FAMILY ACTIVITY: Animal-Inspired Designs

In this session, youth will learn about the concept of biomimicry (using inspiration from nature to solve problems) and will play a game to generate ideas for animal-inspired designs. Youth will draw cards that will prompt them to connect two seemingly random ideas, by designing a functional object inspired by a particular animal. Youth will share their designs with their group, and learn about some of the ways people who work in engineering, art, architecture, science, and other fields have created designs inspired by animals (and other everyday objects). This activity will facilitate youth to think creatively and to communicate their ideas with others.

MATERIALS AND INSTRUCTIONS

Materials
- Biomimicry design cards (attached; print and cut or write the ideas on slips of paper)
- Paper
- Drawing materials

Instructions
1. ASK youth to share an animal with which they identify or really like, and what they think that animal is good at.
2. EXPLAIN that they will be doing an activity in which they come up with ideas that are inspired by animals. There will be two sets of cards: one set that names animals, and one set that names objects. For the activity, they will draw one card from each set.

TIPS!
- Before youth draw their own cards, demonstrate brainstorming an example of an animal-inspired design, or brainstorm together.
- Encourage youth to be silly - designs do not need to be realistic.
- Support youth with inquiry while brainstorming and designing:
  - What do the two cards have in common?
  - How are they different?
  - What features of the animal are interesting or unusual?
  - How could the interesting features be used in a design?
- COLLABORATE - Youth can do this activity with siblings or adults.

3. DISTRIBUTED materials have youth draw cards.
4. EXPLAIN that they should draw their ideas for their animal-inspired designs on their paper. They can sketch out multiple ideas.
5. SHARE animal-inspired design ideas!
6. EXPLAIN that people sometimes get inspired by animals or plants because of things they can do, or how they look. When people borrow ideas from animals or plants to solve problems, it’s called biomimicry.
7. REPEAT creating animal-inspired designs!

QUESTIONS TO EXPLORE

During brainstorming/designing:
1. What do the animal and object have in common?
2. How are the animal and object different?
3. What features of the animal are interesting or unusual?
4. How could the interesting features of the animal be used in a design?

During share-out:
5. What are you proud of in your design?
6. What would you change if you created another version of this design?
7. How would you build this design to make it work? What materials would you use?

General:
8. What do you think biomimicry means, based on the roots of the word? ("bio" = life, "mimic" = imitate)

IDEAS TO INCLUDE YOUNGER SIBLINGS! (ADAPTATIONS FOR 0-5 YEAR OLDS)

- Preschoolers can be invited to play along with support - such as reading the cards along with them and talking with them about their designs. Some may be able (with encouragement) to identify the first letters of the animal names or items for design. Keep in mind they may not understand some words - like prosthetic - though could be familiar with the idea. Consider if it may help to have books with images of some of the animals for little ones to look at. You can also talk about books you've read together that include images of some of the animals that are on the cards (such as Brown Bear, Brown Bear for an image of a dog or bear, or The Kissing Hand - which features racoons). If you know your younger child will be overwhelmed by the amount of choices, start with fewer cards for them. Infants and toddlers may simply enjoy drawing alongside their older siblings or flipping through books you provide. Support their language development by pointing to and naming the animals as they follow along.

REFERENCES, MODIFICATIONS, & EXTENSIONS

References
Activity adapted from Resource Area For Teaching.

Modifications
- The target ages for this activity are 7+, but it can be done with younger youth with adult or older youth support.
- This activity could take several forms. This activity plan is written to facilitate drawing designs, but could also be done as:
  - Sculpture - using craft materials (can be recycled!), have youth build a 3-d prototype of their designs
  - Acting - youth could act out their design ideas

Extensions
Learn more about biomimicry together! Here are some online resources:
- Biomimicry activities and children’s books (from STEMAZing)
- Biomimicry examples (from Biomimicry Institute)
- Videos
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