DTiF
Digital Technologies in focus
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AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

CLASSROOM IDEAS: YEARS 3–4

Privacy and security

Students in Years 3–4 should manage their own data when using digital tools online (privacy) and know how to protect the availability, integrity and confidentiality of their data and information, stored and transmitted in digital systems (security). It is an important aspect of Digital Technologies in an ever-changing digital society. We create and consume using digital tools at an increasing rate, so it is important for students to know how to manage their personal data that is stored and shared online, develop an awareness of the associated risks, and know how to protect their work stored in different accounts.

In considering privacy and security, Years 3–4 students question the security of their online data and describe strategies to strengthen their privacy. As a class, compare stored data from a classroom survey, school database, online accounts and photo metadata. Questions to ask students might include:

- What is personal data?
- How and where is data stored online?
- What online data could reveal your identity – maybe where you live, your hobbies, your age?
- Why is it important that our personal data or information is safe when we are online?
- What are some ways we can be safe online?
- What can we do to reduce our digital footprint?
- Who collects our online data and what do they do with it?
- What do positive actions and behaviours look like when engaging with others online?

Image source: Pixabay

Years 3–4 students will learn how to:

- use strategies to help them remember passwords
- identify what personal data is stored and shared in their online accounts
- identify how personal data might be stored, for example in image metadata
- discuss any risks associated with sharing personal data online.

The following activities detail ways in which teachers can reinforce effective protective behaviours in students so that they understand how to secure their online accounts, remain safe online, and ensure their digital footprint is reduced.

Photo forensics

Using images we can find out information about a character or person including location, time of day, weather, who they are with, etc. This information is data that can be collected and shared. In this activity we explore why it is important to understand what personal data or information can be collected from an image, especially when shared online.

Storybook investigation

Using an image from a storybook, explore what information or data you can get from the image. An example, using the story *The Rainbow Fish* by Marcus Pfister (2012) (sample image in Figure 1), could result in the following observations:
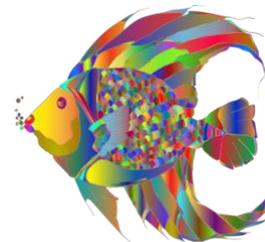
Figure 1: A rainbow fish
Image source: Pixabay

- This fish is colourful and close to the bottom of the sea floor.
- It is daytime as you can see the sun rays coming through the water.
- The fish in the story look like they are passing something to each other.

Family photo investigation

Using a family picture (for example, Figure 2), explore what information you can get from the image.

- It is a family of 5 (Mum, Dad and 3 children).
- It is probably summer because of the clothes they are wearing and are outside at sunset.
- We can explore the location with beach and a lighthouse.
- We could even use the image recognition technology, Google Lens, to try to identify the lighthouse and discover where the location is.

Figure 2: Family picture
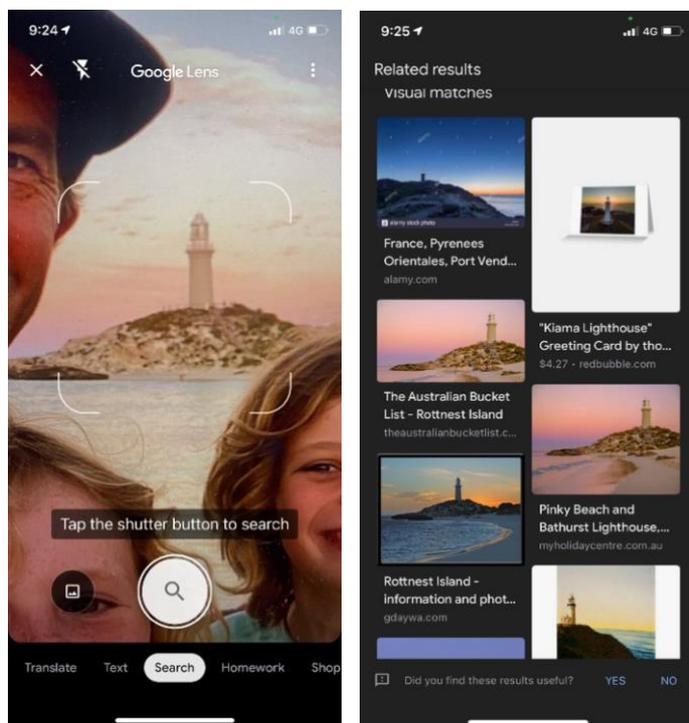
Figures 3 and 4: Using Google Lens on the family picture in Figure 2

Using Google Lens (Figures 3 and 4), the location can be identified as Rottnest Island off the coast of Western Australia.

