Technology Education Key Learning Area
Curriculum Framework of National Security Education (2025)

Introduction

This Curriculum Framework[1] illustrates in tabular form how learning in Technology Education KLA can be connected to related learning elements of national security education to facilitate the planning of the learning content of national security education in schools. Schools should integrate national security education into the curriculum planning and learning and teaching of this Key Learning Area through "organic integration", "natural connection", "diversified strategies", "mutual coordination", "learning within and beyond the classroom" and "whole-school participation". In addition, schools should also refer to the *Curriculum Framework of National Security Education in Hong Kong (2025)* and other relevant curriculum documents to implement national security education more effectively.

1. Overall Teaching Foci

1.1 The knowledge contexts of Technology Education KLA (TEKLA) curriculum include Technology and Society, Safety and Health, Information Processing and Presentation, Strategies and Management, etc. The curriculum empowers students to understand issues related to the use and development of technologies, including understanding of potential security threats on the Internet, the understanding and application of safety precautions and regulations when using tools, equipment and resources in technological processes, recognising the importance of safeguarding data security, cybersecurity, artificial intelligence security and technology security for national security.

[1] The content of this framework is set out in the form of examples. Schools should adopt or adapt the relevant suggestions based on students' learning needs and abilities.

1.2 The broad and balanced TEKLA curriculum fosters students' understanding of various technologies, raises their awareness of the impact of technology on daily life, and provides opportunities for students to develop creativity, problem solving and critical thinking skills in authentic contexts. The core learning elements of the curriculum, such as "(K5) Tools and Equipment" and "(K6) Production Process", allow students to learn to use various tools safely and properly, and master the use of tools and equipment in various production processes, raising their awareness of the appropriate use of technology, and equipping them with the essential knowledge, skills and attitudes of technology talents to practise technology security. "(K16) Information Processing and Presentation" allows students to learn about information processing and presentation, understand the importance of data security and pay attention to information authenticity. "(E1) Computer Networks" allows students to understand the need and methods for safe use of online IT tools, raising their awareness of cybersecurity and becoming responsible cyber citizens. Furthermore, "(K2) Programming Concepts" and the "Module on Artificial Intelligence for Junior Secondary Level" allow students to learn about AI programming, cultivating their ability to apply AI and understand the importance of AI security in safeguarding the sustainable development of technology.

1.3 Through related topics in the curriculum, learning and teaching activities or technology-related issues, teachers can guide students to understand situations from multiple perspectives, make analysis rationally and objectively, as well as develop their generic skills, and teach them to adopt proper values and attitudes as guiding principles in making judgment and decisions, thereby cultivating their sense of responsibility and commitment.

2. Learning Foci

Technology Education Key Learning Area [Key Stage 3 (Junior Secondary)]		**Curriculum Framework of National Security Education in Hong Kong (2025)**
Learning Areas (Examples)	**Learning Elements (Examples)**	**Related Learning Elements / Major Fields of National Security (Examples)**
Knowledge Context: Information and Communication Technology (E1) Computer Networks Social Implications Threats and Security on the Internet	• Understand potential Internet security threats from a user's perspective, discuss potential privacy threats online, and suggest ways to protect privacy • Explain how to use authentication and authorisation procedures to control access to online data ➢ When teaching the topic "The Impact of Network Applications on Society", emphasise the importance of safe network use and the importance of a properly functioning network for the orderly operation of society, such as in online shopping and financial services. Students also need to understand the impact of various cybercrimes and misuse on the public	• 3.8 Learn about the threats/challenges faced by the major fields of national security and approaches/methods to safeguard national security, establishing a sense of vigilance against potential danger • 3.19 Further understand that one must observe the corresponding moral responsibilities and behave responsibly in the application of science and innovation and technology

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Learning Areas (Examples)	**Learning Elements (Examples)**	**Related Learning Elements / Major Fields of National Security (Examples)**
	• Students will understand the importance of cybersecurity from the perspective of internet users and how to strengthen cybersecurity through system-level preventive mechanisms. For example: ➢ Understand potential internet security threats from a user's perspective ➢ discuss potential privacy threats on the Internet, and suggest ways to protect privacy ➢ Understand encryption technology to prevent eavesdropping and data interception ➢ Explain how to use authentication and authorisation procedures to control the access of data on the Internet ➢ Understand the security measures used in electronic transactions	• Related major fields of national security: Data Security, Cybersecurity, Artificial Intelligence Security

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Learning Areas (Examples)	**Learning Elements (Examples)**	**Related Learning Elements / Major Fields of National Security (Examples)**
	• In addition to preventing students from becoming victims of cyberattacks, this will also raise their awareness of cybersecurity risks and cybercrime threats, enabling them to become responsible cyber citizens, as well as safeguarding the legitimate rights and interests of citizens in cyberspace and further enhancing cybersecurity	
Knowledge Context: Information and Communication Technology (K16) Information Processing and Presentation	• Information processing and information processing tools ➢ Search and download useful information through the Internet by choosing different search engines for different purposes ➢ Skills in searching for specific information as well as the use of advanced search features to refine the search results ➢ The necessity of safe web browsing and good practices ➢ Social tools to facilitate discussion or exchange of ideas	• 3.6 Have a further understanding of the importance of national security in ensuring people's security, major national interests and sustainable development • 3.9 Learn about the role of science and innovation and technology

