

How To Use This Resource

General Information

The idea behind creating the book *Taking Time for Teamwork* was to provide teachers with a resource filled with ways to get students to think critically and to work together. The book focuses on group problem-solving activities, which engage students through creative challenges. These activities promote team building, communication and higher-level thinking skills. We have seen the benefits of these activities for students of various ages and across many different curricular areas.

The activities in this book can generally be completed in one regular class period (40 minutes or less). For most of the challenges, we recommend that the students work in groups of 3 to 5 people. Each activity is divided into five easy-to-follow sections: **Challenge, Supplies, Requirements, Testing and Scoring,** and **Teacher Notes.** These sections are more clearly explained below. In addition, we recommend ending every activity with the **Group Processing Questions** provided at end of this introduction.

Challenge

Each activity is based on a challenge or problem for the students to solve. The challenge is clearly stated at the top of each lesson.

Supplies

The supplies needed for the activities are very basic. Many of the supplies, such as toothpicks, straws, mailing labels, paper clips, etc., are used in more than one of the activities. You can substitute supplies if you are unable to obtain the specific items mentioned in the directions.

Requirements

The requirements are a list of directions given to the students explaining each challenge. These steps should be repeated multiple times preceding the activity so that every group understands the task.

Testing and Scoring

We recommend using an attainable group goal for each activity. Depending on the dynamics of your class, you may also want to include a competition aspect. Either way, it is important to test each activity based on the specific scoring criteria provided. The group goal and rules for scoring should be explained before the groups begin working and again prior to the actual testing.

Teacher Notes

The teacher notes include ideas and tips for teachers who wish to use these activities in their classes. Through trial and error, we have developed these suggestions.

Group Processing Questions

It is important for the students to reflect on what they have accomplished and what they have observed throughout the team-building process. The following questions can be used with any of the activities to help facilitate a constructive class discussion:

- What was your group's original plan? Did you stick with it?
- How did you come up with your plan?
- What were some of the problems that may have gotten in the way of your group's goal?
- Did a leader emerge in your group? Who? Why?
- Which materials were helpful in developing your device? Which were not?
- Are there any additional materials you would have liked to have had?
- At what point did your device fail? Why?
- What worked about the device that won the competition?
- What would you do differently if you had the chance to complete this activity again?



Table of Contents

Hanging Contraptions

Candy Swing	7
Build the longest swing that will support a cup containing 20 pennies.	
Don't Leave Me Hanging	8
Build a contraption that will allow a tennis ball to hang the closest to the ground from a door jamb.	
Don't Leave Me Hanging 2	9
Build a contraption that will hold the largest number of golf balls the closest to the ground from a door jamb.	
Golf Ball Swing	10
Create a contraption that will allow a golf ball to swing as high as possible when suspended from a door jamb.	
Hanging Low	11
Create a contraption that will hang as close to the floor as possible without actually touching it.	

Items to Span a Distance

Paper Bridge	12
Build a newspaper bridge that can support the most pennies.	
Suspension Bridge	13
Build a suspension bridge that can hold the most pennies.	
Moving Marbles	14
Build a contraption to move the most marbles from one table to another in 30 seconds without touching the marbles.	
Homemade Rope	15
Create the longest continuous rope.	
Golf Ball Movers	16
Build a contraption that will allow you to move golf balls as quickly as possible across a space of 2 meters and into a bucket.	
World's Longest Bridge	17
Create a bridge spanning the largest distance between two tables that can hold a small toy car.	
Over the River and Through the Woods	18
Create a bridge spanning at least 50 cm and allow a small toy car to travel safely across it with just one push from the builders.	
Bridge the Gap	19
Build a structure that spans the space between two tables and can hold weight in a bucket.	
Cantilever	20
Construct the longest cantilever possible that extends off of a desk or table.	
Keep on Rolling	21
Make a track that spans the distance between two textbooks and can hold a golf ball.	



