ACTIVITY 3

Cognitive Shortcuts

INVESTIGATION

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ACTIVITY SUMMARY

Students deepen their understanding of fast thinking and slow thinking by learning to recognize specific types of fast thinking errors, called shortcuts. These include the availability, representativeness, and anchoring shortcuts. Students investigate these ideas in the context of a contemporary disease known as avian influenza, or bird flu. They examine statements about this disease and analyze them for the characteristics of cognitive shortcuts. Then, students explore some skills to slow down thinking and reduce errors due to cognitive shortcuts. These include looking for additional evidence that reveals the shortcuts. This is done through looking for evidence about bird flu in credible online sources.

ACTIVITY TYPE
INVESTIGATION

NUMBER OF
40–50 MINUTE
CLASS PERIODS
2-3

KEY CONCEPTS & PROCESS SKILLS

1. Slow thinking relies on careful reasoning and is useful for complex or higher-stakes situations. Slow thinking takes time and effort but is less prone to cognitive error when evaluating information and reaching conclusions.
2. Common scientific practices are designed to support slow thinking, which makes scientific conclusions more reliable.
3. Fast thinking is useful for straightforward or routine situations and relies on cognitive shortcuts. It is quick and automatic but can lead to flawed conclusions.

CONCEPTUAL TOOLS

NEXT GENERATION SCIENCE STANDARDS (NGSS) CONNECTIONS:

Compare, integrate, and evaluate sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a scientific question or solve a problem. (*Science and Engineering Practice: Obtaining, Evaluating, and Communicating Information*)

Construct, use, and/or present an oral and written argument or counter-arguments based on data and evidence. (*Science and Engineering Practice: Engaging in Argument From Evidence*)

VOCABULARY DEVELOPMENT

anchoring shortcut
a cognitive shortcut where a person relies too much on an initial piece of quantitative information to make a conclusion

availability shortcut
a cognitive shortcut where a person depends on easily recalled or recent information to make a conclusion

claim
a statement that asserts something is true

cognitive shortcut
a specific pattern of fast thinking that can lead to errors when evaluating information

credible source
a source with relevant expertise that provides accurate information that is free from bias

evidence
information that can support or refute a claim

quantitative
(assumed prior knowledge)
relating to, or expressible as, a number or amount

representativeness shortcut
a cognitive shortcut where a person depends on a pre-existing idea or category to make a conclusion

TEACHER BACKGROUND INFORMATION

Heuristics

Fast thinking (System 1) depends on what are called heuristics in the field of psychology. Cognitive heuristics are common types of cognitive shortcuts that simplify judgment and decision-making processes. These strategies allow people to make quick and efficient judgements by focusing on a subset of relevant information rather than considering all the information. While heuristics often lead to accurate conclusions, they can also result in errors. There are over 200 types of heuristics. The term *heuristic* has other meanings in computer science and math that do not always align with how the term is used in psychology.

Anchoring Shortcut

The anchoring shortcut occurs when your brain latches on to the first piece of information it encounters—the anchor—and uses this information as a reference point for all subsequent judgments. For example, when you're trying to estimate an unknown value, such as the fair price of a used car, your mind starts at that initial anchor and adjusts away from it. The problem is that these adjustments are usually insufficient; even if you know the anchor is irrelevant or exaggerated, your final decision remains tethered to it. In the car example, if the initial price of the car is high and a discount is offered, this can seem like the price is a great deal, even if it is not. Other examples of situations that might involve anchoring shortcuts include salary or other negotiations, year-end sales, bulk purchase limits, and social contexts such as first impressions.

Availability Shortcut

The availability shortcut occurs when a judgment is about the likelihood of an event based on how easily information comes to mind. An example is online Information that is focused on exciting or sensational topics in an attempt to get more views from consumers. Vivid and/or scary images are also more memorable, making them more available to recall. The availability shortcut is also why people think airplane travel is more dangerous than car travel. While airplane accidents make the news and are very memorable, traffic accidents, which kill far more people, are not as well covered in the news.

Representativeness Shortcut

The representativeness shortcut occurs when judgements are based on how similar something is to an existing model or prototype. The representativeness shortcut often relies on stereotypes, which are oversimplified representations of a group that people use to make assumptions. Stereotypes can also be about behaviors, events, and objects. Although it is natural for our brains to group similar individuals/objects of a category together, stereotypes can exist when they are used to perpetuate negative ideas about different race, ethnic, cultural, gender, or class groups. As with the availability shortcut, media coverage can reinforce the representativeness shortcut. The representativeness shortcut is related to base rate neglect, where general statistical information about an occurrence (the base rate) is ignored. This neglect leads to incorrect probability judgments.

