



Animal Expression

OPEN PROJECT: modeling a LEGO® representation of various communication methods in the animal kingdom.

SUBJECTS: Engineering, Science, Coding, Maths (STEM)

TOPIC: animal expression

TIME: 120 + minutes

GRADES: 3-5

The guiding principle is that every student should use the lego bricks on a scientific context, developing science practices. The models will provide opportunities for students to work with and develop ideas and knowledge as well as an understanding of the world around them. The progression and difficulty level in this project allow students to develop competency while exploring and learning about key science topics. This project develop eight science and engineering practices:

1. Ask questions, define and solve problems.
2. Develop and use models.
3. Design prototypes.
4. Investigate.
5. Analyze and interpret data.
6. Use computational thinking.
7. Engage in argument from evidence.
8. Obtain, evaluate, and communicate information.



1. Explore phase: connect and discuss



(30-60 minutes)

Bioluminescence is the production of light by living organisms, such as fireflies, shrimp and deep sea fish.

Bioluminescent creatures use this ability to glow for a variety of purposes, including camouflage, luring prey, and communicating.

Other animals would use sounds and movements to communicate.

Students explore these different social interactions to determine how these types of communication help them to survive, find mates, and reproduce.



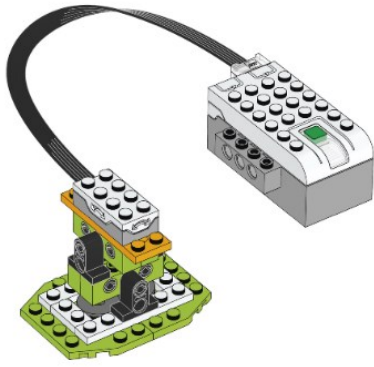
2. Create phase: build, program and modify

(45-60 Minutes)

Students create a creature and illustrate their method of communication. The model display one or more specific type of social interaction, such as light, movement, or sound.

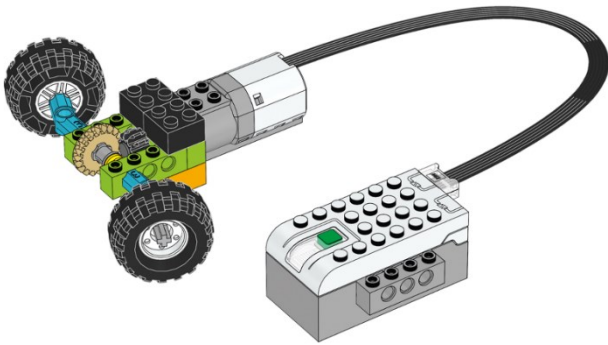
Students explore the Design Library so they can choose a model for inspiration. Then allow them to experiment and create their own solutions, modifying any basic model as they see fit.

Suggested Design Library models include:



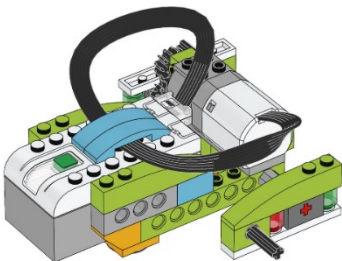
- Tilt

[VIEW BUILDING INSTRUCTIONS](#)



- Wobble

[VIEW BUILDING INSTRUCTIONS](#)



- Walk

[VIEW BUILDING INSTRUCTIONS](#)

3. Share phase: document and present

(45+ minutes)

Student self-assessment

The students are engaged in the work of scientists by communicating their scientific findings. Students present their models, explaining how they represented a method of communication. Students explain how the chosen method of communication creates social interaction and why the animals interact in this way.

After each project, students can and will reflect on the work they have done creating various documents to summarize their work in every step of the process. They will also use the self assessment grid to encourage reflection and set goals for the next project. They will have time to share the documents with each other, allowing to see where and how they can improve some parts of the project.

TEACHER-LED ASSESMENT

There are six habits of mind that are essential for science and engineering growth: systems thinking, creativity, optimism, collaboration, communication, ethical considerations.

Developing students' science and engineering practices takes time and feedback. Assessment should provide feedback to students in terms of what they did well and where they can improve. Problem-based learning is not about succeeding or failing. It is about being an active learner and continually building upon and testing ideas. The record grid lets the teacher record any type of observation is important about each student.

The observation rubrics will evaluate student performance at each step of the process providing constructive feedback to help the student progress. The rubric is based on these progressive stages: emerging, developing, proficient, accomplished.