



Learning, Leading, Living

The Great LEGO Challenge

A 4-H Adventure in Spatial Visualization

Mission Mandate/Project

Connection:

Science and Technology/LEGOS Robotics

Life Skills:

Teamwork

Audience:

4-H members

Length:

20 minutes

Materials Needed:

- One bin of LEGOS each, for teams of up to 5 youth (3 is ideal)
- Challenge Cards (see attached)

Advance Preparation:

- Print Challenge Cards on cardstock (optional)

Source:

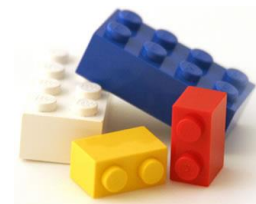
S. Storm and R. Smith. 2001-2002. Spatial Visualization: Fundamentals and Trends in Engineering Graphics. J. Industrial Technology. 18(1).

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Background

Spatial visualization – the ability to envision the result of the manipulation of objects—is a key skill in many engineering, technological, and scientific fields. Research tells us that boys who play with LEGOS have an advantage in spatial visualization over those that don't. Interestingly enough, classes like high school drafting did not increase those spatial visualization skills. Instead, it may be that spatial visualization is enhanced through life skills that youth learn early in their childhood.



It seems that playing with LEGOS – besides being FUN -- may actually help youth prepare for careers.

WHAT TO DO

The Great LEGO Challenge Activity

Begin the activity by asking the youth to share their experiences working in a group with others. Listen to their responses, shaping the answers with questions similar to these:

- How will you decide what to build?
- What are some ways in which your group might make decisions? (Suggestions include: generate options and then decide as a group; play a few minutes to experiment, then share, decide; put all your ideas together; each make one part, etc.)
- How will your team make sure that everyone has a role in the final product?
- What are some ways in which team members show support for each other?

Next, divide the large group into small teams of no more than 5 (3 is ideal for this activity). Give each group a bin of LEGOS and a Challenge Card.

Give each team 10 – 15 minutes to complete their challenge.

Have each team share their challenge and their solution for it, while the other teams listen.

TALK IT OVER:

Reflect:

- In what ways did your group work as a team?
- What did your team do well?

Apply:

- What might you do differently if you were to do the challenge again as a team?
- How might you use what you have learned about working in a team?

ENCOURAGING YOUTH LEADERSHIP

Youth leaders can provide an important role in facilitating the decision-making process. Work with the youth leaders in advance to reinforce techniques in encouraging cooperative behavior.

SIMPLIFY OR ENHANCE

Simplify by having younger children work individually on simple concrete challenges (flower, car, boat, house, etc.).



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A long time ago, a man named John Keats wrote a poem that started like this: *"A thing of beauty is a joy forever"*.

Challenge: Design and build something beautiful with LEGOS. And keep in mind the proverb that says *"Beauty is in the eye of the beholder"*.



EXTRA CHALLENGING Challenge: Design and build a Lego structure for an unexpected place.

LEGOS look good just about any place. But they are really FUN when they show up where you least expect them.

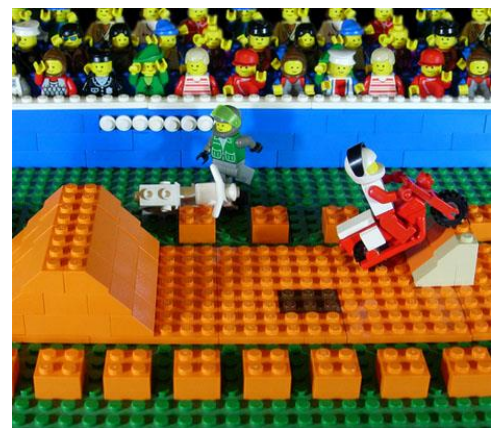


The design possibilities for boats and ships are endless! But there is that ONE thing that all boats and ships have in common...they can float!

Challenge: Design and build a Lego boat that floats.



Challenge: Design and build an action scene with your LEGOS.



Most pets need lots of care and attention, but not a LEGOS Pet!

Challenge: Design and build the ideal LEGOS pet.



Superheroes can do a lot of things — from seeing through brick walls with their x-ray vision to jumping tall buildings in a single leap. We all love them — or want to be just like them.

Challenge: Design and build your own superhero from LEGOS



4-H publication (4-H 424) tells us that "A model is defined as a miniature representation and could be anything. A model that is a true miniature representation should be created to "scale." When something is built to scale, it is the size of an object (model) in proportion to the size of the actual thing."

Challenge: Design and build a scale model from LEGOS.



Can you make something that can be USED out of LEGOS? This basket is GREAT for apples.

Challenge: Design and build something that you can actually use around the house.



Aliens? Really? What would they look like?

Challenge: Design and build an alien using LEGOS. You can make his/her spaceship, too, if you'd like!



It may look like sushi, but I wouldn't take a bite if I were you!

Challenge: Design and build a plate of food using LEGOS.