MATERIALS & ADVANCE PREPARATION

FOR THE TEACHER

- VISUAL AID 3.1 "Scoring Guide: Engaging in Argument from Evidence (ARG)"
- ITEM-SPECIFIC SCORING GUIDE: Activity 3, Build Understanding Item 4

FOR EACH PAIR OF STUDENTS

- COMPUTER WITH INTERNET ACCESS

FOR EACH STUDENT

- STUDENT SHEET 3.1 "Evaluating Posts for Cognitive Shortcuts"
- STUDENT SHEET 3.2 "Lateral Reading" (OPTIONAL)
- STUDENT SHEET 3.3 "Writing Frame: Engaging in Argument from Evidence (OPTIONAL)
- STUDENT SHEET 1.3 "Unit Concepts And Skills" (OPTIONAL)
- SCORING GUIDE: Engaging in Argument from Evidence (ARG) (OPTIONAL)

Prepare online sources for Part B of the activity. Gather a variety of credible sources about avian influenza, or bird flu, for students to use. Decide if you would like students to choose from a selection of sources, or if you prefer to preselect for them. For the purposes of this activity, it is good to have some sources that are not as credible as others for students to evaluate. The following lists, divided into general categories, are some sources about bird flu. Note that since bird flu is a dynamic and emerging disease, more up-to-date information may be needed.

Credible Sources:
World Organization of Animal Health: *Avian Influenza*
Association of Microbiology: *What You Should Know About Avian Influenza A (H5N1)*
Knowable Magazine: *Everything You Need to Know about Bird Flu*
Nature (website or youtube): *Is bird flu the next pandemic? The science so far.*
Reuters: *Bird flu virus could risk pandemic worse than COVID if it mutates, France's Institut Pasteur says*

Partially Credible Sources:
Science Daily: *H5N1*
Live Science: *Bird flu could soon evolve to spread between humans. Here's how to slow its progress.*
Wikipedia: *Avian influenza*
Vox (website or YouTube): *Is it Time to Worry about Bird Flu?*

Not Credible Sources:
Quora: *What is the truth about the bird flu?*
Reddit: *Scientists warn bird flu could spark a human pandemic in 2026*

TEACHING NOTES

Suggestions for **discussion questions** are highlighted in gold.

Strategies for the **equitable inclusion of diverse students** are highlighted in light blue.

GETTING STARTED (10-20 MIN)

1 Introduce an emerging disease that will be investigated.

- Let students know that in this activity, they will be exploring a real emerging disease, known as avian influenza, or bird flu. This current infectious disease is prevalent around the world and is listed on the World Health Organization's (WHO) list of priority diseases that could cause the next global pandemic. As of 2026, the disease is limited to pockets of outbreaks similar to the Southsand fever scenario from Activity 2. At this point in the activity, do not provide more information about the bird flu, although students may have heard of it or seen media about the issue. Let students know that their investigation of bird flu in this activity will help them build skills they will later apply to the Southsand fever scenario.
- Have students read the Introduction in the Student Book, either as a class or individually, and review the term *cognitive shortcut*. Connect it to the previous activities as a type of fast thinking. Students may want to share their everyday experiences with the Halo Effect described in the Introduction.
- Support students, particularly emerging multilingual learners, in sensemaking and language acquisition as they read the text.

PROCEDURE SUPPORT (40-60 MIN)

2 In Part A, support students as they learn about cognitive shortcuts.

- In Part A, students match the cognitive shortcuts to social media posts about a real disease. It may help to clarify that bird flu is real, but the postings are not. The postings are designed to highlight different cognitive shortcuts. As students begin, review the postings and support students as they identify the claims and record them in Table 1 on Student Sheet 3.1, "Evaluating Posts for Cognitive Shortcuts." A sample student response to Student Sheet 3.1 is found at the end of this activity.

- In Procedure Step 2, groups should discuss whether they agree or disagree with each poster, but they do not have to agree amongst themselves. Encourage them to record their own choices on their student sheets.

- To support reading comprehension for students who may need it to read the shortcut descriptions in Procedure Step 3, consider conducting a pair-share or providing a copy of the text for students to read in advance.

- When reviewing the shortcuts described in Procedure Step 3, make sure to highlight the examples provided. Discuss any other everyday examples that come up. There are many cognitive shortcuts, so some student-generated examples may not be one of the three identified in this activity.

- If it hasn't come up, point out that more than one cognitive shortcut can be involved in any given situation. For example, the stereotype of what a librarian looks like may also be something that very easily comes to mind for a student who spends a lot of time in a library, so a student might argue that the availability shortcut could also come into play.

