

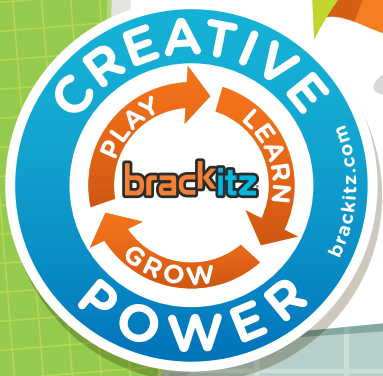
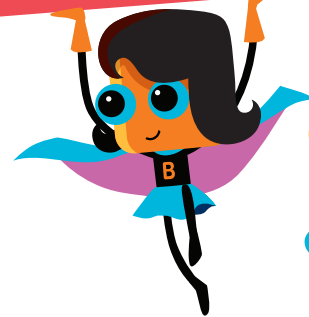
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V2.0

LESSONS

CREATURE

COMFORTS





Lesson 4: CREATURE COMFORTS



Students continue their play-based introduction to solving problems by designing and building to the imagined small creature's small size. Students continue to consider dimensions as they design health, safety, comfort, and recreation items for a creature that's much smaller than them.

Objectives:



Students will demonstrate they can create a Brackitz design that considers the difference between themselves and the creature, continue getting familiar with the Brackitz system, and build their collaboration skills. "I can design in 2-D and then build in 3-D." and "I can consider what a user needs and what a user might want." and "I can consider how to prioritize needs and wants."

Vocabulary used in this activity:

Benefit, scale, dimensions, detail, design, priority

Standards

ECERS-R

Language-Reasoning: Books and pictures, Encouraging children to communicate, Using language to develop reasoning skills | **Activities:** Fine Motor, Art, Math/Numbers

NGSS

3-5 ETS1, ETS1.A, ETS1.B

CCSS-Math

Practice.MP2, Practice.MP5, Practice.MP7, Content.4.MD.A, Content.4.MD.A.1, Content.5.MD.A, Content.5.MD.A.1, Content.4.OA.A.2

CCSS-ELA

Literacy RI.5.5, Literacy RL 5.4, Literacy SL.4.1

Time needed: 35-40 minutes

Materials and Supplies:

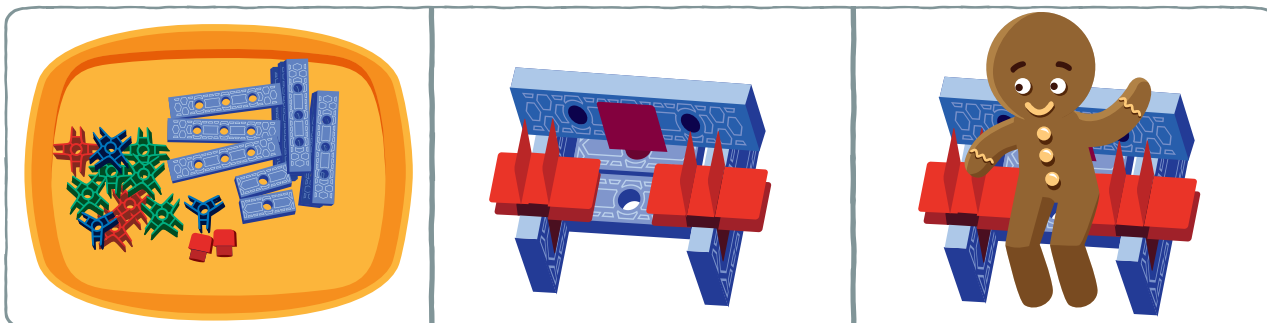
3-D representation of creature to remind students of the size and dimensions, paper, pencils/crayons, Brackitz planks and connectors (all types).

Setup and preparation:

Have trays, boxes, or plates ready with the same number of planks and connectors for each group of 2-3; help students cooperatively form groups of 2-3 to work together.

Background knowledge:

Prior to this lesson, the only background knowledge students need is to be able to pick things up and grasp them. A reminder of the agreed upon dimensions of the creature will help students build with the creature in mind.





