Frame, or another sheet of paper.

ⓘ Some students may not need to alter the Research Frame as a result of their research. Consider having these students peer review each other's Research Frames and research notes/tools to ensure no alterations are necessary.

ⓘ If students need more support, consider modeling for students how to revise/refine the Research Frame by using the model Research Frame developed in Lesson 6.

Instruct students to organize and file their research materials from the previous lesson's homework and assessment in the Research Portfolio.

- Students organize and file their research materials in the Research Portfolio.

Activity 3: Independent Searches 60%

Remind students of the search steps from Lessons 3–5 (plan searches, assess sources, annotate sources, and take notes). Also, remind students that at the end of this lesson they will be assessed on Criteria #5 and #5 on the Conducting Independent Searches Checklist. Transition students to independent searches.

- Students listen and transition to independent searches.

ⓘ Consider displaying the search steps from Lessons 3–5 for students to see.

ⓘ Consider using the media center or library for this lesson so students have access to librarians or media center teachers.

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ⓘ Students will need access to computers with Internet capacity for research purposes. Prepare for the lesson ahead of time by reserving space in classrooms with technology access for all students.

Circulate around the room to support students as they engage in the research process. Consider using the Conducting Independent Searches Checklist to monitor student progress as they research.

- Students independently search for sources using a current Research Frame and the steps from Lessons 3–5 (plan for searches, assess sources, annotate sources, and record notes).

ⓘ Place students in heterogeneous groups of four to five that will remain consistent throughout the module. Consider forming groups ahead of time to maximize the range of different research topics and questions within each group. The goal of these groups is to create small communities of inquiry/research teams that provide support and accountability to each other. Students should know about their teammates' topics, research questions, central claims, etc. Students should share claims and evidence that arise from their individual inquiry and learn from each other's research processes, which they may use to potentially refine their own inquiry topics and questions.

ⓘ Remind students to continue considering print and non-text media when researching and to think about how visuals or auditory media can provide or demonstrate information in ways different from text.

Activity 4: Closing 15%

Collect today's completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame.

- Students turn in today's completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame.

ⓘ Use Criteria #5 and #6 outlined in the Conducting Independent Searches Checklist to assess individual student's research progress, based on their completed research tools. See the High Performance Response for more information.

ⓘ Criteria #'s 1, 2, 3, and 4 have been previously assessed in the previous independent search lessons (Lessons 7 and 8). Criteria #'s 5 and 6 will be assessed for the first time in this lesson. All criteria may be self-assessed using the Independent Searches Self-Evaluation Tool.

ⓘ Optional Activity: Have students complete a self-evaluation using the criteria from the Conducting Independent Searches Checklist. Explain how to complete the Independent Searches Self-Evaluation by explaining to students that they rate their progress on each search criterion. Explain the following rating scale: 1 = Fails to meet criteria, 2 = Somewhat meets criteria, 3 = Meets criteria, and 4 = Exceeds criteria. Explain to students they can rate themselves however they deem appropriate but

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must provide an explanation for their rating with two examples (at least) from their research process. The examples provided should directly address the criterion's action. Copies of the Independent Searches Self-Evaluation Tool are provided at the end of the lesson.

Instruct students to organize this lesson's research in their Research Portfolios.

- Students organize this lesson's research mainly in Section 2 of their Research Portfolio.

Display and distribute the homework assignment. For homework, instruct students to continue conducting searches independently, following the steps taught in Lessons 3–5 (plan searches, assess sources, annotate sources, and record notes). Additionally, instruct students to organize the multiple sources and research tools by inquiry path in the Research Portfolio.

- Students follow along.

ⓘ Distribute additional tools as needed. Students should bring in annotated sources and completed research tools as evidence of their independent research.

Instruct students to examine their current Research Frames and Research Portfolios. Direct students to compile and organize all of their notes, annotated sources, and tools for each inquiry path by reorganizing Section 3 of the Research Portfolio by inquiry path, or by marking their notes, annotated sources, and tools by the inquiry path number that is located on the Research Frame. Remind students to put research information that is not useful or relevant in Section 4 of the Research Portfolio.

- Students follow along.

ⓘ Section 3 of the Research Portfolio is the Drawing Conclusions Section. Section 4 of the Research Portfolio is the Discarded Material Section.

ⓘ Students may have their own system for organizing their research materials by inquiry path. The goal is for students to organize their research materials by inquiry path so how that goal is achieved may look different for individual students.

ⓘ This homework requires students to take home the Research Portfolio.

Homework

Continue conducting searches independently, following the steps taught in Lessons 3–5 (plan searches, assess sources, annotate sources, and record notes). Additionally, organize the multiple sources and research tools by inquiry path in the Research Portfolio.

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Optional Activity: Independent Searches Self-Evaluation Tool

Name:		Class:		Date:	

Instructions: Complete the following self-evaluation of your research work from Lessons 7–9 by rating each criterion and explaining why you gave yourself that rating, including two specific examples from your research work that supports the explanation of each rating.

The ratings are as follows:

- 1 = Fails to meet criteria
- 2 = Somewhat meets criteria
- 3 = Meets criteria
- 4 = Exceeds criteria

Conducting Independent Searches Criteria	Rating	Explanation and Examples From Research Work
1. Uses inquiry questions to drive research and identify sources.		
2. Determines if information is sufficient to address established inquiry paths and questions in the Research Frame and adjusts the search accordingly.		

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Conducting Independent Searches Criteria	Rating	Explanation and Examples From Research Work
3. Makes decisions about the research direction based on reviews of annotation and notes and relevance to inquiry questions/paths. This may include discontinuing inquiry paths and adding inquiry paths/questions.		
4. Continually assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question.		
5. Reads sources closely, analyzes details and ideas, and records notes for each source to determine how it addresses inquiry questions.		
6. Marks key info in sources, takes notes of initial impressions, identifies additional research needs, and inserts codes to link to inquiry paths.		

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Model Optional Activity: Independent Searches Self-Evaluation Tool

Name:		Class:		Date:	

Instructions: Complete the following self-evaluation of your research work from Lessons 7–9 by rating each criterion and explaining why you gave yourself that rating, including two specific examples from your research work that supports the explanation of each rating.

The ratings are as follows:

- 1 = Fails to meet criteria
- 2 = Somewhat meets criteria
- 3 = Meets criteria
- 4 = Exceeds criteria

Conducting Independent Searches Criteria	Rating	Explanation and Examples From Research Work
1. Uses inquiry questions to drive research and identify sources.	4	I have used inquiry questions to drive my research and identify several sources. Two specific questions I used are: Does behavior imply thought? and How do animals show they are thinking? I used the above questions to find a source, "Animal Minds: Minds of Their Own" that provided information for both of these questions, including discussion of how researchers are teaching animals language to show they are capable of higher mental abilities.
2. Determines if information is sufficient to address established inquiry paths and questions in the Research Frame and adjusts the search accordingly.	4	I have read at least five academic sources and determined that they will provide me with enough information to fully address Inquiry Paths #1 and #2. I was able to answer most of my Inquiry Questions within these Inquiry Paths or at least ask new questions that would fit into the Inquiry Paths, based on the Inquiry Path topic. (Examples = To what extent are animal experiments valid if they do not take place in the animal's natural environment? How do we measure the difference between instincts and higher thinking?) I was able to answer some of the questions in Inquiry Path #3, including: Where does our perspective on animal intelligence come from? And How do humans view animal

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		intelligence research? However, I had to abandon most of the questions because of lack of information. I was not able to find information on many questions including: How does our understanding of animal intelligence affect the way we treat animals? and What can animal intelligence research tell us about humans with disabilities?
3. Makes decisions about the research direction based on reviews of annotation and notes and relevance to inquiry questions/paths. This may include discontinuing inquiry paths and adding inquiry paths/questions.	4	I was able to eliminate an entire inquiry path (Inquiry Path #3) from my Research Frame when I realized it was not working and no information could be found (Why research animal intelligence?). I was able to add a new inquiry path in its place based on several Inquiry Questions that led to plentiful research. I changed Inquiry Path #3 to: How has animal intelligence research evolved over time? This question led to more information including a history of animal intelligence research.
4. Continually assesses sources for credibility; identifies the usefulness of a particular source and explains why a particular source does or does not help respond to an inquiry question.	4	See model tools in Lesson 4.
5. Reads sources closely, analyzes details and ideas, and records notes for each source to determine how it addresses inquiry questions.	4	See model tools in Lesson 5.
6. Marks key info in sources, takes notes of initial impressions, identifies additional research needs, and inserts codes to link to inquiry paths.	4	See model tools in Lesson 5.

