

Gr. 1 - Understanding Structures & Mechanisms

Materials, Objects, and Everyday Structures

Terrific Torque

Specific Expectations:

- 2.1 Follow established safety procedures during science and technology investigations.
- 2.2 Investigate characteristics of various objects and structures, using their sense.
- 2.3 Investigate, through experimentation, the properties of various materials.
- 2.4 Use technological problem-solving skills, and knowledge acquired from previous investigations, to design, build, and test a structure for a specific purpose.
- 3.2 Describe structures as supporting frameworks.
- 3.3 Describe materials as the substances from which something is made.
- 3.4 Describe the function/purpose of the observable characteristics of various objects and structures, using information gathered through their senses.

Big Idea (for lesson):

Students investigate different materials to design and build a testable top that spins as long as possible.

Accommodations:

- Increase time
- Visual Aids
- Manipulatives
- Chunking
- Step-by-Step
- Scaffolding
- Copy of Notes
- Student Grouping

Differentiated Instruction:

- Content: Use demo to show the content as you offer verbal descriptions.
- Process: Have students work in pairs and support each other if physical impediments exist.
- Product: Students may show their final product in pairs, and communicate their findings either verbally, visually, or through written means.
- Other: _____

Bloom's Taxonomy:

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

Multiple Intelligence:

- Verbal/Linguistic
- Logical/Mathematical
- Visual/Spatial
- Bodily/Kinesthetic
- Naturalist
- Musical/Rhythmic
- Interpersonal
- Intrapersonal

Delivering The Lesson:

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Portion & Timing	Grouping:			Introduction:	Materials
Minds On: 15 mins	W <input checked="" type="checkbox"/>	S <input type="checkbox"/>	I <input type="checkbox"/>	Teacher can do a demonstration to introduce everyday structures for the lesson. For this, using some sort of small structure that can “power itself” is ideal, so that students can observe and try to explain how each part contributes to the motion of the whole object. Two options are described under “Materials”. Ask students how the air seems to move, why the blades of the helicopter turn/why the hovercraft CD floats, and how they think it was put together.	Balloon Powered Helicopter (WBPH-400) Or Hovercraft according to the Widget Workshop Handout.
Action: 15 mins	W <input checked="" type="checkbox"/>	S <input checked="" type="checkbox"/>	I <input checked="" type="checkbox"/>	Have students build their own tops according to the instructions on the handout. Teacher can circulate and ask questions of the different groups: What designs do you notice are working well? What other materials would you like to use if they were available to you? What characteristics work best for an object to be the spinner of a top? How about the disk? (<i>Answer: the spinner should hold the disk low, and should have a pointed end; The disk should have some weight distributed around the edge to give it some rotational inertia.</i>)	Terrific Torque Handout (Materials listed)
Consolidate: 10 mins	W <input checked="" type="checkbox"/>	S <input checked="" type="checkbox"/>	I <input type="checkbox"/>	Have a list made on the board or on chart paper of all the different parts of the top. Once students are finished their experimenting, have them sit as a whole class and contribute ideas as to what each part does to help the top spin.	Chart Paper Markers