

Lesson Plan

Title of the Lesson	Creating Towers: Science Challenge
Duration	1h
Teaching methods and strategies	<ul style="list-style-type: none"> • Demonstration • Hands-on Learning in groups • Guided Exploration • Group discussions
Learning Outcomes	<ul style="list-style-type: none"> • Understand basic engineering principles such as balance, structure, and stability. • Design and build a stable tower using limited materials. • Develop problem-solving and teamwork skills through hands-on learning. • Reflect on the design process and identify areas for improvement.
Steps to be Followed	<p>1. Introduction (5-10 mins)</p> <ul style="list-style-type: none"> • Start with a brief discussion on towers. Ask students: <i>What makes a tower stable? What materials can we use to build a strong tower?</i> • Demonstrate different types of towers and briefly explain how engineering principles help to keep them standing. Show an example of a simple tower made with popsicle sticks and bulldog clips. • Tell students that they will be building their own towers using popsicle sticks, bulldog clips, and pegs. Their challenge is to create the tallest tower that can stand on its own. <p>Adaptation for Inclusivity:</p> <ul style="list-style-type: none"> • Provide visual aids (images or diagrams) to help students who may have difficulty following verbal instructions.

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	<ul style="list-style-type: none"> • Offer audiovisual resources for students who benefit from additional support, such as a video demonstration or an audio recording of the instructions. • Use different materials (larger popsicle sticks, thicker bulldog clips, or textured items) for students who need tactile or easier-to-handle tools. <p>2. Main Content</p> <p>Step 1: Planning (5 mins):</p> <ul style="list-style-type: none"> • Ask students to sketch or brainstorm ideas for their tower. • Discuss the importance of planning and structure before starting the building process. • Encourage them to think about how they can balance the tower and distribute weight. <p>Step 2: Building (30 mins):</p> <ul style="list-style-type: none"> • Give students the materials: popsicle sticks, bulldog clips, and pegs. • Instructions: Students must build a tower using the materials provided. They can only use the materials they have and must make sure the tower stands upright on its own. • Encourage Problem-Solving: Walk around and offer help when students encounter challenges. Encourage them to test their towers and make adjustments as needed (e.g., adding more supports, adjusting angles). <p>Adaptation for Inclusivity:</p> <ul style="list-style-type: none"> • For students with physical disabilities or motor difficulties, provide larger materials or tools with easier grips (e.g., larger clips,
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	<p>pre-cut popsicle sticks, or foam-based materials).</p> <ul style="list-style-type: none"> • Students with visual impairments can be given textured materials (e.g., foam, fabric) to help them feel the shapes and structure of their tower as they build. • Students who need additional time or have difficulty following the steps can be provided with simplified instructions or extra assistance during the building phase. • Pair students with peers who can assist in handling materials or giving verbal cues during the construction process. <p>Step 3: Testing (5 mins):</p> <ul style="list-style-type: none"> • Once students have finished building, ask them to test their towers by gently tapping them or adding weight to see if they remain stable. <p>Adaptation for Inclusivity:</p> <ul style="list-style-type: none"> • Provide students with alternative ways to present their work (e.g., drawing their final design, explaining orally, or using a tactile demonstration). • Allow for students to test their towers individually or in small groups to ensure they receive the necessary support during the testing phase. <p>3. Wrap-Up/Review</p> <ul style="list-style-type: none"> • Have a short reflection session where students share their experiences. Ask them to explain how they approached the task, what challenges they faced, and how they solved them.
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	<ul style="list-style-type: none"> • Reinforce the concepts of balance, structure, and stability. Highlight the importance of testing and adjusting their designs. • Recognize the creativity and effort of each group or individual. Celebrate the tallest and most stable towers. <p>Adaptation for Inclusivity:</p> <ul style="list-style-type: none"> • Allow students with communication challenges to express their thoughts in alternative ways, such as through drawings, gesture, or assistive technology. • Make sure that all students feel included in the reflection session by encouraging peer support and positive reinforcement.
Required material and resources	<ul style="list-style-type: none"> • Popsicle sticks • Bulldog clips (foldback clips) • Pegs • Paper and pencils for planning • Rulers or measuring tape (optional for measuring tower height) • Accessible Tools: Larger clips, thicker sticks, foam or fabric materials for tactile exploration • Visual Aids: Diagrams, pictures, video resources for students who benefit from additional support
<p>Assessment or evaluation techniques</p> <p>[e.g., Participation in discussions, worksheet completion, group presentations.]</p>	<p>Hands-On Participation: Assess students based on their engagement in the building process. This can include their willingness to experiment, test different designs, and collaborate with peers. Students who face challenges should be encouraged, and their persistence should be recognized.</p> <p>Problem-Solving Skills: Evaluate how students apply engineering principles (balance, structure, stability) to build their towers. This can be observed through the adjustments and</p>

	<p>improvements they make during the construction process.</p> <p>Group Work and Collaboration: Assess how well students work in their assigned roles (e.g., designer, builder, tester). This includes how they interact with peers, offer support to others, and ensure each member contributes to the group task. Inclusion of all members in the activity should be prioritized.</p> <p>Final Product (Tower Evaluation): Evaluate the final tower based on its stability, creativity, and height. However, give equal weight to the process—how students approached their design, tested it, and worked through challenges. This recognizes the effort and collaboration, not just the end result.</p>
Ethical Considerations (if needed)	<ul style="list-style-type: none"> • Inclusivity and Equal Participation: Ensure that all students, regardless of their abilities or disabilities, have equal opportunities to participate in the activity. This involves providing accommodations for students with physical disabilities, sensory impairments, or learning difficulties, ensuring that every student feels valued and included in the group. • Respect for Diverse Abilities: Emphasize the importance of respect and empathy for all students, especially when collaborating in diverse groups. Encourage students to appreciate the different strengths that each member brings to the team, and support those who may need additional help or time. • Safety and Well-Being: Monitor the use of tools and materials, especially those that could be potentially

	<p>hazardous (like scissors or clips). Ensure students understand how to use materials safely and supervise them closely during hands-on activities. This is particularly important for students with motor impairments who may need additional guidance on safe handling of materials.</p> <ul style="list-style-type: none"> Encouraging Positive Behaviour and Teamwork: Foster a positive and supportive learning environment by encouraging students to be kind, patient, and respectful when working with others. Any form of bullying or exclusion based on students' abilities should be addressed immediately to maintain a safe and inclusive classroom culture. Feedback and Evaluation: Provide constructive feedback in a way that highlights students' efforts and encourages improvement without discouraging those who may struggle with the activity. Celebrate diversity in ideas and approaches, and ensure that every student feels proud of their contribution to the project.
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