

## LESSON PLAN: Mobile Tiny House

<b>Date:</b> 27/7/2020	<b>Student Group:</b>	Year 5/6
<b>Duration of the lesson:</b> 2 hours, split over two lessons.	<b>Class size:</b>	23

<p><b>Intended Learning Outcomes/Learning intentions:</b> What will the students be able to know and do by the completion of this lesson?</p>	<p>The students will research and design a mobile tiny house.</p>
<p><b>Success Criteria:</b> How will you know that the students have successfully achieved the learning outcome/intention?</p>	<ul style="list-style-type: none"> <li>• The students will calculate the area and perimeter of their mobile tiny house in 2D, including main furnishings.</li> <li>• The students will produce a 3D model of their tiny houses in Minecraft.</li> <li>• The students will explain and justify their designs and the materials they have chosen.</li> </ul>
<p><b>Prior Learning and Experiences:</b> How will students' prior learning and experiences be used in this lesson?</p>	<p>The students have previous knowledge of geometrical calculations (area and perimeter) and spatial awareness of scale. Many students also have had some exposure to Tiny Houses in media and at local events.</p>
<p><b>Links to the curriculum and to the curriculum planning of the school</b></p>	<p><b>Band 5-6</b> Design and technologies:</p> <ul style="list-style-type: none"> <li>• By the end of Year 6 students will have had the opportunity to create designed solutions addressing the technologies context: Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use (ACTDEK023).</li> <li>• Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques (ACTDEP025).</li> <li>• Develop project plans that include consideration of resources when making designed solutions individually and collaboratively (ACTDEP028).</li> </ul> <p>Mathematics:</p> <ul style="list-style-type: none"> <li>• Choose appropriate units of measurement for length, area, volume, capacity and mass (ACMMG108).</li> </ul> <p>Science (planning and conducting):</p> <ul style="list-style-type: none"> <li>• Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying personal risks (ACSIS086, ACSIS103).</li> </ul> <p>Science (communicating):</p> <ul style="list-style-type: none"> <li>• Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts (ACSIS093, ACSIS110).</li> </ul>
<p><b>Resources, Materials and Organisation:</b></p>	<p>This activity will combine 2D design using mathematics and an understanding of geometry, 3D design using ICT (Minecraft),</p>

What additional human and physical resources will be required for this activity?

What specific teaching materials will need to be prepared?

How will ICT be utilised in the lesson?

What OH&S factors will need to be considered for this activity?

physically exploring a real mobile tiny house and considering the environmental impact of their material/design choices.

The students will require:

- Access to ipads for research.
- Pen and paper for drawing.
- Computers equipped with Minecraft for their 3D designs - monitored by myself and the mentor teacher.
- My mobile tiny home as a physical example to help them visualise.

### Teaching Strategies and lesson structure:

Prompts for your planning:

How will the lesson and ideas be introduced and made relevant to the students?

How will you engage the class?

What specific teaching and learning strategies will you use for the lesson?

What exactly will the students be required to do and what will be your role?

How will you create a collaborative learning environment and how will the classroom be arranged to support this?

How will you include all learners?

What Curriculum and Pedagogy adaptations or modifications will be required?

How will you differentiate learning opportunities for diverse learners?

How will you ensure the students are on-task and what strategies will you use to support positive behaviour?

How will you draw ideas together and conclude the lesson?

How will you conclude the learning experience/ learning findings?