- After reviewing some of the negative outcomes of shortcuts, ask, Do cognitive shortcuts always lead to an incorrect conclusion? Students should see that no, cognitive shortcuts, like all fast thinking, are not always bad. There are lots of situations in which just a quick answer or decision doesn't need a lot of heavy thinking or all the facts. For example, if you want to buy something at the store such as toothpaste, you don't need to use slow thinking if you already bought that brand and know it works fine. These shortcuts allow our brains to save energy by making fast, good-enough decisions without needing to analyze every single detail.

3 **In Part B, students consider how evidence plays a role in evaluating social media posts.**

- In the beginning of Part B, discuss how cognitive shortcuts impact the conclusions people make. Ask, What is a common characteristic of the claims in the posts as it relates to evidence? Students should have noticed that the claims in the posts are not based on much information. If it is helpful, review the limited amount of information or lack of consideration for information in each post. Emphasize that one of the key characteristics of cognitive shortcuts is that they tend to emerge when there is not much evidence.

- Either assign or have students choose the post they would like to investigate. You may choose to differentiate the instruction by having students investigate all three posts or have one group work together to investigate evidence for a single claim.

4 Students look for credible sources to investigate the bird flu claims.

- In Procedure Step 7, provide a list of preselected sources for students to investigate (See Advance Preparation). These should be primarily good sources that provide evidence for the claims made in the shortcuts. Include a few less credible sources for students to use in their investigation and critique. Following are some examples—for each of the criteria—of poor sources and suggestions for related actions:

  - *The author has relevant training or experience*

    An influencer who is not a registered dietitian is not qualified to advise on nutrition, someone who is a veterinarian may not have the specific background to give advice on human global pandemics. Encourage students to click on the author and check their experience and background.

  - *Listed references to other trustworthy sources*

    Science topics referenced from *People* magazine are not as reliable as those from *New England Journal of Medicine*. Encourage students to click on the references and check the date published and supporting organizations.

  - *A perspective that is balanced or neutral*

    A post that advocates for beauty products with affiliate links are generally biased and equivalent to an advertisement. Encourage students to look through the post completely to see if there is a relationship with other organizations or companies, even if they are de-emphasized.

- In Procedure Step 8, discuss with students what made the sources credible or not credible, based on the criteria provided in the Student Book. Have students share the examples they explored and what first tipped them off that there might be a credibility problem.

- Emphasize that credibility of sources should not necessarily be classified as binary—credible or not credible. The credibility of sources is better described as a continuum, as many sources may have more than one source or partially provide accurate information.

- The credible sources should provide evidence that supports and/or refutes the claims from the posts. Review what students found and how the evidence changes their thinking. For example, students may learn from their research that rapid mutation does not universally lead to a deadlier strain of disease. There are evolutionary trade-offs that most often result in strains that spread easily but are less lethal. When this evidence is applied to the post from @OutbreakOutl00k, it clearly refutes the claim.

5 Support student investigation of credible sources through lateral reading (optional).

- Lateral reading is a research technique used to evaluate a source's credibility as well as confirm the accuracy of facts. You may choose to support lateral reading with optional Student Sheet 3.2, "Lateral Reading." As students work, circulate around the room and check that students are using multiple browsers as they work.

- Remind students to focus on evaluating the credibility of the source first instead of looking for

facts from the source. The lateral reading support is used purely to examine the source and is not designed to help students evaluate the validity of a claim. A sample student response for one of the sources is found at the end of this activity.

TEACHER'S NOTE: Students may need additional clarification around the ideas of source bias and conflict of interest, which have not yet been introduced. Let them know that they will further investigate those terms later in the unit.

SYNTHESIS OF IDEAS (30 MIN)

6 **Discuss ways to reduce the negative effects of cognitive shortcuts.**

- In Procedure Step 12, have students reflect on their metacognitive experience in the activity. Discuss how their ideas did or didn't change based on the gathering of more evidence.

  Sample Student Response, Procedure Step 12

  The social media posters should slow down their thinking by gathering more evidence before making a claim. If they did that, then @BirdNerd7865 would realize that her stream is using an algorithm to post similar content. She should look up the statistics for bird flu to put it into context. @OutbreakOutl00k shouldn't assume this disease is the same as others. He could challenge his assumptions by looking at a variety of influenzas and their level of harm. @DoubterDom might get stuck on the first number he sees, which in this case was 1 in 1 million. Instead, he could find out about the history of case numbers for similar diseases that have spread through animal populations

- When students discuss how their thinking process in Part B differed from the social media posters in Part A, look for students to show understanding that the posters were using fast thinking compared to students' slow thinking during the investigation. Ask, How do you think you can reduce cognitive shortcuts in your own thinking? Students should indicate that the metacognitive skill of slowing down thinking is a good approach, but also that using credible sources to get insight supports slow thinking. The specific slow-thinking skill of using credible sources to find larger sets of evidence to evaluate a claim can counteract cognitive shortcuts.

