

Build It Task

Overview

In the **Build It Task**, groups build structures using information provided in a set of clues. Each person will record the structures by drawing them on his or her own sheet of isometric grid paper; however, everyone may get help from the group in the drawing. This activity is also considered a Complex Instruction skill builder task and it, as well as other tasks aimed to develop students' skills for collaboration, can be downloaded from

<http://web.stanford.edu/class/ed284/csb>. We use this task to also support our discussions of status and power in mathematics classrooms. In this task, participation and cooperation by all team members is essential to attain task goals. This activity, then, may expose teachers to behaviors that may contribute toward - or obstruct - group success and to how norms might help mediate perceived status differences so that all can participate in and contribute to the mathematics.

Objective(s)

Teachers will

- Build 3-d structures based on clues
- Identify and analyze important aspects of the task structure that supported group success

Materials Needed

Isometric Grid Paper

Cubes (1 set per group): 2 red, yellow, orange, blue, green

[Envelope with clues](#) (1 per group; have additional sets prepared)

[Built It Task Card](#) (one for every 2 people in group)

Colored pencils (optional)

Lesson Outline

LAUNCH

Set participants up into groups of size 3 or 4 and be sure each group has the following supplies:

- Isometric grid paper – 1 per group member
- Writing utensil – 1 per group member
- Envelope with clues (not to be opened until task begins)
- Task card – 1 for every two group members [to be distributed just before beginning the task]
- Set of cubes - 1 set per table

For this task you may need different abilities:

- Read and follow directions
- Visualize 3-D objects in your head
- Recognize and understand geometric vocabulary
- Represent 3-D shapes on paper
- Listen to others' idea
- Communicate your own thinking
- Use logic
- Using problem solving strategies, such as trial and error, choosing where to start

Remember: No one has all of these abilities, but each one of us has some of the abilities we will use today.

EXPLORE

Pass out the task cards to each group which provides the rules and additional steps for completing the task. These additional steps are found with the above rules on the slide below:

Build It



1. Work in groups of 3 or 4.
2. Pass out clues so each person has at least one card.
3. Each person should look at only their own card(s).
4. Each group member should read the information on their card aloud to the group, and share the information whenever needed.
5. Work together to use the information on the cards to build the structure.
6. When you finish, reread each clue to make sure you are correct.
7. Each person should record the structure on their dot paper in a way that shows that it is a 3D structure.
8. When each person is satisfied with their drawing, put away the first set of clues and call the teacher for a new set of clues.

Groups will work on the task, collaborating to build their structures and creating individual drawings of the completed structure.

SUMMARIZE

In a whole group discussion, reflect on the activity with the following prompts:

How was this participation structure similar to and different from others we have engaged with in our work together? In what ways did the participation structure serve to disrupt status issues that may be at play?

What were some of the abilities or smartnesses evidenced in your work together?

Facilitator Insights and Questions

- When groups ask for a new set of clues, check in with their progress thus far by looking at their drawings and structure.
- We have found the explicit discussion of connections to power and status in mathematics classrooms an integral component of this activity.

Additional Resources (aka Going Further)

Featherstone, H., Crespo, S., Jilk, L., Oslund, J., Parks, A. & Woods, M. (2011). <i>Smarter Together! Collaboration and equity in the elementary math classroom</i> . Reston, VA: National Council of Teachers of Mathematics.	Book with additional resources for complex instruction/group-worthy math tasks (elementary school level)
Horn, I. S. (2012). <i>Strength in numbers: Collaborative learning in secondary mathematics</i> . Reston, VA: National Council of Teachers of Mathematics.	Book with additional resources for complex instruction/group-worthy math tasks (secondary level)
https://www.youcubed.org/	Youcubed is a small group of people working to get as many free and inspiring math ideas out to teachers and learners as possible. Sometimes they create the tasks, sometimes they share ideas from others, and most typically they adapt existing tasks to align with youcubed's approach of a mathematics that is open, visual, and creative.
http://nrich.maths.org	Mathematics tasks and so much more, searchable by grade level! A great teacher resource for rich mathematics tasks.
Lotan, R. A. (2003). Group-worthy tasks. <i>Educational Leadership</i> , 60(3), 72-75.	This article describes features of group-worthy tasks.

References