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9.3.2 Lesson 10

Introduction

In this lesson, students analyze and synthesize their research to begin making claims about inquiry questions within an inquiry path. Students use at least two **Forming Evidence-Based Claims (EBC) Tools** to develop claims about all inquiry paths on the **Research Frame**.

Students begin by choosing the inquiry path that yielded the richest research. Then students narrow the focus down to a single inquiry question. Students then reread/skim their research associated with that inquiry question, including annotated sources and the **Taking Notes Tools**. Students highlight the pertinent evidence directly on the annotated sources or the **Taking Notes Tools**. Students then select details from the highlighted evidence to make claims about the inquiry path by completing **Forming Evidence-Based Claims Tools**. These initial claims serve as the foundation for the **Evidence-Based Perspective** students will develop in Lessons 11 and 12. At the end of this lesson, students are assessed on their **Forming Evidence-Based Claims Tools** using the **Evidence-Based Claims Criteria Checklist**. For homework, students continue the process introduced in the lesson by analyzing and synthesizing their research and completing at least two **Forming EBC Tools** for all inquiry paths on the **Research Frame**.

Standards

Assessed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
W.9-10.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
Addressed Standard(s)	
RI.9-10.7	Analyze various accounts of a subject told in different mediums, determining which details are emphasized in each account.

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Assessment

Assessment(s)
The learning in this lesson will be captured on the Forming Evidence-Based Claims Tools: • Students use at least two Forming Evidence-Based Claims Tools to develop claims about one inquiry path. ⓘ Assess the tools using the Evidence-Based Claims Criteria Checklist.
High Performance Response(s)
A high performance response may include the following: • Individual student tools will vary by the individual's research question/problem. See the model Forming Evidence-Based Claims Tool at the end of the lesson for model student responses.

Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• yielded (v.) – gave forth or produced
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Students will encounter domain-specific vocabulary related to their individual research question/problem by reading, annotating, and recording notes on various sources. Students will track some of this vocabulary in their Vocabulary Journal when conducting independent searches during class and for homework.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text: • Standards: W.9-10.7, W.9-10.9, RI.9-10.7	

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Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability and Research Check-In	2. 15%
3. Analyzing Research	3. 50%
4. Synthesizing Research (Lesson Assessment)	4. 25%
5. Closing	5. 5%

Materials

- At least six copies of **Forming Evidence-Based Claims Tools** for each student
- Copies of **Evidence-Based Claims Criteria Checklist** for each student
- **Research Portfolios** (students have these)
- Highlighters (one for every student)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	Percentage indicates the percentage of lesson time each activity should take.
no symbol	Plain text indicates teacher action.
	Bold text indicates text dependent questions.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
💬	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and sharing the assessed standards for this lesson: W.9-10.7 and W.9-10.9. In this lesson, students choose an inquiry path that yielded rich research and then narrow down the focus to a single inquiry question. Students then reread/skim their research associated with that inquiry question, including annotated sources and the Taking Notes Tools. Students highlight the important evidence directly on the annotated sources or the Taking Notes Tools. Students then select details from the highlighted evidence to make claims about the inquiry path by completing Forming

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Evidence-Based Claims Tools. These initial claims serve as the foundation for the Evidence-Based Perspective students develop in Lessons 11 and 12.

- Students look at the agenda.

Activity 2: Homework Accountability and Research Check-In 15%

Inform students that they will discuss the previous lesson's assessment and homework. Distribute the previous lesson's assessment (completed research tools) to each student.

- Students examine the assessment from the previous lesson.

ⓘ The assessment for Lesson 9 was the following: Completed research tools, including Potential Sources Tools, Taking Notes Tools, and a current Research Frame. All of these materials should be redistributed to the students at this time. Prior to this lesson, all of these materials should be assessed using the Conducting Independent Searches Checklist (located in Lesson 8), focusing on Criteria #5 and #6 only.

Instruct students to take out the homework from the previous lesson, including their completed research and the organized research from their Research Portfolios.

- Students take out their completed research and organized research in the Research Portfolio.

ⓘ The previous lesson's homework was the following: Continue conducting searches independently, following the steps taught in Lessons 3–5 and organize all research notes, annotated sources, and tools by inquiry path.

Instruct students to examine the organized Research Portfolio and previous lesson's work and Turn-and-Talk in pairs about which inquiry paths from their Research Frame yielded the richest information from the source materials.

- Students Turn-and-Talk in pairs about which inquiry paths from their Research Frame yielded the richest information from the source materials.

ⓘ Consider defining the word *yielded* ("gave forth or produced"). Explain that students should be looking for inquiry paths that produced the most useful and ample information based on the searches.

- Student responses may include the following:
  - I noticed that I had several relevant and useful resources for Inquiry Path #1. These references provided some answers to each of the inquiry questions within this path. So, Inquiry Path #1 seems to be the richest path in terms of information across multiple sources.

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- I noticed that I was able to answer several questions within each inquiry path but not address all the inquiry questions within one path. My research is scattered across multiple paths.

ⓘ Circulate around the room to monitor student progress and hold students accountable for the previous lesson's homework by listening for students to use evidence from their research.

Instruct students to take out the Student Research Plan from the front of the Research Portfolio and examine Part 2: Gathering Information. Instruct students to journal about their research progress and next steps based on Part 2: Gathering Information in their Research Journal.

- Student responses will vary by individual research question/problem but look for students to use the language of the Student Research Plan and evidence from their specific research.

ⓘ The Student Research Plan and research journal was introduced in Lesson 2.

Instruct students to organize and file the Student Research Plan, Research Journal, and the other homework and assessment materials in the Research Portfolio.

- Students organize and file their materials in their Research Portfolios.

Activity 3: Analyzing Research 50%

Explain to students that they have been focused on gathering and analyzing specific research sources for the individual questions in their inquiry paths. Explain that students will now take a more global perspective on their research by returning to the Research Frame and rereading and analyzing evidence across multiple sources to see if they can answer some of their inquiry questions. Inform students the goal of this activity is to think about the understanding that is developing about each inquiry path now that the research is mostly complete.

- Students listen.

ⓘ After this lesson's activities, some students will continue researching if they have yet to find enough evidence to directly support a claim about each inquiry path.

Explain to students that they will follow specific steps to analyze the research in order to think about their developing understanding about each inquiry path. Display and explain each step:

- Step #1: Review the Research Frame and analyze each inquiry path. Choose an inquiry path that surfaced the richest research across multiple sources. This inquiry path will now become your focus inquiry path.

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- Step #2: Analyze the focus inquiry path and circle inquiry questions within the path that led to the most useful and relevant research.
- Step #3: Choose one of the circled inquiry questions and reread/skim all the research associated with that one inquiry question by highlighting evidence and details that answer the chosen inquiry question. This step may include reading/skimming across multiple sources for one inquiry question.
- Exception to Step #3: If five or more inquiry questions are circled within one inquiry path, then an optional step can be to choose the inquiry path question itself to reread and analyze the research associated with that path.
- Step #4: Continue to repeat this process for each inquiry path (even for inquiry paths that did not yield the most interesting or rich research).

  - Students listen and examine the steps.

Display the model Research Frame (from Lesson 6) for students to see.

  - Students examine the model Research Frame.

ⓘ The model Research Frame is located in Lesson 6 and has been used throughout the unit to model content for students.

Model for students how to follow the research analysis steps. Explain to students that Step #1 states: Review the Research Frame and analyze each inquiry path. Choose an inquiry path that surfaced the richest research across multiple sources. This inquiry path will now become your focus inquiry path. Explain to students that after examining all the inquiry paths, you decided that two paths yielded the richest research: Inquiry Path #1: How is animal intelligence measured? and Inquiry Path #2: How do animals display intelligence? Most of the resources addressed both of these paths. However, when looking at the questions within each path, Inquiry Path #1's questions led to the most relevant and useful information, so Inquiry Path #1 should be the focus path for this first analysis process.

  - Students listen and follow along with the modeling.

Model for students how to complete Step #2: Analyze the focus inquiry path and circle inquiry questions within the path that led to the most useful and relevant research. Explain to students that you are examining the focus inquiry path (Inquiry Path #1) and all the questions within it, and thinking about the independent searches previously conducted. Explain to students that many of the inquiry questions within Inquiry Path #1 were answered through research including the following: What experiments could be used to reveal animal intelligence? How is animal intelligence measured differently for various kinds of animals? How have our attempts to measure animal intelligence evolved over time? Is it possible to measure animal intelligence without anthropomorphizing animals? To what extent are animal experiments valid if they do not take place in the animal's natural environment? Circle the questions for students to see.

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- Students listen and follow along with the modeling.