- Another skill is to apply metacognition to social media claims to be more aware of them. This is because one of the key characteristics of cognitive shortcuts is that they can occur unconsciously. We all use cognitive shortcuts unintentionally, so being able to identify them is helpful.

- Have students recall the beginning of the activity when they could respond with "not sure" about whether or not they agreed about each social media post. Point out that this is a good strategy when confronted with a claim with scant evidence. If you are not able or willing to take the time to slow down thinking and get evidence, simply saying, "I don't have enough information to make a judgement" is a prudent response.

7 Draw a parallel from bird flu to the Southsand fever scenario.

- Draw a parallel to the real-life bird flu with the fictional Southsand fever scenario. In both situations—the emerging nature and the sensationalized coverage they have received—clear information is challenging to get. Likewise, in the Southsand fever scenario, the headlines students worked with in Activity 2 reflect cognitive shortcuts within an environment where there isn't a lot of information.

8 Review concepts generated by the Build Understanding items.

- In Build Understanding item 2, students consider whether a Language Learning Model (LLM) is considered to be a credible source. Review how an LLM will produce results that look believable and professional, but it does not check for credibility of sources when it compiles its results.
- For Build Understanding item 3, follow up with the idea that if students pay attention to others, they may see that anecdotes are very common and usually lead to "going too far" with limited information, otherwise known as a cognitive shortcut.

9 Introduce the assessment for Build Understanding item 4.

- Build Understanding item 4 is an assessment item that uses claims, evidence, and reasoning for argumentation. This first opportunity should be used to introduce your students to the Scoring Guide: Engaging in Argument from Evidence (ARG). As this is the first opportunity for students to review the Scoring Guide, you may wish to have them work in pairs or small groups to discuss and/or write their responses, using the Scoring Guide to help develop their responses. See Appendix 2: Assessment Resource at the end of the Teacher's Edition for more guidance and information on using the Scoring Guide with your students.
- Do not share the item-specific version of the Scoring Guide (Item-Specific Scoring Guide: Activity 3, Build Understanding Item 4) with students as it provides specific information on how to respond to the item prompt. Review the Item-Specific Scoring Guide to support scoring this specific item.
- Visual Aid 3.1, "Scoring Guide: Engaging in Argument from Evidence (ARG)," can be used to assess Build Understanding item 4. Point out the scoring levels (0–4) and review the criteria for each score. Explain that the scores are based on the quality of students' responses and reflect student growth over time. The scores do not correspond to letter grades. A Level 4 response is complete and correct. A Level 3 response is almost complete and mostly correct, but possibly missing minor details or containing small errors. At first, many students will write Level 2 responses, and they should strive to achieve Level 3 or Level 4 responses. Let students know that you would like them to improve by at least one level as they progress through the unit. As a class, discuss what a Level 4 response to Build Understanding item 4 would include. You may develop a Level 4 exemplar as a class or share with students the Level 4 responses from the provided sample responses. To help students better understand the three levels, discuss how they are different and ask students for ideas about how to improve from Level 2 to Level 3 and from Level 3 to Level 4.

- For some students, you may wish to support a specific level of growth—this can be particularly helpful if students have an Individualized Educational Plan (IEP), a 504 plan, or other specific educational goals. Growth from a Level 1 to a Level 2 may indicate significant progress for a student and should be recognized as such. Additionally, assessments can be a good opportunity to have students evaluate one another's work and provide initial feedback for revisions prior to submitting their responses to you. You may wish to project a copy of the Scoring Guide for your students to review each level and clarify your expectations.

- Sample responses for Levels 1–4 are provided in the Build Understanding section. Review these responses to get an idea of what is expected for each level, alongside the Item-Specific Scoring Guide. See Appendix 2: Assessment Resource at the end of the Teacher's Edition for more guidance and information on using the Scoring Guides and assessment system with your students.

- Optional Student Sheet 3.3, "Writing Frame: Engaging in Argument from Evidence," provides additional support for students responding to Build Understanding 4. A Writing Frame can support learners, particularly emerging multilingual learners, in decoding scientific ideas, constructing meaning, sensemaking, and language acquisition. This strategy, which has been deemed effective for emerging multilingual learners, was built on and adapted from strategies for English-proficient learners. You may wish to provide students with the Writing Frame to compose their responses or simply as a reference or checklist to help them organize how they will respond. Consider posting an enlarged version of the writing frame on a classroom wall for students to refer to now and in future assessments. For more information on a Writing Frame, see Appendix 1: Literacy Strategies.

