Deconstructing the Development of Embedded Assessments


Embedded Assessments (EA) Activities:

- Integrated into the learning experience
- Allow learners to demonstrate competency around a specific skill
- Valuable in **informal learning contexts such as citizen science** where assessment is uncommon (Stylinski et al. 2019)

We are working across the citizen science landscape to develop, **validate, and field-test methodologically rigorous** processes, which result in assessments that are:
- embedded,
- authentic to projects,
- performance-based, and
- broadly applicable.
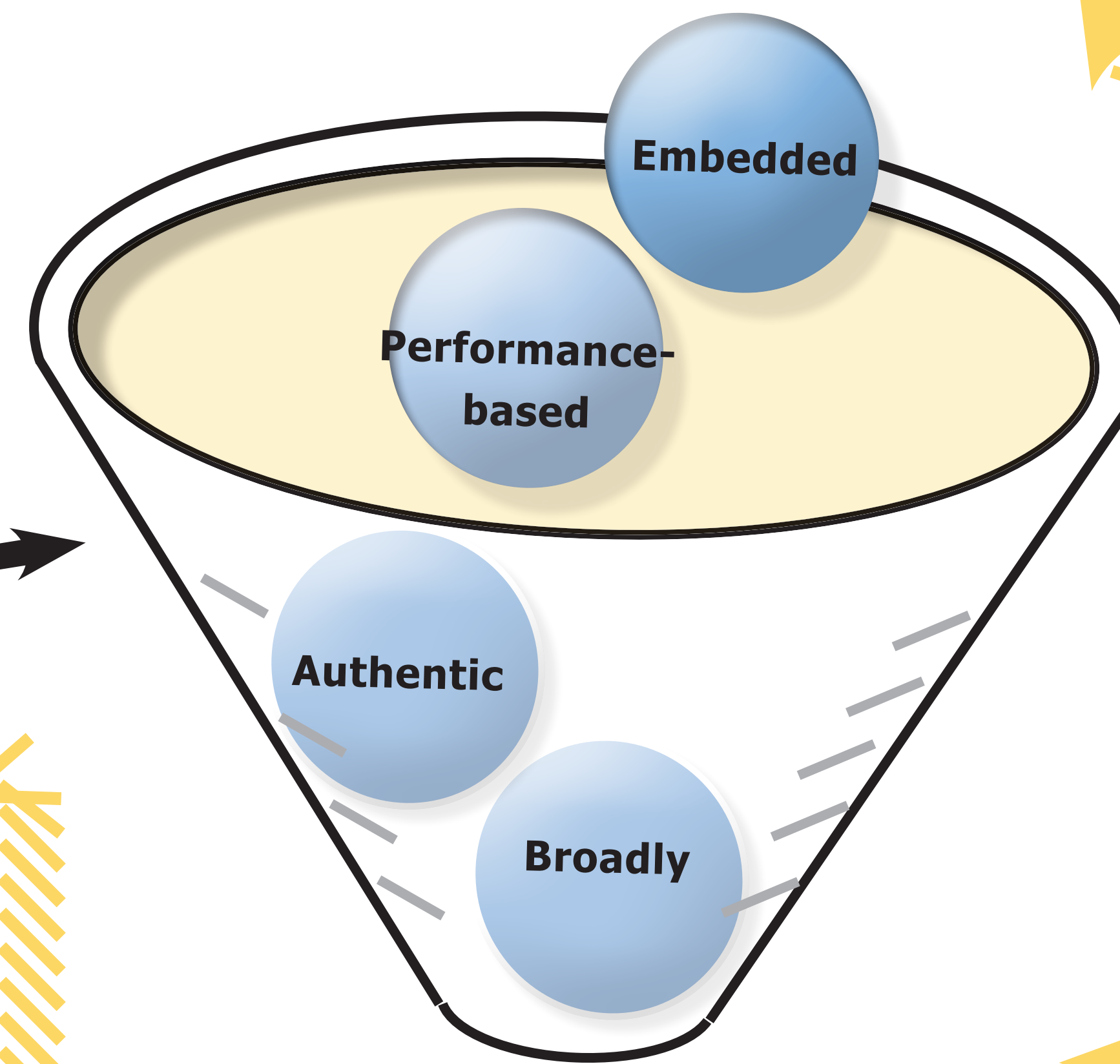
What are the Benefits of Embedded Assessment?

- Embedded assessments allow learners to demonstrate their competency through authentic tasks that integrate seamlessly into the learning experience (e.g., test presented as a game).
- They are not an added burden for volunteers.
- They can be performance-based activities that mirror real-life problem-solving situations.
- They can encourage project leaders to reflect on their training of targeted skills.

Reflection questions for you!

- How could EAs be useful and challenging in your work?
- How is our assessment development process contextually relevant to your work?
- How can the example EA (or others) be applied to other projects?

