

Design a town

Planning for people, places and the environment

Year Level:	9-10	Subject:	Geography (Environmental change and management)	Topic:	Sustainable development, competing land use relationships, and food security.
Duration:	1-2 50 minute lessons Lesson 1- Learning and building stage 1 Lesson 2- Building in sustainability	Australian Curriculum:	Content description codes: <ul style="list-style-type: none"> • VC2HG10K10: human-induced environmental changes and their impacts on the sustainability of places and environmental functions • VC2HG10K03: the environmental, economic and social sustainability of farming in Australia • VC2HG10S06: justify responses and develop and evaluate strategies using environmental, economic or social criteria, recommend a strategy and explain the predicted impacts 	Climate Topic:	<ul style="list-style-type: none"> • Sustainability • Renewable energy • Climate change risks • Resource degradation

Brief Overview

In this activity, students will work in groups to design a town, balancing residents' needs with environmental protection and sustainability. They will decide where to place homes, businesses, parks and other elements, considering how these choices impact one another. The aim is to ensure a high quality of life while maintaining sustainable development.

Learning outcomes

Learning Intention

To create a town that meets people's needs while protecting the environment, ensuring sufficient goods and services are available, and balancing competing land uses, environmental impacts, and human wellbeing.

Success Criteria

- Describe how human activities and land-use choices influence the sustainability and liveability of places.
- Explain how environmental, economic and social factors shape how places are used and managed.
- Evaluate the environmental impacts of human activity and suggest strategies to reduce them.

Teaching materials and resources (device-free hands on activity)

Tool ID	Student/Teacher	Tool	Overview and link	Source
R1	Teacher	Lesson PowerPoint	PowerPoint slides with activity steps and instructions for students to follow, includes speaker notes	Monash Climate Change Communication Research Hub
R2	Student	A3 graph paper and butchers paper	Paper for students to sketch and draw their towns on	n/a (school to supply)
R3	Student	Markers	Markers or pens for students to draw their towns with	n/a (school to supply)
R4	Student	Post-it notes	Post-it notes for students to write peer feedback on	n/a (school to supply)
R5	Teacher	Glossary of climate terms	This document provides teachers with a glossary of key terms relevant to this lesson plan. It is important that students are familiar with the meaning of these terms so they can complete the class activities.	MCCCRH

Activity plan

Stages	Description	Tool ID	Slide Number	Time
Part 1	<p>Teacher: Begin the lesson with the powerpoint (R1) introducing the activity and instructions.</p> <ul style="list-style-type: none"> ● Slide 1 (Optional to show to students): Learning goals ● Slide 2: Title slide ● Slide 3: Activity introduction ● Slide 4: Town planning instructions ● Slide 5: Guide for adding water sources and land features <p>Organise students into groups of 3 or 4 once content delivery from slide 5 is complete, and put slide 4 back on the screen with the instructions for the activity. Note, this could also be conducted individually.</p> <p>Encourage students to sketch the town out roughly first on butcher's paper to test placement of the required features and then use the graph paper to draw it out properly (USE PENCIL). (Alternatively, students could cut coloured card out to represent different town elements so they don't get carried away with drawing. This means students can move them around or make them smaller)</p> <p>See 'possible discussion questions' in the next section. These can also be asked throughout this design-time to prompt critical thinking.</p>	R1, R2, R3	1-5	35 mins

Students:

In groups, students are to 'design a town' (using PENCIL will be best). Space must be allocated for:

- Food production (wheat and grain)
- Food production (vegetables and fruits)
- Livestock farming
- Industrial crops (sorghum and cotton)
- Urban housing
- Transport hubs (Buses and trains)
- Industrial developments (factories)
- A mine
- Sacred sites
- Recreational spaces
 - One park
 - One sports ground
 - One golf course

Groups have the freedom to add and shape water sources (such as lakes, rivers, and oceans) and land features (such as beaches, hills, and plains) however they wish. They will need to consider the implications of their placement, e.g. placing water sources next to a mine might affect water quality, or placing urban housing on the beach might raise concerns about coastal erosion and flooding.

Elements must be labelled or a colour key provided.

Students need to think about the size of each of the required elements and draw them accordingly using the 5mm squares on the graph paper.

