

## Lesson Plan 7TECHC


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| <b>Class/Grade/Stage:</b> Year 7 (7TECHC)   |  | <b>Date:</b> 20/02/2024   | <b>Time: Start:</b> 8:45am <b>Finish:</b> 10:25am   |
| <b>Key Learning Area(s):</b> Technology and Applied Sciences (TAS)  |  | <b>Lesson Topic:</b> CO2 Cars: Learning the design process  |   |
| <b>NESA Australian Professional Standards for Teachers</b><br><br><i>Identify the standard(s) and focus areas that align with this lesson:</i>  |  | <b>1.2</b> Understand how students learn<br><b>2.5</b> Literacy and numeracy strategies<br><b>2.6</b> Information and communication technology (ICT)<br><b>3.1</b> Establish challenging learning goals<br><b>3.3</b> Use teaching strategies<br><b>3.4</b> Select and use resources<br><b>3.5</b> Use effective classroom communication<br><b>4.1</b> Support student participation<br><b>4.2</b> Manage classroom activities<br><b>4.3</b> Manage challenging behaviour |   |
| <b>Recent Prior Experience:</b> Students have had prior lessons where they have begun researching into and understanding their CO2 car project. They have had lessons researching safety measures and the purpose of engineers. |  |   |   |
| <b>Syllabus/Syllabi Outcome(s):</b>   | <b>Indicators of Learning for this lesson- learning intentions and success criteria:</b><br><br><b><u>Learning Intention:</u></b><br><br>Students will understand each stage of the design process. They will complete a small practical project which they will be able to evaluate and analyse, understanding how they got to the end product. They will then be able to use this knowledge towards the development of their CO2 cars.<br><br><b><u>Success Criteria:</u></b><br>Students will be able to: <ul style="list-style-type: none"><li>- Follow a design process to produce a paper plane</li><li>- Complete research</li><li>- Sketch ideas</li><li>- Understand how the design process leads to an improved product.</li></ul> |   | <b>Assessment:</b><br><br><b>Design Process Slides:</b><br><br>Students will present their work in a Google Slides document, this will enable the teacher to monitor their understanding and progress towards the design process. |

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| <p><b>Any safety issues to be considered (APST 4.4.1):</b></p> <p>Consideration that students are using ICT software appropriately (APST 4.5.1).</p> <p>As this activity may involve the use of scissors, the teacher must ensure they are using them safely and responsibly.</p> <p>Students will be allowed to go outside briefly to test their planes. The teacher must therefore ensure they are safe and responsible when working outside.</p> | <p><b>Resources:</b></p> <p><b>Google Slides Document:</b> Paper Plane Design Process Activity (created by Sophie Voll)</p> <p><b>Videos:</b> The Engineering Design Process: Taco Party<br/> <a href="https://www.youtube.com/watch?v=MAhpfFt_mWM">https://www.youtube.com/watch?v=MAhpfFt_mWM</a></p> <p><b>Paper Plane Activity:</b> A4 sheets of paper.<br/> Students may also use their own: pens/pencils, glue and scissors</p> |
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### LESSON SEQUENCE

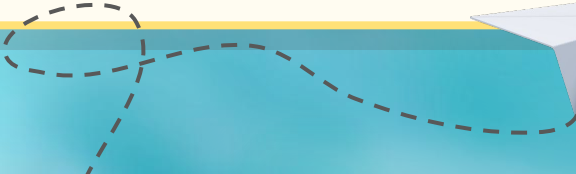

| Lesson Content / Indicators of Learning/ Teaching Strategies ( <i>What is Taught</i> ):   | Timing ( <i>mins</i> ) | Learning Experiences: ( <i>How it is taught</i> )   | Resources and Organisation:  |
|---|------------------------|---|--|
| <b>INTRODUCTION</b>   |                        |   |  |
| <p><b>Continuation of unit: CO2 Cars</b><br/> Students appreciate and understand the learning intentions and success criteria.</p> <p><b>Brainstorm:</b> What process do you think an individual/group would take when designing something?</p> |                        | <p>The continuation of the CO2 cars unit will be addressed as students will be told the learning intentions and success criteria for the lesson.</p> <p>Students will be asked what process they believe individuals, engineers or groups take when undergoing the design process. A flow chart will be drawn on the board for students to record in their books.</p> |  |
| <b>DEVELOPMENT</b>  |                        |   |  |
| <p><b>Video:</b> Design Process</p>   |                        | <p>Students will watch a video introducing them to the design process. Whilst watching this video, they are encouraged to make notes and add to their design process flow chart.</p>  | <p><b>Video:</b> The Engineering Design Process- Taco Party<br/> <a href="https://www.youtube.com/watch?v=MAhpfFt_mWM">https://www.youtube.com/watch?v=MAhpfFt_mWM</a></p> |