Streamline Embedded Assessment

We are collaborating with 10 citizen science project leaders to develop and use EAs to assess their volunteers' science inquiry skills. The process includes:

- Defining relevant science skills,
- Co-create assessments of those skills using our EA Development Process (Peterman et al., 2017),
- Pilot the EAs with project volunteers, and
- Validating the EAs through expert review of content and think-alouds.

Embedded Assessment Development Process
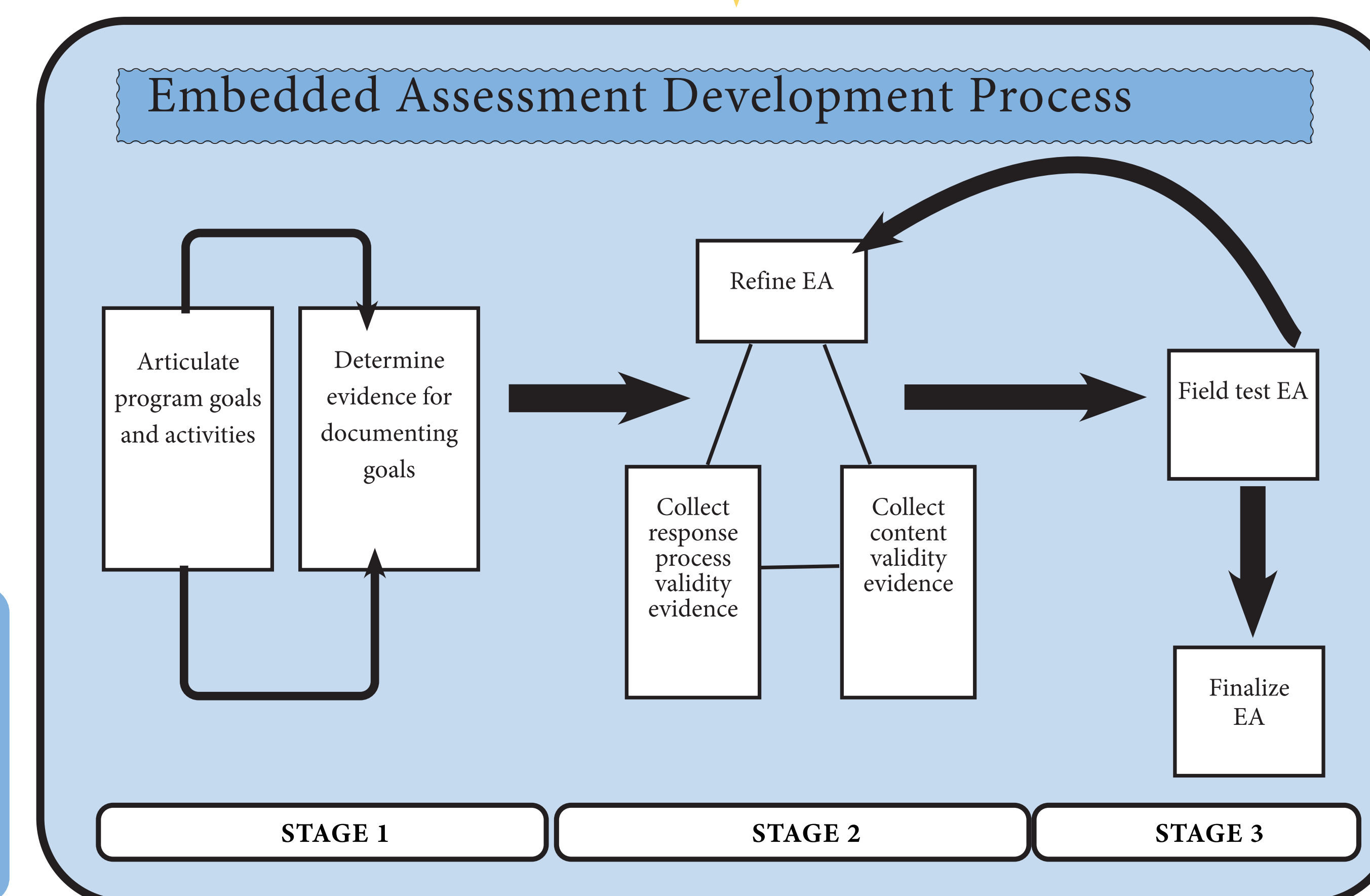
Sample EA

Skill: Notice Relevant Features

Skill Definition: An observer must be able to match what they see (e.g., floral structure) with their content knowledge (e.g., plant families).

