Cyber-Savvy: Mastering Online Security in a Click

Learning Outcomes:

U.1 Critically engage, evaluate, and reflect on the implication's cyberspace has for privacy, security and freedom and their associated concepts

U.3 Recognise the interdisciplinary and complex nature of cyberspace and the personal, local, national, and global role it has in our lives

1.1 Consider the variety of uses of cyberspace for different stakeholders e.g., individuals, communities, businesses, and governments etc.

1.4 Consider what data is, and what makes data politically, economically, and personally valuable

1.6 Reflect on the concept of privacy and the value they place on their own privacy

1.10 Investigate how cyber security breaches occur for individuals, institutions, and businesses

2.1 Explore the historical role of passwords and encryption to secure valuable information

2.4 Describe the features of strong passwords or passphrases and identify different strategies or tools for their safety and maintenance

Learning Intentions:

1. Students will explore and identify the different ways that various stakeholders use cyberspace and identify the risks and opportunities associated with its use.
2. Students will examine how different stakeholders' use of cyberspace can align with Sustainable Development Goals (SDGs) and broader societal objectives.
3. Students will explore the concept of data and recognise different types of data along with its economic and personal value.
4. Students will develop practical skills for protecting their privacy, such as creating strong passwords, managing digital footprints, and understanding privacy settings on social media.
5. Students will identify potential risks to privacy, such as data breaches, unauthorised surveillance, and identity theft, and discuss strategies to prevent these threats.
6. Students will examine the balance between privacy and security, reflecting on how these concepts can sometimes conflict.
7. Students will investigate common causes of cybersecurity breaches, such as weak passwords, human error, or inadequate security measures.
8. Students will identify best practices for preventing cybersecurity breaches, including the use of security tools such as firewalls.
9. Students will explore the historical development of passwords and encryption methods, identifying early examples of these techniques.
10. Students will investigate historical cases where encryption was broken or passwords were compromised, understanding the consequences and lessons learned from these incidents.
11. Students will describe the key elements of strong passwords and passphrases, such as length, complexity, use of special characters, and avoidance of common words or patterns.
12. Students will learn about various tools that help with password safety, such as password managers, multi-factor authentication (MFA), and password vaults, understanding how they can enhance security.

Learning Experiences:

- Students will experience completing two-factor authorisation as an added security measure
- Individual student engagement with the Cyberwise 'staying safe online' activities
- Students will successfully use an encoder and decoder to understand this method of protecting private information
- Completion of www.CyberSkillsLesson.com lesson on the history of passwords
- Students will design an informative poster promoting cyber safety which may be displayed school-wide
- Students will examine real-world case studies of significant cybersecurity breaches to understand how they occurred, their impact, and lessons learned from these incidents

Assessment Checks

Formative:
- 'Defend Stirling Castle' lesson at www.Cyberskillslesson.com. A comparative activity in Modern Cyber Security defences and medieval defensive practices.
- Successfully use a two-factor authentication tool on a social media of student's choice.
- Completion of the CyberWise 'Staying Safe Online' resource pack. Students will complete a series of activities relating to password creation and management.
- Peer-to-peer teaching, whereby students can share knowledge with their neighbour, and 'steal' a piece of information they did not have themselves.
- Use of an encoder and decoder from Caesar-cipher: https://cryptii.com/pipes/caesar-cipher.
- Use of scaffolded questioning, tailored to both higher achievers and the weaker learner.

Summative
- Students will create posters highlighting the importance of self-management in cyberspace (Unit can be taught from mid/end of January to coincide with world internet safety day).
- Shared Learning Day: Display of posters and presentation of information.
- Completion of a short MCQ-style Google form to show understanding of material covered within the unit.

Junior Cycle Key Skills:
- *Being numerate:* Seeing patterns, trends and relationships.
- *Working with others:* Developing good relationships and dealing with conflict. Learning with others. Working with others through digital technology.
- *Being literate:* Writing for different purposes. Expressing ideas clearly and accurately.
- *Communicating:* using numbers. Discussing and debating.
- *Being creative:* Imagining. Learning creatively. Stimulating creativity using digital technology.

Focus on Sustainable Development Goals:

SDG 9: Industry, Innovation, and Infrastructure: This goal focuses on building resilient infrastructure and fostering innovation. Ensuring robust cybersecurity practices, including password safety, contributes to creating secure digital infrastructure. Secure systems support innovation by protecting data and maintaining trust in digital technologies.

SDG 16: Peace, Justice, and Strong Institutions: This goal emphasizes promoting peaceful and inclusive societies, providing access to justice, and building strong, accountable institutions. Password safety helps protect sensitive information, reduces cybercrime, and enhances the safety and integrity of digital platforms. A secure online environment supports governance and reduces the risk of exploitation or misuse of personal and institutional data.

Cross-curricular Links:
SPHE: 1.6 Learn how to stay safe in Cyberspace
History: 3.6 explore life and death in medieval times
Mathematics: 4.1 Generating arithmetic expressions from repeating patterns
Geography: 2.2 evaluate the environmental, economic, and social consequences of rock exploitation and energy resources

Link to CBAs:

Geography CBA 1: Geography in the News
        - Colonial pipeline cyber attack
https://www.economist.com/united-states/2021/05/13/a-cyber-attack-exposes-risks-to-americas-energy-infrastructure