

Lesson plan: Designing your sustainable city – 2D plan of your city

Learning objective: Work collaboratively to generate a plan of their sustainable city with annotated and exploded diagrams.

Resources required

Graph paper (if desired)
Plain paper
Pencils
Rulers
Colouring pencils
Scissors

Adult Support

- General teacher support where needed, in particular with scales and teamwork

Follow up activities

- 1) Pupils will be creating a 3D model for their city
- 2) Pupils will produce a city charter for the inhabitants of their city

Duration

1 hour

Theme

Sustainability

Subject focus

Design and Technology

Age group

Lower KS2
Upper KS2

Learning outcomes (differentiated)

MUST: Work collaboratively to plan their sustainable city. Produce a plan drawing to scale with a key.

SHOULD: Include their research of other sustainable cities in their plans. Draw an exploded diagram.

COULD: Use computer programmes to create their plan on computer. Include cross section diagrams of one feature of their city e.g. building with a roof top growing area.

Keywords

Plan,
scale,
key,
infrastructure

Starter

Gather the class into their working groups. Ask them to review their notes on their city plan from the previous lesson (Resource 1b – planning my city). Ask the team to discuss how they can best work together to create a successful plan of the city.

What buildings and areas do the group think are essential in their plan?

e.g. Houses, office buildings, shops, restaurants, bank, hospital, police station, fire station, cinema and entertainment, museum, sports arena, library, school, university, train station, bus station, airport, places of worship, supermarkets, factories, warehouses, recycling centre, sources of energy, food growing areas, natural spaces.

Ask the group to choose carefully what will be in their city. Depending on time for making the 3D model you may want to limit this to a set number of different buildings, so they don't build a cardboard city that won't even fit in the classroom!

Main activity

Introduce how to draw a scale plan to the class. Discuss the use of scale and using a key on their plan, what makes a good key and what do they need to include? If not already used Resource 1a (PowerPoint with inspiration from other cities) can be used to show how you can build upwards as well as outwards. Vertical gardening and using a space for multiple uses e.g. growing food on the top of blocks of flats etc. are great examples of this.

Groups to create the plan of their city, with a key and to scale. This can either be done as individual work, or as a group project (children can draw the buildings and decorate individually and then cut and stick them onto large card or paper as a group). Ask each pupil to choose one building and create a cross section of that design and annotate with the key features.



Higher ability pupils can draw an exploded diagram of one of their features e.g. a wind turbine. This is also homework or an additional lesson option.

Plenary

Pupils share their city plans in their groups and work out how they can bring them to life in the 3D model lesson. Discuss what materials need to be collected before the next session

Extension tasks

Pupils can even include working wind turbine models (See 'Build your own wind turbine' resource). These are tested with scientific experiments and efficiency improved to create fit for purpose products.

Actions before next lesson

Collect materials for the 3D model e.g. inner tubes from kitchen tubes, plastic pots e.g. soup pots, yoghurt pots etc.

Reflective Notes

Curriculum links

Design and Technology

- Generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams.
- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or group