

Designing a Sustainable City of the Future

Lesson 6: How can we design a sustainable city of the future that addresses current energy challenges?



Lesson Logistics

- [Watch Teacher-Author Walkthrough Video of this Lesson](#)
- [Watch Putting It All Together In Your Community Video Resource From Teacher-Author](#)

Handouts & Reference Links

- Video: [Farm of the Future](#)
- Teacher Resource Reference: [Consensus Strategy](#)
- Teacher Resource Reference: [City Planning](#)
- [City Planning Sheet](#) Template
- [City of the Future Presentation Template](#)

Required Materials, Equipment & Supplies

- Blank Paper, Colored Pencils

Detailed Description

Lesson 6: How can we design a sustainable city of the future that addresses current energy challenges?

Students work collaboratively to apply what they have learned in the unit to design a sustainable city of the future with attention to water, energy, carbon footprint, waste, and layout of the city.

Lesson Preparation

- If completing methane demonstration, prepare wood splits, matches, safety equipment

Lesson Preparation

- Teacher secures guest visit from local city planner/architect
- Teacher may collect questions from class at the end of Day 1 to help facilitate Q & A with the guest speaker on Day 2.

Lesson Progression

Day 1: Review Solutions & Brainstorm City Models

- (15 min) Start by reminding students of our original phenomenon, the moisture farm on Luke Skywalker's home planet, Tatooine and our original question, "How and why would communities farm for moisture." By now, students will understand that moisture farming is a solution to a problem of no drinkable water due to environmental factors. Ask students to list as many of the other solutions they have studied in this unit (Fog farms in Chile, Morocco, and Ethiopia, Sustainable logging in Borneo, Reducing Carbon Footprint, Renewable energy from sun, wind, gas, waste, methane, algae, and ocean waves, and all of the work of the activists they researched). Write student ideas on the board and then ask them what problem existed that they were solving.
- (5 min) Watch [Farm of the Future](#) Video and discuss what environmental challenges urban farming may provide a solution for.



- (20 min) Introduce the idea of a city planner, a person who tries to figure out the best way to use the land in cities and neighborhoods, balancing housing, jobs, traffic, and the environment. Tell students they will be

acting as city planners for a sustainable city of the future and they will need to come up with the best way to balance the needs of the community, the use of the land, and the environment. They will need to incorporate solutions in their city to:

- Provide clean water
- Provide renewable energy
- Reduce the community's carbon footprint
- Manage the community's waste
- Design the layout of the city so people have access to jobs, houses, food, and recreation

Allow students to brainstorm on a blank piece of paper, drawing a first draft model of their city, listing needs and solutions they want to incorporate, and writing questions they will want to ask the guest speaker.

Day 2: Guest Speaker

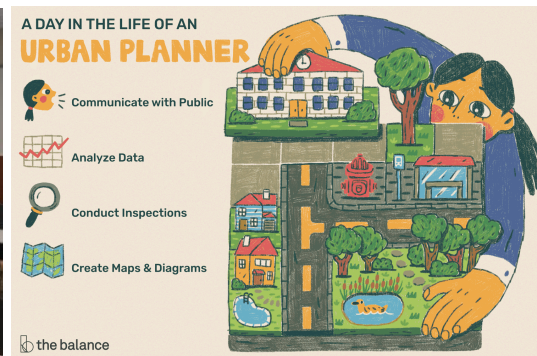


Image Source: <https://www.thebalancecareers.com/urban-planner-or-regional-planner-526078>

Day 3: Redesigning Our City Models

- Review solutions students need to incorporate into their design.
- Ask students to decide on geography, population, climate, and environmental challenges they are going to overcome (If 100 million people live there, what transportation solutions are there? If it is not by water, how will they get access to freshwater? Will they have urban farms?) Allow students to redesign their city models, reminding them to include at least 6 solutions and a reason for each of their solution choices (support arguments with evidence).

Day 4:

- Once students have designed their city and written about their 6 solutions, allow them to work in teams to incorporate their cities into a metropolis. They will now have to have solutions for a combined population without doing harm to the environment.
- Ask students to work in their pairs, to discuss their solutions and decide on a [consensus](#) after both team members share their arguments and evidence. Teacher models this process and offers an example.



- Students fill out [City Planning Sheet](#) and complete the final drawing of their future city.

Optional Extension:

- Students build a model of their city from recycled materials
- Students create a virtual model using Sketch Up of their city
- Students [present their final designs](#)

Day 5: Explain & Evaluate

- (25 min) Student teams explain their choices and city design to the class
- (15) Reflection: Students compare different teams solutions and reflect on all of the ways we can address energy challenges in the future

Leave time to review question board and have students reflect on what they learned during this unit about the needs of communities, natural resources, energy, and how technology is shaping the cities of the future!

Sample Student Designs:

