

Presentation Notes

Slide One



Shape the future by solving problems

Pick a problem, search for a solution, and get involved

Where could engineering take you?

1.732 $\Sigma F = ma$ Fun Data

Big Idea

Learning School play

STEM

Engineering Australia | STEM PUTTING THE E IN STEM

Slide Two



Where could engineering take you?

Introduce yourself and what you do. Also if you feel comfortable include a little personal trait ie: I also sell homemade products at markets, I used to play saxophone in a band, something interesting about yourself.

Slide Three

What could **YOU** be?

- Planet cleaner
- Star maker
- Cancer crusher
- Robot ruler
- Sustainability hero
- Material manipulator
- Time traveller

Problem Solver



HIGH SCHOOL

Your aim: inspire kids about the big-picture of why engineering matters, and how engineers shape the future...without using the word 'engineering' in this slide.

Choose an application of engineering, and describe the person who does this without saying 'engineer':

Improving the environment

Curing cancer

Building roads, bridges and skyscrapers

Inventing a sustainable future

How do you get there? Choosing the right foundations at school.

What sets you up to be a problem solver? A strong technical/science background.

Slide Four

Shape the future



Pick a problem.

Find a solution.

Get involved.



HIGH SCHOOL

Your aim: connect engineering disciplines with answers to real-life problems that could shape the future.

Part 1: What are the boundary-pushing ideas in your area of engineering?
These ideas are brought to you by problem solving.

Part 2: Think of a practical problem solving example that relates to:

Electrical engineering
Mechanical engineering
Chemical engineering
Civil engineering

The takeaway - math, science and engineering subjects are the pathway to solving these problems.

Slide Five



Your aim: illustrate how engineering touches nearly every aspect of modern-day life.

Using a 'day-in-the-life' approach, what things have you done so far today that are thanks to engineering?

Examples:

Using Wi-Fi
Roadworks
Electric vehicles
GPS

<1:04 video>

The takeaway - engineers contribute to almost every aspect of our lives.

Slide Six

8 reasons to consider engineering

- 1. Create and shape the future
- 2. Make great money
- 3. Get a job straight after uni
- 4. Work in any industry, anywhere
- 5. Never stop learning
- 6. Beat the stereotypes
- 7. Travel the world
- 8. Solve problems all day, every day

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HIGH SCHOOL

Your aim: put engineering into a context that the students can picture themselves in.

Game time - the aim is for students to start sitting down, and stand up if they can answer yes to a statement.

Test statement: Your hair is brown <there will always be one clown that stands up at the wrong time, have a laugh if you get one of these!>

Real statements:

When you start something, you want to finish it.

You want to contribute to making the world better.

You want the freedom to work anywhere in the world.

You question things - you've been in trouble for asking 'why' too many times.

You like problems that have a definite answer (like 'what is 2+2', rather than 'describe a perfect lunch'.)

You had a thing for LEGO or Minecraft.

You want to earn a good living.

At the end of the game, hopefully all students are standing - and these are future potential engineers.

Read through the 8 reasons to consider engineering, adding context/questions aimed at these students.

The takeaway - engineering is a career path that may suit you.

Slide Seven

More than lab coats and geek glasses

Makeup = chemical engineer
Music = audio engineer
Cars = mechanical engineer
VFX + Animation = electrical engineer

HIGH SCHOOL

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Your aim: point out engineering careers that transcend stereotypes. Feel free to insert your own examples!

Breaking the stereotypes - consider what interests a teenager might have, and how they might relate to engineering.

Makeup (chemical engineering)

Music (audio engineering)

Cars (mechanical engineering)

VFX + Animation (electrical engineering): "Are you a wiz at maths and science and are you also in awe of films with great VFX and animation? Maybe you can make the next Oscar winning animated film, like Guy Griffiths."

<Click on Lego Movie image to show Guy Griffiths video>

The takeaway - your interest can easily translate into a career in engineering.

Slide Eight

What makes a good engineer?



Creativity



Critical thinking



Collaboration



Communication

HIGH SCHOOL

Your aim: help the students understand the 'soft skills' that make a great engineer.

Optional question/answer activity (if you've got a warm audience!) - what do you think would make a good problem solver?

Direct students towards answers like:

Imagination

Communicating your thoughts on paper/to people

Sketching

Research

Detail-orientation

Critical thinking

All of these things also make a great engineer.

The takeaway - engineering is more than just technical skill.

Slide Nine

Choose your own adventure

HIGH SCHOOL + UNI

- Science (Physics + Chemistry) + Math
- Creative/communication subjects, such as English

ALTERNATIVE PATHWAYS

- Enabling courses
- Other related courses at university
- TAFE/colleges/PIBT/V.E.T.
- Defence

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Your aim: bust the myth that getting a high ATAR score and going to university is the only way to become an engineer.

Time to share - how did you get to be where you are? Traditional study, a gap year, alternative entry pathways?

Outline the ways to get to a graduate engineer position:

Straight from school

Via enabling courses

Transferring from a related course

TAFE engineering-based courses

Defence traineeships

The takeaway - if you want it, there are ways to make it a reality.

Slide Ten

You can't spell TEAM without...



T

Tradespeople,
technicians,
technologists

E

Engineers

A

Associates

M

Me!

HIGH SCHOOL

Your aim: widen perceptions of who's in a team of engineers.

What are the different roles in a team of engineers?

Explain what the difference is between:

Tradespeople

Technicians/technologists

Engineers

Associates

Finally, what role do you play as an engineer?

The takeaway - even if you're not an engineer, working alongside them is a great way to spend a career.

Slide Eleven



Your aim: introduce the video and generate some interaction.

Felicity Furey is working to change the stereotypes in engineering, alongside engineers like Renee. Let's take a look...

<4:20 video>

Slide Twelve



Your aim: introduce the video and generate some interaction.

Building a Formula 1 car sounds like a lot of work, right? Well, a bunch of people your age have done exactly that, thanks to the F1 in Schools challenge. A team from Australia won the competition in 2018 - let's take a look.

<3:19 video>

Slide Thirteen

Engineering groups and events



Powerofengineering.org



rea.org.au/f1-in-schools



starportal.edu.au



dayofstem.com.au

HIGH SCHOOL

Wrap-up time - discuss how students can get involved with engineering:

Do you want to explore engineering? There are plenty of ways to get involved.

Here are some projects that you can get involved with through school:

Power of Engineering

The Power of Engineering project holds one-day events for Year 9 and 10 students around Australia.

F1 in Schools

This is a worldwide competition with 17,000 students racing to develop the fastest miniature Formula 1 car.

If you want to explore engineering on your own:

STARportal

STARportal is full of free and low-cost STEM workshops and activities that are available around Australia. Why not look at some of these during your next holidays?

Day of STEM

A free online resource that lets you experience what a day in the life of a STEM career might look like.

There's plenty out there, but what can you do now?

- Start thinking about the problems you want to solve
- There are programs and grants out there, so get involved now
- Keep your head in the game - turn up, every day
- What's your passion? Learn all about it

Leave them with something inspirational they can do today to move towards a future as an engineer.

Final Slide