10 **Revisit Student Sheet 1.3, "Unit Concepts and Skills," and add key concepts and skills about fast thinking and slow thinking.**

- The end of this activity is a good time to revisit optional Student Sheet 1.3, "Unit Concepts and Skills," to help students formally organize the ideas introduced in the unit so far. Students can place the headings of the main ideas of metacognition and cognitive shortcuts into the organizer and add examples from their classroom experiences in Activities 2 and 3. See the end of Activity 1 in the Teacher's Edition for a sample student response.

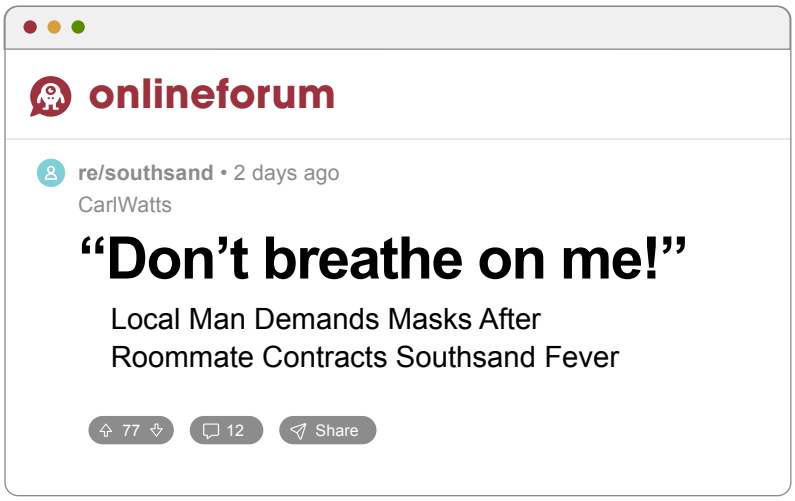
- This activity has an unusually large amount of vocabulary. Review the terms at the end of the activity and answer students' questions. Support students, particularly emerging multilingual learners, in sensemaking and language acquisition by adding unit words to the word wall. Record the seven Key Scientific terms—*anchoring shortcut, availability shortcut, claim, cognitive shortcut, credible source, evidence, and representativeness shortcut*—and provide examples as needed. For more information on a Word Wall, see Appendix 1: Literacy Strategies.

- To conclude the activity, evaluate whether your students are able to answer the Guiding Question, *How do people avoid errors from cognitive shortcuts?* Students should have learned through their experience in the activity that gathering more evidence is a key skill in combating cognitive shortcuts. Revisit and summarize the key concepts and process skills of the activity.

SAMPLE STUDENT RESPONSES

BUILD UNDERSTANDING

① **Review the following headline and beginning of a fictional post from Activity 2. What type of cognitive shortcut is the person using? Explain your reasoning.**



This is an availability shortcut because he is using the most recent information about his roommate being sick to make a decision. He doesn’t stop to ask if evidence supports transmission through the air compared to other routes of transmission, such as through water or soil.

② **Large Language Models (LLMs), such as ChatGPT or Gemini, use artificial intelligence (AI) technology to answer questions by gathering information available on the Internet to construct a response to a search or a question. Most LLMs do not identify the source of the information or list the evidence used to construct the answer. Would you consider an LLM to be a credible source? Why or why not?**

Responses will vary. One sample response is shown here.

I think that LLMs can produce biased information even though it appears believable. The credibility is not based on human judgements. There aren’t any standards for LLMs to check their sources. So it just parrots the Internet, which is not a reliable source itself. I always check my AI results.

③ **Many social media posts focus on personal anecdotes, which are single stories or one-time events, usually involving one person. How could using an anecdote lead to one or more cognitive shortcuts?**

Someone providing an anecdote because it is faster and easier than having to spend the time and energy to get and analyze data. Since an anecdote relies on a single piece of information to reach a conclusion, it could include any of the shortcuts in this activity. Using data from a larger group of people provided by a credible source would lead to a more accurate conclusion.

