SSE School Workshops
2020

Key information

Resource type	School workshop
Duration (guide)	1 hr 50 minutes. Can be delivered as 1 session or divided into 2 lessons.
Location	Classroom/school hall
Max number of students	-
Age group	School leavers (years 12&13 in the UK and S5&S6 in Scotland)
Target number of volunteers	Minimum of 1 (where applicable)
Facilitator	SSE volunteer or teacher
Room set up	Desks and chairs arranged facing a screen with the session presentation and connection to sound. The students will be working in teams of 3, therefore it will be helpful if they're already placed and arranged in these groups.
Required materials	• EV persona worksheets (1 per team) • Instruction cards for tech solution, scheme and investment option (1 set of 3 per team) • Pens and paper (1 kit per team)

Session Aims and Objectives

The session aims to introduce students to the concept of Net Zero and to make them aware of the changes being made to electricity production and infrastructure and how this will impact them.
They will focus on the expansion of EV technology. Using their essential skills such as Staying Positive and Teamwork, they will work in groups to create viable methods of making EVs attractive to the younger driving generation**.**

Learning outcomes

(1) To understand the changes occurring in the production of electricity and how this will impact their future.
(2) To understand Net Zero as a necessary goal as well as SSE's connection to it.
(3) To understand and appreciate the opportunities and challenges associated with EVs.
(4) To empathise with and create viable solutions for young individuals who would benefit from using EVs.

Essential skills outcomes

(1) Teamwork - To contribute to group decision making, whilst recognising the values of others
(2) Staying Positive - To look for opportunities in difficult situations and create new plans to use these opportunities
(3) Creativity - To develop ideas by considering different perspectives

Links to the Curriculum

A-level Geography

- Improve their understanding of the ways in which values, attitudes and circumstances have an impact on the relationships between people, place and environment, and develop the knowledge and ability to engage, as citizens, with the questions and issues arising.
- Develop as critical and reflective learners, able to articulate opinions, suggest relevant new ideas and provide evidenced argument in a range of situations.

Workshop timings

Activity	Time allocation (guide)
Starter activity	-
SSE (and volunteer where applicable) introduction	3 minutes
Starter activity reflection	5 minutes
Net Zero	15 minutes
Introduction to Electric Vehicles	10 minutes
Team challenge. The opportunities and challenges of EV	20 minutes
Challenge prep time	25 minutes
Ideas sharing	20 minutes
Examples	5 minutes
Plenary	5 minutes

Time allocation	Activity	Description/instruction	Check learning by	Resources
-	**Starter activity (images up as the students arrive)**	*'What are these items and what do they all have in common?'* Students will observe images of the following: • Smart meter • Hive app • Electric car • EPC certificate for appliance or house These items allow individuals to take more responsibility for their electricity usage habits.	Facilitator/teacher to host a 5-minute reflective conversation on this slide before the Net Zero Section. discussion on this topic.	**-**
3 minutes	**Volunteer introduction (where applicable)**	The facilitator will introduce themselves to the students communicating the following information: Name • What they do for SSE (and in brief what this means)	-	https://www.skillsbuilder.org/universal-framework/listening

		• Their first ever job • A fun hobby they do/interesting fact about themselves They should also explain what SSE do. Using the video below to help bring this to life. **https://vimeo.com/458879568** They should then explain the value of focusing on essential skills as well as technical skills as per slide 5 and introduce the focus skills in turn along with their definitions. *To help you develop these skills, there is a Framework which breaks each one down into steps to focus on in turn.* Signpost / open the Framework to explore it together. Explain that each activity will have a particular essential step focus students should demonstrate.		
5 minutes	**Starter activity reflection**	Facilitator/teacher to host a 5-minute reflective conversation on the starter activity slide. Asking what they think the images are and what they have in common. The answer being: These items allow individuals to take more responsibility for their electricity usage habits.		
15 minutes	**Net Zero**	'*We are experiencing the biggest change to electricity* ***production*** *and* ***infrastructure*** *since the birth of the National Grid.'* SSE Teacher/facilitator will introduce **Net Zero**. Covering what it is and what needs to be done to achieve it, focussing on some of SSE's key goals and linking these objectives to the **UN sustainability goals.** - EV, increasing uptake and improving infrastructure to make it possible - Continued investment in green energy sources. SSE's aim is to treble their green energy output - Cut carbon intensity of non-renewable energy sources by half The students will watch this video: https://vimeo.com/327293644 In small teams, the students will be asked to brainstorm ***why*** we need to achieve **Net Zero** and make huge changes to our power generation and infrastructure.	Teacher/facilitator to ask the students to feedback on their group discussions, ensuring all key words have been explored. Extension question. How are these things linked? How will the move to Net Zero impact you and how can you contribute to Net Zero?	**-**