# Design Process Activity: Paper Plane

Follow the design process to create a  
paper plane



## Identify the need

Students will utilise the design process to create a paper plane. They are required to learn basic principles of **aerodynamics** in order to complete their CO2 car projects. Students will therefore need to **research and plan** their design prior to folding and making the plane. Students must consider how their planes could travel the furthest distance.

### Limitations:

- Students will only be provided with one A4 piece of paper to make the plane
- Students must complete their planning within the first half of the lesson
- Students must work within allocated groups and are not to share their ideas between other groups.
- Students can only use paper (provided by the teacher), pens/pencils, scissors and glue to make their planes.

# Research

Consider researching: You may research more than the following points

- How to make a paper plane
- Previous designs
- What makes a plane move through the air: Aerodynamics
- What do you and don't you want in your design?

Enter your research here AND on the next slide:

# Research

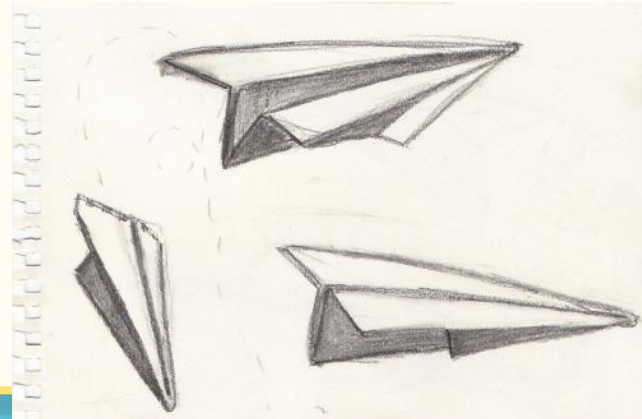
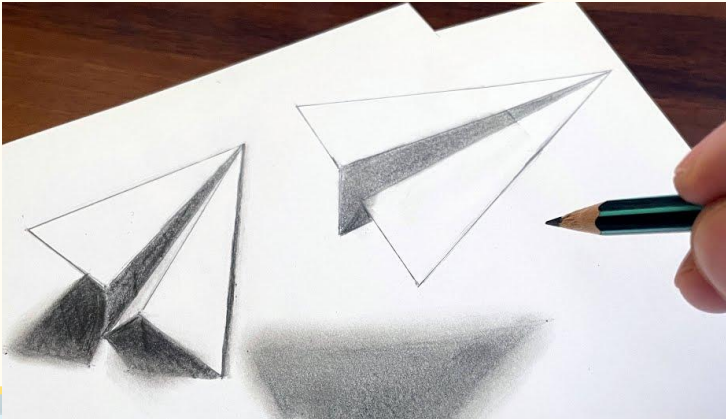


# Sketches

Each person within your group must draw **at least 2 sketches** of their design ideas. These drawings do not have to be perfect, but they do need to convey the idea you have.

- Please draw them in your books.
- Try to think further than a basic paper plane

Each person within the group will need to present their sketches to the teacher before they are allowed to move on to the next stage.





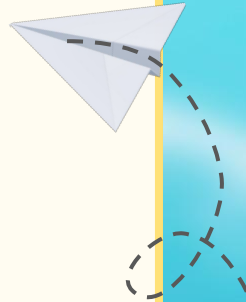
## Select your favourite design

Share the drawings you have completed with your group. When sharing them you should talk about:

- Why drew these designs
- Why you think these designs will work well

As a group, you must then decide whose paper plane design you like the most. Below, explain why your group chose this design:

My group chose (students name)'s design because...

