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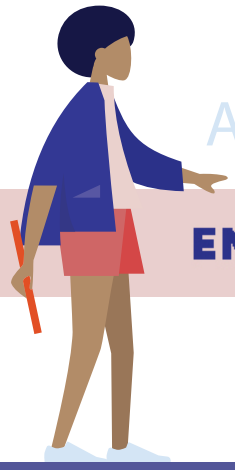
Supported by
The Invergowrie Foundation
Swinburne University
Griffith University
The University of Tasmania



ACTIVITY SHEET

ENTERPRISE + STEM

THE AIRPLANE CONTEST

Objectives

- Developing team building and collaboration skills
- Developing design and testing skills
- Developing resilience in the face of challenges or frustrations
- Developing communication skills: practice pitching your idea
- Evaluate the pitch for a new concept
- Understand the importance of communicating your pitch vs idea
- Appreciate prototyping as an effective way to develop your product or service in an unknown environment

Activity

Task

- Design a paper airplane that is capable of carrying coins to the value $1.
- The plane can carry any number of coins as long as their value is $1.
- Groups of 3-4 students
- Give a 2-minute pitch of your design to the class BEFORE the contest takes place to convince other students that your design is the best.

Materials

- One standard size paper sheet per student for plane construction
- Coins adding to $1
- A piece of paper to record votes

The design will be assessed according to:

- Time that the plane can stay aloft
- Distance it will travel
- Number of votes your design will get from your classmates in each category (time and distance)

Rules of the game

- A group of 3 will get 3 sheets of paper, a group of 4 will get 4 sheets of paper.
- Design pitch must be limited to 2 minutes.

Voting rules: each student is allowed to vote for one team/design only (excluding his/her own team)

Plane demonstration rules: each team gets only one throw of its plane. The throwing student must not cross the line on the floor.

INSTRUCTIONS FOR TEACHERS

Instructions for teachers

- Time required for the exercise depends on the number of students and teams since each team needs to pitch their design.
- If you decide to use an online voting system, it needs to be setup before the class
- Explain the task, ensure every team has necessary materials and give them time to create their paper airplane and prepare their pitch.
- After the design time is up, explain voting rules
- As the next step each team should pitch its design, strict time limit is 2 minutes (use the countdown clock for each team, e.g. online stopwatch https://www.online-stopwatch.com/)
- Have the students record their votes. Students cannot vote for their own design.
- Take students to an open area to test the planes. Indoors could be done in a gymnasium or in good weather the activity could be conducted outdoors, however windy weather could affect the outcome.
- Watch that the throwing student does not cross the line on the floor /ground.
- Record the time that the plane stayed aloft and after the plane lands measure the distance.
- Involve other students in measuring planes' performance.
- Display results of votes and measurements for each team.
- Have a discussion of the design experience.

Suggested discussion

- How did you view the issue of coins, as a constraint or an opportunity?
- Did you try to optimise your design for time or distance or both?
- How did you work on your design? Did you prototype and test?
- What was the biggest challenge when you needed to pitch your design to your classmates?
- Why do you think others vote or did not vote for your design? How would you change your pitch if you had a chance to present your design again?

This activity is adapted from Bradley George. (2014). Exercises to practice play: Airplane contest: Teaching Entrepreneurship: A Practice-Based Approach. Page: 131-135. Edward Elgar Pub.

CURRICULUM MAPPING

General Capabilities: Personal and Social	
Years 7-8	Years 9-10
Social Awareness and Management	
Collaboration	
	Develop specific skills and a variety of strategies to prevent or resolve conflict, and explore the nature of conflict resolution in a range of contexts (VCPSCSO051)

General Capabilities: Critical and Creative Thinking	
Years 7-8	Years 9-10
Metacognition	
Consider how problems can be segmented into discrete stages, new knowledge synthesised during problem-solving and criteria used to assess emerging ideas and proposals (VCCCTM042)	Investigate the kind of criteria that can be used to rationally evaluate the quality of ideas and proposals, including the qualities of viability and workability (VCCCTM053)
Questions and Possibilities	
Suspend judgements temporarily and consider how preconceptions may limit ideas and alternatives (VCCCTQ033)	Suspend judgements to allow new possibilities to emerge and investigate how this can broaden ideas and solutions (VCCCTQ044)

Science

Years 7-8	Years 9-10
Science Inquiry Skills (strand)	
Communicating (sub-strand)	
Communicate ideas, findings and solutions to problems including identifying impacts and limitations of conclusions and using appropriate scientific language and representations (VCSIS113)	Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (VCSIS140)

Design & Technologies

Years 7-8	Years 9-10
Creating Designed Solutions	
Investigating	
Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas (VCDSCD049)	Critique needs or opportunities to develop design briefs and investigate and select an increasingly sophisticated range of materials, systems, components, tools and equipment to develop design ideas (VCDSCD060)
Generating	
Generate, develop and test design ideas, plans and processes using appropriate technical terms and technologies including graphical representation techniques (VCDSCD050)	Apply design thinking, creativity, innovation and enterprise skills to develop, modify and communicate design ideas of increasing sophistication (VCDSCD061)
Producing	
Effectively and safely use a broad range of materials, components, tools, equipment and techniques to produce designed solutions (VCDSCD051)	Work flexibly to safely test, select, justify and use appropriate technologies and processes to make designed solutions (VCDSCD062)