

Science Education Key Learning Area: Science (Primary 1 to 6)

Curriculum Framework of National Security Education (2025)

Introduction

This Curriculum Framework¹ presents in tabular form how the learning of Science (Primary 1 to 6) can be connected to relevant learning elements of national security education. To cater to students' abilities and learning needs, this Curriculum Framework is divided into two key learning stages, allowing students to learn progressively and facilitating schools in planning the learning content of national security education. Schools should integrate national security education into the curriculum planning and learning and teaching of this subject through “organic integration”, “natural connection”, “diversified strategies”, “mutual coordination”, “learning within and beyond the classroom” and “whole-school participation”. In addition to this Curriculum Framework, schools should also refer to the *Curriculum Framework of National Security Education in Hong Kong (2025)* and other relevant curriculum documents to better implement national security education.

1. Overall Teaching Foci

- 1.1 The four main strands of the Science (Primary 1-6) curriculum are “Life and Environment”, “Matter, Energy and Changes”, “Earth and Space” and “Science, Technology, Engineering and Society”. Many topics within these strands can be organically integrated and naturally connected to the learning content of national security education, particularly some foundational concepts related to ecological security, resource security, biosecurity, science and technology security and outer space 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 At the lower primary level, teachers can draw on students' everyday experiences to introduce national security education in a relaxed and engaging way. For example, when teaching the proper use of electronic products, teachers can use everyday scenarios (e.g. playing loud music in public places) to let students think about the impact of disobeying rules on others, thereby highlighting the importance of abiding by the rules. Alternatively, through engaging stories related to ancient Chinese science and technology, students can learn about the spirit of scientists, understand the long-standing history of Chinese culture, and cultivate a sense of national identity. When teaching topics related to "Life and Environment", teachers can arrange outdoor learning and observation to help students appreciate biodiversity and cultivate their values and attitudes of respecting and caring for nature, thereby establishing a connection to ecological security and resource security.
- 1.3 At the upper primary level, in line with students' cognitive development, teachers can employ various methods such as information collection, group discussions and project learning to guide students to further reflect on the learning elements of national security education in Primary Science. For example, students' understanding of biosecurity can be enhanced when teaching the topic "Communicable and non-communicable diseases". In topics related to global warming, students can gain an understanding of its impact on the global environment and climate change, as well as our country's efforts to mitigate global warming. In topics related to aerospace technology, students can gain an understanding of the wide application of aerospace technology in daily life and a preliminary understanding of outer space security.

2. Learning Foci

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 1 (Lower Primary)]		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)
<ul style="list-style-type: none"> Diversity and classification of living things 	<ul style="list-style-type: none"> Appreciate the diversity of life [3LB7] <ul style="list-style-type: none"> Teachers can take students on field trips to help them understand the characteristics of different types of animals, appreciate the diversity of life, and cultivate an attitude of caring for animals and the environment. This will help students gain a preliminary understanding of the close relationship between biodiversity and ecological security 	<ul style="list-style-type: none"> 1.7 Learn about some major fields of national security covered by a holistic approach to national security 1.20 Love our country, Hong Kong, and the community; and be willing to strive for the security of Hong Kong Related major field of national security: Ecological Security
<ul style="list-style-type: none"> Impact of human behaviour on the natural environment 	<ul style="list-style-type: none"> Recognise the impact of human behaviour on the environment (e.g. causing air and water pollution) [2LD1] <ul style="list-style-type: none"> Teachers can have students watch short videos or pictures to learn about the impact of air and 	<ul style="list-style-type: none"> 1.7 Learn about some major fields of national security covered by a holistic approach to national security 1.20 Love our country, Hong Kong, and the community; and be willing to strive

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	<p>water pollution on the environment, thereby gaining a preliminary understanding of the close relationship between the ecological environment and the lives and health of people</p> <ul style="list-style-type: none"> • Show concern for safeguarding and improving the environment, and take action accordingly [2LD3] <ul style="list-style-type: none"> ➤ Teachers can lead students in a discussion and propose some good habits that can be put into practice to protect the environment (e.g. not littering, taking public transportation), so that students understand that everyone can contribute to protecting the environment 	<p>for the security of Hong Kong</p> <ul style="list-style-type: none"> • Related major field of national security: Ecological Security