④ **ARG Scoring Guide**

In the Southsand fever scenario, Trevor reads an article that states: *Adults are most at risk of this disease.* Trevor suspected that the claim involved a cognitive shortcut, so he went to the Southsand fever public health website to get more information. He found the following data from the local hospital, a credible source. Based on analysis of the data, which age group (children, adults, or seniors) do you think is most at risk from the disease? In your response:

- **a make a claim about which age group is most at risk.**
- **b support your claim, using at least 2 pieces of evidence from the data in Table 3.1. Use reasoning to explain how each piece of evidence supports your claim.**

TABLE 3.1
Southsand Fever Hospital Data

	CHILDREN (0-14 years)	ADULTS (15-59 years)	SENIORS (60+ years)	TOTAL
Number of cases	13	68	19	100
Number hospitalized	2	27	10	39
Number who died	1	2	4	7
Average length of hospital stay (days)	10	5	14	

Level 4 response

a *My claim is that seniors are the most at risk from Southsand fever.*

b *The data shows that the senior group had 4 deaths out of only 19 cases (about 21%), which is a much higher rate than children (1 death out of 13 cases, about 8%) and adults (2 out of 68 cases, about 3%). This strongly suggests that although fewer seniors are infected, the disease is far more serious for them once they get it. Also, seniors have the longest hospital stays at 14 days, which is a lot longer than the 5-day average for adults and a little longer than the 10-day average for children. These long hospital stays are strong evidence that Southsand fever probably causes more severe health problems for seniors. These two pieces of evidence are from a credible source (the hospital). All of this supports the idea that seniors are more at risk of dying or having serious health problems than the other groups. Even though adults have the highest total number of cases, it's seniors who are probably more at risk.*

Level 3 response

a *I think seniors are the age group most at risk from the disease.*

b *My first piece of evidence is that they are more likely to die than the other two groups if they get the disease. Four seniors died from Southsand fever, compared to only 2 adults and 1 child. Another piece of evidence is that seniors had to stay 14 days on average at the hospital. So this shows that seniors are affected the most by the disease.*

Level 2 response

a *Some children are at risk.*

b *They have to stay for 10 days on average if they are hospitalized. This is a very long time for a child, so it shows that they are in danger if they get the disease.*

Level 1 response

a *Every age group can get Southsand fever.*

b *My evidence is that every age group can die from the disease. So Southsand fever is dangerous.*

CONNECTIONS TO EVERYDAY LIFE

5. **Imagine that the very first piece of information Sam receives about a severe weather event is a social media post. The post claims the storm will be a Category 5 hurricane that will hit the town. The storm turned out to be strong, but was rated a Category 3. Sam's home had expensive damage but it wasn't structural, and he was still safe. Sam felt like he was lucky. Which cognitive shortcut could have affected his interpretation of the situation? Explain.**

   It would probably be the anchoring shortcut. It works because the first piece of information was a Category 5 hurricane, which anchored Sam's expectations. When the actual storm was rated a Category 3, he felt like he was lucky. If his expectations were that there wasn't going to be a storm, the damage from the Category 3 hurricane would not have made him feel lucky.

6. **Imagine you have a friend who complains about a stomachache. He says, "I had a stomachache a few months ago when I had the flu. I must have the same illness again." Which cognitive shortcut could have affected his interpretation of the situation? Identify the cognitive bias and explain how you would advise him.**

   This friend is using an availability shortcut because he is using his most recent experiences to guide his thinking. I would advise him to slow down, to not assume that he has the same thing, and to go see a doctor if it doesn't get better soon.

STUDENT SHEET 3.1	EVALUATING POSTS FOR COGNITIVE SHORTCUTS	NAME

PART A: TABLE 1

POST	@BirdNerd7865	@DoubterDom	@OutbreakOutl00k
Claim			
Do you agree with the reasoning?	YES NO NOT SURE	YES NO NOT SURE	YES NO NOT SURE
Cognitive Shortcut			

PART B: TABLE 2

POST	@BirdNerd7865	@DoubterDom	@OutbreakOutl00k
Possible evidence to support or refute claim			
Credible sources			
Supporting evidence			
Refuting evidence			

STUDENT SHEET 3.1	EVALUATING POSTS FOR COGNITIVE SHORTCUTS	NAME	SAMPLE STUDENT RESPONSE

PART A: TABLE 1

POST	@BirdNerd7865	@DoubterDom	@OutbreakOutl00k
Claim	*A big outbreak of bird flu must be coming*	*Bird flu is very rare, so people should not be worried about it.*	*The next outbreak of bird flu will be very deadly.*
Do you agree with the reasoning?	(YES) NO NOT SURE	YES (NO) NOT SURE	YES NO (NOT SURE)
Cognitive Shortcut	*Availability*	*Anchoring*	*Representativeness*

PART B: TABLE 2

POST	@BirdNerd7865	@DoubterDom	@OutbreakOutl00k
Possible evidence to support or refute claim	*Who is reporting the story?* *Likelihood of outbreak.*	*How the outbreak could happen.* *Who is getting sick?*	*How bird flu is spread.* *Chances of getting it.*
Credible sources	*Reuters* *World Organization of Animal Health*	*World Organization of Animal Health* *Reuters*	*World Organization of Animal Health* *Knowable Magazine*
Supporting evidence	*Because there are many types of bird flu, and there is a potential for mutation bird flu, it is a continued global health concern.*	*There have been 1,000 cases in humans since 2003, and 48% died.*	*Bird flu mostly affects wild birds and poultry. Not contagious between people. The odds of an outbreak in humans are very low.*
Refuting evidence	*Risk of bird flu pandemic is low. World is more prepared for viral pandemics.*	*People need close contact with infected birds to get it. Can't get it from properly cooked food.*	*If it mutates, it could be more likely to spread to humans. Your risk is higher if you work with poultry or farm animals.*

Find a relevant information source and record the information about it below.

