LESSON 7

Designing our smart city pt. 1

Age 7-11
(Key Stage 2)

60 minutes

Curriculum links

Design & Technology
- 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 groups
- Generate, develop, model and communicate ideas through discussion and prototypes

English
- Generate and develop initial ideas, drawing on reading and research where necessary

Resources

Slideshow 7:
Designing our smart city pt. 1

Student Sheet 7a:
User profiles

Student Sheet 7b:
Empathy map

Video:
Design thinking

Subject Updates:
- How can autonomous vehicles be useful?
- Futures Thinking

Kit (per group)

- No additional kit required

Lesson overview

In the last section of this unit of work, your class will take part in a Design Thinking Workshop that can be delivered as three one hour sessions or combined as a half day activity.

In part one of the workshop, your class will use personas to empathise with different types of people. They will then use these insights to brainstorm ways that robots and autonomous vehicles can improve lives or solve problems.

Parts two and three of the workshop see student groups select, refine and prototype ideas before presenting and demonstrating their proposals.

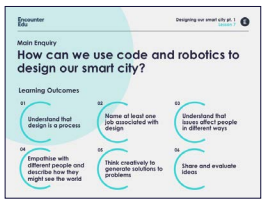
Lesson steps	Learning outcomes
1. Video opener (5 mins) Introduction to design thinking. This workshop's challenge is to use design to solve the problems of citizens living in a city of the future.	• Understand that design is a process • Name at least one job associated with design
2. Classroom discussion (10 mins) Students will discuss the video and share ways they've solved problems in that past.	• Describe basic design thinking techniques
3. Design thinking: empathise (15 mins) Students will use character personas to empathise with different people and their travel related problems.	• Understand that issues affect people in different ways • Empathise with different people and describe how they might see the world
4. Design thinking: ideate (20 mins) Students will complete a class brainstorming activity then work in groups to brainstorm ideas to make life better for the character personas.	• Think creatively to generate solutions to problems
5. Reflect (10 mins) Students will reflect on their brainstorming activity then share their best and worst ideas.	• Share and evaluate their own ideas

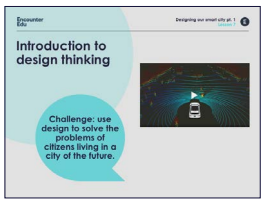
TEACHER GUIDANCE 7 (page 1 of 3)

Step

1

5 mins





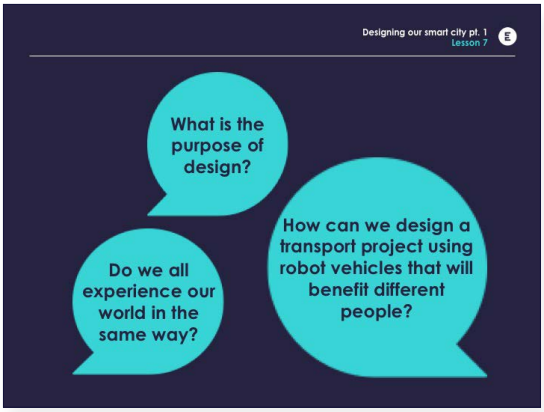
If you use formal learning outcomes with your class every lesson, the list on **slide 2** has been formulated to structure learning for this lesson. All learning outcomes are composed using the SWBAT (Students Will Be Able To) format.

Using **slide 3** introduce students to the lesson where they are going to embark on their design challenge and use what they have learned to address societal needs.

Show your class the video **Design thinking**.

2

10 mins



Consider using a think-pair-share structure for these three questions as well, with students listing possible answers on their own for four minutes before sharing in pairs for two minutes. The whole class discussion element would then take a further four minutes.

Manage a whole class discussion using the questions on **slide 4**.

What is the purpose of design?

- Design is not just to make things look nice – it helps us make the world better and solve problems.

Do we all experience our world in the same way?

