



PAPER ROD SCULPTURE – Balance, Movement, Stability

Students create multicoloured rods of construction paper and use them to build a three-dimensional sculpture.

Required Time

80 Minutes

Grade Level

Grade 4 to Grade 6

Subject

Language Arts
Mathematics
Science
Visual Arts

Vocabulary

angle
balance
movement
parallel
sculpture
space
stability
tripod

Materials

Crayola Construction Paper - 22.9 cm x 30.9 cm (9" x 12")

Crayola Washable No-Run School Glue

Pony Tail Elastics

Bamboo Skewers - 30 cm (12") - 1 per student

Shop Crayola
Products

Steps

Step One

PAPER ROD

1. Place a piece of construction paper flat on your desk and at a 45-degree angle to the edge of your desk.
2. Place the skewer on one corner of the paper so that it is parallel to the edge of your desk.
3. Slowly begin to roll the paper around the skewer keeping it fairly tight.



Step Two

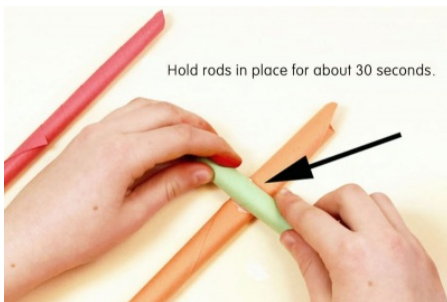
1. When you are almost at the end put a small amount of glue on the tip of the paper, then finish rolling the paper.
2. Press the glued tip against the rolled paper to hold it in place.
3. Remove the skewer and you have a paper rod.
4. Make about 12 rods in various colours.



Step Three

SCULPTURE

1. Use 3 rods to create the base for your sculpture.
2. Make sure the base is very stable and well balanced so it can support all the other rods that you add to it.
3. Place a small amount of glue on one of the rods and press a second rod into it.
4. Gently press the rods together and hold them in place for about 30 seconds.



Step Four

1. Add the third rod to create a tripod structure.
- think about where you want the rods to join - midway, two-thirds up, or somewhere in between
2. Use an elastic to hold the rods together while the glue dries.





Step Five

1. Once you have a sturdy base begin to add more rods to create your sculpture.
2. Add each rod in such a way that it touches 2 other rods but does not touch the ground.
3. Place each rod so that it creates a new angle and is not parallel to any other rods.
4. Use an elastic to hold the rods together while the glue dries.



Step Six

1. Continue adding rods until you are satisfied with your sculpture.
2. As you add more rods make sure they do not touch the ground.
3. From time to time gently turn the sculpture around to view it from all points of view.
4. It should:
 - *be stable enough to be moved without falling apart;*
 - *have many different angles;*
 - *have no two rods that are parallel to each other.*
5. When you are satisfied with your work set it aside to let it dry.
6. Once it is dry, remove the elastics and give it a title.

Learning Goals

Students will be able to:

- create a three-dimensional, free-standing paper rod sculpture;
- use angles and spaces to create movement;
- use colour and placement to create visual balance;
- demonstrate technical accomplishment and creativity.

Extensions

Have students:

- think of a theme for their sculpture and hang light objects from it that link to their theme;
- further explore the stability of their structure by seeing how high they can build it;
- contribute to the *Add a Rod* class sculpture.
Set up an '*Add a Rod*' station –
 - place a paper rod tripod, a stack of construction paper, a bottle of glue, elastics, and several skewers at the side of the room
 - invite students to add a rod whenever they need a break or have finished their work early
 - leave the '*Add a Rod*' station set up for at least a month and see how big it can grow
 - allow it to change shape and fall to a new base so it grows organically
 - let it be a conversation piece and have students draw it from time to time
 - use it as a story starter, for example, *What if you were small enough to travel through this space? What adventures would you have?*
 - once you decide to stop the station, ask students what they learned by participating in the '*Add a Rod*'.

Prepare

1. Prior to this lesson, have students experiment with a variety of building materials to explore stable versus unstable shapes and structures, e.g., toothpicks and miniature marshmallows, straws and modelling clay, popsicle sticks etc.
2. Challenge students to create a structure that can't be blown over by a fan or does not collapse under the weight of a book.
3. Have students share their findings, paying particular attention to similarities amongst the strongest structures.
4. Download and display the *Balance* and *Movement* **posters** available on this website.
5. Review or teach the principles of balance and movement – asymmetry, placement of shapes
6. Download pictures of free-standing structures from the Internet, for example,
Bell Tower
Life Guard Tower
Tower
Glass Fish

Introduction

1. View pictures of different kinds of functional structures such as towers, and lead students in a discussion about what factors contribute to their stability.
2. List their ideas on chart paper.
3. View the sculpture, *Glass Fish*. Discuss the work drawing attention to the use of spaces and angles to create movement, and how stability is created by an internal support structure or armature. Ask students to tell what they think of the sculpture, and why.
4. Discuss the difference between a sculpture such as the *Glass Fish*, and a structure such as the life guard tower.
5. Introduce the challenge.

Activities

The Challenge

1. Create a three-dimensional, free-standing paper rod sculpture that:
 - has a tripod base
 - is stable enough to be moved without falling apart
 - contains many different angles
 - has no two rods parallel to each other
 - has only 3 base rods touching the ground
2. Use angles and spaces to create movement.
3. Use colour and placement to create visual balance.
4. Demonstrate technical accomplishment and creativity.

The Process

1. Make sure everyone understands the challenge.
2. Establish success criteria with your students. For example,
I know I am successful when I have:
 - created a free-standing sculpture

- *rolled sturdy paper rods*
 - *made a stable tripod base*
 - *included many different angles*
 - *no two rods parallel to each other*
 - *only 3 base rods touch the ground*
 - *kept the paper rods in good condition*
3. Ensure that the initial tripod shape created by each student is stable and well glued so that it provides adequate support for subsequent rods.
 4. Encourage students to build thoughtfully, periodically turning their sculpture around to view it from all angles and making strong connections between each rod.
 5. Guide students through the steps outlined in this lesson plan.
 6. Observe students as they work.
 7. Provide individual assistance and encouragement.

Sharing

1. Place students into groups of about 6.
2. Ask them to discuss their sculptures and compare the way they are made.
 - *What do you notice about how students balanced their designs?*
 - *How do the angles and spaces create movement through the works?*
 - *How does colour and placement contribute to the overall impression of the work?*
 - *What makes a stable structure?*
3. After the small group discussions, ask students to share something of interest from their group with the whole class.
4. Ask students how they felt about making this paper rod sculpture.

Assessment

1. Observe students as they work – thoughtful focus, discriminating, seeking more information, elaborating, experimenting.
2. Observe students as they discuss the sculptures – active listening, insightful contributions, supporting ideas with evidence found in the artwork and from personal experience.
3. Use a checklist to track progress. (Downloads - Rod_tracking.pdf)
4. Have students use the self-assessment form to evaluate their work. (Downloads - Rod_self-assessment.pdf)