Website URL _____

Name of site/title _____

Who is the author? _____

What type of website is it (.gov, .edu, .com, .org)? _____

What date was the page published/last updated? _____

Who is the intended audience? _____

Purpose of the site (to inform, entertain, persuade) _____

Does the site provide facts, opinions, or both? _____

Open a separate browser window to evaluate the site for evidence of credibility.
Look for other sources that describe the site, author, or its related institution (company, organization, or university). Use the other sources to answer the next three questions.

Is there evidence of expertise?
(Does the author have appropriate education or relevant experience? A strong reputation among peers? Do they work at a reliable organization, institution, or university? Are references acknowledged in the source? Are the references credible?)

Is there evidence of conflict of interest?
(Where does their funding come from? What other organizations do they partner with? Might these connections influence their writing?)

Is there any indication of bias?
(Is it politically neutral? Does there seem to be some kind of agenda—political, social, environmental? If there is a bias, what is it?)

Find a relevant information source and record the information about it below.

Website URL *https://www.livescience.com/health/viruses-infections-disease/bird-flu-could-soon-evolve-to-spread-between-humans-heres-how-to-slow-its-progress*

Name of site/title *Live Science: Bird flu could soon evolve to spread between humans. Here's how to slow its progress.*

Who is the author? *Ron Barrett*

What type of website is it (.gov, .edu, .com, .org)? *.com*

What date was the page published/last updated? *April 6, 2025*

Who is the intended audience? *people in the community/general public*

Purpose of the site (to inform, entertain, persuade) *inform and educate*

Does the site provide facts, opinions, or both? *facts, opinions*

Open a separate browser window to evaluate the site for evidence of credibility.

Look for other sources that describe the site, author, or its related institution (company, organization, or university). Use the other sources to answer the next three questions.

Is there evidence of expertise?

(Does the author have appropriate education or relevant experience? A strong reputation among peers? Do they work at a reliable organization, institution, or university? Are references acknowledged in the source? Are the references credible?)

He is a Professor of Anthropology who studies social issues related to infectious disease. While his research is related, his experience may not be relevant enough for medical treatment recommendations related to avian flu, though he was formerly a nurse and does seem like a credible source for general information. He does give references to other credible sources including research studies.

Is there evidence of conflict of interest?

(Where does their funding come from? What other organizations do they partner with? Might these connections influence their writing?)

Live Science is a science news website. Their policies have high standards for fact-checking scientific and medical articles. They require authors to disclose conflicts of interest.

Is there any indication of bias?

(Is it politically neutral? Does there seem to be some kind of agenda—political, social, environmental? If there is a bias, what is it?)

Live Science is a pro-science website. Their policies page states that they won't publish stories that go against accepted scientific theories (such as climate change) unless there is extremely good evidence to consider. They don't allow the use of AI to create their stories. This article is marked as an opinion piece, so it is not purely informational and contains the author's interpretations of the data and situation.

CLAIM (statement about how the disease is spreading)

My claim is:

EVIDENCE (data and observations related to the claim)

The first piece of evidence that supports my claim is

The second piece of evidence is

REASONING (how or why each piece of evidence supports the claim)

First piece of evidence: My reasoning is that

Second piece of evidence: My reasoning is that

CLAIM (statement about how the disease is spreading)

My claim is:

that seniors are the age group most at risk from Southsand fever.

EVIDENCE (data and observations related to the claim)

The first piece of evidence that supports my claim is

that the senior group had the highest rate of deaths. 4 of 19 (about 21%) seniors died, compared to only 1 of 13 children (about 8%) and only 2 of 68 adults (about 3%).

The second piece of evidence is

that seniors have the longest stays at the hospital. People 60 or older stay 14 days on average, compared to 5 days for adults and 10 days for children.

REASONING (how or why each piece of evidence supports the claim)

First piece of evidence: My reasoning is that

the higher rate of deaths for seniors is probably because the disease is much more serious for them if they contract it. If they get Southsand fever, seniors probably get a lot more sick and could die.