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	• Issues related to the use of IT ➢ Issues may include: data privacy, data security • Cultivate students' ability to analyse information and use information processing tools carefully and critically, allowing them to understand the importance of proper use of information and communications technology to the normal operation of society and raising their awareness of data security and cybersecurity	industries in safeguarding national security in our country and Hong Kong • Related major fields of national security: Data Security, Cybersecurity, Artificial Intelligence Security
Knowledge Context: Information and Communication Technology	• Major stages (problem definition, problem analysis, algorithm design, program coding, program debugging/testing, and program documentation) in problem solving and the needs of each stage • Real-life examples of the various stages in problem solving procedures	• 3.9 Learn about the role of science and innovation and technology industries in safeguarding national security in our country and Hong Kong

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(K2) Programming Concepts	• A variety of simple programming projects • Cultivate students' good programming habits, reducing the chances and risks of programming errors or vulnerabilities, and train students from an early age to perform technology-related work in an appropriate and legitimate manner to ensure data security and artificial intelligence security	• Related major fields of national security: Data Security, Artificial Intelligence Security
Knowledge Context: Operations and Manufacturing (K5) Tools and Equipment (K6) Production Process	• Good housekeeping of work area: Safety measures (i.e. safety, rules and regulation, and code of practice) within the working environment • Safe use of tools and equipment • Factors and constraints in choosing production process: Selection of the appropriate hand tools, machines and equipment for use with	• 3.6 Have a further understanding of the importance of national security in ensuring people's security, major national interests and sustainable development • 3.19 Further understand that one must observe the corresponding

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	a variety of materials and a range of technological components in a safe and correct manner • Design consideration: Value of intellectual property and possible ways of protection ➢ Cultivate students from an early age to perform technology-related work in an appropriate and legitimate manner, handle and resolve problems cautiously and responsibly, raise their awareness of technology security, use technology properly in accordance with the law to create more valuable products for society, and contribute to our country's technological and design development ➢ When studying topics related to "Tools and Equipment" and "Production Process" through lessons and model making activities, students learn to use tools and equipment safely,	moral responsibilities and behave responsibly in the application of science and innovation and technology • Related major field of national security: Science and Technology Security

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	understand the constraints and considerations in the process of design, production and sales of product, and the need to ensure that the processes comply with the law, ethics and safety requirements, as well as the intellectual property rights are protected, thereby safeguarding the interests of stakeholders and the sustainable development of technology. All these are the knowledge, skills and attitudes that technology talents must possess, which are of great significance for safeguarding science and technology security	
Knowledge Context: Information and Communication Technology	• Information is data which has been given specific meaning: ➢ Data processing involves the transformation of data by means of a set of predefined rules	• 3.9 Learn about the role of science and innovation and technology industries in safeguarding

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(K16) Information Processing and Presentation	➢ The correctness of data is essential in data processing - the concept of "garbage-in garbage-out" ➢ Output of data processing should be useful information • Cultivate students' good information processing and presentation habits, including AI data and models, to reduce the chances and risks of errors or vulnerabilities, and train students from an early age to conduct technology-related work in an appropriate and legitimate manner to ensure data security and artificial intelligence security	national security in our country and Hong Kong • Related major fields of national security: Data Security, Artificial Intelligence Security
Knowledge Context: Information and Communication Technology	• Be aware of the validity and reliability of information, and be able to verify and evaluate the accuracy and reliability of information • Be aware of intellectual property rights, data privacy issues, etc. and observe the rules and regulations in handling information	• 3.19 Further understand that one must observe the corresponding moral responsibilities and behave responsibly in the application of

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Learning Areas (Examples)	**Learning Elements (Examples)**	**Related Learning Elements / Major Fields of National Security (Examples)**
(K16) Information Processing and Presentation		science and innovation and technology • Related major fields of national security: Data Security, Artificial Intelligence Security
Module on Artificial Intelligence for Junior Secondary Level	• Through studying AI, its applications and related topics, students can gain a deeper understanding of the connections between AI in learning and everyday life. They will also gain insights into generative AI, such as the developments of various innovative technology enterprises/companies of our country in this area • Under the guidance of teachers, students will further reflect on the ethical considerations between AI technology and its applications, nurturing them to become ethical technology users	• 3.5 Learn about our country's development and achievements in areas such as the economy, national defence, society, culture, science and technology, healthcare, transportation infrastructure, ecological conservation, bioengineering,

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		aerospace, thereby enhancing our national pride • 3.19 Further understand that one must observe the corresponding moral responsibilities and behave responsibly in the application of science and innovation and technology • Related major fields of national security: Data Security, Artificial Intelligence Security

3. Suggested Learning and Teaching Activities (Examples) (Junior Secondary)

The following are merely examples. Teachers can design appropriate activities based on their school context and subject characteristics to promote national security education.