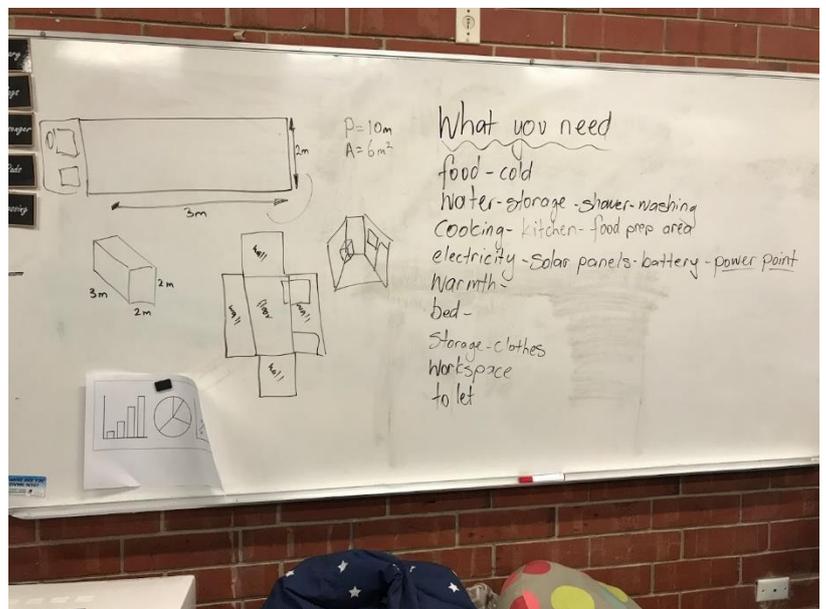
### Lesson 1: Introduction to Tiny Houses

In this lesson students are introduced to the design brief about designing a Tiny House for themselves. I asked the students to tell me what they knew about tiny houses (drawing from their funds of knowledge), responses include:

- Caravans are tiny houses
- My dad's building me a tiny house
- Sometimes people live in buses or vans

I then explained that people live in tiny houses for a range of reasons, for some it's an environmentally conscious choice, for others it's about being a minimalist, and yet others do it for travel or to save money.

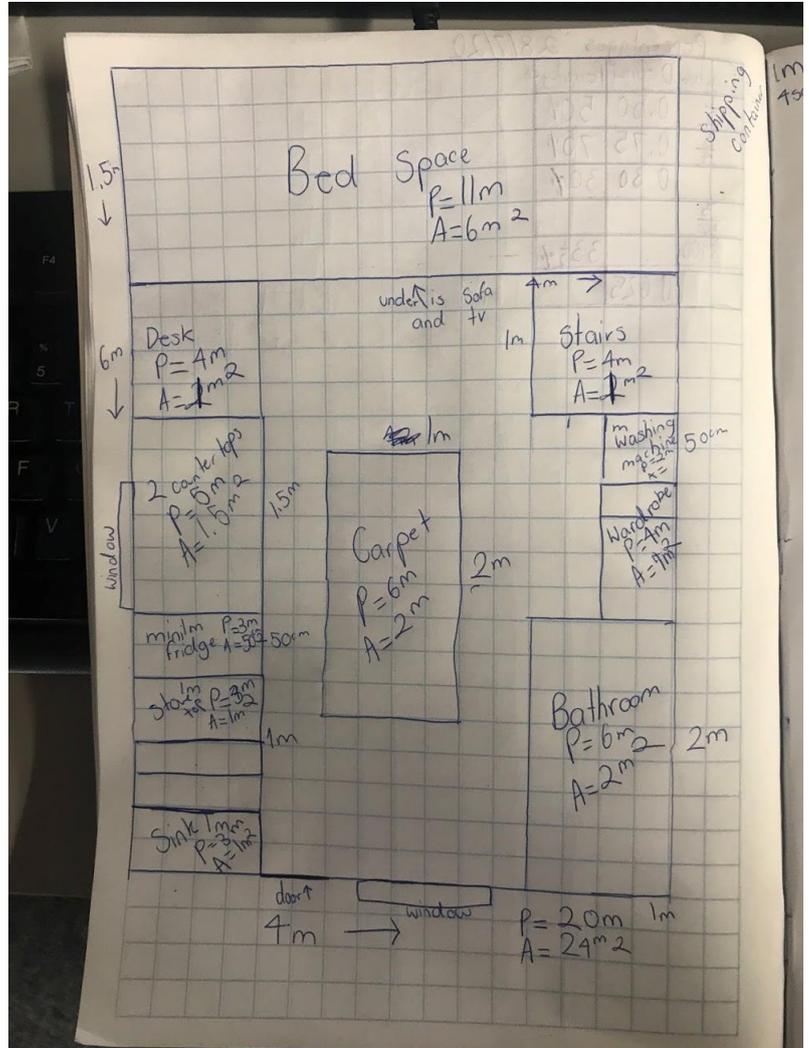
We then did a brainstorming session of things one might need in a mobile home on the board:



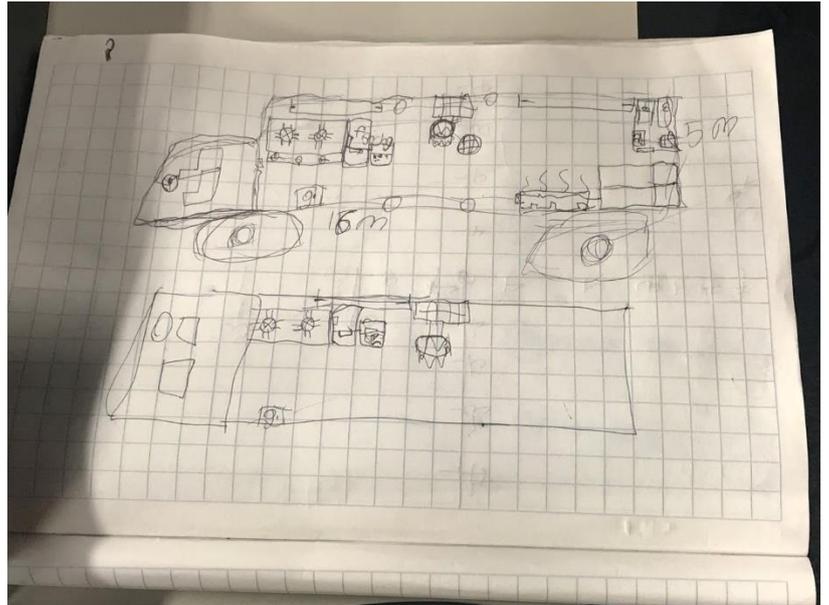
When they had run out of ideas I drew up the dimensions of the space they had to work with and asked them to calculate the perimeter and area of the space. We talked about different ways to represent the space, including 3D models, 2D floor plans and online with Minecraft.

I then set them to task designing their own Tiny Houses.

**Example of student's work (1).** This student is a high achiever and always tries to do as much as possible with the task she's been given.



**Example of student's work (2).** This student is dyslexic and fairly behind his peers in his literacy development especially. He enjoyed the creativity of the design in the task but potentially hasn't achieved the more mathematically-inclined objectives of the task (spatial awareness, geometry).



## Lesson 2: Exploring a real Tiny house and using Minecraft to bring the 2D plan to life!

This lesson began with me driving my own mobile Tiny House onto the school grounds. The students were able to climb in and around the van and ask me questions about my design choices. We talked about things like solar panels and batteries for the electrical systems, gas safety and Australian Standards, design decisions to accommodate wants and needs, plumbing systems for water - how do I shower? And building materials used.

The students really enjoyed being able to physically see a Tiny House. I didn't show them before they drew up their plans because I wanted them to use their own creativity in their designs. In seeing a real version of a tiny house, they were able to pick out where they went wrong in their designs, what was and was not possible and other considerations they hadn't thought of (the weight of a swimming pool on the roof... Would not be ideal for a smooth drive!).

The van:



The inside:



We then took the lesson into the computer room. The students logged on to their accounts in Minecraft and began designing their Tiny Houses in 3D. Some students worked collaboratively, delegating jobs (cooking, shower, bed, floor, walls) and some students worked independently.

Student example (1): This student has ASD and ADHD. He made the most amazing model. He was able to inspire other students in the class, for instance: placing a campfire beneath a trapdoor to make it look like a stove and putting small flames on the roof with a switch to make it look like down lights.



Student example (2): These students were working collaboratively on their design, taking each of their design elements and combining them to create a better tiny house!



**Reflection and Self Evaluation:**

The students really loved the idea of combining maths and art together. They are an extremely arty bunch and probably don't do as much as they would like!

What aspects of the lesson seemed to be most valuable?  
What aspects of the lesson could be improved and how could they be improved?  
What follow-up will be required from this lesson?

I did not summarise or round up the end of the unit very well. I didn't give them a chance to present, talk about or reflect on their experience or what they'd learnt. This would have been valuable for me as much as it would have been for them.