

## 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.   |

## 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

- 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 |
|---|-------------|
| <b>Standards &amp; Text:</b>  |             |
| <ul style="list-style-type: none"> <li>• Standards: W.9-10.7, W.9-10.4</li> </ul> |             |
| <b>Learning Sequence:</b>   |             |
| 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. |

|           |   |
|-----------|---|
| no symbol | Plain text indicates teacher action.                                  |
|           | <b>Bold text indicates questions for the teacher to ask students.</b> |
|           | <i>Italicized text indicates a vocabulary word.</i>                   |
| ▶         | 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.

- ▶ 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.

① 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

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.

● 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 through 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.

① 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.

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

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.

① 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.

① 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?

- 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.

- ① 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.

- ① 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?
- ① 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.

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.

- ① 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?

- ① 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.**

- ▶ Students independently answer the prompt using today’s Area Evaluation Checklists and the selected research question/problem.
- ① 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.
- ① 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.