EA Description: During project training, volunteers are asked to identify organisms in different photos (specific to their citizen science project), and prompted to show their work with the following question: "What features of the animal did you use in your identification?"
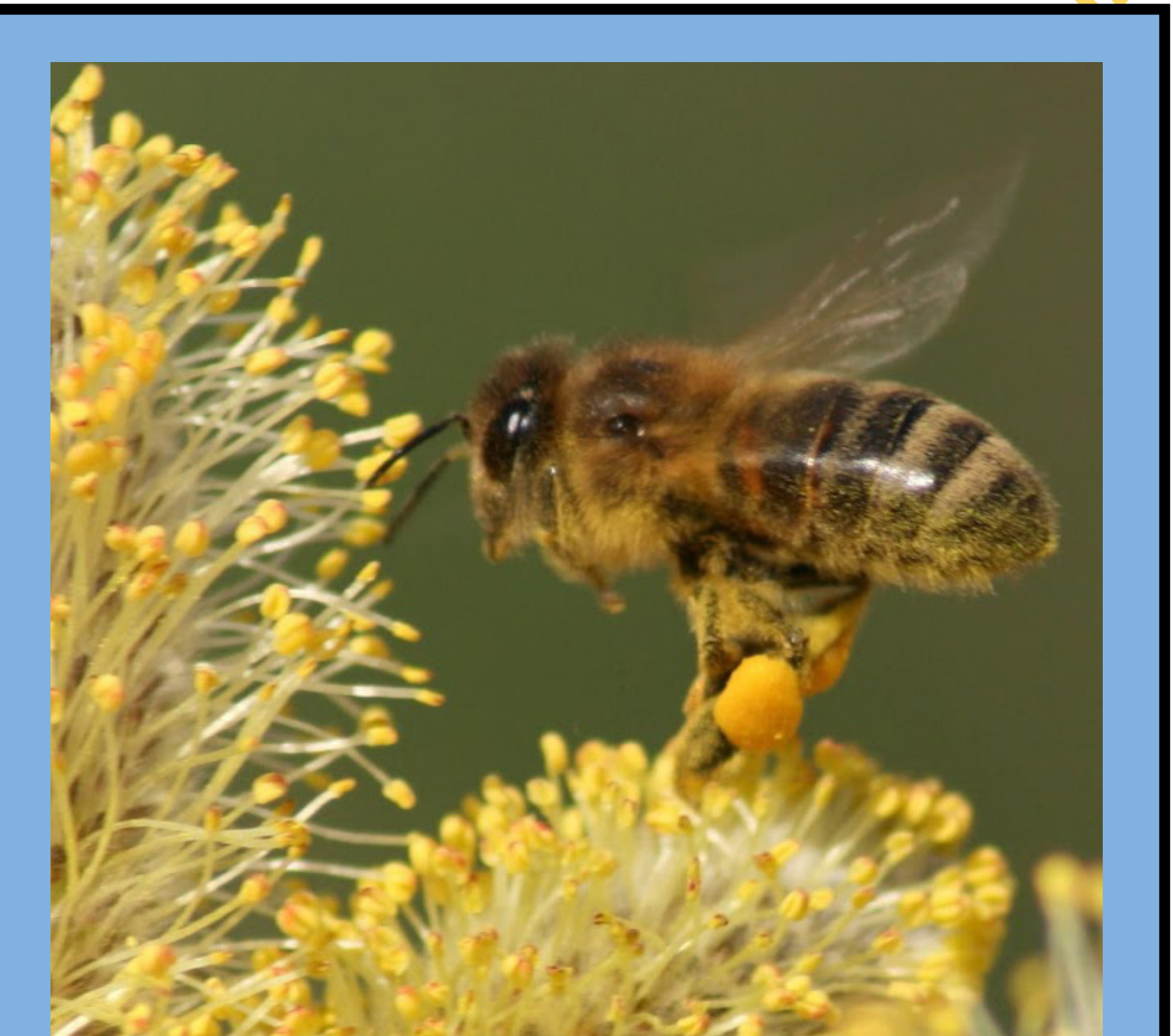
What type of bee is this?
- ☐ Honey bee
- ☐ Carpenter bee
- ☐ Bumble bee
- ☐ Not sure
- ☐ Other: _____

What features of the bee did you use to decide the type?

Please fill in as many relevant features as you can identify, minimum 2. When providing details about the features you noticed that helped you identify the insect, please be as specific as possible about how each feature differentiated it from other insects. For example, if you notice the wings, what do you notice about the wings (e.g. 2 wings, 4 wings, etc.)? Or if you notice the color pattern, body shape, etc., WHAT do you notice about the color pattern and body shape?

Feature 1: _____
Feature 2: _____
Feature 3: _____

Example Application

Citizen science project: BeeSpotter seeks to educate the public about pollinators by engaging them in a data collection effort. It uses a web-based University of Illinois portal that provides information about honey bees and bumblebees, and for contributes volunteer data to a nationwide effort to collect baseline information on the bee population status.

Relevant features: Distinguishing bee species features from each other (e.g., hair, color pattern, body shape, pollen-carrying structures, size)

Instrument: A written survey embedded into the BeeSpotter training that asks volunteers if the organism in a provided photo is a bee or some other insect, and asks how they knew that; it also asks volunteers to identify the species of bee, and asks how they knew that.

Scoring: Based on whether volunteers' correctly identified the bee and the species, and which features they used to make these decisions.

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