✧ **Classroom learning**

- **(K16) Information Processing and Presentation and Media and Information Literacy**

  Through watching and discussing deepfake clips, students will learn about verification skills and their importance. When teaching information processing and demonstrating related learning elements, teachers will show students fake videos created using deepfake technology. This will help them understand that current AI technology can produce highly realistic fake videos and help them understand and apply relevant verification skills (for example, observing whether the eye movements and facial expressions of people in the video appear unnatural, and whether there are inconsistencies between audio and video). Teachers will then guide students to identify and describe the negative impact of creating and spreading false information on individuals and society (for example, the ethical issues that may arise from the improper use of emerging and advanced information technologies such as generative AI). This will highlight the importance of verifying information authenticity and the relationship between data security and the public interest, thereby teaching students to use information effectively and ethically and that understanding data protection and legal use is an effective way to safeguard data security

  (Reference: Media and Information Literacy - Learning and Teaching Resources Unit 2 https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/mil/resources.html)

- **(K16) Information Processing and Presentation – Data Security**

Have students reflect on whether they have encountered online scams in their daily lives, ask them to think of solutions and the right attitude to deal with them, and then let them discuss this with their classmates in class. This will allow students to learn about technology crime and online traps, make them more aware of the things happening around them and teach them to pay attention to data security, thereby protecting their online privacy and raising their self-protection awareness

(Reference: "Cyber Security and Technologies Crimes Related Information" Learning and Teaching Resources (Unit 1) https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/cyber-security/resources.html)

- **(K2) Programming Concepts, Module on Artificial Intelligence for Junior Secondary Level, Media and Information Literacy, Data Security and Artificial Intelligence Security**

Through learning about the principles, applications, development, impact on humanity, and potential problems of artificial intelligence (AI), and through learning AI programming, students will understand the importance of information literacy, data security, and artificial intelligence security. This will develop their ability to apply AI, as well as enhance their understanding of the importance of artificial intelligence security to technological development and the appropriate attitude to have when applying it

(Reference: Module on Artificial Intelligence for Junior Secondary Level https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/innovationandtechnologyeducation/resources.html)

(Reference: Media and Information Literacy https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/mil/resources.html)

(Reference: "Cyber Security and Technologies Crimes Related Information" Learning and Teaching Resources (Unit 3) https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/cyber-security/resources.html)

- **(K5) Tools and Equipment: Safe use of tools and equipment**

By teaching students the use of appropriate tools and equipment safely to enhance their safety knowledge and skills when conducting technological activities, cultivate them from an early age to perform technology-related work in an appropriate and legitimate manner, handle and resolve problems cautiously and responsibly, thereby achieving science and technology security

S1 https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/tech-subjects/s1%20teaching%20plan.html

S2 https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/tech-subjects/s2%20teaching%20plan.html

S3 https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/tech-subjects/s3_teaching_plan.html)

✧ **Extended learning activities**

- **(K2) Programming Concepts, (E1) Cybersecurity and Data Security**

Students will learn to write programs to control IoT devices, gather relevant news and information online, read related materials and watch videos. This will help them understand the principles of the IoT, recognise that IoT devices are more vulnerable to cyberattacks and understand the relationship and importance of IoT devices to cybersecurity. When writing programs, they should pay attention to the data security of data transmitted by IoT devices over the network

(Reference: "Cyber Security and Technologies Crimes Related Information" Learning and Teaching Resources (Unit 3) https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/cyber-security/resources.html)

- **Project learning – [Design and Manufacturing]**

Teachers may use real-life examples as an introduction (for example, when choosing to purchase and using an electrical appliance, one should carefully read the instruction manual to understand how to use it and whether it complies with relevant product standards/legal requirements for safe use and proper maintenance), and arrange the project learning on "Designing and Manufacturing a Product (e.g., a toy for children)" to enable students to consider from multiple perspectives (e.g., whether the selected materials are toxic / have passed relevant tests, and whether the production process complies with environmental standards). This allows them to understand the importance and potential dangers of technology applications in daily life, as well as the importance of compliance with the procedures and standards of related professional fields by technology/technological personnel

- **Exploration on technologies**

Organise thematic week or related learning activities for students to understand the information and cyber security efforts of the Hong Kong Special Administrative Region Government

(Reference: Government Computer Emergency Response Team Hong Kong https://www.govcert.gov.hk/en/index.html)

✧ **Competitions**

- **Short video competition – [Media and Information Literacy]**

Organise a competition featuring short videos to explain the authenticity of information (including video, audio and text). Play students' videos' oncampus TV to raise awareness of the importance of performing fact-checks and discerning information

(Reference URL: Cyber Defender https://cyberdefender.hk/en-us/)

Disclaimer:

- *In case of any discrepancy in the meaning of wording between the English text and the Chinese text, the Chinese text shall prevail.*