

**Intended Audience:**

Grades 3-5, 6-8

**Learning Standards**

See the end of the doc.

**Lesson Objectives**

Participants will:

After this activity you will be able to understand what a pollinator is and use that knowledge to understand how a computer is trained in AI.

**Time Needed**

5 minutes

**Equipment and Supplies**

9+ preprinted pollinator cards. Make sure at least 4 are of the same variety of pollinator.

**Prepared by: (Authors)**

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**Pollinators and AI**

**Background**

This activity will introduce you to what Indiana pollinators are as well as how data is presented to a computer to train it for AI.

**What to Do**

**lesson: Introducing the Activity**

Ask youth if they know what a pollinator is. Make sure they understand how pollinators help plants reproduce by transferring pollen from flower to flower. Show them the cards of pollinators and of some flowers/plants that benefit from pollination.

Now lets talk about how to teach a computer to know how to recognize what a pollinator is. If you show a computer a picture of a pollinator, it will put that image into its database and remember it. The problem is that it takes a lot of different pictures of the same thing for a computer to recognize something.

1. Lets see how that works. Sort through these cards and make two piles. One is pollinators, one is not. See how well you do.

**Did You Know?** Humans are capable of abstraction. That means that they can look at a photograph and automatically understand what the object is and what it should look like from all sides.

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1. Lets look at all these images that a computer needs just to understand what just one type of pollinator is. (show same pollinator from **many** angles and perspectives. Possibly a bee?)

**Did You Know?** It may seem like a computer is intelligent, but it really uses math and statistics to make a very good guess.

**lesson: Facilitator notes:**

This lesson is perfect for very short interactions such as at fairs or conventions.

## Science Standards

* NGSS 2-LS2-2: Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants

NGSS 3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death

## Computer Science Standards

* CSTA 1B-AP-08: Compare and refine multiple algorithms for the same task and determine which is the most appropriate

CSTA 1B-DA-06: Organize and present collected data visually to highlight relationships and support a claim.

* CSTA 1B-AP-10: Create programs that include sequences, events, loops, and conditionals

## The lesson addresses these standards by:

1. Introducing the concept of pollinators and their role in plant reproduction.
2. Using visual aids (cards) to help students identify pollinators and flowers.
3. Explaining the basics of computer vision and machine learning.
4. Engaging students in a sorting activity to mimic computer classification.
5. Demonstrating the concept of abstraction and its importance in human cognition.
6. Illustrating the data-intensive nature of machine learning by showing multiple images of a single pollinator type.

This lesson effectively combines biological concepts with introductory computer science principles, providing a foundation for understanding both natural systems and artificial intelligence

[2](https://aihub.org/2023/02/23/ai-can-track-bees-on-camera-heres-how-that-will-help-farmers/" \t "_blank)

[4](https://www.nsta.org/science-and-children/science-and-children-julyaugust-2023/bee-time" \t "_blank)

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