

Grade 3 Science

Lesson: 5-11

Unit: Strong and Stable Structures

Topic: Adding Strength to Materials

Lesson

- Review: "What is structure?" - supporting framework, define size, shape, + purpose.
- "What is strength?" - the ability to support a load
- "What is stability?" - the ability to maintain balance and stay in place
- Ask "When we had our scientist in the classroom visit, what were some of the things you did to increase the strength of the materials?"
- Explain that today we will look at another way, while also learning to use a spring scale.
- Show spring scales and explain how to use them and what they are used for.
- Explain task to students → Determine how much force is needed to break thread
→ Braid thread, test again
- Demo experiment, record results on chart paper
- Students do experiment, recording results on chart paper
- Discuss results.

• Folding (corrugated)
→ layering
• Joints shape

Reminders

Supplies Needed

- Spring scales (for experiment and variety to show)
- Thread
- Chart Paper

Homework

Notes

- Is it fair test - No (1 vs 3 threads)
- How could we make it fair? - 3 unwrapped vs 3 braided
- Demo
- Discuss

Describe ways in which the strength of different materials can be altered

- folding
- layering
- braiding
- changing shape

Grade 3 Science

Lesson: 5-12

Unit: Strong and Stable Structures

Topic: Improving Strength

Lesson

- Read info on top of worksheet
- Explain task $\rightarrow$ build simple structure (show example)
 - $\rightarrow$ test capacity
 - $\rightarrow$ re-build same structure but add re-inforcements
 - $\rightarrow$ re-test
- Hand out worksheets
- Students work in pre-determined groups of ~ 3

* Only time to test first one
continue next class



Reminders

Supplies Needed

- Quiz Note
 - Straws 24/ $\sim$ students
 - Worksheet
 - Pins
- $\swarrow$ none failed by damaged straws, only need 16

Homework

Notes

* Structures failed due to stability issues

- Describe ways to improve a structures strength and stability
 - $\rightarrow$ triangulation, cross beams
- identify roles of struts and ties in structures under load
 - $\rightarrow$ lower centre of gravity

Grade 3 Science

Lesson: 5-13

Unit: Strong and Stable Structures

Topic: Structural Strength

Lesson

- Review lesson from previous class
 - build structure
 - test what it can hold
- Explain today's construction
 - re-inforce structure so it will hold more
 - * cannot make more legs
- Students perform experiment, document on worksheet

Reminders

Supplies Needed

- Straws
- Pins

Homework

Notes

Grade 3 Science

Lesson: 5-13

Unit: Strong and Stable Structures

Topic: Function

Lesson

Reminders

Supplies Needed

~~Write Note~~

Homework

Notes

Explain how strength and stability enable a structure to perform a specific function

Grade 3 Science

Lesson: S-15

Unit: Strong and Stable Structures

Topic: Quiz

Lesson

- Review Quiz expectations (No looking, no talking, hand up for questions)
- Hand out quizzes
- When students are done they finish up other work

Reminders

Supplies Needed

Quizzes

Homework

Notes

Grade 3 Science

Lesson: 5-16

Unit: Strong and Stable Structures

Topic: Affects of Forces

Lesson

Reminders

Supplies Needed

Homework

Notes

Grade 3 Science

Human vs Animal
Structures

Lesson: 5-¹⁷

Unit: Strong and Stable Structures

Topic: ~~Force~~ Comparing human
and animal structures

Lesson

Reminders

Supplies Needed

Quizzes

Homework

Notes

Grade 3 Science

Lesson: 5-18

Unit: Strong and Stable Structures

Topic: Design Challenge

Lesson

- Prior to class, organize students into groups of 3
 - Explain challenge to students
 - use only given supplies to stably support a specific object as high as possible off the ground, in front of a fan
 - Materials: 24 popsicle sticks, 10 straws, 2 pieces of paper, glue
 - Day 1 - plan, start build. Day 2 - finish build, ~~test~~ test
 - Day 3 - test structures.
 - Organize groups, get started
- show object

Reminders

Supplies Needed

- Popsicle sticks
- Straws
- Glue
- Goose Paper
- Object to be supported

Homework

Notes

Grade 3 Science

Lesson: 5-19

Unit: Strong and Stable Structures

Topic: Design Challenge 2

Lesson

- Groups continue working on their structure
- Remind class that build (glue parts) need to be done today.
- * if done early, decorate it

Reminders

Supplies Needed

- Popsicle sticks
- Glue paper
- Straws
- glue

Homework

Notes

Grade 3 Science

Lesson: 5-20

Unit: Strong and Stable Structures

Topic: Design Challenge - Test

Lesson

- ~~One~~ Groups have some time for ~~to~~ final touch-ups on their structure
- One group at a time, test structure and have group explain rationale.

Reminders

Supplies Needed

- Object to be supported
- Fan

Homework

Notes