Cantilever

Challenge

Construct the longest *cantilever* – a projecting structure which extends beyond its point of support – that extends off of a desk or table.

Supplies

- 10 straws
- 20 toothpicks
- 1 meter of masking tape
- 1 in. cube of clay

Requirements

1. All supplies must be used.
2. The structure must be completed within the time limit.
3. The structure must be balanced on or attached to a desk or table at only one end.
4. The structure cannot fall below the ruler used for measurement (needs to be straight).

Testing and Scoring

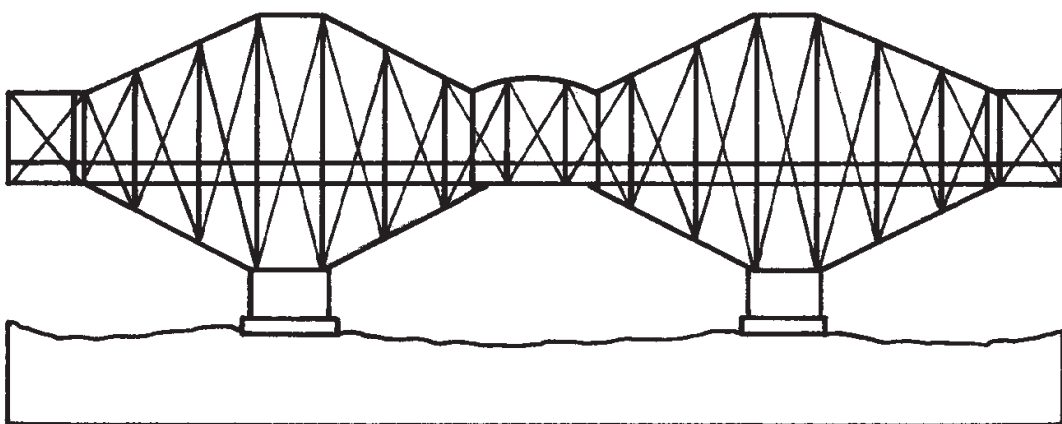
Group goal – Each cantilever should be at least 50 cm in length.

- The structure will be measured from the end of the desk or table to the far end of the cantilever.

Scoring – The longest cantilever will be considered the winner.

Teacher Notes

- It is acceptable for students to build the base of their cantilever at an angle, so that there is less drooping (but let them figure this out for themselves).
- At the end of the activity, have students salvage as many of the unused or unbroken supplies as possible for use in other classes or for other activities.



Tennis Ball-Powered Car

Challenge

Build a tennis ball-propelled car that can travel as far as possible down a track.

Supplies

- 2 rubber bands
- 3 paper clips
- 2 nails
- 2 balloons
- 2 Styrofoam cups
- 2 small plastic cups
- 40 cm x 40 cm square of cardboard
- 1 toilet paper tube
- 1 meter of tape
- tennis ball
- scissors (for cutting only)
- meter stick or metric measuring tape for measurement

Requirements

1. At least seven different supplies must be used.
2. The car must measure less than 25 cm in any direction.
3. The car must be completed within the time limit.

Testing and Scoring

Group goal – The car must travel at least 1 meter.

- The vehicle must begin completely behind the starting line.
- The vehicle's movement must be started by the movement of the tennis ball. Once started, it must move without any outside help.
- The ball may be rolled, dropped or bounced to start the vehicle's movement.
- The ball may only be used to start movement; it may not be part of the vehicle in any way.

Scoring – The vehicle that travels the farthest will be considered the winner.

- The distance traveled will be measured from the starting line to the part of the car closest to the starting line when it stops moving.

Teacher Notes

- Put a tape line down to represent the starting line.
- Testing on a slight incline might help cars travel farther.
- For easier measurement, run a tape measure or meter sticks down the middle of the track.
- At the end of the activity, have students salvage as many of the unused or unbroken supplies as possible for use in other classes or for other activities.

