SSE School Workshops
2020

Key information

Resource type	School workshop
Duration	1 hr 40-minute session To be delivered as a whole session or as 2 separate sessions
Location	Classroom/school hall
Max number of students	-
Age group	Exam (years 10 & 11 in UK, S3 & S4 in Scotland)
Target number of volunteers	Minimum of 1
Facilitator	SSE volunteer or teacher
Room set up	Desks and chairs arranged facing a screen with 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	• **Word sheets 1 per table- ideally A3 (X 6 in total) These should be placed on the tables face down before the session starts.** • **Data collection worksheets (1 per team of 3)** • **Household data sheets (1 per team of 3)** • **Solar Panel fact sheet (1 per team)**

Session Aims and Objectives

This session will encourage students to explore digital technology in relation to businesses and services and the impact it has on society. They will learn how digital advancements has enabled SSE to innovate and the positive impact this has had through 2 key examples. They will focus on and explore the role of analysing data as one of the main enablers of modern innovation. Using their essential skills such as Problem Solving and Leadership, they will learn about the role of a data analyst and will adopt the mindset of an analyst by examining data in an SSE themed scenario, using the information to make informed decisions.

Learning Outcomes

1. To gain an appreciation of how advancement in digital technology has impacted business and society (including SSE and their future objectives)
2. To understand data in its basic form and how it is utilised in modern technology
3. To analyse data and use findings to observe patterns and make decisions, gaining a deeper understanding of data analysis in practice and in relation to SSE.

Essential skills outcomes

(1) Teamwork - To contribute to group decision making, encouraging others to do so
(2) Problem Solving - To explore complex problems by building understanding through research
(3) Leadership – To recognise strengths and weaknesses of others in a team and use this to allocate roles accordingly

Workshop timings

1 hr 40-minute session
To be delivered as a whole session or as 2 separate sessions

Activity	Time Allocation Guide
Digital technology in pictures	As the students arrive (Starter activity) 3 minutes to discuss
SSE introduction (volunteer intro where applicable)	5 minutes
Digital Technology and the world of work	10 minutes
Technology and the world of work 'true or false'?	5 minutes
How does technology improve businesses and services? (carousel)	20 minutes
Introduction to data	5 minutes
Spotlight on SSE and data	5 minutes
Meeting an SSE Data Analyst	5 minutes
Data generation	10 minutes
Solar panels and data team activity	30 minutes
Plenary	3 minutes

Time allocation	Activity	Description/instruction	Teacher/facilitator to check learning by	Resources
As the students arrive (Starter activity) 3 minutes	**Digital technology in pictures**	As the students arrive at the session, they will see the following words (with associated images) and phrases on the presentation: AI (artificial intelligence) Data The Cloud	Asking students to verbally contribute to the discussion.	-

to discuss		Automation Gamification VR IoT (internet of things) The slide will also read ‘what do these things have in common’? The session will open with a discussion around this question. There is no definitive or correct answer as such, but some examples of ways in which they’re linked are: • They’re all to do with modern technology • They’re all futuristic • They will be used more and more in the future • They all effect the way humans interact/behave		
5 minutes	**SSE introduction (volunteer intro 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) • Their first ever job • A fun hobby they do/interesting fact about themselves At this stage they should also cover what SSE do and how they do it. This will be a succinct and broad overview, using the video on the to explain SSE’s role in the energy sector. **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.	-	https://www.skillsbuilder.org/universal-framework/listening

10 minutes	**Digital technology and the world of work**	*'In this session, we're going to be focussing on digital technology. '* *'What's your favourite piece of digital technology?'* *'Why are a company that generate and distribute power talking to you today about digital technology?'* Teacher/facilitator to take suggestions from the floor. *'All businesses no matter what they do rely on digital technology to varying extents and we'll be looking at that and how digital tech helps SSE very soon.'* They will bring up some further discussion topics: • Can you think of a job, a business or industry that doesn't use make use of digital technology is some way? • Who are the people that develop technology? What jobs do they have? • Would you like to have a job that involves digital technology in the future?	Asking students to verbally contribute to the discussion and asking extension questions.	**-**
5 minutes	**Technology and the world of work 'true of false?'**	The PPT deck with display 3 true of false statements that relate to technology and the world of work and energy sector. The students should play individually guessing if the statements are true or false. The statements are: 65% of young people now entering primary school will do a job that hasn't been invented yet Technology will increase productivity by 40% by 2030 117,000 energy sector jobs need to be filled by 2030- many of these roles are related to technology All statements are true.		
20 minutes	**How does technology improve businesses and services?**	The group will now be instructed to turn over the sheet of paper on their table. Each sheet will have a different word(s): • Hospitals & Doctors • Transport	At the end of the carousel, the teacher/facilitator will collect the sheets and go through each, highlighting a few suggestions per sheet.	**Word sheets (ideally A3) 1 per table (X 6 in total)**