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 1 (Lower Primary)]		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)
<ul style="list-style-type: none"> Research and contributions of renowned scientists 	<ul style="list-style-type: none"> Be aware of some renowned scientists in history and their achievements [2SA1] <ul style="list-style-type: none"> ➤ Teachers can have students read biographies of some famous scientists in Chinese history (e.g. Zhang Heng and Shen Kuo) to learn from them the spirit of exploring with curiosity and appreciate their contributions to the development of Chinese science 	<ul style="list-style-type: none"> 1.3 Have a preliminary understanding of the profound and long-standing history of Chinese culture; and learn that it is the responsibility of all citizens to cherish and inherit Chinese culture, building cultural confidence 1.7 Learn about some major fields of national security covered by a holistic approach to national security Related major field of national security: Cultural Security
<ul style="list-style-type: none"> Technology in daily life 	<ul style="list-style-type: none"> Be aware of the importance of proper use of electronic products [1SB1] Be aware of the etiquette for using electronic products [1SB3] 	<ul style="list-style-type: none"> 1.7 Learn about some major fields of national security covered by a holistic approach to national security

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	<ul style="list-style-type: none"> ➤ Teachers can design scenarios involving the daily use of electronic products and conduct role-playing activities with students to help them understand the consequences of misusing electronic products and cultivate the good habit of abiding by laws and regulations 	<ul style="list-style-type: none"> • 1.19 Have a preliminary understanding of the proper attitudes and behaviour when using technological products (e.g. avoiding excessive reliance on electronic devices and the Internet and respecting intellectual property rights); and learn the importance of protecting personal privacy and complying with online rules and codes • Related major fields of national security: Cybersecurity, Data Security
<ul style="list-style-type: none"> • Innovation and technology development 	<ul style="list-style-type: none"> • Give some examples of innovative technologies applied in everyday life (e.g. smart homes, electronic payments, new energy vehicles, autonomous driving) [3SB3] 	<ul style="list-style-type: none"> • 1.7 Learn about some major fields of national security covered by a holistic approach to national security

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	<ul style="list-style-type: none"> ➤ Teachers can have students discuss and reflect on the innovative technology products they use in everyday life, thereby highlighting how the development of innovative technologies can enhance people's lives 	<ul style="list-style-type: none"> • 1.9 Have a preliminary understanding of innovation and technologies commonly used in our country and Hong Kong (e.g. electronic payments and new energy vehicles), and their application in daily life • Related major field of national security: Science and Technology Security
<ul style="list-style-type: none"> • Engineering, design cycle and applications 	<ul style="list-style-type: none"> • Give some examples of ancient Chinese skills and engineering (e.g. Zhaozhou Bridge, mortise and tenon joints) [3SC3] <ul style="list-style-type: none"> ➤ Teachers can arrange for students to make engineering models with mortise and tenon joint technology, thereby enabling them to 	<ul style="list-style-type: none"> • 1.3 Have a preliminary understanding of the profound and long-standing history of Chinese culture; and learn that it is the responsibility of all citizens to cherish and inherit Chinese culture, building cultural confidence

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 1 (Lower Primary)]		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)
	discover the ingenuity of traditional Chinese architecture and appreciate the breadth and depth of Chinese culture	<ul style="list-style-type: none"> • 1.7 Learn about some major fields of national security covered by a holistic approach to national security • Related major field of national security: Cultural Security

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 2 (Upper Primary)]		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)
<ul style="list-style-type: none"> • Healthy lifestyles 	<ul style="list-style-type: none"> • Recognise simple first-aid for handling minor injuries or discomforts [6LA1] • Recognise ways to handle household accidents (e.g. fire, leakage of electricity, gas leak) [6LA2] <ul style="list-style-type: none"> ➤ Teachers can arrange for students to conduct simulation activities and demonstrate how to perform simple first-aid or handle household accidents in different scenarios to enhance students' ability to cope with emergencies and crises • Be aware of the adverse effects of smoking, alcoholism, drug abuse and drug use on the body [6LA3] <ul style="list-style-type: none"> ➤ Teachers can arrange for students to design posters and slogans to point out the harms of 	<ul style="list-style-type: none"> • 2.8 Learn to identify, prevent, and deal with emergencies and potential risks, further establishing a sense of safety and vigilance against potential danger • Related major field of national security: Societal Security

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 2 (Upper Primary)]		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)
	smoking, alcoholism, drug abuse and drug use, and promote the message of healthy living	
<ul style="list-style-type: none"> Communicable and non-communicable diseases 	<ul style="list-style-type: none"> Recognise the transmission routes of communicable diseases (e.g. droplet transmission, vector transmission, contact transmission, food transmission, blood transmission) and their prevention [4LA2] Realise that scientific progress can help respond to large-scale communicable diseases (e.g. the COVID-19 pandemic), protect the lives and health of people, and promote biosecurity [4LA4] <ul style="list-style-type: none"> Teachers can arrange for students to collect information to learn about the measures taken by our country in response to the COVID-19 pandemic (including the research, development, and donation of vaccines), which effectively 	<ul style="list-style-type: none"> 2.5 Learn about and take pride in the recent development, achievements and contributions of our country (e.g. infrastructure, innovation and technology, aerospace technology, health care, ecological conservation) 2.8 Learn to identify, prevent, and deal with emergencies and potential risks, further establishing a sense of safety and vigilance against potential danger Related major field of national security: Biosecurity