	<p>Each square equals 250m, an A3 sheet of graph paper is 60 x 5mm squares by 84 x 5mm squares, making the town 15km x 21km in size.</p> <p>Students must give each element enough space to be operational and to support a high quality of life – they must be able to adequately justify their size decisions. It isn't as simple as splitting the area equally.</p>			
<p>Part 1.2 Discussion questions</p>	<p>Teacher: Select groups (up to 3) to present their landscapes to the class, explaining their design choices.</p> <p><u>Possible discussion questions (ask a couple per group):</u> <i>These can also be asked throughout the design-time to prompt critical thinking</i></p> <ul style="list-style-type: none"> ● Why did you prioritise some areas over others? <ul style="list-style-type: none"> ○ How do those choices then impact... [environment, economics, society]? ● Are there any implications of putting one element next to another? (e.g. mine next to a sacred site, mine next to water?) ● Have you given enough space for each element to support a high quality of life? ● How do all these competing elements impact one another? <ul style="list-style-type: none"> ○ What are the consequences? ● What are the threats to these connections? (e.g. climate change) 	R1	4	10 mins
<p>Part 2</p>	<p>Teacher: For the second part of the activity, students must now try and make their towns sustainable.</p> <p>Go through slides 7 and 8 for the instructions for this next stage.</p>	R1, R2, R3	7-8	25 mins

- **Slide 7:** Introduction to stage 2 (sustainability)
- **Slide 8:** Sustainability additions instructions

Keep slide 8 on the screen so students can see some of the sustainable solutions they might like to integrate into their towns. If students need ideas or prompts, a list of sustainable solutions is available in the PowerPoint speaker notes (**R1**).

See 'possible discussion questions' in the next section. These can also be asked throughout this design-time to prompt critical thinking

Students:

- Think about how and where sustainable solutions (such as renewable energy, rooftop gardens, or bike lanes) could be added to your town to:
 - improve food security
 - increase access to clean energy, and
 - reduce land and water degradation
- Think about the possible environmental impacts of these solutions (e.g. land clearing). How can we balance the risks and rewards?

Optional extension:

For groups who finish early, give them an extra climate challenge to encourage adaptive thinking and consider how trade-offs shift. Examples as follows:

- **Flooding:** *A major flood affects part of your town. Reorganise land use and protect important infrastructure while reducing future flood risks.*
- **Energy supply:** *Your town's electricity supply is low. Plan ways to increase renewable energy and reduce energy use without lowering quality of life.*
- **Population boom:** *Your town's population suddenly grows by 1,000 people. Decide where to locate new housing, transport, and services while keeping your town sustainable.*
- **Water scarcity:** *Drought reduces water availability by 50%. Prioritise water use for*

	<i>homes, farms, industry, and recreation.</i>			
Part 2.2 Discussion questions	<p>Teacher: Select different groups (up to 3) to present their new landscapes to the class, explaining their sustainable additions design choices.</p> <p><u>Possible discussion questions (ask a couple per group):</u> <i>These can also be asked throughout the design-time to prompt critical thinking</i></p> <ul style="list-style-type: none"> • What are the positive impacts of your chosen solutions? • What are possible negative impacts of your chosen solutions, and how can we navigate them? • How can these solutions mitigate climate change impacts to support long-term resilience? (e.g. renewable energy technologies reducing emissions). • How can we incorporate sustainable solutions to increase food security? 	R1	8	10 mins
Part 3 Town gallery	<p>Teacher: Change to slide 10 for the final part for peer feedback and self-reflection.</p> <p>Facilitate a classroom gallery walk. Encourage students to move around, observe other designs, and reflect on differences.</p> <p>Students: Visit other groups' towns and leave two post-it notes:</p> <ul style="list-style-type: none"> ○ One positive comment about the town's planning. ○ One constructive suggestion for improvement. <p>Once all feedback has been given, students should spend 3 mins in their group reading and discussing the feedback.</p>	R1 + R4	10	10 mins

	<p><u>Optional</u> Move to powerpoint slide 11 and ask students what feedback their group received (what worked well? What didn't?)</p> <ul style="list-style-type: none"> • Topic prompts in speaker notes 			
<p>OPTIONAL</p> <p>Part 3.2 Concluding Discussion</p>	<p>Teacher: Go through powerpoint slide 12: Real world examples of sustainable urban planning</p> <p>Students: Participate in class discussion</p>	R1	11-12	5 mins