		• Shopping • TV, film and music • Socialising • Leisure and travel The group will be divided into 6 groups and instructed to carousel around each table with a pen (if you have 6 groups/tables, they will have roughly 3.5 minutes at each station). At each station they will write down the ways in which technology has improved these areas of life. They can put as many ideas down as they want in the time permitted. Students should also be made aware that they are focussing on Step 8 of teamwork whilst completing this task. Ask: 1) Why is it important that everyone contributes to the group? 2) How can we encourage others contributions? If there's not enough time for every group to visit every station this is fine as there will be a reflection at the end.	Click 'what does this mean?' on the slide to use the Framework to aid an explanation of this focus step.	
5 minutes	**Introduction to data**	The word data will appear on the presentation with an accompanying image. Teacher/facilitator to ask, *'what is data'?* Taking a few suggestions and ideas from the floor (all likely to be correct but will be interesting to hear different interpretations). Examples might include: knowledge, information, facts. The dictionary definition will appear: *noun* *facts and statistics collected together for reference or analysis.* *'The vast amount of data we now collect makes the technology discussed in this session so far possible. As knowledge makes us smarter, data makes technology smarter. The ways in which technology improves the different areas of life you identified earlier are all made possible because of information. It's all about finding innovative ways of using the information gathered to make improvements to all aspects of modern life.'*	**-**	
5 minutes	**Spotlight on SSE and using**	Teacher/facilitator to turn the spotlight onto SSE and discuss examples of how digital technology is helping SSE improve its business and what it does.		

	data.	The example are: SSE – Project Synaps. Where data is being used to predict faults on the network before they occur. SSE – Wind Farm Planning. Where data was used to calculate the number of puffins inhabiting a specific area. This enabled them to determine the best position for the new wind farm that would cause the least disruption to the puffin population.		
5 minutes	**Meeting an SSE Data Analyst**	Teacher/facilitator to introduce students to the profile of a data scientist at SSE discussing: - What they do - How this benefits SSE - The skills involved in being a data analyst - What to study if you want to become a data analyst		
10 minutes	**Data generation**	In groups of three the students will use a worksheet to discuss and record what data can be collected from the following sources and what that data can be used for. The worksheet will contain image prompts to help them. Examples answer: **TV streaming service** **Data**: The types of programmes/genres a person likes, their age, how often and for how long they watch TV. **What it can be used for:** To suggest programmes for you to watch, to tailor your platform (recently viewed etc) to help Netflix make decisions on what types of programmes to produce for their audiences. - **Supermarket loyalty cards** Products a person buys, how much they spend, the days and times they go shopping. **What it can be used for:** Tailored emails/adverts on product promotions, to help supermarkets decide which products to order and when, insight into eating habits and trends (what should they provide more or less of). After this short brainstorm, the students will see an image of a home smart meter. *'Does anyone know what one of these are?'* *'Put up your hand if you have one in your home?'*	Teacher/facilitator will ask the students to feedback some of their suggestions. They will ask them to actively take part in the smart meter discussion, testing their existing knowledge before revealing answers.	**Data collection worksheets (1 per team of 3)**

		Teacher/facilitator to explain what a smart meter does and what data it captures (energy consumption patterns within a household) Teacher/facilitator to ask: What can be done with this data? How could it be useful to either the people living in the house or a company like SSE who generate and supply power?		
30 minutes	**Solar panels and data team activity**	The students will now be working in groups of 3. They will be stepping into the shoes of an SSE Data Analyst and will look at some data collected from 5 household smart meters from different parts of the UK/Ireland. The presentation will display an image of **some solar** panels on top of a house. *'Can anyone identify what this object is and what it does?'* Teacher/facilitator to explain what solar panels are, why they were introduced/how they work and the benefits of having them installed using the video below: https://www.youtube.com/watch?v=ZzCjZb8mFwM The aim of the exercise is to look at the 'raw' data that has been collected from 10 households and use it to make informed decisions. The students will use the data to decide which 2 households would benefit most from installing solar panels. The data will include information such as: - How many people live in each property - Direction the roof is facing - Household energy consumption patterns throughout the day/night - Household energy performance In addition to the data on each household. They will be given a solar panel 'fact sheet' that will include the following information: - The time of day when they're most efficient	The teacher/facilitator should check in with each group as they do this exercise. They should ensure they comprehend what is being asked of them and that each member of the team is actively contributing to the exercise. They will conclude this exercise by asking the teams to feedback their results and reasoning.	**Household Data sheets (1 per team of 3)** **Solar Panel fact sheet (1 per team)**

		- The type of roof/direction of roof most suitable for them to work efficiently The students will need to cross reference what they learn from the data with the information they have on solar power technology to select 2 households that will benefit most from installing solar panels. Each group of three will need to decide on their two households and supply the reasoning behind their choices. Students should also be made aware that they are focussing on Step 7 of Problem Solving and step 9 of leadership whilst completing this task. Ask 1) How does research build our understanding of something? 2) How can we recognise the strengths we have in our teams and allocate roles accordingly? The teacher/facilitator should give the students 15-20 minutes to work through the data and come to their decision. They should hear back from as many teams as time allows to understand which households they chose and why. They will need to be encouraged to take notes on their reasoning.	Click 'what does this mean?' on the slide to use the Framework to aid an explanation of this focus step.	
3 minutes	**Plenary**	Teacher/facilitator to recap on what has been covered in the session. - How digital technology is transforming businesses and our lives - How SSE have benefited from advancements in technology - How data plays a key part in making these improvements - Adopting the role of a data analyst, analysing data and using it to make informed decisions. Teacher/facilitator ask a selection of questions from those provided to identify demonstration of essential skills.	Teacher/facilitator will ask the students to verbally contribute.	**-**

Extension activity/question

Asking students to come up with other ways of using the data provided. What other information can you glean from it? If a company like SSE had data on 10,000 homes what knowledge would it give them?

Key words/phrases

Digital Technology
Data
Data Analyst
Solar Panels
AI (artificial intelligence)
The Cloud
Automation
Gamification
VR
IoT (internet of things)
Teamwork
Problem solving
Leadership

Additional resources
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.