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40 minutes

Whole Class

10 minutes



"Here are some things we've done for our small creature : We estimated and measured their size in 2-D and 3-D, we built a place for the creature to stay, and built a tool to help let them out safely. What else does our friend need? Designers and engineers do their best work when they make things that someone else needs and wants to use. Let's think what our friend needs to live here and be happy and safe and have fun. First, let's brainstorm and write down every idea." Write down all ideas. "Now, let's discuss which needs are the most important. Which ones should be the priority? How do we decide?" Help students talk about if safety is more important than fun. Ask if we can choose ideas so that all are addressing safety, or if we should balance the list with some safety and some fun/comfort.

Instructor Notes and Tips

To help get the brainstorm started you could ask students what makes them safe and happy every day: place to live and sleep, toys, going to school, etc. Then ask them if their creature needs the same things, and if so, if they need to be made differently for her/him to use them (smaller)!

Great ideas if you and your class are struggling are:

- creature playground
- place to plant a garden
- toys and toy room,
- tiny furniture (places to eat, sleep, and relax).

Guide them to discuss the issue of which ideas take priority. How do we decide priorities?

Group Exploration

10 minutes



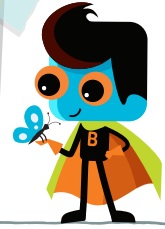
Assign each group one idea, so each group is working on something different. Ask them to keep in mind the creature's size and how this idea will help her/him live in a world of big people. "Your job is to first do a 2-D design - work as a group and make a drawing/design showing using Brackitz to make this item for creature. Remember her/his needs at a different scale than ours - much smaller. Your drawing should have enough detail so that someone else could build what you're thinking. " After 6-8 minutes ask groups, "If your drawings are done, then add to them a count or estimate of how many Brackitz planks you will need and how many hubs."

Help small groups get started by reminding them how this idea will help or benefit the creature. Will it make her/him more happy, safe, comfortable, healthy?

Remind them that a drawing should have enough detail that, "someone who wasn't in class with us could find it and use it to make something like what you planned."



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Group Challenge

15 minutes



"Now it's time to go from two dimensional drawings into a 3-D building! Build what your group planned, using Brackitz planks and connectors. Remember, we're building for a creature that's this small (indicate all three dimensions or put on board)."

As students begin building, watch to make sure groups are able to share pieces and ideas functionally. Circulate to groups to help groups keep scale and dimensions in mind as they move from a 2-D plan to 3-D build.

Reflection

5 minutes



Ask each group to do one minute presentations. "Tell us: what you made, and how it helps our creature. Tell us too, if you had more time, what would you add to your design or change on it." Help students preserve their structures for the next lesson - pictures, or videos where students do a show and tell are great tools to preserve their ideas.

As they share, keep asking: "How does this benefit our tiny friend?" (How does it help her/him be safer, healthier, happier, more comfortable?) Ask also, "How will this work to help out tiny friend live in a world of big people?"

CHALLENGE ADVANCED STUDENTS

In discussion: "What do we give up when we focus only on safety? What do we risk if we focus too much on fun and things that aren't just about survival?" Rank all "safety/health" ideas with one color, and rank all "fun/comfort" ideas with another color. Then help class rank "feasibility" in a third color. The help them see the areas of overlap in a Venn diagram.

In the challenge/build: Give student groups a constraint such as - you can ask for four extra pieces, but after that, you have to give a piece to get a piece.

Expansion: "Calculate how much we'd have to scale the tiny items you made for the creature to be sized for us. What is the scale factor (multiplication) that represents this?"

SIMPLIFY FOR YOUNGER GROUPS

In discussion Ask for one idea that can be made small for each of these categories -

- Something to help with safety
- Something for comfort
- Something for fun
- Something for better health

In the challenge/build: do this with smaller groups and have them focus on simpler designs like furniture or simple toys.



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Student Worksheet

What are some things you need to be safe or healthy (List at least three things)

1. _____
2. _____
3. _____
4. _____

What are some things that help you have fun?

1. _____
2. _____
3. _____
4. _____

What are some things that help you be healthier?

1. _____
2. _____
3. _____
4. _____

How did your class choose what was a priority to make? Write at least two sentences:

If you had gotten to choose which ideas got built what would your top four choices have been:

1. _____
2. _____
3. _____
4. _____

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Student Worksheet



Why would you choose these ideas? How did this differ from your class decision?

What did you make to help our small creature? Draw your design here.