

# Smart Living

Voice recognition and AI mean we can now talk and ask questions in any language, rather than typing in a search box, to control our homes and devices.

Just one example of how **engineers** are **changing the way we live**.

[www.tomorrowsengineers.org.uk](http://www.tomorrowsengineers.org.uk)

## Did you know?

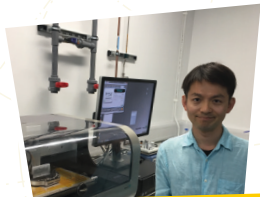
Developments in artificial intelligence (AI), speech analytics and robotics mean that 'pet-bots', which owners will be able to emotionally connect with, may be available in the next decade.



# Electronics

**Engineers develop the latest electronic devices:**

- ➡ Smart clothing with inbuilt sensors that can monitor health
- ➡ Faster recharging mobile phones with more features and computing power
- ➡ Virtual reality games that can be played in 3D
- ➡ 3D printed objects in a wide variety of materials, including living tissue



Philex, Electrical Engineer

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story and  
others here**



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**Important subjects for engineering:**

- Maths
- Physics



**Useful subjects:**

- Design and Technology
- Computing
- Electronics



As the possibilities of AI increase, engineers are playing a crucial role in inventing new applications.

**Imagine you're an engineer...**

What device or app would you invent to make your life easier?

**You could help engineer the next smart solution.**

# Future Lifesavers

Tomorrow's  
Engineers

Surgical robots and **advances in virtual reality** are allowing surgeons to perform operations remotely.

Just one example of how **engineers** are improving healthcare.

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Did you know?

The world's first 3D-printed skull transplant was recently performed by Dutch surgeons.



# Medicine

**Engineers are inventing many revolutionary products in healthcare:**



Artificial limbs which use muscle sensors connected to the user's skin



Wearable technology that monitors the patient's vital signs



Smart glasses



3D bio-printed human organs and bones



Louise, Rehabilitation Engineer

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**Important subjects for engineering:**

- Maths
- Physics



**Useful subjects:**

- Chemistry and/or Biology
- Computing
- Design and Technology



With an ageing population, society is facing many future healthcare challenges.

**Imagine you're an engineer...**

What would you invent to help people stay mobile as they age?

**You could engineer the next life-saving solution.**

# Sunshine and Showers

Tomorrow's  
Engineers

Solar powered water pumps are **transforming lives around the world**, allowing communities to access safe drinking water and water their crops.

Just one example of how **technology** is used in increasingly creative ways **to harness the earth's natural resources** to generate electricity.

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## Did you know?

Enough energy from the sun falls on the earth in one hour to power everyone in the world for one year.



# Power

## Engineers create new ways to generate electricity:

- ➡ Tidal power technology which captures energy from the sea
- ➡ Pedal power from exercise bikes which provides lighting for buildings
- ➡ Smaller, safer and cheaper nuclear reactors
- ➡ Ground source heat pumps which use the constant temperature of the earth to heat and cool homes



Joe, Operations Engineer

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story and  
others here

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## Useful subjects:

- Chemistry
- Design and Technology
- Computing



As the global population grows, our demand for power increases, meaning we have to find new, sustainable ways to generate electricity.

## Imagine you're an engineer...

Can you come up with a creative way of charging up an electronic device you use?

You could engineer a new way of powering our daily lives, while protecting the planet.

# Sporting Success

Tomorrow's  
Engineers

**Computers and sensors** make it easy to study a sports professional's technique and to **develop unique, personalised equipment** using 3D design software.

Just one example of how **engineers** are helping us keep fit, have fun and **achieve world recognition**.

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## Did you know?

Wimbledon has a network of state-of-the-art cameras spread around the courts, which capture 60 high-resolution images per second. At least 5 'Hawk Eye' cameras cover every ball bounce.



# Sport

**Engineers design and manufacture materials and equipment that help improve sporting performance:**

- 3D printed shoes that suit weather conditions and match the athlete's physique
- Composite materials used to build super lightweight bicycles for triathlons
- Video Assistant Referees (VAR) to help make informed decisions on and off the field
- Bespoke carbon fibre running blades for Paralympian sprinters



James, Sports Engineer

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**Important subjects for engineering:**

- Maths
- Physics



**Useful subjects:**

- Biology and/or Chemistry
- Design and Technology
- Computing



Advances in technology are allowing us to watch and play sport like never before.

**Imagine you're an engineer...**

What would you design to help Olympians and Paralympians perform their best?

