

SUITABLE FOR STUDENTS AGED 11-14

# How can we live smarter?

STEM Learning activity resources



## SUBJECT LINKS:

Design and Technology,  
engineering, physics,  
maths and essential  
employability skills.

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## Introduction

This programme has been created by STEM Learning, the largest provider of STEM education and careers support in the UK. It has been developed in partnership with Club leaders and supports essential employability skills and the Gatsby Careers Benchmarks.

This programme is part of A STEM Future, a suite of themed activity resources exploring how science, technology, engineering and maths will enhance our future.

## How can we live smarter?

Human beings are pretty smart. We have transformed the world and thought up some wondrous inventions. But what will the future hold for planet Earth and the people who inhabit it? Can we use new technology and innovations to improve the quality of our lives as well as the world we live in?

This programme investigates how you can use **design and technology** to find ways we can live smarter – from creating a game to save water at home, to investigating how we can use our living space more efficiently.

## Key information

**AGE RANGE:** 11–14

**SUBJECT LINKS:** design and technology, engineering, physics, maths and essential skills.

**DURATION:** a range of activities up to 60 minutes – 6 hours in total.

**FLEXIBILITY:** complete the whole programme over a half term or choose individual activities to suit the needs of your club.

**RESOURCES:** each activity includes a list of the resources required and a comprehensive set of Club leader and student notes.

**ESSENTIAL SKILLS:** Each activity identifies essential employability skills as recognised by the Skills Builder Framework.

**IMPACT MEASUREMENT:** each set of resources is designed to help evaluate and assess the progress of Club-based learning on Club members. A useful set of assessment tools are available at [www.stem.org.uk/enrichment/stem-clubs](http://www.stem.org.uk/enrichment/stem-clubs).

**ACHIEVEMENT:** students that successfully complete a complete set of activities can be rewarded with the downloadable STEM Clubs Certificate of Achievement. Successfully completing a set of themed activities enables students to enter for a CREST Discovery Award. Further information is available on the STEM Clubs website.

**APPROPRIATE VENUES:** club leaders can run most activities in general spaces e.g. classrooms, halls, and outdoor areas. Some activities need to be conducted in labs and workshops – these are marked clearly in the Club leader guide and in the table below.

**SAFETY:** each activity includes details about significant health and safety considerations, such as appropriate eye protection, gloves, etc. Club leaders should ensure that all equipment is handled with care, particularly sharp instruments. Advice and guidelines are available from CLEAPSS and SSERC, or see the STEM Clubs handbook (page 20). We recommend that practical activities are risk assessed before commencing and Club leaders must follow their employer or organisations policies.

**OTHER ACTIVITIES:** visit [www.stem.org.uk/resources/stem-clubs/](http://www.stem.org.uk/resources/stem-clubs/) for a wealth of ideas for STEM-related clubs.

**FURTHER SUPPORT:** the STEM Clubs Best Practice handbook can be found at [www.stem.org.uk/stem-clubs/support](http://www.stem.org.uk/stem-clubs/support). A selection of careers information, resources, programmes and guidance can be found at [www.stem.org.uk/stem-careers](http://www.stem.org.uk/stem-careers).



## Activities

1	<b>MICROFLATS:</b> in this activity students discuss and sketch / mock up a microflat – a small, flexible living space where objects can be converted from one purpose to another.	🕒 60 minutes	Page 4
2	<b>CLEANING OUR OCEANS:</b> in this activity students will simulate a small-scale oil spill, and investigate different methods of cleaning up the oil.	🕒 120 minutes	Page 7
3	<b>THERE'S AN APP FOR THAT:</b> in this activity students learn about the effects of waste on the environment and try to find a way to incentivise recycling by designing an app that allows households to log how much material they are recycling each week where points will be given depending on the amount of recycling that is done.	🕒 50 minutes	Page 10
4	<b>SMARTEN UP YOUR LIFE:</b> in this activity students discuss how advances in the kitchen might affect the future, and design their own product that has all the smart features they can think of. They will then try to sell their product to the CEO of an important 'smart' company using a PowerPoint presentation.	🕒 50 minutes	Page 16
5	<b>SMART SHOWERS:</b> in this activity students will do calculations where they can figure out how many litres of water they use per minute, and create a scoreboard to gamify the way they look at water usage at home.	🕒 40 minutes	Page 20
6	<b>FIGHTING HUNGER:</b> in this activity students learn about the fight against world hunger, and make their own version of a low-cost, highly nutritious food. They can experiment with the ratios to make the perfect recipe.	🕒 60 minutes	Page 23
7	<b>GET CREST DISCOVERY AWARDS:</b> By completing activities in this resource pack, your STEM Club members can get a CREST Discovery Award.		Page 28
8	<b>SKILLS BUILDER FRAMEWORK:</b> Introduction to the Framework that uses essential employability skills to develop student learning across four key domains: interpersonal, self-management, creative problem-solving and communication skills.		Page 29