Explain to students that Step #3 in the research analysis process is to choose one of the circled inquiry questions, reread/skim all the research associated with the chosen inquiry question, and highlight evidence and details that answer the chosen inquiry question. This step may include reading across multiple sources for one inquiry question. Explain to students that since more than five inquiry questions were circled on the model Research Frame, the inquiry path question itself can be used as the question to focus the rereading and analysis of the associated research. Circle the inquiry path question itself: How is animal intelligence measured?

- Students listen.

Model for students how to use the inquiry path question itself to guide the research analysis: How is animal intelligence measured? Demonstrate how to skim through a source to find, read, and highlight key evidence associated with the chosen inquiry question. Skim through Source #1 "The Brains of the Animal Kingdom" and discuss which evidence to highlight for the chosen inquiry question: How is animal intelligence measured?

- Students listen and follow along with the modeling.

ⓘ Possible highlighted evidence to model from Source #1 "The Brains of the Animal Kingdom" is the following: "Experiments with animals have long been handicapped by our anthropocentric attitude: We often test them in ways that work fine with humans but not so well with other species" and "Scientists are now finally meeting animals on their own terms instead of treating them like furry (or feathery) humans, and this shift is fundamentally reshaping our understanding."

ⓘ Prior to this lesson, students have annotated and recorded notes on all their sources; they will not need to read every source closely again but can skim through for key evidence and details associated with the chosen inquiry question. Consider modeling how to skim if students struggle with this skill.

ⓘ The source "The Brains of the Animal Kingdom" is used to model how to find evidence related to specific inquiry questions. Feel free to use any source to model this skill.

Instruct students to look at their individual Research Frames and follow the first three steps of the research analysis process by choosing one inquiry path to focus on, circling inquiry questions, and finally choosing one focus inquiry question. Remind students to circle questions within the inquiry path that led to relevant and useful research.

- Students look at their individual Research Frames and choose a rich inquiry path to focus on, circle inquiry question(s) within the path, and choose one focus inquiry question.

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ⓘ Again, students can choose the inquiry path question itself to guide their research analysis. It is dependent on how many inquiry questions were circled within one inquiry path. See the exception in the research analysis process steps above.

ⓘ Instruct students to highlight evidence and details that answer the chosen inquiry question using highlighters. Remind students they are looking for how the multiple pieces of research answer the chosen inquiry question.

ⓘ Circulate while students are working to monitor their progress. If students struggle with the analysis process, consider modeling with an individual student's chosen inquiry question to highlight evidence and details that answer the question.

Activity 4: Synthesizing Research (Lesson Assessment) 25%

Inform students they are now going to use a Forming Evidence-Based Claims Tool to synthesize or combine their highlighted evidence associated with their focus inquiry question. Explain to students that it is important to think about how the multiple pieces of research connect and what the research is saying about the focus inquiry question. Explain that this work will help students develop a deeper understanding of the research itself and its connections to the research question/problem (area of investigation). Inform students that this work will be the foundation for developing a perspective about their research question/problem in subsequent lessons.

- Students listen.

ⓘ Students were introduced to making claims in Module 9.2.

ⓘ **Differentiation Consideration:** Consider reminding students of the definition of *synthesize* ("to combine into a single or unified entity") for students.

Distribute several copies (at least six) of the Forming Evidence-Based Claims Tool to all students.

- Students examine the Forming EBC Tool.

Display a model Forming EBC Tool for all students to see. Model for students how to complete the top portion of the Forming EBC Tool by writing the model source numbers: 1 and 5, and the model Inquiry Question: How is animal intelligence measured?

- Students follow along with the modeling.

Instruct students to complete the top portion of their blank Forming EBC Tool, writing their chosen inquiry question and the numbers of the sources they analyzed in the previous activity.

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- Students complete the top portion of their blank Forming EBC Tool using the analysis work from the previous activity.

ⓘ The source numbers have been labeled on the Potential Sources Tools and the Taking Notes Tools as students independently searched in Lessons 7–9. These tools were introduced in Lessons 3–5.

Model for students how to select details from the highlighted research analysis to complete the "Selecting Details" portion of the Forming EBC Tool. Show students several highlighted pieces of evidence from Sources 1 and 5. Explain to students that they should choose the most important evidence that answers the focus inquiry question. Model for students how to choose the most important evidence from model highlighted evidence. Then write these details on the model Forming EBC Tool for students to see. Explain to students that these specific examples all have to do with how animal intelligence is measured now and why that makes it successful. These should include the following:

- "Experiments with animals have long been handicapped by our anthropocentric attitude: We often test them in ways that work fine with humans but not so well with other species" (Source #1).
- "We suggest a simple answer: by pursuing animal cognition with the methods of natural science." "… but careful and impartial experimentation alone can yield incontestable evidence of animal cognition" (Source #5).
- "Scientists are now finally meeting animals on their own terms instead of treating them like furry (or feathery) humans, and this shift is fundamentally reshaping our understanding" (Source #1).

ⓘ Model Source #1 is "The Brains of the Animal Kingdom" and model Source #5 is "Animal Intelligence: How We Discover How Smart Animals Really Are."

- Students listen and follow along with the model.

ⓘ The sources "The Brains of the Animal Kingdom" and "Animal Intelligence: How We Discover How Smart Animals Really Are" are used in the model Forming Evidence-Based Claims Tool. Feel free to use any source to model using the Forming Evidence-Based Claims Tool.

Instruct students to analyze the highlighted evidence from their research and select the most important details to answer their chosen inquiry question. Instruct students to write the selected details on the Forming EBC Tool in the "Selecting Details" section. Remind students to write the source's number on the reference line so they do not separate the resource from the evidence.

- Students analyze the highlighted evidence from their research and write the most important details on the Forming EBC Tool.

ⓘ Circulate and monitor student progress during this guided practice.

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Model for students how to complete the "Analyzing and Connecting Details" section of the Forming EBC Tool. Ask students to consider what the details say about the chosen inquiry question and how connections can be made among the details when considering the chosen inquiry question. Model this thinking and write on the model Forming EBC Tool in the "Analyzing and Connecting Details" section for students to see.

- The details suggest that past animal intelligence research has been limited because of human influence on the research experiments. In the past, human-designed animal experiments have not worked well for animals and may not show an animal's true intelligence potential. Animal research has shifted. The animal's perspective as well as their environment is considered as an integral part of successful experiments. This shift in thinking has produced more research that shows evidence of animal intelligence.

  - Students follow along with the modeling.

Instruct students to practice on their own Forming EBC Tool by thinking about their details and how they are connected in light of their chosen inquiry question. Instruct students to write their thinking in the "Analyzing and Connecting Details" section on the Forming EBC Tool.

  - Students make connections between the important details and write these connections in the "Analyzing and Connecting Details" section on the Forming EBC Tool.

Model for students how to develop a claim that answers the chosen inquiry question by completing the "Making a Claim" section on the Forming EBC Tool. Ask students to think about what conclusions or answers they are developing based on their detail analysis. Write the following claim on the model Forming EBC Tool in the "Making a Claim" section for students to see: The animal's perspective is essential to consider if experiments are going to accurately measure their intelligence.

  - Students follow along with the modeling.

Instruct students to develop their own claim and write it on their Forming EBC Tool in the "Making a Claim" section.

  - Students develop a claim in the "Making a Claim" section on the Forming EBC Tool.

Explain to students that for the previous analysis, they only chose one inquiry question within the path or the inquiry path question itself. Either way, they can analyze the rest of their research evidence and develop more claims about their other inquiry questions.

  - Students listen.

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Instruct students to review their focused inquiry path with the circled inquiry questions. Inform students that they will continue to use Forming EBC Tools to develop claims about all the circled questions within the inquiry path. Instruct students to begin developing claims for their focus inquiry path.

- Students use Forming EBC Tools to develop claims about the circled inquiry questions within the chosen inquiry path.

ⓘ This is the lesson assessment. Instruct students to turn in at least two completed Forming EBC Tools at the lesson's closing.

ⓘ If students have chosen the inquiry path question itself, they should still be able to complete multiple Forming EBC Tools, as they should have plenty of evidence to analyze and make a variety of claims about the inquiry path question itself. (See the model responses at the end of the lesson for an example of this.)

Activity 5: Closing 5%

Instruct students to turn in two completed Forming EBC Tools for assessment purposes.

- Students turn in two completed Forming EBC Tools.

ⓘ Assess the completed Forming EBC Tools using the EBC Criteria Checklist.

Display and distribute the homework assignment. For homework, instruct students to complete the process introduced in the lesson by organizing, analyzing, and synthesizing their research and using at least two Forming EBC Tools to develop claims about all inquiry paths on the Research Frame.

- Students follow along.

ⓘ This homework requires students to take home the Research Portfolio.