**You could engineer the next innovation in your favourite sport.**



## On the Move

It's been over 5,000 years since the wheel was invented. Since then, travel by road, water, rail and air has brought us closer together.

Just one example of how **engineers** are making it **easier for people to get around**.

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### Did you know?

Engineers used the soil dug out during construction of new London Underground tube lines to build an island off the coast of Essex, which doubles as a nature reserve and a defence against floods.



# Transport

**Engineers design, create and maintain our transport systems. They also:**

- ➞ Connect isolated communities to healthcare, schools and markets
- ➞ Plan airports based on factors such as wind speed, noise pollution and environmental impact
- ➞ Think up solutions for cyclists and cars to safely share the road
- ➞ Innovate new types of transport, from skateboards to spaceships.



Kamlah, Traffic Control Engineer

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**Important subjects for engineering:**

- Maths
- Physics



**Useful subjects:**

- Chemistry and/or Geography
- Design and Technology
- Computing



As our cities become overcrowded, we need to find new ways to help people get around as quickly as possible to take the pressure off the tube, trains, trams and buses.

**Imagine you're an engineer...**

What would your transport solution be for your nearest town or city?

You could help engineer a new way to help people move safely and swiftly from A to B.

# Space Explorers

Tomorrow's  
Engineers

**Satellites are changing our view of the earth.** They aid communications, monitor weather and provide navigation services.

Just one example of how **engineers** are **helping us better understand our planet** and the universe.

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## Did you know?

By 2021 space tourists will be able to stay in a space hotel. Guests will experience zero gravity and witness on average 16 sunrises and sunsets a day.



# Space

**Engineers design equipment to help us explore our own planet and the rest of the universe:**



Weather satellites to help measure the rate at which ice is melting around the world



Satellite systems used in search and rescue missions, which help locate people in remote and dangerous places



Rovers to explore the surfaces of planets



Space telescopes to find planets outside our solar system



Hanna, Engineer and Space Scientist

**See my story and others here**



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**Important subjects for engineering:**

- Maths
- Physics



**Useful subjects:**

- Design and Technology
- Computing
- Chemistry



Space agencies are planning to send people to the Moon and Mars in the coming decades.

**Imagine you're an engineer...**

What would you design to help people live on Mars?

**You could engineer the first crewed mission to Mars.**

# Water Works

Only 1% of the world's water can be used by people, but there's **enough for all of us** if it's **captured, treated and distributed** efficiently.

Just one example of how **engineers** are **providing the essentials** we need to survive.

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## Did you know?

Each person in developed countries uses roughly 450 litres of water a day. That's the equivalent of 7 full bath tubs.



# Water

**Engineers design systems for managing water that:**

- ➡ Capture tidal energy
- ➡ Clean up plastic waste from our oceans
- ➡ Reduce the risk of flooding
- ➡ Deal with wastewater and sewage



Drew, Energy Consultant

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- Computing



Hundreds of thousands of children die every year due to a lack of safe drinking water and poor sanitation, and many more are made homeless or killed by floods.

**Imagine you're an engineer...**

How would you help people in remote villages get clean water and stay safe?

**You could help engineer a future in which everyone has water that is safe to drink.**

# Hair-Raising

From **designing hair straighteners** and **make-up apps** to creating formulas for **personalised shampoo**, there is science and engineering behind helping us look and feel good, whatever the occasion.

Just one example of how **engineers** are **improving** the **products** we use every day.

[www.tomorrowsengineers.org.uk](http://www.tomorrowsengineers.org.uk)

## Did you know?

Smart hairbrushes help us take better care of our hair. Conductive sensors identify frizz, dryness and wet ends, with haptic feedback signalling brushing force.

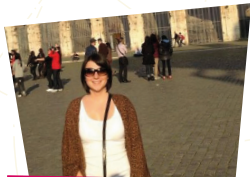




# Products

**Engineers develop and manufacture cutting edge health, beauty and lifestyle products:**

- ➞ Virtual hair and make-up apps
- ➞ Sustainable packaging
- ➞ 3D printed cosmetics
- ➞ Smart mirrors that offer a daily analysis of your skin



Jasmine, Process  
Development Manager

**See my  
story and  
others here**



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**Important subjects for engineering:**

- Maths
- Physics and/or Chemistry
- 



**Useful subjects:**

- Design and Technology
- Computing



Our desire to look and smell good has consequences for the environment, as the pots, razors, bottles and tubes we throw away often end up in landfill.

**Imagine you're an engineer...**

What cosmetic product would you design to help people look and feel their best, without impacting on the environment?

You could help engineer the next generation of eco-friendly products.