		They will be given 4 key headings to explore to help structure their conversations. **Demand** (examples of answers: increase in population, urban populations rising, EV vehicles will mean we need to generate more electricity, new buildings and transport needs more power, as the population becomes smarter some people/places will use less power) **Environment** (we need to reduce greenhouse gas emissions, set an example for less developed countries to follow, need to make sure our power supply is future proof, improve air quality especially in cities) **Awareness** (individuals are more aware of their carbon footprint and want to be able to reduce it, younger generations are demanding change, more people wanting to live 'off-grid') **Jobs** (investment in renewable energy creates jobs for our generation) Students should also be made aware that they are focussing on Step 7 of teamwork whilst completing this task. Ask why is it not enough to just to focus on sharing your own ideas?	Click 'what does this mean?' on the slide to use the Framework to aid an explanation of this focus step.	
10 minutes	**Introduction to Electric Vehicles (setting the scene)**	*'Surface transport represents 23% of UK greenhouse gas emissions and is now the UK's largest source of carbon emissions. For the main source of transport emissions – small road vehicles – we have a ready-made solution in the form of electric vehicles (EVs).'* SSE Students will be presented with the statement above followed by a definition of what an EV is (a vehicle that plugs in). Teacher/facilitator to also highlight at this stage that walking/cycling is always the best way of reducing the carbon we use, but for longer journeys or where car travel is unavoidable it's important that we motivate people to go electric! ***'Who's seen an EV being charged in the last day/week?' (adapt depending on where this session is taking place')*** ***'Does anyone have a friend/family member with an EV?'*** Teacher/facilitator to introduce the **'chicken and egg' dilemma**; without the necessary charging infrastructure, EV demand will be constrained; and without sufficient EV demand, extensive charging infrastructure will be uneconomic. There will be clear visuals to help explain this.	Teacher/facilitator to ask the students to feed into the conversation.	**-**

		'The sale of petrol/diesel cars is likely to be ended by 2030. This means that your generation will predominantly drive electric vehicles in your lifetime. We have a responsibility to make this form of transport appealing and accessible to younger generations to drive EV demand'. '*In order to be able to promote the take up of EV vehicles and help us to achieve Net Zero, we need to understand young people might be reluctant to buy and drive electric vehicles.'* **Extension question**: Even though the production of EVs omits Co2 and the electricity used to charge the batteries is still largely generated by fossil fuel powered power stations, why are EVs considered to be greener that conventional engines? Answers: - At certain times of the day, cars will be charged using predominantly green energy produced by renewable methods. -EVs don't pump out harmful exhaust into the atmosphere- this causes issues in built up cities.		
20 minutes	**The EV challenge** **The opportunities and challenges of EV**	The teacher/facilitator will ask the students to put their hands up if they can think of a positive outcome of using an EV over a petrol/diesel car (taking a couple of suggestions from the floor.) Then they will ask if anyone can think of a reason why someone wouldn't choose an EV (again taking a couple of suggestions from the floor.) The students will watch this video: **https://www.youtube.com/watch?v=UKttFDnKSp8** This video will give the students an idea of the various opportunities and challenges associated with EV. *'We now want you to imagine you're part of an SSE task force challenged with motivating young people aged 18-25 to take up EV driving'.* The students will now work in small teams (of 3) to complete this activity. Students should also be made aware that they are focussing on Step 10 of staying positive and step 10 of creativity whilst completing this task. Ask what do we mean by perspectives? The students will be introduced to 4 personas and will use their profiles to identify both the challenges and opportunities that driving EV presents to them. The personas will be presented to them on a large worksheet (A3). **Persona examples:** **Name:** Ray **Occupation:** Student	Facilitator/teacher to ask the students about the positives and negatives after the video to ensure the learning is embedded. Following the persona activity, the teacher/facilitator will go through each in turn, asking the students to feedback on what they have identified. Click 'what does this mean?' on the slide to use the Framework to aid an explanation of this focus step.	**EV persona worksheets**

		Age: 19 **Income:** Low (student loan and part time job) **Location:** Birmingham city centre **Car owner?** No, rides a bike and uses busses when necessary. **Accommodation:** Lives in a rented flat with no parking **Additional information:** Studying Environmental Sciences and is a climate activist. His family home is far away in Dundee and he currently relies on an expensive train to get him home for the holidays. **Name:** Kim **Age:** 25 **Occupation:** Vet **Income:** Medium/high for her age. **Location:** Lives in Aylsham, a rural village in Norfolk. **Accommodation:** Owns her own house with a driveway. **Car owner:** Yes and relies on it for travelling long distances for work and to visit family. **Additional info:** Interested in becoming 'self-sufficient' (living off-grid) as a long-term goal. Has doubts around how green EVs *really* are. **Name:** Ben **Age:** 22 **Occupation:** Estate Agent **Income:** Medium, often with generous commissions. **Location:** Milton Keynes (a suburban town just outside of Oxford). **Accommodation:** Lives with his parents in a detached family home. **Car owner?** He uses the family car for work, covering around 20-30 miles a day. He pays a high price for petrol every week. **Additional information:** His work contract states his car can't be more than 4 years old and must be in perfect condition as he meets clients and drives them to view houses. **Name:** Jo **Age:** 24 **Occupation:** Trainee midwife **Income:** Low **Location:** Central London **Accommodation:** Lives in a rented house with street parking only. **Car owner?** No, instead relies on taking busses to get to the hospital and is often called out in the middle of the night to make home visits. She does sometimes worry about her safety. She also has to transport equipment and heavy paperwork for her job. **Additional info:** Doesn't currently have a driving licence, she would like to get one, but lessons and tests are expensive. The students will work in teams of 3 to assess each persona in turn, identifying the challenges and opportunities that each face when it comes to driving EV. They will also choose which persona they would like to work on for the remainder of the session.		