Homework

Continue to complete the process introduced in the lesson by organizing, analyzing, and synthesizing your research and using at least two Forming EBC Tools to develop claims about all inquiry paths on the Research Frame.

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Name ..... Source(s) #.....

Inquiry Question:

SEARCHING FOR DETAILS

I read the sources closely and mark words and phrases that help me answer my question.

SELECTING DETAILS

I select words or phrases from my search that I think are the most important for answering my question. I write the reference next to each detail.

Detail 1 (Ref.:)	Detail 2 (Ref.:)	Detail 3 (Ref.:)

ANALYZING AND CONNECTING DETAILS

I re-read parts of the texts and think about the meaning of the details and what they tell me about my question. Then I compare the details and explain the connections I see among them.

What I think about the details and how I connect them:

MAKING A CLAIM

I state a conclusion I have come to and can support with evidence from the texts after reading them closely.

My claim that answers my inquiry question:

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FORMING EVIDENCE-BASED CLAIMS

Name Student Response **Source(s) #** 1 and 5

Inquiry Question: How is animal intelligence successfully measured?

SEARCHING FOR DETAILS

I read the sources closely and mark words and phrases that help me answer my question.

SELECTING DETAILS

I select words or phrases from my search that I think are the most important for answering my question. I write the reference next to each detail.

Detail 1 (Ref.: 1)

"Experiments with animals have long been handicapped by our anthropocentric attitude: We often test them in ways that work fine with humans but not so well with other species."

Detail 2 (Ref.: 5)

"We suggest a simple answer: by pursuing animal cognition with the methods of natural science." "...but careful and impartial experimentation alone can yield incontestable evidence of animal cognition."

Detail 3 (Ref.: 1)

"Scientists are now finally meeting animals on their own terms instead of treating them like furry (or feathery) humans, and this shift is fundamentally reshaping our understanding."

ANALYZING AND CONNECTING DETAILS

I re-read parts of the texts and think about the meaning of the details and what they tell me about my question. Then I compare the details and explain the connections I see among them.

What I think about the details and how I connect them:

The details suggest that past animal intelligence research has been limited because of human influence on the research experiments. In the past, human-designed animal experiments have not worked well for animals and may not show an animal's true intelligence potential. Animal research has shifted. The animal's perspective as well as their environment is considered as an integral part of successful experiments. This shift in thinking has produced more research that shows evidence of animal intelligence.

MAKING A CLAIM

I state a conclusion I have come to and can support with evidence from the texts after reading them closely.

My claim that answers my inquiry question:

The animal's perspective is essential to consider if experiments are going to accurately measure their intelligence.

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Name Student Response **Source(s) #** 3 and 2

Inquiry Question: How is animal intelligence measured?

SEARCHING FOR DETAILS

I read the sources closely and mark words and phrases that help me answer my question.

SELECTING DETAILS

I select words or phrases from my search that I think are the most important for answering my question. I write the reference next to each detail.

Detail 1 (Ref.: 3)

"The researchers discovered that when one chimp laughed others sometimes engaged in 'laugh replications' that lacked the full acoustic structure of spontaneous laughter. In other words, they were fake-laughing."

Detail 2 (Ref.: 2)

"A few recent research papers describe animal competence at social and cognitive tasks that humans often struggle with—mastering conversational etiquette..."

Detail 3 (Ref.: 2)

"Although imitation was once regarded as a simpleminded skill, in recent years cognitive scientists have revealed that it's extremely difficult...actions that imply an awareness of one's self."

ANALYZING AND CONNECTING DETAILS

I re-read parts of the texts and think about the meaning of the details and what they tell me about my question. Then I compare the details and explain the connections I see among them.

What I think about the details and how I connect them:

The details suggest that animal intelligence research can assess animal intelligence by observing certain skills like social awareness and imitation. The chimp's "fake-laugh" is a great example of an animal following social codes and acting in a way that demonstrates intelligence. This is not mindless copying and also shows that the human perspective of the research is also important when studying animal intelligence.

MAKING A CLAIM

I state a conclusion I have come to and can support with evidence from the texts after reading them closely.

My claim that answers my inquiry question:

Animal intelligence can be measured by observing social awareness skills.

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EVIDENCE-BASED CLAIMS CRITERIA CHECKLIST		✓	COMMENTS
I. CONTENT AND ANALYSIS ***An EBC is a clearly stated inference that arises from reading texts closely.***	**Clarity of the Claim:** States a conclusion that you have come to after reading and that you want others to think about.	☐	
	Conformity to the Text: Is based upon and linked to the ideas and details you have read.	☐	
	Understanding of the Topic: Demonstrates knowledge of and sound thinking about a text or topic that matters to you and others.	☐	
II. COMMAND OF EVIDENCE ***An EBC is supported by specific textual evidence and developed through valid reasoning.***	**Reasoning :** All parts of the claim are supported by specific evidence you can point to in the text(s).	☐	
	Use and Integration of Evidence: Uses direct quotations and examples from the text(s) to explain and prove its conclusion.	☐	
	Thoroughness and Objectivity: Is explained thoroughly and distinguishes your claim from other possible positions.	☐	
III. COHERENCE AND ORGANIZATION ***An EBC and its support are coherently organized into a unified explanation.***	**Relationship to Context:** States where your claim is coming from and why you think it is important.	☐	
	Relationships among Parts: Groups and presents supporting evidence in a clear way that helps others understand your claim.	☐	
	Relationship to Other Claims: Can be linked with other claims to make an argument.	☐	
IV. CONTROL OF LANGUAGE AND CONVENTIONS ***An EBC is communicated clearly and precisely, with responsible use/ citation of supporting evidence.***	**Clarity of Communication:** Is clearly and precisely stated, so that others understand your thinking.	☐	
	Responsible Use of Evidence: Quotes from the text accurately.	☐	

ODELL EDUCATION

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9.3.2 Lesson 11

Introduction

In this lesson, students organize, analyze, and synthesize their claims (**Forming Evidence-Based Claims Tools**) from the previous lesson to develop comprehensive claims about each inquiry path in the **Research Frame**.

Students begin the lesson by organizing the claims they created in the previous lesson by physically arranging the **Forming Evidence-Based Claims (EBC) Tools** according to the inquiry paths they address. Students analyze and make connections between these specific claims and the research evidence to develop comprehensive claims about each inquiry path. Students use **Organizing Evidence-Based Claims Tools** to write the comprehensive claims about each inquiry path. Students then work in small groups to peer review one **Organizing Evidence-Based Claims Tool** using an **Evidence-Based Claims Criteria Checklist**. For the lesson assessment, students synthesize the information from an **Organizing Evidence-Based Claims Tool** into a paragraph explaining the claim and the evidence that supports it.

This work directly prepares students for developing and writing an Evidence-Based Perspective for the End-of-Unit Assessment in the next lesson. Students build on the claims created in the previous lesson to develop comprehensive claims that reflect a deeper understanding of the inquiry paths and the research question/problem itself. For homework, students review all of their **Organizing Evidence-Based Claims Tools** using the **Evidence-Based Claims Criteria Checklist**. Students will revise their claims, if necessary, to prepare for the next lesson's End-of-Unit Assessment.

Standards

Assessed Standard(s)	
W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Addressed Standard(s)	
W.9-10.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.

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SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively.

Assessment

Assessment(s)
The learning in this lesson will be captured through a Quick Write at the end of the lesson. Students will craft a response to the following prompt using an Organizing Evidence-Based Claims Tool from the lesson. • Develop a claim about an inquiry path or your research question/problem and support it using specific evidence and details from your research. ⓘ The Quick Write will be assessed using the Evidence-Based Claims Criteria Checklist.
High Performance Response(s)
A high performance response may include the following: • Researchers can measure animal intelligence by observing qualities of intelligence that are shared by humans, but they must design experiments that consider the animal's perspective. Animals share traits of intelligence with humans, specifically social awareness skills. Scientists can also measure animal intelligence by observing social awareness skills—the same skills humans exhibit. For example, chimpanzees are able to "fake laugh," a skill that humans can also do. Researchers were able to show that chimpanzees "engaged in 'laugh replications' that lacked the full acoustic structure of spontaneous laughter." This shows that chimpanzees were engaging in fake laughing with fellow chimpanzees, a social awareness skill that demonstrates an advanced mental capacity. Even though researchers can measure animal intelligence by observing similar human-like skills or qualities, they must maintain the animal's perspective if they are to get accurate measurements or research. Animal intelligence researchers have shifted their attitudes and believe that "meeting animals on their own terms instead of treating them like furry (or feathery) humans" will result in the most accurate and relevant animal intelligence research. And, researchers are designing experiments that "provide other ways for animals to disclose their intelligence to us." Even though animals cannot speak, there may be other ways that show us how smart animals truly are. ⓘ *The evidence in this high performance response comes from the following model sources: Source #3 "Think You're Smarter Than Animals? Maybe Not," Source #2 "Animal Minds: Minds of Their Own," and Source #1 "The Brains of the Animal Kingdom."

