SDG13 Climate Change Engage Game Design

Lesson 13: Settlement Pattern and Sustainability

Subjects: Design, Environmental Science, Game Design, Geography, Science, Technology

Lesson Title and Summary: Settlement Pattern and Sustainability

In this lesson, learners will reflect on the different settlement patterns in their locality and consider if they are positive or negative for the environment. They do this by firstly reviewing some of the key vocabulary / terms from the previous lesson and secondly, looking at what these terms mean on the ground in the built environment that they are familiar with. They can do this by visually surveying their own local environment, using online mapping and identifying different patterns of development.

The final element of the lesson asks learners to think of the future and what sorts of policies might change these patterns of development.

Vocabulary: Compact Development; High Density; Low Density

In this lesson, the learner will:

- reflect on and define key vocabulary
- explore different settlement patterns in their locality
- think about how these different layouts might have negative climate impacts
- think about how these might be changed with policies to encourage more positive behaviour

Materials

- Worksheet: Reviewing Vocabulary
- Worksheet: Exploring Settlement Patterns
- Reference: Appendix 1 and 2
- Access to Google Maps or Google Earth to explore their local area virtually\
- Internet Access - Access to Google Maps or Google Earth
- Pens, Paper

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Activity Instructions

Activity 1 Review Key Vocabulary (10 minutes)

1. Refer to the whole class vocabulary list (paper or digital).
2. In pairs, ask learners to build on the definitions by using each word in a sentence.
3. Monitor and share examples as a whole class.

Activity 2. Exploring settlement layout from a climate perspective (40 minutes)

1. Divide learners into groups of 3-4.
2. Ask groups to think about the area/neighbourhood/town surrounding their school. Take 2-3 minutes to list elements of the area from the top of their head (buildings, green spaces, parking, road, facilities).
3. Using Google Maps or Earth and Worksheet: Exploring Settlement Patterns, ask the groups to:

    - Identify three elements of the layout of this area that are negative from a climate perspective e.g. low-density, lots of parking, lots of roads, and write down the negative elements.
    - Identify a sub-area or an element of the area that is positive from a climate perspective, e.g. an illustration of compact land use (apartment development), has small numbers of parking spaces, communal open space, and cycle lanes; combines a couple of different uses.
    - Identify the area and write down 3 positive elements. Learners can use some of the prompt material included in the task sheet as an aid.

4. Share ideas as a whole class.
5. Ask learners to pretend that they are the planning team for the area and have been asked to produce one new policy in relation to the layout of either the existing settlement or a new neighbourhood, which they think will have the most positive climate impact. This can be a written policy (bullet points) or an illustration.
6. Each group appoints a speaker to present their policy in two minutes to the rest of the class.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One opinion they have about the activities, what did they like or how they would improve them

Use Post-its or a mentimeter survey - www.mentimeter.com to gather reflections

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EXTENSION / REDUCTION ACTIVITIES

Reduction: For a shorter class, focus on Activity 2 and reduce the time allocated for each of the tasks.

Extension: For a longer class, reflect and compare learners' maps from lesson 9/10 (on Green Infrastructure) and integrate the information from Google Maps / Earth identified in Step 1 and 2.

The tasks in Lesson 8 & 9 will have helped identify the potential for green infrastructure. Learners can think about how they might complement the green infrastructure they identified in this lesson, with changes to transport infrastructure, or different types of housing, or mixing housing with other uses such as shops or offices.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

Cities For People: How Paris & Barcelona Learned Urban Planning from Groningen (32:50min) https://www.youtube.com/watch?v=RYuGWOjm26E

RIBA Sustainable Building (3:32min) https://youtu.be/8GuYe0J5pWo

Royal Town Planning Institute https://www.rtpi.org.uk/netzerotransport

Local Trip / Expertise / Additional Work and Assessments

Organise a field trip in the area surrounding the school, to observe the settlement pattern that the learners will see or have seen on maps. If it is an urban area (city or suburban location), learners can walk around and look at different types of housing developments in the vicinity, using a route where different types of development are visible (i.e. low-density housing estates, compared with an apartment development). If in a rural village or small town, consider looking at the whole location.

Encourage learners to observe whether the car dominates, if mixed-uses are close to each other (e.g. businesses and housing close together; living over the shop in older streets, terraces that include both shops and houses, a modern mixed-use development like an apartment block with shops or other uses on the ground floor). Are there cycle lanes, good quality footpaths, open space that are inviting and usable?

13 CLIMATE ACTION

Appendix 2 Sustainable Activity and Mobility Framework, Interventions to Achieve Net Zero Transport

Table 2.1. Interventions, grouped according to the SAM framework

Substitute trips
Active travel infrastructure
Cycling infrastructure - genuine connected network
Walking infrastructure - genuine connected network
Logistics infrastructure
Micro-consolidation - cargo bike / electric vehicle last mile delivery
Flexible pick up / drop off points for home deliveries
Land use planning
Co-working spaces (local, in new developments / disused shops)
Mixed use developments meeting a greater range of local needs
Recreation space embedded in neighbourhoods
Local amenities within short walk and cycle (15-minute neighbourhood)
IT infrastructure
Home working (superfast broadband and house design to allow for work space)
Remote study and 'blended learning' for further and higher education
Digital public services (e.g. GP online)