- Discuss how Google got the information. Ask students to suggest why we might not want our location made public.
- Ask students to discuss what photos their families have shared online and when it is okay to share location data or have recognisable public features in the photo.

Classmates drawing investigation
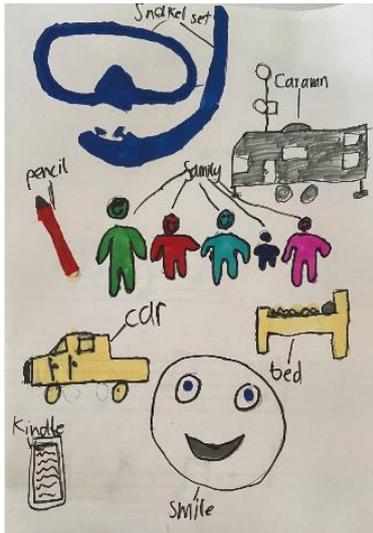
Figure 5: Student drawing

Ask students: 'What can you find out about your classmates?' Get students to draw a picture of themselves, including things that are important to them. Using these drawings, have a class guessing game. For example, using an image such as shown in Figure 5, ask students: 'Can you guess who this picture belongs to?' Students might be able to identify the following attributes:

- This person has a family of 5.
- They like snorkelling and reading their Kindle.
- They might like drawing or writing because of the pencil.
- They most likely have a caravan and like to smile.

Further ideas

Image source: Pixabay

Create a board game based around privacy and security

- Students design a game board where players move around while collecting action cards as they navigate the board. These templates might be useful: printabletemplates.com/graphics/board-game/ Action cards would move players further forward or backward depending on the scenario written on the action card.

Sample action cards:

- You share your password with a friend. Move back 2 spaces.
- You access your school account using a hard-to-guess password – move forward 2 spaces.
- You decide to use your real name in an online game. Move back 2 spaces.
- You ask a friend for permission before using their image on a school poster you are uploading to the class blog. Move forward 2 spaces.

These action cards could be created after the class has explored one or more of the following activities and could be a useful way for students to demonstrate their understanding.

Role-play a situation involving privacy and security

- Explore and demonstrate how techniques can be used to create easy-to-remember and hard-to-guess passwords and why it is important.
- Role-play an 'attacker' (formerly referred to as an 'unethical hacker', someone who steals personal information from others) trying to guess a classmate's password. Have students identify what questions they would ask to find out information about the class member.
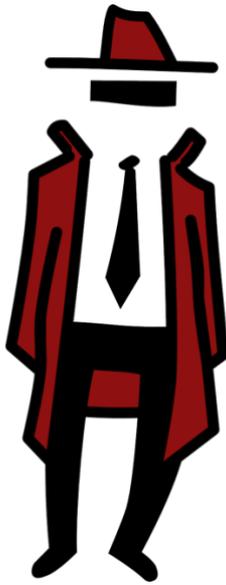
Image source: Pixabay

Guess the password

- Playing a guessing game, for example, 20 questions, with students using clues to see if they can guess simple passwords:
  - What is your favourite colour?
  - What is your friend's name?
  - What is your favourite TV show?
  - What is your favourite song?
  - What year are you in at school?
  - What is your favourite food?
- Discuss what could be done to make the passwords hard to guess but easy to remember for the user.

Spies and detectives

- Attackers who steal personal information from others often know more about their victim than the victim realises. Watch an excerpt of a children's spy movie, for example, *Spy Kids* (2001), *Agent Cody Banks* (2003) or *Spies in Disguise* (2019), and record the ways the heroes went about gathering their information.
- Ask students:
  - How does this relate to security on the internet or in an app?
  - What would a cyber attacker do the same way to get the information they need?
  - What would they do differently?
- Make a digital or hand-drawn poster detailing the difference between an ethical cyber spy (hacker) and an unethical cyber spy (attacker).