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Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• comprehensive (adj.) – of large scope, covering or involving much, inclusive • clarity (n.) – the state of being clear or transparent • thoroughness (adj.) – complete, extremely attentive to accuracy and detail • objectivity (n.) – the state or quality of not being influenced by personal feelings or prejudice
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Because this is not a close reading or research lesson, there is no specified vocabulary. However, in the process of returning to the source texts, students may uncover unfamiliar words. Teachers can guide students to make meaning of these words by following the protocols described in 1E of this document http://www.engageny.org/sites/default/files/resource/attachments/9-12_ela_prefatory_material.pdf.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text:	
• Standards: W.9-10.4, W.9-10.7, W.9-10.9, SL.9-10.1	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability and Research Process Check-In	2. 10%
3. Organizing and Developing Comprehensive Claims	3. 40%
4. Peer Review: Assessing Claims	4. 25%
5. Quick Write	5. 15%
6. Closing	6. 5%

Materials

- Copies of **Organizing Evidence-Based Claims Tools** for each student (one point, two point and three point)
- Model **Research Frame** (refer to 9.3.2 Lesson 6)

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- Student copies of **Evidence-Based Claims Criteria Checklist** (refer to 9.3.2 Lesson 10)
- **Research Portfolios** (students have these)
- Student copies of **Forming Evidence-Based Claims Tools** (refer to 9.3.2 Lesson 10)

Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	**Percentage indicates the percentage of lesson time each activity should take.**
no symbol	Plain text indicates teacher action.
	Bold text indicates text dependent questions.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
💬	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and the assessed standards for this lesson: W.9-10.4 and W.9-10.7. Explain that in this lesson, students use the Organizing Evidence-Based Claims Tool to make comprehensive claims by identifying connections between the specific claims and evidence from the previous lesson (Forming Evidence-Based Claims Tools). Students then peer review one Organizing Evidence-Based Claims Tool using the Evidence-Based Claims Criteria Checklist. Finally, students synthesize the information from an Organizing Evidence-Based Claims Tool into a written paragraph. This work directly prepares students for developing and writing an Evidence-Based Perspective for the End-of-Unit Assessment in the next lesson.

- ▸ Students look at the agenda.

Activity 2: Homework Accountability and Research Process Check-In 10%

Distribute the lesson assessment from the previous lesson (use two Forming Evidence-Based Claims Tools to make claims about one inquiry question) and have students take out their homework from the previous lesson (use at least two Forming Evidence-Based Claims Tools to make claims about each inquiry path).

- ▸ Students examine the previous lesson's assessment and take out their homework.

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Instruct students to take out the Student Research Plan and journal about their research progress and next steps in the research journal, based on the work completed in the previous lesson (Lesson 10). Instruct students to look specifically at Part 3: Organizing and Synthesizing Research on the Student Research Plan to reflect on the research activity they did in the last lesson: forming evidence-based claims about inquiry paths.

- Students journal about their research progress and next steps.
- Student responses will vary by individual research question/problem. Look for students to use the language of the Student Research Plan and evidence from their research process for research journal responses.

ⓘ The lesson assessment from the previous lesson required students to use two Forming Evidence-Based Claims Tools. Hand these tools back to each student with feedback. This assessment was evaluated using the Evidence-Based Claims Criteria Checklist.

ⓘ While students are journaling about their research progress and next steps, circulate around the room to monitor students' homework completion.

ⓘ The research journal was started in Lesson 2 and will be completed in this lesson.

Instruct students to physically arrange all of their Forming EBC Tools by inquiry path on their desks.

ⓘ Students should have at least six Forming EBC Tools, two for each inquiry path.

ⓘ Students are not engaging in pair discussion for homework accountability because they will work together on their Forming EBC Tools later in the lesson.

Activity 3: Organizing and Developing Comprehensive Claims 40%

Explain that students will build on the claims-making process they started in the previous lesson by analyzing and synthesizing comprehensive claims about each inquiry path in the Research Frame. They will use the claims made in the previous lesson as a foundation to analyze and develop comprehensive claims for an entire inquiry path.

- Students listen.

Share the definition of the word *comprehensive* ("of large scope, covering or involving much, inclusive"). Explain that in this lesson students will combine the claims made in the previous lesson to create claims with a larger scope for each inquiry path. Explain that these new claims will be more global and inclusive of multiple pieces of evidence.

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- Students listen.

Distribute a blank Organizing Evidence-Based Claims Two Point Tool to each student. Display the model Research Frame for students to see. Instruct students to examine the Research Frame and read Inquiry Path #1: How is animal intelligence measured?

- Students examine the Organizing Evidence-Based Claims Two Point Tool and read Inquiry Path #1 on the Model Research Frame.

ⓘ The Model Research Frame was created in Lesson 6.

Explain to students that in the previous lesson, the class developed these two claims about this inquiry path:

- The animal's perspective is essential to consider if experiments are going to accurately measure their intelligence.
- Animal intelligence can be measured by observing social awareness skills.

- Students listen.

ⓘ The Model Forming EBC Tools used in this part of the lesson are located in Lesson 10, the previous lesson.

ⓘ The first claim was formally modeled in the previous lesson. The second claim was not formally modeled during the previous lesson, but was included as an additional example.

Explain that students will analyze and make connections between the claims they made about their inquiry questions (the work from the previous lesson). Students will organize, analyze, and make connections between the Forming EBC Tools completed for each inquiry path to create a comprehensive claim on an Organizing EBC Tool.

- Students listen.

Model how to complete an Organizing EBC Two Point Tool based on the model inquiry path discussed above (How is animal intelligence measured?) Display the tool, and explain to students that the Two Point Tool is the most appropriate one to use because in this case they are working with two points (claims).

Explain to students that they can make a larger claim by connecting these two claims.

Continue modeling by writing one of the claims in the Point One section and the other in the Point Two section, and writing the supporting evidence for each point (claim).

ⓘ See the Model Organizing EBC Two Point Tool at the end of the lesson.

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Explain that students can connect these two claims to create a new claim, and model it. Write the new claim at the top of the tool: Animal intelligence can be measured by observing qualities of intelligence that are shared by humans, but experiments must be designed considering the animal's perspective. Explain that the research evidence supports these two claims as well as the connection we just made between them.

- Students follow along with the modeling.

Distribute blank Organizing EBC Tools to each student, giving students the appropriate tool for the number of claims they have. Students should have one tool for each inquiry path.

ⓘ Some students might use a One, Two, or Three Point tool depending on how many claims they made about each inquiry path in the previous lesson. For example, if students completed three Forming EBC Tools for one inquiry path, they should use a Three Point Organizing EBC Tool to connect the three claims into one comprehensive claim about the inquiry path.

Instruct students to use an Organizing EBC Tool to develop a comprehensive claim about each inquiry path on their Research Frame. They should use the six Forming EBC Tools they completed in the previous lesson. Remind students they have completed at least two of these tools for each inquiry path.

- Students use their Organizing EBC Tools to form comprehensive claims about each inquiry path.

ⓘ Circulate around the room to monitor student progress.

ⓘ Some students may be able to use an Organizing EBC Tool to complete a comprehensive claim about the research question/problem, in addition to the inquiry paths.

Activity 4: Peer Review: Assessing Claims 25%

Explain that students will now assess one of their claims using the Evidence-Based Claims Criteria Checklist. Students will work in small groups to assess if one of the claims they developed on the Organizing EBC Tool is appropriately supported.

Distribute the Evidence-Based Claims Criteria Checklist to all students.

- Students examine the Evidence-Based Claims Criteria Checklist.

Model how to use the Evidence-Based Claims Criteria Checklist by using it to assess the Model Organizing EBC Tool created in the previous activity. Remind students of the model claim from the previous activity: Animal intelligence can be measured by observing qualities of intelligence that are shared by humans, but experiments must be designed considering the animal's perspective. Read

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through each criterion in the "Content and Analysis" section, check off boxes that apply, and write model comments. Explain the following:

- I can check off the first box for the "Content and Analysis" section, Clarity of the Claim, because the claim is clearly stated and understandable. *Clarity* means "the state of being clear or transparent."
- I can check off the second box for the "Content and Analysis" section, Conformity to the Text, because I created the claim directly from the textual evidence and ideas I read. For example, the quote "Experiments with animals have long been handicapped by our anthropocentric attitude" directly supports the part of the claim that says experiments must be designed with the animal's perspective in mind.
- I can check off the third box for the "Content and Analysis" section, Understanding of the Topic, because my claim demonstrates sound thinking about the topic of animal intelligence. The idea is not abstract and there is evidence to support it.