5 minutes	**Setting the challenge**	The students will be asked to use the persona they have chosen and to either: **Develop a tech solution**, an app/website/gadget (there are already a lot of EV charging websites and apps out there- how will yours be unique?) **Create a government-funded scheme**, made available for certain people for a certain period (example, the help to buy scheme that helps people get onto the property ladder). **Spend local EV charge-point investment.** A pot of money has been given to local government to spend on EV infrastructure. Their tech solution, incentive or investment should be aimed at supporting 1 of the personas they've been looking at. Their aim is to make EV as appealing, affordable, and viable to that persona as possible. **Teacher/facilitator to also highlight that many businesses now work in this way. By empathising with their target audience or user group, they fully get to grips with what the problem is and therefore develop more meaningful solutions.** In their teams of three they will assign the following roles: - Brainstorm and ideas scribe. This person is also in charge of making the final decisions on ideas in a diplomatic way. - Time keeper and person in charge of keeping the team on track with the task. - Presentation leader, the person in charge of making sure the team know what they're reporting back to the group and who is speaking when etc. They will be given instruction cards to help them structure their responses.	The teacher/facilitator will ensure the instructions have been fully comprehended before the planning time begins.	**Instruction cards for tech solution, scheme and investment (covering what to consider and further guidance on developing their ideas)**
20 minutes	**Challenge prep time**	The students will use this time to develop their ideas. They don't have long so will be required to work quickly and efficiently. They should be supported by the teacher/facilitator at least once during this prep time.	The teacher/facilitator will ensure they spend time with each group to ensure they fully understand the task, to give them useful insights or additional information and to make sure every team member is playing an active role	**Pens and paper**

			in the session.	
20 minutes	**Ideas sharing**	Each group will be required to share their ideas to the rest of the class. For a class of 30 there will be roughly 10 groups to hear from so each team will have just 2 minutes to report back. The teacher/facilitator will need to be very strict with the timings.	The teacher/facilitator to offer feedback and praise for their work.	**-**
5 minutes	**Examples**	This is a chance to look at some examples of a tech solution, scheme and investment already available. The students might have come up with a similar idea, so it will be great for them to see that it's possible and that someone has already made it happen. **Examples to look at:** **Tech** Zap-map.com **Scheme** Grant for vehicle charger. You can get up to £350 off the price of installing a home charger through the Electric Vehicle Home Charge Scheme. **Local Investment** From Autumn 2020, Birmingham city council will be spending £3 million on EV charging infrastructure. Also flag recent UK legislation that has just been introduced banning the sale of petrol/diesel cars by 2030	**-**	**-**
5 minutes	**Plenary**	*'Based on the information you've received and the work you've done, would you be encouraged to drive an electric vehicle?'* *How did you demonstrate your essential skills today?*	Teacher/facilitator to hold a vote. Use reflection questions on screen to frame reflection/discussion	**-**

Extension Activities

Students to consider all ideas put across in the feedback session and should be asked to vote on which they think would be the most viable and/or would make the most impact. The team with the most votes to be awarded a prize.

Students to be encouraged to explore ‘Carbon Offsetting’ for themselves. They could be encouraged to download the Vyve app and start inputting the journeys they make to gain some more awareness of their carbon footprint.

A discussion around COVID-19 and the positive impact this had on our travel habits and the environment. ‘*How many of your parents and/or family members stopped commuting during the lockdown?*’ Are they continuing to work from home and as a result reducing their carbon footprint? Should we be asking businesses to allow their staff to work from home forever?

Key words and phrases

Carbon emissions
Carbon footprint
Net Zero
Electric vehicles (EV)
Government funded incentive
Local investment
National Grid
Infrastructure
UN Sustainability Goals
Empathy
Personas
Teamwork
Staying Positive
Creativity

Additional Resources:

Article about the 2030 petrol car ban can be found here.

The Universal Framework for essential skills can be found here.

Feedback links
Please ensure your host supports us with feedback on the session:
Host feedback link

Please also provide us with your feedback on the session:
Volunteer feedback link

Further Information

For more information about STEM careers, in particular Engineering careers, please visit the Institution of Engineering & Technology’s education website at https://education.theiet.org. You will also find a large range of our STEM education recourses and activities available free of charge, along with competitions and funding opportunities to support your STEM education engagement.