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	controlled the pandemic and contributed in the medical and healthcare fields	
<ul style="list-style-type: none"> Impact of human behaviour on the natural environment 	<ul style="list-style-type: none"> Recognise some endangered species [6LD1] Explain why endangered species are on the verge of extinction [6LD2] Recognise some methods of protecting endangered species [6LD3] Respect and care for life, and show concern for endangered species [6LD4] <ul style="list-style-type: none"> ➤ Teachers can take students on field trips to gain a deeper understanding of the efforts made by our country and Hong Kong to protect giant pandas, which has led to the downgrading of their threat level from “endangered” to 	<ul style="list-style-type: none"> 2.20 Care for oneself, family, society, our country and nature; and contribute to safeguarding national security Related major field of national security: Ecological Security

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	“vulnerable”, and to understand our country’s emphasis on ecological security	
<ul style="list-style-type: none"> Common microorganisms 	<ul style="list-style-type: none"> Recognise common types of microorganisms (including bacteria, fungi, viruses) [5LF1] Recognise the uses of antibiotics and the effects of inappropriate use of antibiotics [5LF2] <ul style="list-style-type: none"> ➤ Teachers can ask students to share their experiences of seeing a doctor when they are sick, discuss why a doctor’s prescription is required for antibiotics and why the entire course of treatment must be completed when using antibiotics. This discussion can then be connected with the concept of biosecurity. Recognise the benefits (e.g. probiotics inhibiting the growth of harmful bacteria, degrading pollutants) and 	<ul style="list-style-type: none"> 2.8 Learn to identify, prevent, and deal with emergencies and potential risks, further establishing a sense of safety and vigilance against potential danger Related major field of national security: Biosecurity

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 2 (Upper Primary)]		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)
	negative impacts (e.g. causing diseases) of microorganisms to humans [5LF3]	
<ul style="list-style-type: none"> Sources and uses of energy 	<ul style="list-style-type: none"> Identify the sources of energy (e.g. the Sun, moving water, wind, coal, crude oil, natural gas) [4MB1] Be aware that energy is needed for transportation, manufacturing, illumination, and powering electronic equipment [4MB2] <ul style="list-style-type: none"> ➤ Teachers can arrange group discussions for students to identify daily situations that require energy use, thereby helping them understand the importance of resource security in ensuring a safe and prosperous life Recognise the importance of energy saving [4MB3] <ul style="list-style-type: none"> ➤ Teachers can have students collect household electricity bills, analyse their own and their 	<ul style="list-style-type: none"> 2.19 Learn the personal responsibilities in the application of science and information technology; and the rules and ethical codes that need to be followed 2.20 Care for oneself, family, society, our country and nature; and contribute to safeguarding national security Related major field of national security: Resource Security

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	family's electricity usage habits, develop personal energy conservation plans, and implement them to cultivate good energy conservation habits	
<ul style="list-style-type: none"> Changes in climate and seasons 	<ul style="list-style-type: none"> Show concern for the phenomenon of global warming and its impacts (e.g. glacier melting, rising sea levels, desertification) [4EB3] Recognise some methods to slow down global warming [4EB4] Show concern for environmental and climate change [4EB5] <ul style="list-style-type: none"> ➤ Teachers can arrange for students to conduct science inquiry activities related to glacier melting to understand its impact on the sea level 	<ul style="list-style-type: none"> 2.19 Learn the personal responsibilities in the application of science and information technology; and the rules and ethical codes that need to be followed 2.20 Care for oneself, family, society, our country and nature; and contribute to safeguarding national security Related major field of national security: Ecological Security

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	<p>and explore its impact on the global environment and climate</p> <p>➤ Teachers can arrange for students to collect information to understand our country's efforts and contributions to mitigating global warming</p>	
<ul style="list-style-type: none"> Innovation and technology development 	<ul style="list-style-type: none"> Be aware of the development of some innovative technologies (e.g. artificial intelligence, big data, the Internet of Things) and their applications in the society [5SB1] <ul style="list-style-type: none"> ➤ Teachers can arrange for students to collect information to learn about the application of innovative technologies in daily life, as well as to gain a preliminary understanding of how innovative technologies can promote social development and progress, which are crucial for 	<ul style="list-style-type: none"> 2.5 Learn about and take pride in the recent development, achievements and contributions of our country (e.g. infrastructure, innovation and technology, aerospace technology, health care, ecological conservation) 2.9 Learn about the importance of the development of scientific and technological innovation in our country, and how they safeguard national security

