



Community Building

BIG IDEA(S):

- What is workforce readiness?
- What is collaboration and why is it important?

WHAT YOU WILL NEED:

- STEM Collaboration: AI Challenge, Part 1 (two pages)
- Scissors
- STEM Collaboration: AI Challenge, Part 2 (one page)

OVERVIEW

In this first session, young people will participate in icebreakers that prompt them to begin considering their own workforce readiness. They will then work together on a STEM challenge focused on artificial intelligence as they deepen their understanding of the value of collaboration and consider the role it plays in achieving their goals.

BEFORE YOU BEGIN

- Print and copy the handouts listed in the *What You Will Need* section so there are enough copies for about half of the participants.
- Find scissors for the participants to share or cut out the squares on page two of **STEM Collaboration: AI Challenge, Part 1** in advance.
- Read through the activity to make sure you understand the directions before the session begins.

ENGAGE

- Begin by dividing the young people into groups of three or four.
- Explain that group members will get to know each other by sharing fun, interesting, or surprising facts about their work, leadership, and volunteer experiences during *Three Truths and a Lie*.
- If needed, explain that in *Three Truths and a Lie*, each participant shares a combination of three factual statements and one fictional statement. The other group members then try to guess which one is the lie.

EXPLORE

1. Explain that each volunteer, leadership, and work experience that we've had in the past contributes to our workforce readiness—or, in other words, how prepared we are to begin our future careers!
2. Next, lead the young people through the following Four Corners Activity as you prompt them to think a little more about their own workforce readiness.

- Designate each corner of the classroom: strongly agree, agree, strongly disagree, and disagree.
- Present the statements below and encourage the young people to move to the corner of the room that best represents their stance on each statement. Once everyone has moved, ask at least one person from each corner to share their reasoning before moving on to the next statement.
 - Statements:
 - ◇ I can identify the personal strengths and qualities that make me unique.
 - ◇ I understand how my personality, interests, experiences, hobbies, and skills could help me in a future career.
 - ◇ I am confident I could find a STEM career that I enjoy.
 - ◇ I believe I have the skills and abilities I need to succeed in a STEM career.
- 3. Explain that the young people will be developing their workforce readiness over the course of this afterschool program with the goal of eventually being able to answer each statement with a “strongly agree!” Today, they will be strengthening their collaboration skills so they can work together to meet these goals.
- 4. To begin this collaboration, encourage the young people to find a partner they don’t know well.
- 5. Tell partners that they will be collaborating on an AI (Artificial Intelligence) STEM Challenge. Explain that AI is a computer system’s ability to learn, understand, and deal with new situations. The field of AI focuses on creating machines that can process information and produce results similar to those that humans are capable of.
- 6. Give one **STEM Collaboration: AI Challenge, Part 1 handout (2 pages)** to each pair. Ask them to read the directions and collaborate to complete the activity.
- 7. Once the pairs finish Part 1, hand out one **STEM Collaboration: AI Challenge, Part 2 handout** to each pair. Then ask each pair to find another pair to form a group of four.
- 8. Encourage these new groups of four to follow the handout’s instructions and collaborate to improve each other’s data sorts. Remind the young people that feedback is important in all design processes, and ask them to respect the thoughts, opinions, and contributions of every team member.
- 9. Once the groups have finished Part 2 and optimized their original sorts, bring everyone back together. Ask each pair to demonstrate with their fingers how many steps are in their optimized sorts. Encourage pairs with the lowest number of sorts to share their steps as the listeners consider what they could learn from their process.
- 10. Conclude with a discussion around collaboration. Discuss:
 - How did collaboration contribute to the success of this activity?
 - How may the outcome have been different if everyone had worked completely independently?
 - How could collaboration be beneficial as we seek to achieve goals in other situations as well?

MAKE THE CONNECTION

Careers in AI are just one of the many different types of STEM careers. While all STEM careers require different skillsets, the 4Cs—Critical Thinking, Collaboration, Communication, and Creativity—are needed across the field. Any opportunity to strengthen these 21st-century skills will be beneficial to your future!

EXTEND AND EVALUATE

Do you meet more than once a month? In an upcoming session, you could:

- Continue to begin with icebreakers so the young people get to know more of their peers. Assign small groups to be responsible for leading the beginning of each session with an icebreaker they find or develop.
- Elaborate on this AI Challenge by increasing the difficulty of the sorting tasks and challenging the young people to explore what else they can teach a computer system to efficiently do.
 - For instance, could they:
 - Introduce sensory data (imagery, sounds, smells, etc.) to the sort?
 - Experiment with if/then statements, such as:
 - ◇ If [a certain condition] is true, then [action is taken]?
 - ◇ If [a certain condition] is false, then [action is taken]?
 - Remind the young people about the power of collaboration and encourage them to work with and receive feedback from as many people as possible as they enhance their sorts.

Did you know? One ever-growing capability within AI is machine learning. Machines learn through sorting huge amounts of data. As they sort this data, they begin to recognize patterns and eventually learn how to use these patterns to make their own decisions. For instance, if a computer needs to learn how to recognize bird images, it may first be programmed to search for pictures with legs, then for pictures with only two legs, then for pictures with wings, and so on. After completing sorts for many different characteristics, the computer is eventually left with only bird images.

Your Job: Teach a computer how to recognize horse images by sorting through the cards provided. Each sort should focus on a single characteristic. After several sorts, the computer should have only horse cards remaining.

Record each characteristic that your computer will sort for below. Think about the order of your sorts and try to make the process as efficient as possible. Complete each sort as you record it and stop when only horse images remain!

Data Sort

Characteristic #1:

Characteristic #2:

Characteristic #3:

Characteristic #4:

Characteristic #5:

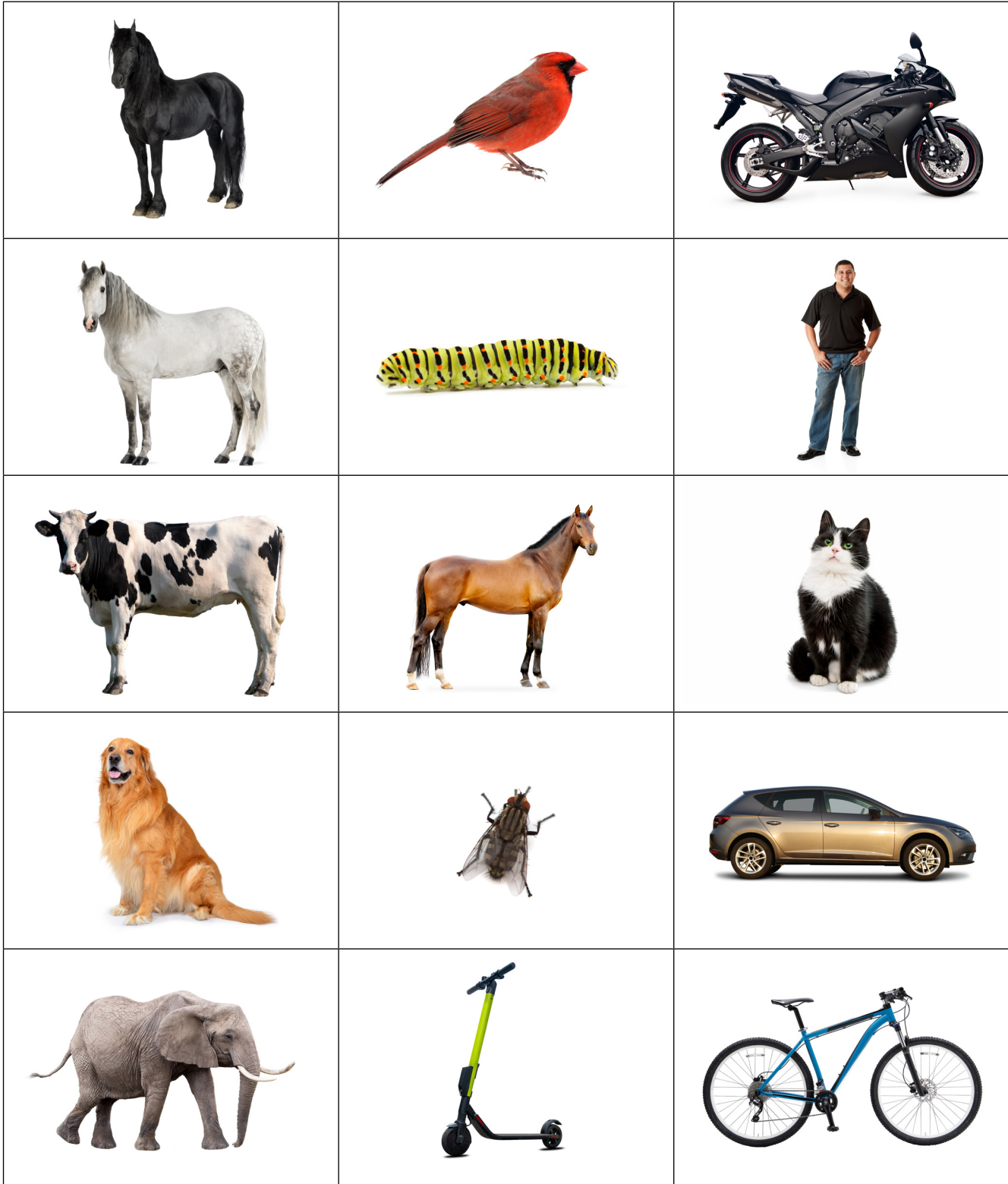
Characteristic #6:

Characteristic #7:

Characteristic #8:

STEM COLLABORATION: AI CHALLENGE, PART 1—PAGE 2

Directions: Cut out each square and use them with the activity on page 1.



1. Pair with another group and simulate machine learning by completing each other's sorts. Be sure to sort only for the characteristics included in the instructions.
2. When the sorts are complete, provide feedback to each other:
 - Would these data sorts have successfully taught a computer to identify a horse?
 - How could the sorting process become more effective or more efficient?
3. Take a few minutes to optimize (improve and/or rewrite) your data sort based on this feedback.
4. Then discuss as a group: If a computer were to learn how to perfectly identify a horse, what other data (new images, sounds, etc.) should it be exposed to in order to be successful?