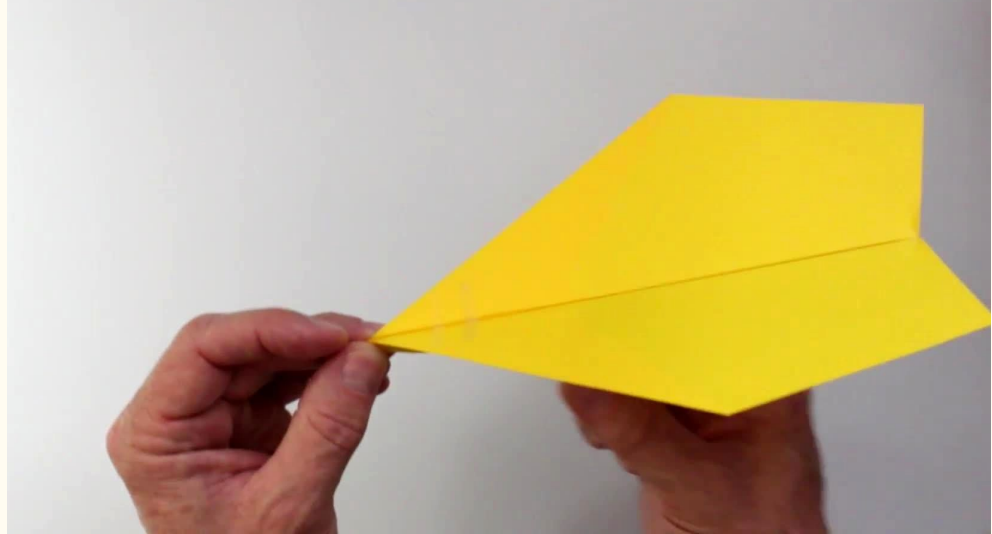


## Make your design

Once you have chosen your design, let the teacher know so she can check your work. You will then be given **ONE** piece of A4 paper to make your plane.

You can also use:

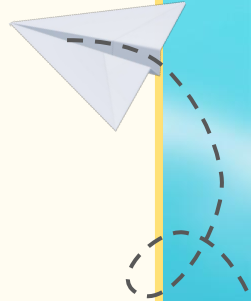
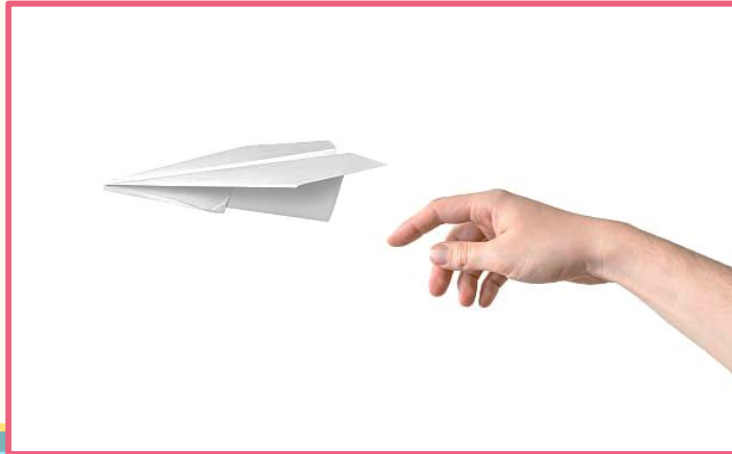
- Pens
- Scissors

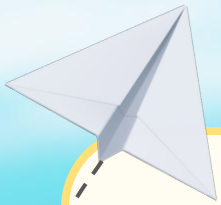


## Test your design

Once all groups have folded their planes and you are happy with your final design you will be provided the opportunity to test them. Make sure you take note of:

- How far your plane flies
- How it compares to the other groups planes
- How much **force** you use to throw the plane
- What did/did not work





## Evaluate the design

**Evaluate** your team's design. When writing your evaluation you must consider:

- The pros and cons of your plane
- Did your plane fly far? Why or why not?
- How fast your plane flew
- How it compared to the other groups planes
- Was your plane aerodynamic? Why or why not?
- If you were to remake this plane, what would you change?

Please write your evaluation on the next slide.



## Evaluate the design

Write your evaluation here: