Lesson 2: Presenting the Design Challenge*

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** This lesson occurs after all animals and plants have been introduced (i.e., all Lesson 1s have been completed and all the plants and animals are living in various spaces/containers around the classroom).*

Grade Level

Kindergarten

Lesson Overview

The second lesson will be a 30 minute or less review of all the animals and plants we've learned about. The design challenge will be presented.

The class will review the Needs (and Considerations) Chart that they've built over the unit and notice similarities and differences. Teacher should use think/pair/share to encourage active engagement. This is where the teacher will present the challenge: *How might we design a classroom habitat for all of our plants and animals to coexist?* Children will regularly refer to the Needs (and Considerations) chart to empathize.

Learning Objectives and/or Standards

- To use observations to describe patterns of what and animals (including humans) need to survive. (NGSS K-LS1-1)
- To ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (NGSS K-2-ETS1-1)
- To analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. (NGSS K-2-ETS1-3)

Preparation

List what needs to be prepared for the day's lesson plan activities

Materials and Resources

- Completed Needs (and Considerations) Chart

- Access to the actual living things studied in this unit for observation (in their individual spaces/containers)

(sample completed chart)

	Needs			**Considerations**		
	Take in Food	Water	Light	Ideal Shelter	Human Handling	Ecosystem Impact
Earth Worm	Oatmeal	Get water from moist soil	Minimal	soil	Use open hand, gentle, don't squeeze	Recycling organic material, increasing nutrients, improving soil structure, food for predators like snails
Gold fish	Fish food	Distilled water to live in	Minimal	Water in a tank or bowl	Use fish net to gently scoop, but keep fish in water	No native gold fish in wild, so when put their by humans, they are destructive
Pill Bug	Dead plants	Get water from moist soil	Minimal	soil	Let bug crawl in open hand, gentle	Break down dead plants and animals
Fern		Enough to keep soil moist, don't drown roots	Indirect	Protected from wind or bright sun	Light touching, don't pull off leaves, don't break roots or stems	Serves as a filter to shape seedlings, removes heavy metal from soil, stabilizes soil, provides habitat for other species
Land snail	Rotting vegetation	Dew, moisture on leaves	Minimal	In tact shell, places to hide like under leaves	Don't touch body, only shell, be careful not to pull shell off body	Low on food web, eat rotting vegetation, food source for other insects and animals

Activity 1: Present the Challenge (*under 30 minutes*)

The class will review the Needs (and Considerations) Chart that they've built over the unit and notice similarities and differences. Teacher should use think/pair/share to encourage active engagement. Children will regularly refer to the Needs (and Considerations) chart to empathize. Teacher should present the challenge: How might we design a classroom habitat for all of our plants and animals to coexist?

Tell the class that during the next lessons they will:

- Work individually to “sketch” a prototype
- Work with a team to design a prototype of a classroom habitat
- Teams will present their prototypes to the whole class
- The class will select their favorite of the prototypes
- The class will build a classroom habitat

Troubleshooting

Depending on the class experiences with design challenges, the teacher may need to introduce or review design thinking vocabulary such as: “empathizing,” “noticing and caring,” “brainstorming,” “experiment,” “observe,” “prototype,” “collaborate,” “generate ideas,” “identify user (worm) needs,” and “identify opportunities”

Assessment

Teacher should use informal observations (during think/pair/share and classroom discussions) to evaluate students’ grasp of material. Teacher should look for children being able to: communicate orally, incorporate new vocabulary, ask relevant follow up questions, etc. For students who need more, consider small group work to scaffold learning.