



EduTrend Contents

EDUTECH · GAMIFICATION IN STEM EDUCATION · MIDDLE SCHOOL

Parachute Mission

Design, predict and improve a parachute over three test rounds, logging your best failures

Ages 11–13

Level: Intermediate

60 minutes

Teams of 3 · up to 30

Activity 03

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 student worksheets · assessment checklist

ACTIVITY 03 · AT A GLANCE

Parachute Mission

Teams build a parachute from a plastic bag, string and tape to slow a small load such as a lump of modelling clay. Rules: limited materials, one drop per round, and every design change recorded. Before each drop, teams predict the fall time with a reason. Stars go to predictions within one second, to recorded improvements and to entries in the class “best failures” log.

Learning outcomes

By the end of the session students can:

- design and build a parachute;
- predict with reasons;
- record and test design changes;
- link results to air resistance.

KEY WORDS

air resistance · gravity · canopy · variable · prediction · iteration

CURRICULUM LINKS

Science: forces. D&T: iterative design. Maths: timing and averages.

1**GOAL**

What is the learning goal?

2**CHALLENGE**

What is the task?

3**FEEDBACK**

How do players know?

4**PROGRESS**

How is growth shown?

5**RETRY**

Can they try again?

6**REFLECT**

Did it help learning?

Materials (per team)

- Plastic bags, string, tape, scissors
- Modelling clay load
- Stopwatch
- Measured drop point about two metres high
- Worksheets 1, 2 and 3

Before the session

- Set up a safe drop point.
- Prepare material packs.
- Draw a star chart and failures log.
- Assign roles: builder, recorder, tester.

SAFETY

Only the teacher or a supervised adult drops from height. Use scissors carefully.

ACTIVITY 03 · SESSION PLAN

Step by step

Rotate roles each round so everyone builds, records and tests.

Time	What happens	Say or ask
0–10 min Mission	Explain the mission, rules and roles.	<i>"What will slow it down?"</i>
10–30 min Build	Design and build; predict round 1.	<i>"Why that size?"</i>
30–50 min Test rounds	Three drops; predict, test, record changes.	<i>"What changed and why?"</i>
50–60 min Present	Share the biggest improvement and a best failure.	<i>"How does it link to air resistance?"</i>

CHALLENGE CARD (print or copy onto the board)

Slow the load as much as possible, predict your fall times accurately and record every change and failure.

ACTIVITY 03 · FACILITATOR NOTES

The STEM game know-how in brief

A larger canopy traps more air, increasing air resistance, which balances gravity sooner and slows the fall.

Stars for predictions with reasons and for recorded improvements keep the focus on reasoning and iteration, not just winning.

Common ideas to listen for

- “Heavier loads always fall slower with parachutes.”
Load changes results.
- “A hole in the canopy is always bad.” It can stabilise the fall.
- “Failed drops are wasted.” They show what to change.

Adapting the activity

Support

Give a template canopy size.

Stretch

Test one variable fairly across three sizes.

WORKSHEET 1

Test rounds

Name: _____

Class: _____ Date: _____

Predict, test and record.

Test rounds

Round	Design change	Prediction (s) and reason	Result (s)
1			
2			
3			

WORKSHEET 2

Best failures log

What went wrong and what you changed.

Best failures log

Failure	Why it happened	What we changed

WORKSHEET 3

Biggest improvement

Explain using forces.

The change that made the biggest difference was... because...

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight students; copy as needed.

Student	Predicts with reasons	Records changes	Explains air resistance

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Parachute Mission is a sample activity from the EduTrend Contents Edutech Gamification in STEM Education programme (middle school, level: intermediate). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

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