  - Students listen and follow along with the modeling.

ⓘ Display the Evidence-Based Claims Criteria Checklist for all students to see.

ⓘ **Differentiation Consideration:** Consider pointing out to students that the word *conformity* means that the claim is based upon the text, as indicated by the phrase "directly based upon" in the checklist.

Ask students to give their assessment of the Model Organizing EBC Tool for the next three sections of the Checklist: Command of Evidence, Coherence and Organization, and Thoroughness and Objectivity. Remind students to explain their thinking. Write students' thoughts on the Evidence-Based Claims Criteria Checklist that is displayed.

  - Students assess the Model Organizing EBC Tool as a whole class, using the next three sections of the Evidence-Based Claims Criteria Checklist as a guide.

  - Student responses may include the following:

    - Command of Evidence: The claim has specific evidence supporting it, as demonstrated by the text quotes on the tool itself. Each piece of evidence can be used to directly support the claim. For example, the quote "Scientists are now finally meeting animals on their own terms" shows that researchers understand they must design animal experiments with the animal perspective in mind.
    - Coherence and Organization: The specific points on the tool group the evidence; the evidence is easy to understand and follows a logical pattern, directly supporting each point and laying a clear foundation for the claim itself.
    - Thoroughness and Objectivity: There are eight quotes, and each quote aims to support the overall claim. For example, the quote "This is the larger lesson of animal cognition research:

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It humbles us. We are not alone in our ability to invent or plan or to contemplate ourselves—or even to plot and lie" demonstrates the major idea of the claim that animal intelligence can be measured by looking at qualities of intelligence that are shared by humans.

ⓘ **Differentiation Consideration:** If students struggle with responses for Thoroughness and Objectivity, consider explaining the definition of *thoroughness* ("complete; attentive to detail and accuracy") and *objectivity* ("the state or quality of not being influenced by personal feelings or prejudice"). Students will encounter the term *objective tone* in the next unit, Unit 3, when learning how to write objectively about research.

Instruct students to transition into small groups.

- Students form small groups.

ⓘ Place students in heterogeneous groups of four to five that will remain consistent throughout the module. Consider forming groups ahead of time to maximize the range of different research topics and questions within each group. The goal of these groups is to create small communities of inquiry/research teams that provide support and accountability to each other. Students should know about their teammates' topics, research questions, central claims, etc. Students should share claims and evidence that arise from their individual inquiry and learn from each other's research processes, which they may use to potentially refine their own inquiry topics and questions.

Explain to students that in this lesson, they will continue the work of collaborative discussion outlined in SL.9-10.1, to which students were previously introduced. Remind students these discussion strategies have been taught in previous modules.

ⓘ Consider reminding students of the skills inherent in the sub-standards of Standard SL.9-10.1, to which students were previously introduced.

Explain to students that for this activity, each student will give one Organizing EBC Tool to a peer in the small group (each student should have one Organizing EBC Tool to review). Each student in the group will lead the group in an assessment of their peer's tool, using the Criteria Checklist.

- Students exchange Organizing EBC Tools within their group, and review them with the group using the Evidence-Based Claims Criteria Checklist.

Direct students to return the Organizing EBC Tool to their peers once the review is complete.

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Activity 5: Quick Write 15%

Instruct students to respond briefly in writing to the following prompt:

Develop a claim about an inquiry path or your research question/problem and support it using specific evidence and details from your research.

Instruct students to develop their written response from the Organizing EBC Tools. Remind students to use the Evidence-Based Claims Criteria Checklist to guide their response.

ⓘ Display the prompt for students to see, or provide the prompt in hard copy.

- Students independently answer the prompt, using the Organizing EBC Tools and the Evidence-Based Claims Criteria Checklist to guide their response.

- See the High Performance Response at the beginning of this lesson.

Activity 6: Closing 5%

Display and distribute the homework assignment. For homework, instruct students to review all of their Organizing EBC Tools using the Evidence-Based Claims Criteria Checklist. Students revise their claims, if necessary, to prepare for the next lesson's End-of-Unit Assessment.

Remind students that revising the Organizing Evidence-Based Claims Tool might lead to a final round of research and analysis of annotated sources and Taking Notes Tools to find the most relevant and useful evidence possible.

- Students follow along.

Homework

Review all of the Organizing Evidence-Based Claims Tools using the Evidence-Based Claims Criteria Checklist. Revise claims, if necessary, to prepare for the next lesson's End-of-Unit Assessment.

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Name ..... Inquiry Path .....

CLAIM:

A Supporting Evidence	B Supporting Evidence	C Supporting Evidence
(Reference:)	(Reference:)	(Reference:)
D Supporting Evidence	**E Supporting Evidence**	**F Supporting Evidence**
(Reference:)	(Reference:)	(Reference:)

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ORGANIZING EVIDENCE-BASED CLAIMS

Name ..... Inquiry Path .....

CLAIM:

Point 1		Point 2	
A Supporting Evidence (Reference:)	B Supporting Evidence (Reference:)	A Supporting Evidence (Reference:)	B Supporting Evidence (Reference:)
C Supporting Evidence (Reference:)	D Supporting Evidence (Reference:)	C Supporting Evidence (Reference:)	D Supporting Evidence (Reference:)

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ORGANIZING EVIDENCE-BASED CLAIMS

Name Student Response **Inquiry Path** How is animal intelligence measured?

CLAIM: Animal intelligence can be measured by observing qualities of intelligence that are shared by humans, but experiments must be designed considering the animal's perspective.

Point 1: The animal's perspective is essential to consider if experiments are going to accurately measure their intelligence.		Point 2: Animal intelligence can be measured by observing social awareness skills.	
A Supporting Evidence	**B Supporting Evidence**	**A Supporting Evidence**	**B Supporting Evidence**
"Experiments with animals have long been handicapped by our anthropocentric attitude: We often test them in ways that work fine with humans but not so well with other species."	"We suggest a simple answer: by pursuing animal cognition with the methods of natural science." "...but careful and impartial experimentation alone can yield incontestable evidence of animal cognition."	"The researchers discovered that when one chimp laughed others sometimes engaged in "laugh replications" that lacked the full acoustic structure of spontaneous laughter. In other words, they were fake-laughing."	"A few recent research papers describe animal competence at social and cognitive tasks that humans often struggle with — mastering conversational etiquette..."
(Reference: 1)	(Reference: 5)	(Reference: 3)	(Reference: 3)
C Supporting Evidence	**D Supporting Evidence**	**C Supporting Evidence**	**D Supporting Evidence**
"Scientists are now finally meeting animals on their own terms instead of treating them like furry (or feathery) humans, and this shift is fundamentally reshaping our understanding."	Today's researchers are proceeding to fashion shrewd behavioral tests that provide other ways for animals to disclose their intelligence to us. Although animals may not use human words, we may be able to provide other ways for animals to disclose their intelligence to us.	"Although imitation was once regarded as a simpleminded skill, in recent years cognitive scientists have revealed that it's extremely difficult...actions that imply an awareness of one's self."	This is the larger lesson of animal cognition research: It humbles us. We are not alone in our ability to invent or plan or to contemplate ourselves - or even to plot and lie.
(Reference: 1)	(Reference:)	(Reference: 2)	(Reference: 2)

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Name ..... Inquiry Path .....

CLAIM:		
Point 1	Point 2	Point 3
A Supporting Evidence (Reference:)	A Supporting Evidence (Reference:)	A Supporting Evidence (Reference:)
B Supporting Evidence (Reference:)	B Supporting Evidence (Reference:)	B Supporting Evidence (Reference:)
C Supporting Evidence (Reference:)	C Supporting Evidence (Reference:)	C Supporting Evidence (Reference:)

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ORGANIZING EVIDENCE-BASED CLAIMS

9.3.2 Lesson 12

Introduction

In this final lesson of the unit, students complete the End-of-Unit Assessment by conducting a final review of the **Research Portfolio** and writing an **Evidence-Based Perspective** based on the research outcomes from the unit.

Students begin the lesson by finalizing the **Research Portfolio** for assessment purposes. Students review all of the **Organizing Evidence-Based Claims Tools** from the previous lesson and discuss their developing perspective of the research question/problem in small groups. Next, students write an **Evidence-Based Perspective** (one-page synthesis) using the **Organizing Evidence-Based Claims Tools** and supporting their perspective with relevant evidence from the research. Students submit the finalized **Research Portfolio** and the **Evidence-Based Perspective**. The **Evidence-Based Perspective** is assessed using a rubric based on the **Research Portfolio** content. For homework, students complete a vocabulary activity using the Vocabulary Journal work from the unit.