Shift modes
Shared mobility
Bike share
eBike share
Car share (club)
Electric vehicle car share (club)
Mobility hubs - integrated network
Modern public transport
Demand Responsive Transport & Rideshare
Bus Rapid Transport
Bus priority traffic lights
Automated vehicle shuttles - last mile connectivity
Mobility as a Service - integrated public transport, on-demand and shared mobility services
Street design & access restrictions
Low Traffic Neighbourhoods - active travel priority
Car free zones
Street space reallocation from car to active and public transport
20mph zones
Controlled parking zones
Congestion charging zones
Fiscal measures
Workplace Parking Levy
Fuel tax

Switch fuels
Electric vehicle (EV) charging infrastructure
EV charging (residential) + vehicle to grid technology
EV charging (stations / shops / work / mobility hubs)
Hydrogen fuel cell charging (stations / shops / work)
Conversion of fleets
Convert commercial delivery and servicing fleets to EVs
Convert municipal delivery and servicing fleets to EVs
Convert public transport fleets to EVs
Fiscal measures
Grants to trade in petrol / diesel for EVs
Access restrictions
Low emission zones - Clean Air Zones

These are just some spatial planning policy interventions which could be adopted to achieve Net Zero emissions from Transport. The ideas here might help you think about the type of policies that you could suggest for your local area.

Source: RTPI (2021) **Net Zero Transport: The Role of Spatial Planning and Place Based Solutions**, London, RTPI, p 14.
https://www.rtpi.org.uk/netzerotransport

CCE L13WS: APPENDIX 1

Developing Planning Policies

A planning policy can be described is a set of ideas that is used as a basis for determining how development and various changes to the built environment will be managed. A policy could, for example, set out details of how older buildings are to be conserved. A transport policy could set out ideas for reducing car traffic and increasing cycling and walking.

Example of a General Policy for Mixed-Use Development:

It is a policy of some councils to develop more sustainable villages and towns by encouraging a better mix of uses in village and town centres.

To develop your own policy, think about a specific objective that you think needs to be changed in the area you have looked at, maybe it is housing, transport or green space.

An objective is a measurable or defined action or set of actions that can bring about some element of your overall policy. If your policy is to encourage a better mix of uses in the town centre, village or neighbourhood centre, your policy objectives might give a list of actions to achieve this i.e.

- All new developments in the village/town centre area will incorporate a mix of uses.
- The ground floor of all new apartment developments in the village/town centre will include non-residential use.

Here is an example of a transport policy objective from the Dun Laoghaire Rathdown County Council Development Plan for 2022 -2028. The policy objective relates to the overall planning policy of ensuring that the towns and villages in the county act as multifunctional centres, which in addition to providing important retail uses (shopping facilities), also provide a range of other uses including leisure and recreation, employment and tourism, civic, community, cultural, health and education for the communities they serve.

The policy below is focused on accessibility to centres by sustainable transport.

7.2.3.2 Policy Objective MFC2: Accessible and Inclusive Multifunctional Centres

It is a Policy Objective of the Council to promote accessibility to Major Town Centres, District Centres and Neighbourhood Centres by sustainable modes of transportation in order to encourage multi-purpose shopping, business and leisure trips as part of the same journey. Dun Laoghaire Rathdown County Council Development Plan 2022-2028 p 143

Try to write your own policy in the same way -

It is a Policy Objective of the [insert name] County Council to...

CCE L13: EXPLORING SETTLEMENT PATTERNS

Think about the area / neighbourhood / town surrounding your school. You can use Google Maps or Google Earth to look at the area to help you.

1 Name of the area and a description of where it is in the local area / neighbourhood.

_____

_____

2. Looking at the wider neighbourhood, identify three elements of the layout of the area that are negative from a climate perspective e.g. low density, lots of parking, lots of roads. Identify the area and write down the negative elements.

_____

_____

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3. Using the same area, identify elements that are positive from a climate perspective, e.g. an illustration of compact land use (apartment development), areas with small amounts of parking, good communal open space, cycle lanes, combining different uses. Identify the area and write down 3 positive elements.

   You can use some of the prompt material included in Appendix 1 as an aid, this lists some positive elements that can deliver more climate-positive places.

_____

_____

_____

4. Imagine that you are the planning team for the area and have been asked to produce one new policy in relation to the layout of either the existing settlement or a new undeveloped site (it could be a derelict site or an institutional site) in your neighbourhood / village / town which you think will have the best climate impact.

   For ideas on types of policies and how policies are phrased see the information contained in appendix 1 and 2.

CCE L13: EXPLORING SETTLEMENT PATTERNS

Start by thinking about the negatives and positives you have identified, then think about addressing the negatives and enhancing the positives by describing a policy that would reduce climate impacts. This can be a written policy included below or alternatively you can use a diagram, or a sketch map showing an actual policy implementation. You could do a quick sketch map and show a new cycle lane for example or the location of an electric vehicle charging station.

Policy: It is a policy of the County Council to

_____

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Alternatively, create a diagram or sketch map showing policy implementation

5. Present back – appoint a speaker from your group to present your policy in 2 minutes to the rest of the class.

CCE L13WS: REVIEWING VOCABULARY

Working in pairs you will work with your partner to find definitions of the following terms, by using online dictionaries or searching using Google. Rewrite the definitions in your own words:

Compact Development

_____
_____
_____
_____
_____

High-Density Development

_____
_____
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_____
_____

Low-Density Development

_____
_____
_____
_____
_____

In class compare your definitions with those of other groups. Create a glossary of terms.

Compact Development

High-density Development

Low-density Development