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	maintaining the competitiveness of our country and Hong Kong	<ul style="list-style-type: none"> • 2.19 Learn the personal responsibilities in the application of science and information technology; and the rules and ethical codes that need to be followed • Related major fields of national security: Science and Technology Security, Artificial Intelligence Security, Data Security
<ul style="list-style-type: none"> • The nation's and the world's aerospace technology development 	<ul style="list-style-type: none"> • Be aware of the methods used by ancient people and modern scientists to conduct astronomical observations and space exploration [6SB2] <ul style="list-style-type: none"> ➤ Through project learning, teachers can guide students to explore how the ancient Chinese developed the calendar of the 24 solar terms 	<ul style="list-style-type: none"> • 2.2 Learn about and appreciate the fine traditional Chinese culture and traditional wisdom, building cultural confidence and an awareness of inheritance; and take pride in being Chinese

Science Education Key Learning Area: Science (Primary 1 to 6) [Key Stage 2 (Upper Primary)]		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)
	based on long-term observations of astronomy, seasons, and phenology, and appreciate the traditional wisdom of Chinese culture	<ul style="list-style-type: none"> Related major field of national security: Cultural Security
<ul style="list-style-type: none"> The nation's and the world's aerospace technology development 	<ul style="list-style-type: none"> Recognise the applications and impact of artificial satellites in daily life (e.g. satellite positioning, weather observations) [4SB1] Show concerns for the nation's significant achievements in space exploration (e.g. lunar and deep space exploration) and aerospace technology (e.g. Tiangong space station, BeiDou Navigation Satellite System) [6SB4] Realise the importance of aerospace technology development to the nation's interests and security [6SB5] 	<ul style="list-style-type: none"> 2.5 Learn about and take pride in the recent development, achievements and contributions of our country (e.g. infrastructure, innovation and technology, aerospace technology, health care, ecological conservation) 2.9 Learn about the importance of the development of scientific and technological innovation in our country, and how they safeguard national security Related major field of national security:

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Learning Areas (Examples)	Learning Elements (Examples)	Related Learning Elements / Major Fields of National Security (Examples)
	<ul style="list-style-type: none"> ➤ Teachers can arrange group discussions for students to learn about the wide range of applications of aerospace technology in daily life and gain a preliminary understanding of the importance of making good use of space resources and protecting the space environment for the future development of our country 	Outer Space Security

3. Suggested Learning and Teaching Activities (Examples) (Lower Primary / Upper Primary)

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

✧ Project learning

- [Impact of human behaviour on the natural environment] Conduct a project learning on “Improving the Campus Environment”, collect and analyse data on campus pollution, investigate the main sources of pollution on campus, and propose improvement plans, thereby understanding that everyone can contribute to environmental protection

✧ Science inquiry activities

- [Engineering, design cycle and applications] Build a model of a wooden arch bridge using traditional Chinese techniques, including cross-bracing and mortise and tenon joints, thereby discovering the ingenuity of traditional Chinese architecture and appreciating the profoundness of Chinese culture

✧ Field trips

- [Some phenomena and patterns observed on the Earth caused by the movements of the Sun, Earth and Moon] Visit the Astropark to learn about the operation of ancient Chinese astronomical instruments and ancient astronomical observation methods, thereby appreciating the traditional wisdom of Chinese culture and cultivating a sense of national identity

- [Impact of human behaviour on the natural environment] Observe and study the living habits of giant pandas and learn about the efforts made by our country and Hong Kong to protect giant pandas, which have resulted in their threat level being downgraded from “endangered” to “vulnerable”, thereby understanding the country’s emphasis on ecological security

✧ **Visits**

- [Earth’s resources] Visit the Water Resources Education Centre or water treatment works to learn that the amount of water collected from local catchment facilities is inadequate to meet the fresh water demand in Hong Kong and fluctuates significantly, which makes it necessary to import water from Dongjiang to ensure a stable supply, thereby gaining a preliminary understanding of the basic concept of resource security
- [The nation’s and the world’s aerospace technology development] Visit aerospace technology exhibitions held at venues such as the Hong Kong Science Museum, Hong Kong Space Museum and Hong Kong Base for Aerospace Science Education to learn about our country’s significant achievements in space exploration and aerospace technology, as well as their applications in daily life, thereby realising the importance of aerospace technology development to national interests and national security and strengthening one’s sense of national identity

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