Standards

Assessed Standard(s)	
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
W.9-10.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
Addressed Standard(s)	
W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively.
L.9-10.4.	Determine or clarify the meaning of unknown and multiple-meaning words and phrases

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a,c,d	based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

Assessment

Assessment(s)
The assessment in this lesson is the End-of-Unit Assessment and consists of the following: • Completed Research Portfolio: Students submit a completed Research Portfolio with the four sections organized including 1. Defining an Area of Investigation, 2. Gathering and Analyzing Information, 3. Drawing Conclusions, 4. Discarded Material. • Evidence-Based Perspective: Students write a one-page synthesis of their personal conclusions and perspective derived from their research. Students draw on the research outcomes, as developed in the Organizing Evidence-Based Claims Tools to express their perspective on their respective research question/problem. • Research Journal: This item is located in the Research Portfolio. ⓘ This assessment will be evaluated using the Evidence-Based Perspective Rubric.
High Performance Response(s)
A high performance evidence-based perspective response may include the following: • I started out this research process thinking that humans were a lot smarter than animals and there was no way that animal intelligence could compare to human intelligence. When reading *Animals in Translation* during the first unit, I disagreed with Grandin that animals have "genius" qualities similar to autistic savants. I thought animals were too simple-minded to display thoughtful intelligence. So, I began the research journey wanting to know more about how animals display their intelligence and how it is possible for scientists and researchers to actually measure animal intelligence. I was interested in how scientists like Grandin create valid experiments to demonstrate animal intelligence. I found that there is historical basis for my point of view about animal intelligence in Waal's article "The Brains of the Animal Kingdom." He writes: "Aristotle's idea of the scala naturae, the ladder of nature, put all life forms in rank order, from low to high…" I was surprised to learn that people had been thinking about animal intelligence so far back in history.

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The research points out that animals can demonstrate a high capacity for intelligence if the experiments are designed correctly.

I discovered that animal intelligence can be measured by looking at the ways humans are intelligent, but experiments must be designed considering the animal's perspective to uncover their unique intelligence. I read on a blog by Edward A. Wasserman and Leyre Castro that "today's researchers are proceeding to fashion shrewd behavioral tests that provide other ways for animals to disclose their intelligence to us. Although animals may not use human words, we may be able to provide other ways for animals to disclose their intelligence to us." This article demonstrates how important it is to create animal intelligence experiments that take into account the way animals think.

Since the animal's perspective is more important for experimental design, it makes it more difficult to compare human and animal intelligence directly. I did find several examples that proved animals' intelligence is more advanced than humans: "A few recent research papers describe animal competence at social and cognitive tasks that humans often struggle with—mastering conversational etiquette..." I found this evidence from an article in *The New York Times* called "Think You're Smarter Than Animals? Maybe Not" by Alexandra Horowitz and Ammon Shea. Overall, it seems like humans are smarter, but there are a lot of instances where animals display remarkable intelligence. For example, birds prove to be smarter than humans when figuring out how to get water from a cup by using the scientific concept of displacement.

A remarkable animal I read about is Alex the parrot. In Virginia Morell's article "Animal Minds," she wrote about a parrot that was so smart he was able to learn how to talk far more than most parrots: "Under Pepperberg's patient tutelage, Alex learned how to use his vocal tract to imitate almost one hundred English words." Alex is an example of an animal that I read about who was taught to think and learn like a human, demonstrating animals' potential for higher order thinking and learning.

I learned that it is difficult to compare human and animal intelligence, but it is possible if humans design experiments from the animal's point of view. I do not know if there will ever be animals that are smart in the same way as humans, but I did learn that animals can display their intelligence in a variety of ways, including ways shared by humans.

*The evidence in this high performance response comes from the sources: Source #1 "The Brains of the Animal Kingdom," Source #2 "Animal Minds: Minds of their Own," Source #3 "Think You're Smarter Than Animals? Maybe Not," Source #5 "Animal Intelligence: How We Discover How Smart Animals Really Are."

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Vocabulary

Vocabulary to provide directly (will not include extended instruction)
• perspective (n.) – a way of regarding facts or situations and judging their importance
Vocabulary to teach (may include direct word work and/or questions)
• None.*

*Because this is not a close reading or research lesson, there is no specified vocabulary. However, in the process of returning to the source texts, students may uncover unfamiliar words. Teachers can guide students to make meaning of these words by following the protocols described in 1E of this document http://www.engageny.org/sites/default/files/resource/attachments/9-12_ela_prefatory_material.pdf.

Lesson Agenda/Overview

Student-Facing Agenda	% of Lesson
Standards & Text:	
• Standards: W.9-10.7, W.9-10.9, W.9-10.2, SL.9-10.1, L.9-10.4.a, c, d	
Learning Sequence:	
1. Introduction of Lesson Agenda	1. 5%
2. Homework Accountability	2. 10%
3. Research Check-In	3. 15%
4. Discussion: Developing a Perspective	4. 30%
5. Writing an Evidence-Based Perspective	5. 35%
6. Closing	6. 5%

Materials

- Student copies of the **Organizing Evidence-Based Claims Tools** (refer to 9.3.2 Lesson 11)
- **Research Portfolios** (students have these)
- Copies of the **End-of-Unit Assessment** for each student
- Copies of the **Evidence-Based Perspective Rubric** for each student

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Learning Sequence

How to Use the Learning Sequence	
Symbol	**Type of Text & Interpretation of the Symbol**
10%	**Percentage indicates the percentage of lesson time each activity should take.**
no symbol	Plain text indicates teacher action.
	Bold text indicates questions for the teacher to ask students.
	Italicized text indicates a vocabulary word.
▸	Indicates student action(s).
❍	Indicates possible student response(s) to teacher questions.
ⓘ	Indicates instructional notes for the teacher.

Activity 1: Introduction of Lesson Agenda 5%

Begin by reviewing the agenda and sharing the assessed standards for this lesson: W.9-10.7 and W.9-10.9. In this lesson, students finalize the Research Portfolio for assessment purposes. Then students discuss their developing perspective concerning their research question/problem using the Organizing Evidence-Based Claims Tools from the previous lesson. Finally, students write an Evidence-Based Perspective (one-page synthesis) using the Organizing Evidence-Based Claims developed in the previous lesson and supporting the perspective with relevant evidence and reasoning from the research.

- ▸ Students look at the agenda.

Activity 2: Homework Accountability 10%

Instruct students to take out the revised Organizing Evidence-Based Claims Tools (EBC) from the previous lesson's homework.

Instruct students to Turn-and-Talk with a classmate about revisions they made to the Organizing EBC Tools and how the EBC Criteria Checklist guided their review.

- ❍ Student responses may include the following:
  - I had to choose better evidence to support some of my claims. My evidence did not always directly address the claims I made. For example, some of my evidence underneath the point "Animal Intelligence can be measured by observing social awareness skills" did not always address social awareness skills, so the claim was weaker as a result.
  - I have to improve my claim and make it more comprehensive to incorporate all the written evidence. For example, my claim that "Animal intelligence can be measured by observing qualities of intelligence that are shared by humans" did not include the evidence from Point

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1 about the animal's perspective and how important it is to research. I needed to refine the claim to give it a larger scope and to make it more inclusive of all the evidence.

ⓘ Consider circulating during the pair discussion to monitor students' homework completion.

Activity 3: Research Check-In 15%

Inform students that they will be completing a final review of their Research Portfolios by rereading the Student Research Plan and conducting a final check of all the documents and sections of the portfolio. Instruct students to take out the Research Portfolio.

Instruct students to review the Student Research Plan for all research activities.

Inform students that in this lesson, they will complete the last step in the Student Research Plan: Reviews and synthesizes the research to develop a written Evidence-Based Perspective (Part 3: Organizing and Synthesizing Inquiry).

- Students listen.

Instruct students to use the Student Research Plan as a guide to finalize all sections of the Research Portfolio. Direct students to file all sources, annotated copies, notes, tools, and assessments in the Research Portfolio. Instruct students to keep out the Organizing Evidence-Based Claims Tools from the previous homework activity.

ⓘ The Research Portfolio sections are the following: 1. Defining an Area of Investigation, 2. Gathering and Analyzing Information, 3. Drawing Conclusions, 4. Discarded Material.

Instruct students to finalize the Research Portfolio by placing the Student Research Plan in the front of the portfolio. Direct students to keep the Research Portfolio accessible because they may return to it during the following discussion activity or while writing of the Evidence-Based Perspective.

