Tech innovation and entrepreneurship

Age range: 14-19

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Session overview

Time	Key learning outcomes	Resources
25 mins	By the end of this lesson students will be able to: • Understand what tech innovation is and what it means to be innovative. • Recognise the key skills that are needed to be innovative through tech. • Understand how innovation will shape their world in the future. • Identify the importance of making a business digital and the benefits of this.	• Tech innovation and entrepreneurship presentation slides. • Tech innovation and entrepreneurship film.

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This lesson has been created in collaboration with Barclays Eagle Labs, funded by the UK Government, as part of the Department of Science, Innovation and Technology (DSIT) Digital Growth Grant (DGG). The DGG aims to spur sustained and diverse growth within the UK tech sector. This lesson can be used as part of the **Enterprise project challenge** or separately, to approach the topics of entrepreneurship, using technology to be innovative and incorporating sustainability into business.

**Funded by
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This lesson will introduce the topic of driving innovation through technology in business, why it's important for entrepreneurs, the key skills that are needed to be innovative with tech and examples of real-world technological innovation from entrepreneurs. Moreover, it aims to show students that it is important for developing technology businesses in the UK and growing the UK economy. Students will also learn about cyber security and what to look out for when using digital technology in a business.
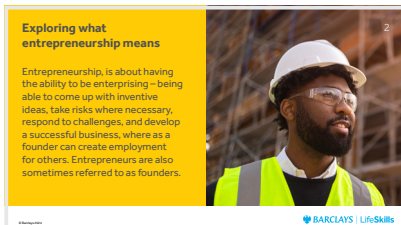
Contents

Activity one

What is entrepreneurship?

1. Exploring what entrepreneurship means

- Some students will have an idea of what entrepreneurship means, but if they don't then this introduction activity can be used to help give a foundation for them to build upon.

- Start this activity by asking your class:

What do you think an Entrepreneur does?

- Ask students, in pairs, to write down what they think of when they hear this term. You can prompt the class by asking them to think of products or people they have seen or heard about from TV, social media or past learning.

- Next, show **slide 2** to share the definition below with your students:

Entrepreneurship, is about having the ability to be enterprising – being able to come up with inventive ideas, take risks where necessary, respond to challenges, and develop a successful business, where as a founder can create employment for others. Entrepreneurs are also sometimes referred to as founders.

Extension

Ask students to reflect on real life examples of entrepreneurs they may know and why these people have been successful. This presents an opportunity to discuss entrepreneur traits ahead of activity two.

Your students may suggest people such as Sir Richard Branson, Sir James Dyson or some of the entrepreneurs from Dragons Den but to help challenge stereotypes you can show them founders such as Omari McQueen (Dipalicious), Pamela Aculey (Just Like Me Books), and Oana Jinga (Dexory).

Activity two

Understanding tech innovation

1. Tech innovation vs innovation
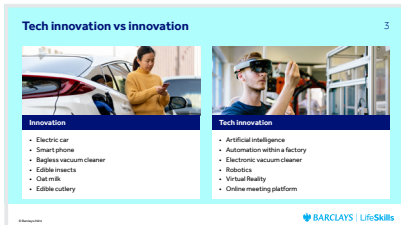
- This activity will help to engage students with the use of real life examples to prompt responses on their interpretation of what innovation means to them. In addition, it will introduce tech innovation and how this differs from innovation.

- Show **slide 3**, which highlights an example for both innovation and tech innovation. In pairs, ask your students to discuss what these two key terms mean and the differences. Taking it in turns, ask them to feedback to the rest of the class.

Innovation	Tech innovation
• Electric car	• Artificial intelligence
• Smart phone	• Automation within a factory
• Bagless vacuum cleaner	• Electronic vacuum cleaner
• Edible insects	• Robotics
• Oat milk	• Virtual Reality
• Edible cutlery	• Online meeting platform

- Guide students on the subtle differences between the two: innovation is a new idea that improves one's quality of life compared to tech innovation which is a new idea (product or process) that uses technology to improve efficiency of a particular activity or task.

- Explain that tech innovation, by its nature, can create a greater competitive advantage for businesses as its aim is to solve problems and develop new products that are not available in the market.

- Click to reveal further examples for each type of innovation and explore any which were not previously discussed.

Activity two

Understanding tech innovation (cont'd)

2. Developing tech innovation
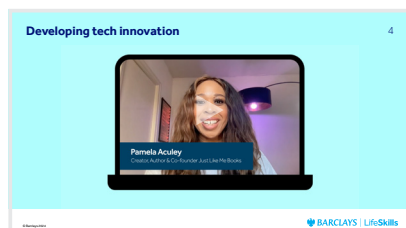
- Next, show students the Just Like Me Books video on **slide 4**. It features Pamela Aculey, an entrepreneur who created a series of picture books where her son of mixed heritage who is autistic could see himself represented. She realised augmented reality could help bring the stories to life for neurodivergent children, by using the technology to make the books more engaging and inclusive.

- Once you have finished watching the film ask your students:

How did Pamela use technology to make Just Like Me books more engaging?

What ways did Pamela's use of technology make the books more inclusive?

Why do you think Pamela's use of technology has been successful?

What are the lessons from her story about using technology in a business idea?
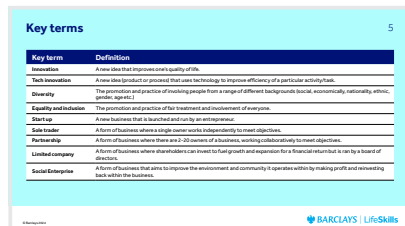
Extension

Ask students to think of any benefits of a business being technologically innovative. Then ask your students:

- **How will this improve business success in the long term?**
  Responses could include: because it can help businesses to offer unique products and services which helps gives advantage over competitors; tech innovation can support communications; it can help businesses operate smarter; help improve brand recognition; provide better customer experiences; and improve the way systems and data are managed and analysed all helping to increase profit.

- **What would happen to a business that lacks innovation?**
  Responses could include: that it would prevent a business to stay current and up to date, meaning that it could fall behind competitors.

Activity two

Understanding tech innovation (cont'd)

3. Reflect on key terms

- Show the terms on **slide 5** to the class. As a class, discuss the key terms related to starting a business and what they think some of them mean. Click to share the full definitions with them.

Key term	Definition
Innovation	A new idea that improves one's quality of life.
Tech innovation	A new idea (product or process) that uses technology to improve efficiency of a particular activity/task.
Diversity	The promotion and practice of involving people from a range of different backgrounds (social, economically, nationality, ethnic, gender, age etc.)
Equality and inclusion	The promotion and practice of fair treatment and involvement of everyone.
Start up	A new business that is launched and run by an entrepreneur.
Sole trader	A form of business where a single owner works independently to meet objectives.
Partnership	A form of business where there are 2-20 owners of a business, working collaboratively to meet objectives.
Limited company	A form of business where shareholders can invest to fuel growth and expansion for a financial return but is ran by a board of directors.
Social Enterprise	A form of business that aims to improve the environment and community it operates within by making profit and reinvesting back within the business.

Activity two

Understanding tech innovation (cont'd)

4. The importance of intellectual property
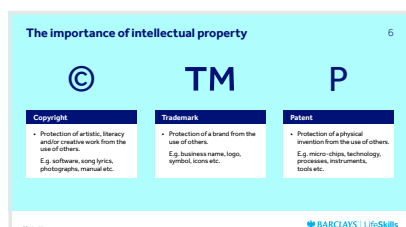
- This activity will introduce students to intellectual property (IP) and why it is important for an entrepreneur.

- Students may have some idea of the types of intellectual property, but you can help clarify the different types and the meaning of each one.

- Show the three types of intellectual property (copyright, trademark and patent) on **slide 6**. Briefly ask students what they think each one means. Click to show them the definitions.

Copyright	Trademark	Patent
Protection of artistic, literacy and/or creative work from the use of others.	Protection of a brand from the use of others.	Protection of a physical invention from the use of others.
E.g. software, song lyrics, photographs, manual etc.	E.g. business name, logo, symbol, icons etc.	E.g. micro-chips, technology, processes, instruments, tools etc.

- Highlight that intellectual property is an important part of entrepreneurship. Ask the class for some suggestions of what could happen without it? Responses could look at how a new business idea would be at risk of being copied by other businesses, who can then profit from someone else's idea.

- By having intellectual property, it grants legal and exclusive rights to the entrepreneur to be the sole owner of new, creative and innovative business ideas.

- This can help to develop their brand, their business uniqueness and their appeal to their customers.

