

TECNOLOGY IN SPORT

Helping Humans Perform At Their Peak

INTRODUCTION

In this activity you will:

- Find out about the history of technology in sport
- Explore different types of technology and engineering in sport
- Design your own sports tech product for the future

Who this activity is for?

• This activity is aimed at anyone who would like to explore an expanding area of engineering

F

• It is mainly aimed at students in years 9 and 10, but can also be used by year 11 students

You will need:

- Internet access that enables you to watch video content
- Pen and paper to note down your thoughts and ideas during the activities
- It will also be useful to have a pencil, some coloured pens/pencils and some large paper, but you can still complete the activity without.



Q

WATCH

Engineers solve human problems. They apply science, technology and mathematics to design and build useful objects and systems like roads, bridges and aircraft.

F.

Watch this short video about Sam Fraser, an engineer working in an area that may surprise you: <u>Sam Fraser - Sports Engineer</u>





F.

- Is this what you expected an engineer to do?
- Did you know you can study Sport Engineering and Sport Technology at university?
- But what is Sport Engineering and Technology? And what's the point?



Here are some more examples of technology and engineering in sport:

- Goal Line Technology in football confirms whether the ball has crossed the goal line or not
- Instant Replay helps the referee make the right decision in sports like basketball
- Prosthetic legs and adapted wheelchairs enable more people to play sport
 - 1. Can you think of any other sports technology and engineering examples?
 - 2. How has sports technology and engineering improved sport?



3. What do you think a Professor of Sports Engineering does?



Q



Watch <u>A Brief History of Sport</u> (and any other videos in the 6-episode series you are interested in).

Compare your answers with the video.

THINK - SUGGESTED ANSWERS

1. Can you think of any other sports technology and engineering examples?

F.

Sports engineering technology mentioned in the video:

- Carbon fibre tennis rackets
- Aerodynamic bicycles
- Automated timing systems
- Telephoto lens
- High speed digital cameras

THINK - SUGGESTED ANSWERS

2. How has sports technology and engineering improved sport?

Some suggested answers:

- Improved athletes' performance e.g. use of performance data in coaching
- Made sport fairer e.g. instant replay helps referees make more accurate decisions
- Made sport safer with better equipment e.g. smart helmets protect against concussion
- Made playing sport accessible to more people e.g. wheelchair sports, carbon fibre running blades

F.

• Made sport a better experience for the spectator e.g. high definition score boards

THINK - SUGGESTED ANSWERS

3. What does a Professor of Sports Engineering do?

A Professor of Sports Engineering is an expert who studies how we use our scientific understanding

F.

of sport to improve athletes' performance.



Q

DIG DEEPER

1. What's the point?

Pick a sports engineering technology either from your favourite sport or choose one mentioned in the video.

Research these questions:

1. What difference does it make to the sport?

Think about performance, safety, fairness, accessibility etc.

- 2. What are the benefits (if any) for the sportswoman/man?
- 3. What are the benefits (if any) for the spectators?



2. Is it cheating?

In the video Professor Steve Haake tells us 'sport and technology have been linked since the very earliest Olympic Games more than 2,000 years ago'.

F.

- Do you think using technology in sport is always fair?
- Is it ever cheating?



DESIGN A NEW SPORTS TECH PRODUCT

Design a new tech product that will be used in your favourite sport in 2035. You will be following the

Design Engineering process called STEPS that real engineers use, shown below:



To help you with the first two steps – Discover and Define – we've included an example on the next page...

F.

Q

EXAMPLE OF A NEW SPORTS TECH PRODUCT

This example uses a problem in sprinting from 100 years ago, before starting blocks were designed.

In the 1920s athletes dug holes in the dirt of the track so they had something to push off against and so their feet wouldn't slip at the start of the race.



Ullstein bild / Getty Images



F.

Starting blocks were patented in 1935 and officially used at the start of sprint races from 1937.

STEP 1: DISCOVER

- Choose a sport and brainstorm possible problems and opportunities for improvement.
- Use your own and your family/friends' experiences as both players and spectators.



Problems

• Creates an unfair start because the runners who dug the best holes got the best start. This could influence the result of the race.

• Pushing off from a small hole in the ground doesn't give a powerful start from which it is easy to accelerate. This impacted athletes' performance.

Ullstein bild / Getty Images

STEP 2: DEFINE

• Pick one problem in your chosen sport. What problem are you solving?

Is your aim to make the sport safer, fairer, more accessible for players, or to improve performance? Or is your objective to make the sport a better experience for the spectators? Is it a combination of these aims? Or a different aim?

• Write a short design brief

Example

1920s sprinters

• Problem – the start of sprint races where athletes dug small holes in the track for their feet.

• The aim is to make the start of the race fair for everyone. So the race is a contest of equals, not based on who can dig the best hole.

Design brief: Design a device to give everyone an equal start to a race.



STEP 3: DEVELOP

• Brainstorm solutions/ideas, focussing on the design brief

• Feel free to do lots of sketching!



F

STEP 4: DELIVER

- Design a final sketch (or prototype out of cardboard if you have the materials) of your product
- Create a poster to explain:

The problem the product solves How it will work



• Practise a 2-minute pitch of your product and deliver to family or film it.

Practise a 2-minute pitch of your product and deliver to family or film it.



This activity is personal to you, but if you would like to share your poster or 2-minute pitch, email your picture or video to **future.quest@uwe.ac.uk** and we may share it on our Instagram for others to see. Or you could share it on Instagram and tag us (@Future_Quest_)



Q

Here are some Sport Technology and Engineering courses you can study at university

F.

Q

<u>Sports Design Engineering – University of Strathclyde</u>

Sports Technology - Loughborough University

<u>Sport Engineering – Nottingham Trent University</u>



WWW.FUTUREQUEST.ORG.UK | FUTURE.QUEST@UWE.AC.UK