- One person may see something as good and another may see the same thing as bad.
- Empathy is very important in design. When designing something we must make sure we consider how different people will react to it. Something that is positive for one set of people may be negative for another – we should always aim to find a balance.

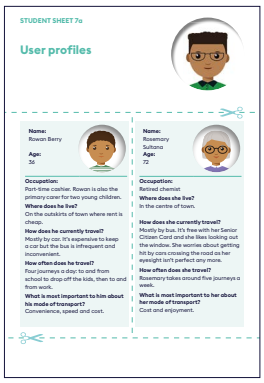
How can we design a transport project using robot vehicles to benefit people who may use it?

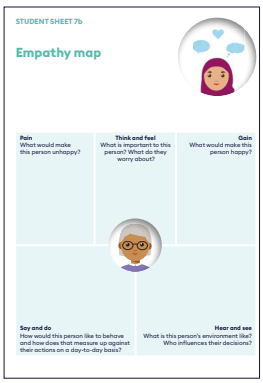
- Start your class thinking about how what they've learned could be applied to real life scenarios.

Step

3

15 mins





Hand out copies of **Student Sheets 7a and 7b**. Provide each group with a couple of different user profiles and the same number of empathy maps.

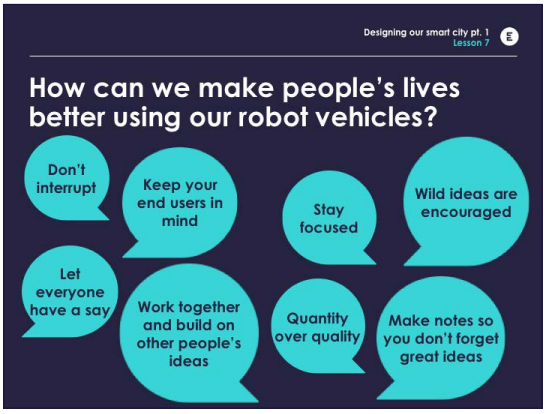
Explain that the user profiles and empathy maps are design tools that help service and product designers work out the motivations, worries and habits of different people. Assign small groups one or two user profiles each and ask them to fill in empathy maps for each profile. You can use **slide 5** to highlight some of the things they might think about. You can also use the blank profile for pupils to make up their own users.

Students will work through the student sheets.

This is a design tool called an empathy map. It helps service and product designers work out the motivations, worries and habits of different people. Students should use it in conjunction with one or more user profiles, so they can empathise with how different types of people would use or be affected by any robot vehicle project they might design.

4

20 mins



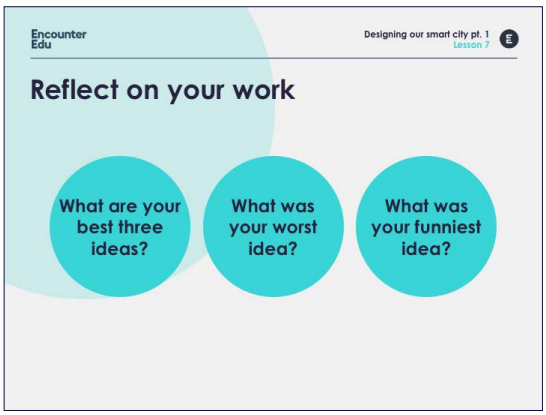
Explain that using their learning from the user empathy maps, your class will now think about problems people have with transport. In groups, they will now brainstorm ideas to make people's lives better using robot vehicles. Use the brainstorming guidelines on **slide 6** to keep them on track.

Students will probably come up with all sorts of answers, but make sure they are considering a range of issues from different viewpoints. The major takeaway from this exercise should be that we should think carefully about users when designing a feature, product or service. Just being cool, new and shiny doesn't equal good design!

Step

5

10
mins



Using **slide 7**, ask students to reflect on the brainstorming exercise, sharing their best, worst and funniest ideas.