

Face the Future

Lesson Overview		Learning Outcomes
<p>Students explore different authentication methods to gain access to a digital system. They will discuss how some are more secure than others. This lesson focuses on facial recognition technology (FRT). Students practice making facial signatures to identify people in images. FRT has many applications and benefits. However, there are some ethical concerns including equity, accuracy, and bias.</p>		<ul style="list-style-type: none"> • Identify three types of authentication. • Create a facial signature using nodal points • Discuss the advantages and disadvantages of facial recognition. <p>Prior Learning:</p> <ul style="list-style-type: none"> • A basic understanding of digital security such as passwords would be helpful.
Lesson Outline		Preparation & Materials
<p>5 mins 10 mins 15 mins 15 mins 10 mins 5 mins</p>	<p>Warm up: Discuss authentication Explain: Facial Recognition Offline: Create facial signatures Discuss: Uses of FRT Video: Concerns of FRT Wrap up: Exit pass reflection</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Teaching Slides <input type="checkbox"/> ABCs of #AI - F is for Facial Recognition <input type="checkbox"/> thispersondoesnotexist.com <input type="checkbox"/> Faces A sheet Faces B sheet <input type="checkbox"/> Tracing paper, rulers & pencils <input type="checkbox"/> "Why cities are banning FRT" video <input type="checkbox"/> Exit passes (Print 4 per page)
Curriculum Links		
<p>Concepts:</p> <ul style="list-style-type: none"> • Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts. • Compare various security measures, considering tradeoffs between the usability and security of a computing system. 		<p>Supports:</p> <ul style="list-style-type: none"> • US: 3A-NI-06, 07 • UK: KS4 AQA GCSE • NZ: DDD0 P03 • AU: ACTDIK034
Vocab	Differentiation & More	
<p>Artificial Intelligence (AI) - Systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect.</p> <p>Authentication - The process of determining whether someone or something is who or what it says it is.</p> <p>Biometrics - Body measurements and calculations related to human characteristics.</p> <p>Deep Learning - A type of computer technology that helps machines learn and understand things by mimicking the way our brains work with interconnected layers of information.</p> <p>FRT - Stands for Facial Recognition Technology.</p> <p>Nodal Point - A specific facial feature or landmark on a person's face.</p>	<p>Support: Groups that are struggling to come up with applications of FRT should read this for ideas.</p> <p>Enrichment: You could extend this learning by having a follow up lesson(s) with a writing activity, or even debate, on whether students think FRT is a good idea or not.</p> <p>There is extended reading here too.</p>	

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Time	Section	Instructions
5 mins	Warm up	<p>Q: What does authentication mean?</p> <ul style="list-style-type: none"> • A: Determining whether something is real, and whether we are the person we claim to be. • Organizations have to be sure before they grant you access to bank accounts, school folders, emails etc. <p>Explain that there are three ways to authenticate: through something we know, something we have or something that we are physically (also known as biometrics)</p> <ul style="list-style-type: none"> • Q: Ask for examples from students and display slide examples once you've exhausted their ideas. • Q: Ask students to consider which method is the most secure? A: Biometrics. Physical things can get lost/stolen. Things we know can be compromised through hacking or phishing scams. • Q: How can authentication be more secure? A: Two factor authentication (2FA)
10 mins	Video	<ul style="list-style-type: none"> • Play the F is for Facial Recognition video. • Show slides 6 to 10 to explain about AI algorithms and facial recognition. • Slide 10 - Explain that the next task will be creating facial signatures to see if they can be matched to images of people generated from the thispersondoesnotexist.com web page.
15 mins	Offline	<ul style="list-style-type: none"> • Split the students into groups A or B. You can have multiple sets of group A and B depending on numbers. Hand out an A or B sheet. • Students come up with names for their people and write it down on their sheets. Group A writes 5 made up names where it says Person 1 - 5 is called. Group B writes 5 of their own made up names where it says Person 6 - 10 is • Cover each face with tracing paper and use a pencil to plot the 14 nodal points. Join up the lines as per the diagram. • Write the names of the people on the tracing paper. Pass the tracing paper to the other group and they have to work out who the people are and write the names on their faces worksheet where it says "I think Person # is...."
15 mins	Discuss	In groups, discuss examples of where FRT is used. Feedback to the whole class. Use examples on slide 11 if students are stuck. Ask them what the benefits may be or display the second column.
10+ mins	Video	Some people have concerns about the use of FRT. Watch this video . If time allows, facilitate a discussion with the students, exploring concerns they may have.
5 mins	Wrap up	Students complete exit passes (write names on back and hand in as they leave).

Teaching Tips

You may find some additional resources in the [background](#) section.

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Reflect on your WINS

You can use this page to reflect on how the facilitation of this lesson went. Take notes in the box below during the lesson, and then afterwards reflect on your WINS:

- What went **WELL**?
- What could be **IMPROVED**?
- What are your **NEXT STEPS**?

We'd also [love your feedback](#) on how this lesson went!

Notes from lesson

What went WELL?

What could be IMPROVED?

NEXT STEPS?

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Notes for next time