Image source: Pixabay

Links to the Australian Curriculum (v8.4)

Table 1: Aspects of the Australian Curriculum: Digital Technologies Years 3–4 (v8.4) which may be addressed depending on the task

Digital Technologies *Achievement standard*	By the end of Year 4, students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. They explain how the same data sets can be represented in different ways. Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes. They collect and manipulate different data when creating information and digital solutions. They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used.
Strand	**Knowledge and understanding** • Representation of data **Processes and production skills** • Collecting, managing and analysing data • Evaluating • Collaborating and managing
Content descriptions	• Identify and explore a range of digital systems with peripheral devices for different purposes, and transmit different types of data (ACTDIK007) • Recognise different types of data and explore how the same data can be represented in different ways (ACTDIK008) • Collect, access and present different types of data using simple software to create information and solve problems (ACTDIP009) • Explain how student solutions and existing information systems meet common personal, school or community needs (ACTDIP012) • Plan, create and communicate ideas and information independently and with others, applying agreed ethical and social protocols (ACTDIP013)

Key concepts	• digital systems • data representation • data collection • data interpretation • interactions • impacts	**Key ideas**	Thinking in Technologies • Systems thinking
		General capabilities	• ICT capability • Literacy • Critical and Creative Thinking • Personal and Social capability • Numeracy • Ethical Understanding
Cross-curriculum priorities	• sustainability	**Learning area or subject connections**	• English • The Arts – Drama • Health and Physical Education

Learning area or subject connection

English

Learning in Technologies places a high priority on accurate and clear communication. The Australian Curriculum: Technologies is supported by and in turn reinforces the learning of literacy skills. Students need to describe objects and events; interpret descriptions; and participate in group discussions.

The Arts – Drama

The Australian Curriculum: Technologies complements The Arts curriculum, particularly in the application of the elements and principles of art/design, and aspects of aesthetics and user experiences which are incorporated into the design processes in Technologies content. The Digital Technologies curriculum focuses on using digital systems (hardware and software) to create solutions. In each of the Arts subjects students can use digital systems to create works in traditional and emerging forms. In The Arts, students may use skills and knowledge learnt through Digital Technologies to develop their arts practice. For example, Drama may be a useful tool for students to role-play scenarios relating to privacy and security.

Health and Physical Education

The Australian Curriculum: Technologies takes account of what students learn in Health and Physical Education. In Digital Technologies, students have an opportunity to apply their knowledge of and skills in privacy, safety (seeking help and engaging respectfully) and giving or denying consent as they expand their communication and collaboration experience into online and networked environments.

Resources

- Australian Curriculum – Curriculum connections – Online safety
  www.australiancurriculum.edu.au/resources/curriculum-connections/portfolios/online-safety
- Australian Curriculum – Curriculum connections – Respect matters
  www.australiancurriculum.edu.au/resources/curriculum-connections/portfolios/respect-matters

Useful links

- Attacker vs Hackers – Two *Very* Different Animals
  www.tripwire.com/state-of-security/vulnerability-management/hackers-vs-attackers-different-animals
- 50 printable board game templates
  printabletemplates.com/graphics/board-game/
- eSafety education
  www.esafety.gov.au/educators
- eSafety education – Classroom resources – Be secure
  www.esafety.gov.au/educators/classroom-resources/be-secure
- eSafety kids – Being safe online
  www.esafety.gov.au/kids/be-an-esafe-kid/being-safe-online

- eSafety kids – Sharing photos and my personal information online
  www.esafety.gov.au/kids/be-an-esafe-kid/sharing-my-personal-information-online
- eSafety kids – Security and privacy for my device
  www.esafety.gov.au/kids/be-an-esafe-kid/security-and-privacy-for-my-device
- Google Be Internet Awesome resources
  beinternetawesome.withgoogle.com/en_us/
- Playing IT safe – Share that Photo
  games.playingitsafe.org.au/
- Common Sense Digital Passport – password protect game
  www.digitalpassport.org/password-protect.html
- ACA (Grok Academy) cyber-sharing cards (PDF download)
  aca.edu.au/resources/cyber-sharing-cards/cyber-sharing-cards.pdf
- NetSmartzKids: Sharing is Caring activity
  www.netsmartzkids.org/activities/
- Hello Ruby: Data Selfie
  www.helloruby.com/play/27

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