ⓘ Inform students that they will submit the Research Journal at the end of the lesson as part of the completed Research Portfolio.

Activity 4: Discussion: Developing a Perspective 30%

Remind students that through the research process they were instructed to find information to deepen their understanding about a topic through questioning and developing ideas about various sources. Students were conducting inquiry for exploration and not to prove an established perspective about a topic. Now that the research has been conducted, it is time to think about what ideas or opinions have developed as a result of the research outcomes. Explain to students that in the following discussion,

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they will have an opportunity to look at the claims made in the previous lesson and discuss their developing perspective about their research question/problem.

- Students listen.

Ask students the following question:

What is a perspective?

- Student responses may include a viewpoint or an opinion.

Define the word *perspective* ("a way of regarding facts or situations and judging their importance") and display the definition for students to see. Explain to students that a perspective is the mindset or way of thinking about a topic. It could be considered a viewpoint or opinion on a topic.

- Students listen.

Inform students they have already begun to develop a perspective by analyzing the research and developing claims about it.

- Students listen.

Display the following guiding questions for students:

How has your understanding of the research question/problem developed or deepened as a result of the research?

Based on your claims, what ideas can you connect and what do those connections tell you about the research question/problem?

Based on your claims, what is your overall view or opinion about the research question/problem? How did the research lead you to these views or opinions?

- Students examine the guiding questions.

Instruct students to reflect on their claims from the previous lesson (Organizing Evidence-Based Claims Tools) using the guiding questions. Ask students to take notes on a separate sheet of paper about each guiding question, as they reflect on the claims and the research process as a whole.

Explain to students that in this lesson, they will continue the work of collaborative discussion outlined in SL.9-10.1, to which students were previously introduced. Remind students these discussion strategies have been taught in previous modules.

- Students listen.

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ⓘ Consider reminding students of the skills inherent in the sub-standards of Standard SL.9-10.1, to which students were previously introduced.

Instruct students to form small groups and discuss the guiding questions regarding their respective research questions/problems. Remind students to use specific evidence to support their conclusions or reflections about the research work.

- Student responses will vary based on individual student's research question/problem. Examples of student responses may include the following:
  - I now understand that animal intelligence is real and that it is comparative to human intelligence. The research demonstrates that animals can learn language and advanced concepts like Alex, the parrot, who could understand the concept of same and different and who labeled colors and shapes.
  - How animals display their intelligence is closely linked to how their intelligence is measured. Animals are unlikely to show their true cognitive potential if the experiment is designed with humans and not animals in mind. For example, the elephant and the mirror example shows elephants are aware of themselves but the mirror has to be the right size. Humans have to consider animals' perspectives when designing animal intelligence experiments.

ⓘ Circulate while student groups are discussing to monitor student progress.

ⓘ Place students in heterogeneous groups of four to five that will remain consistent throughout the module. Consider forming groups ahead of time to maximize the range of different research topics and questions within each group. The goal of these groups is to create small communities of inquiry/research teams that provide support and accountability to each other. Students should know about their teammates' topics, research questions, central claims, etc. Students should share claims and evidence that arise from their individual inquiry and learn from each other's research processes, which they may use to potentially refine their own inquiry topics and questions.

Activity 5: Writing an Evidence-Based Perspective 35%

Inform students they will now write about their Evidence-Based Perspective in a one-page synthesis using their research evidence and details for support.

- Students listen.

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Instruct students to use their Organizing Evidence-Based Claims Tools from the previous lesson and their discussion notes from the previous activity to write a cohesive perspective about their research question/problem. Remind students that their perspectives must be supported with evidence and reasoning elicited from the research, so they should use specific research from the Research Portfolio. Remind students of the focus for this writing: to develop a perspective on the research and not summarize all the research outcomes.

ⓘ Consider providing students the Evidence-Based Perspective Rubric to guide their writing.

Remind students to paraphrase and quote the evidence correctly when crafting the perspective.

- Students listen.

ⓘ Students were taught paraphrasing and quoting evidence correctly in Module 9.1.1.

Transition students to writing the Evidence-Based Perspective.

- Students independently write an Evidence-Based Perspective.

ⓘ See the High Performance Response at the beginning of the lesson.

Collect the Evidence-Based Perspective.

Activity 6: Closing 5%

Instruct students to file the Organizing Evidence-Based Claims Tools from the previous activity in Section 3 of the Research Portfolio. Instruct students to remove the Vocabulary Journal from the Research Portfolio.

Collect the Research Portfolio.

ⓘ Make sure students have the Research Journal in the Research Portfolio for assessment purposes.

Display and distribute the homework assignment. For homework, instruct students to complete the following vocabulary activity using the Vocabulary Journal from this unit.

Choose three to five words or phrases from the research (sources) that were important in deepening your understanding of the research question/problem. In a paragraph, discuss how the three to five words helped you better understand the research question/problem.

- Students follow along.

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- ⓘ See a sample student response of the homework in 9.3.2 Lesson 1 (Homework Accountability).
- ⓘ Direct students to keep the Vocabulary Journal for more vocabulary work in Unit 3.
- ⓘ Students will have the Research Portfolio redistributed in Unit 3 in order to write the research paper.
- ⓘ Consider drawing students' attention to their application of standard L.9-10.4.a, c, d by using context to make meaning of a word; consulting reference materials to clarify its precise meaning; verifying the preliminary determination of its meaning.

Homework

Complete the following vocabulary activity using the Vocabulary Journal from this unit.

- Choose three to five words or phrases from the research (sources) that were important in deepening your understanding of the research question/problem. In a paragraph, discuss how the three to five words helped you better understand the research question/problem.

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End-of-Unit Assessment (9.3.2 Lesson 12)

Evidence-Based Perspective

Your Task: Write a one-page synthesis of your personal conclusions and perspective derived from your research. Draw on your research outcomes, as developed in the Organizing Evidence-Based Claims Tools to express your perspective on your research question/problem.

Your writing will be assessed using the Evidence-Based Perspective Rubric.

Guidelines

Be sure to:

- Develop a perspective on the research, and not summary all the research outcomes.
- Support your perspective with relevant evidence from your research.
- Organize your perspective using the claims you developed on your Organizing Evidence-Based Claims Tools (based on your inquiry paths).
- Use specific research from your Research Portfolio to support your claim(s).
- Organize your ideas in a cohesive and coherent manner.
- Use precise language appropriate for your task.
- Follow the conventions of standard written English.

CCLS: W.9-10.7; W.9-10.9

Commentary on the Task:

This task measures W.9-10.7 because it demands that students:

- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem
- Narrow or broaden the inquiry when appropriate
- Synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation

This task measures W.9-10.9 because it demands that students:

- Draw evidence from literary or informational texts to support analysis, reflection, and research

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Evidence Based Perspective Rubric (9.3.2 End-of-Unit Assessment)

CCSS.ELA-Literacy.W.9-10.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CCSS.ELA-Literacy.W.9-10.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Criteria	4 – Writing at this Level:	3 – Writing at this Level:	2 – Writing at this Level:	1 – Writing at this Level:
CCSS.ELA-Literacy.W.9-10.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem.	Clearly states a question or problem; writer demonstrates substantial evidence of sustained research addressing a question or a problem.	Includes a clear question or a problem; writer demonstrates some evidence of sustained research in response to a question or a problem.	Includes a question or a problem; writer's research is limited and a question or a problem has a limited response.	Does not include a clear question or a problem and demonstrate almost no evidence of research.
Narrow or broaden the inquiry when appropriate.	Clearly narrows or broadens the inquiry while conducting research.	Some evidence of narrowing or broadening the inquiry while conducting research.	Demonstrates limited narrowing or broadening of inquiry while conducting research.	Conducts very little inquiry.
Synthesize multiple sources on the subject.	Successfully synthesizes multiple sources while addressing a question or a problem.	Provides some synthesis of sources while addressing a question or a problem.	Synthesis of sources is limited while addressing a question or a problem.	Does not synthesize sources or address a question or a problem.
Demonstrate understanding of the subject under investigation.	Demonstrates a deep understanding of the subject of research.	Demonstrates some understanding of the subject.	Demonstrates limited understanding of the subject.	Demonstrates vague understanding of the subject.

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Criteria	4 – Writing at this Level:	3 – Writing at this Level:	2 – Writing at this Level:	1 – Writing at this Level:
CCSS.ELA-Literacy.W.9-10.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.	Extensively draws evidence from the informational texts that were read; uses the information to support analysis, reflection, and research.	Draws some evidence from informational texts that were read; uses the some of the information to support analysis, reflection, and research.	Draws limited evidence from informational texts that were read; analysis limited.	Does not draw evidence from informational texts.

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