Activity three

Activity three: Exploring cyber security

1. The rise of cyber attacks
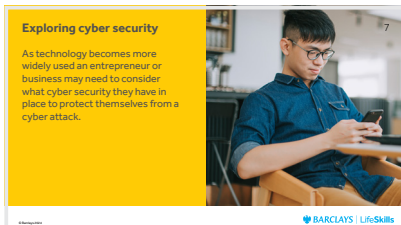
- Show **slide 7**. Explain to students that as technology becomes more widely used an entrepreneur or business may need to consider what cyber security they have in place to protect themselves from a cyber attack.

> **What do you think a cyber attack is?**
>
> **How do you think this affects businesses?**

- Show students the definition of a cyber attack on **slide 8**.

- Show them **slide 9** and ask students if they were aware how often cyber criminals target UK businesses or if they had seen anything about cyber crime or cyber attacks in the news before?

- Now challenge students to think about how entrepreneurs and businesses can protect themselves from cyber attacks. They can do this in pairs or groups.

- Then share some of the possible ways that they can help minimise the risk of cyber attacks on **slide 10**. Ask for any additional measures which your students may have discussed, outlining any which might be missing from the list below.

Firewall	ID&V (Identity and verification)	Authentication
Dedicated IT support teams	Updating security systems and software regularly	Data encryption
Regular staff training	Strengthen access or permission of users	Antivirus software

> **What measures can be put in place to protect businesses (in addition to us personally) to prevent cyber-attacks?**
>
> - Installing security and identity management software.
>
> - Ensuring that you have data protection measures in place should staff access business data on personal devices.
>
> - Working with security consultants to regularly check that your security set up is fit for purpose.
>
> - Be aware of the risks when using public Wi-Fi.
>
> - Keeping passwords safe.
>
> - Understanding the latest cyber security scams and educating your teams and customers for example not clicking on unknown links in emails and texts which could lead to a malware attack.
>
> - Creating a culture where staff understand the importance of data security.

Activity three

Activity three: Exploring cyber security (cont'd)

- Ask students: Why do you think it's important that businesses have proper cyber security in place? What measures can be put in place to protect businesses (in addition to us personally) to prevent cyber-attacks? Use the example answers below to help students if they need:

Why do you think it's important that businesses have proper cyber security in place?

- To stop cyber criminals accessing their business network.
- To prevent hackers from accessing business data or customer information.
- To prevent competitors from hacking their systems to access competitive intelligence.
- To secure business and customer data from state sanctioned attacks from other countries.
- To protect the businesses reputation and a data breach can mean that customers loose trust in the brand.
- To prevent against hefty fines for data breaches.

- Explain how startups are tackling cyber attacks and taking on cyber security challenges by using skills such as creativity and problem solving. Also explain that an important part of tackling cyber security challenges is about increasing education and awareness on cyber security to reduce human error occurring.

Extension

If you have technology available to support, ask students to spend some time looking through the established businesses start-ups in the **Barclays Eagle Labs Cyber Bridge** cohort for more inspiration, to identify the challenges around Cyber Security and how they might solve these issues.

Summary

- Summarise by reinforcing how important it is for entrepreneurs to make a business technologically innovative to help aid long-term success.

- Recap the benefits for businesses including brand development and recognition, keeping up with trends, being different from rival firms, improved communications, stronger data safety and security and increased productivity.

- Reiterate the key skills and traits from Pamela's film which has had a positive impact on her business. Highlight that it's important for entrepreneurs to have a range of core transferable skills, alongside an appetite to make a business digital in the modern world.

Further support

- If you have time within the session or as a follow up, you can signpost students to **How to protect a business idea** for extended learning on intellectual property. Alternatively, they can explore the **Barclays Eagle Labs Cyber Bridge Programme** to find out more about how Barclays Eagle Labs in collaboration with **CodeBase** are uniting the UK's biggest firms, leading businesses and promising startups to accelerate cyber security innovation.

- If supporting technology is available you could set your students, as an independent activity, the Barclays Digital Wings module **How to keep your business cyber secure** around keeping a business safe in a digital world. Students would be required to sign up for a free account.

- Support your students develop core transferable skills to develop an enterprising mindset with the **Staying positive (resilience) lesson** (11-19) and the **Problem solving lesson** (11-19).

- If your class would benefit from learning more around financial risks and fraud these resources can help: **Financial survival skills** (16-19) and **Financial risk and security** (14-16).