Second piece of evidence: My reasoning is that

the longer hospital stays are also probably because the disease is causing more severe health problems for seniors. All of this supports the idea that seniors are more at risk of dying or having serious health problems than the other groups.

VISUAL AID 3.1 | SCORING GUIDE: ENGAGING IN ARGUMENT FROM EVIDENCE (ARG)

WHEN TO USE THIS SCORING GUIDE:

This Scoring Guide is used when students are developing effective evidence-based arguments.

WHAT TO LOOK FOR:

- Response includes a clear and relevant claim.
- Response includes sufficient evidence, including multiple lines of evidence when appropriate.
- Reasoning is logical, sufficient, and connects the evidence to the claim.

LEVEL	GENERAL DESCRIPTION		
	CLAIM	EVIDENCE	REASONING
Level 4 **Complete and correct**	The student's claim is clear and relevant.	The student's evidence supports the claim; is relevant, accurate, and sufficient; AND the student evaluates the strength of the evidence in supporting the claim.	The student's reasoning is appropriate, logically connected to the claim, and sufficient.
Level 3 **Almost there**	The student's claim is relevant BUT incomplete.	The student's evidence is relevant, accurate, and sufficient.	The student's reasoning is appropriate and logically connected to the claim BUT is not sufficient.

LEVEL	GENERAL DESCRIPTION		
	CLAIM	EVIDENCE	REASONING
Level 2 **On the way**	The student's claim seems relevant BUT is unclear.	The student's evidence is relevant BUT is incomplete and/or contains inaccuracies.	The student's reasoning is incomplete or not logically connected to the claim.
Level 1 **Getting started**	The student's claim is irrelevant.	The student's evidence is irrelevant or does not support the claim.	The student's reasoning does not logically support the claim and does not connect the claim to the evidence.
Level 0 **Missing or off task**	The student provided no claim.	The student provided no evidence.	The student provided no reasoning.
X	The student had no opportunity to respond.		

ITEM-SPECIFIC SCORING GUIDE | ACTIVITY 3, BUILD UNDERSTANDING ITEM 4

WHEN TO USE THIS SCORING GUIDE:

This Scoring Guide is used when students are developing effective evidence-based arguments.

WHAT TO LOOK FOR:

- Response includes a clear and relevant claim.
- Response includes sufficient evidence, including multiple lines of evidence when appropriate.
- Reasoning is logical, sufficient, and connects the evidence to the claim.

LEVEL	ITEM-SPECIFIC DESCRIPTION		
	CLAIM	EVIDENCE	REASONING
Level 4 **Complete and correct**	The student's claim is clear and relevant.	The student's evidence supports the claim; is relevant, accurate, and sufficient; AND the student evaluates the strength of the evidence in supporting the claim.	The student's reasoning is appropriate, logically connected to the claim, and sufficient.
	The student's response includes: • a clear claim about which age group is most at risk from the fictional disease. • a thorough description of at least 2 pieces of evidence from the data table that supports their claim. • an accurate description of the strength of each piece of evidence.		

LEVEL	ITEM-SPECIFIC DESCRIPTION		
	CLAIM	EVIDENCE	REASONING
Level 3 **Almost there**	The student's claim is relevant BUT incomplete.	The student's evidence is relevant, accurate, and sufficient.	The student's reasoning is appropriate and logically connected to the claim BUT is not sufficient.
	The student's response includes: • a clear claim about which age group is most at risk from the fictional disease. • a thorough description of at least 2 pieces of evidence from the data table that supports their claim. • a description of the strength of each piece of evidence that may not be accurate.		
Level 2 **On the way**	The student's claim seems relevant BUT is unclear.	The student's evidence is relevant BUT is incomplete and/or contains inaccuracies.	The student's reasoning is incomplete or not logically connected to the claim.
	The student's response includes: • provides an unclear claim about which age group is most at risk from the fictional disease. • describes 1 piece of evidence from the data table to support their claim. • provides a description of reasoning that may be unclear or does not logically support their claim.		

LEVEL	ITEM-SPECIFIC DESCRIPTION		
	CLAIM	EVIDENCE	REASONING
Level 1 **Getting started**	The student's claim is irrelevant.	The student's evidence is irrelevant or does not support the claim.	The student's reasoning does not logically support the claim and does not connect the claim to the evidence.
	The student's response includes: • a clear claim about which age group is most at risk from the fictional disease. • evidence that is irrelevant to which age group is most at risk. • reasoning that does not logically support their claim.		
Level 0 **Missing or off task**	The student provided no claim.	The student provided no evidence.	The student provided no reasoning.
X	The student had no opportunity to respond.		