

Professional Development Programme

Connecting the Dots: Effective Strategies for Teaching Vocabulary for Cross-curricular Learning

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Workshop Objectives

- To enrich teachers' knowledge of the major principles and practice in vocabulary instruction in the English classroom
- To explore effective learning and teaching strategies to raise students' awareness of the vocabulary building strategies to support them in learning across the curriculum
- To provide suggestions on how to foster cross-curricular collaboration in promoting Language across the Curriculum in the school curriculum

Do you agree?

Vocabulary knowledge = Academic performance?

Vocabulary knowledge = Content knowledge?

Role of Vocabulary in Academic Learning

- Research studies have repeatedly demonstrated that **vocabulary knowledge** is the best indicator/predictor of students':
 1. Reading ability and comprehension
 2. Familiarity with academic discourse
 3. Academic success and disciplinary achievements

To acquire information, negotiate understanding, construct knowledge, etc.

**An English-Chinese Glossary of Terms
Commonly Used
in the Teaching of Geography
in Secondary Schools**

中學地理科常用英漢辭彙

Personal, Social and Humanities Education Section
Curriculum Development Institute
The Education Bureau
HKSAR
2025
香港特別行政區
教育局
課程發展處
個人、社會及人文教育組
二零二五

https://www.edb.gov.hk/attachment/tc/curriculum-development/kla/pshe/references-and-resources/geography/glossaries/Geography_Glossary_Final_Version_July_2025.pdf



Home > Curriculum Development and Support > Key Learning Areas > Science Education > References & Resources

Glossary for Science Subjects

- [On-line English-Chinese Glossaries of Terms Commonly Used in the teaching of Science Subjects in Secondary Schools](#)
- English-Chinese Glossary of Terms Commonly Used in the Teaching of Biology in Secondary Schools
(2020)
- English-Chinese Glossary of Terms Commonly Used in the Teaching of Chemistry in Secondary Schools
(2007)
- English-Chinese Glossary of Terms Commonly Used in the Teaching of Physics in Secondary Schools
(2020)
- English-Chinese Glossary of Terms Commonly Used in the Teaching of Science (SI-3) in Secondary Schools
(2017)

<https://www.edb.gov.hk/en/curriculum-development/kla/science-edu/ref-and-resources/glossary.html>

What makes a text easy / difficult to read?

- **Syntactic complexity**

- Sentence length
- Text length
- Number of clauses / embedded structures
- Length of noun phrases
- Text cohesion

- **Lexical complexity**

- Word length
- Word frequency
- Lexical diversity
- Lexical density

- **Meaning, purpose and discourse style**

- **Text structure**

- Organisation
- Use of graphics

- **Language features: Conventionality and clarity**

- Vocabulary
- Sentence structures

- **Knowledge demands**

- Subject matter knowledge
- Intertextuality

- **Cognitive capacities**

- Attention and memory
- Critical and analytical thinking skills

- **Reading Skills**

- **Motivation and engagement**

- Interest in the content
- Self-efficacy as a reader

- **Prior knowledge and experiences**

- **Complexity of content**



What KLAs are
they related to?

**Are there cross-curricular texts in
TSA and DSE English Language?**

English Language Education

Key Learning Area Curriculum Guide
(Primary 1 – Secondary 6)



Prepared by
The Curriculum Development Council

Recommended for use in schools by
The Education Bureau
HKSARG
2017

Key Stage 3 (S1 – 3)

Teenage Life

- Leisure and hobbies
- Growing up
- Being fashionable

Rights and Responsibilities

- At home
- In a group (class, peer, school, neighbourhood)

Getting Along with Others

- Friendship and dating
- Sharing, co-operation, rivalry

Study, School Life and Work

- Study and related pleasure/problems

Cultures of the World

- Travelling and visiting
- Customs, clothes and food for different places

Wonderful Things

- Successful people and amazing deeds
- Great stories
- Precious things

Nature and Environment

- Protecting the environment
- Resources and energy conservation

Key Stage 4 (S4 – 6)

Getting Along with Others

- Friendship and dating
- Sharing, co-operation, rivalry

Study, School Life and Work

- Study and related pleasure/problems
- Experiments and projects
- Occupations, careers and prospects

Cultures of the World

- Travelling and visiting
- Customs, clothing and food of different places

Wonderful Things

- Successful people and amazing deeds
- Great stories
- Precious things

Nature and Environment

- Protecting the environment
- Resources and energy conservation

The Individual and Society

- Crime
- Human rights (personal rights, civic rights, respect)

Communicating

- The media and publications
- The Internet

Technology

- Changes brought about by technology

Leisure and Entertainment

- The world of sports
- “Showbiz”

At least: once every textbook unit? Once every month? Once every term?

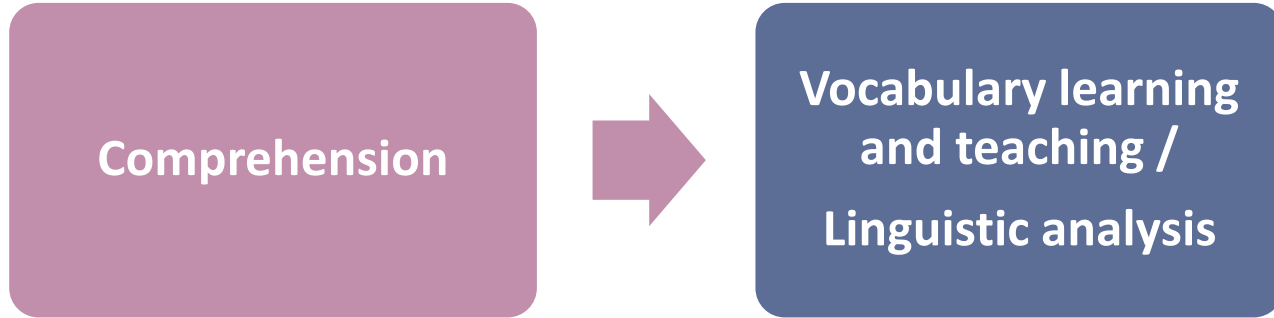
Using cross-curricular texts to teach language skills + language systems

These suggested modules and units are not unique to the learning and teaching of English.

Goals of Language Learning and Teaching

To use language
independently and proficiently

When using cross-curricular texts,



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Examples of Text Types for Stages 1 – 4 (P1 – S6)

A text is produced for a given purpose. Hence, the text types listed below can be of different natures such as narrative, informational, procedural, expository, persuasive, depending on the purposes they serve. Teachers might like to draw students' attention to both the conventions and features of a particular text type and the purpose the text serves in the learning and teaching process.

Text Types for KS1 (P1 – 3)	Additional Text Types for KS2 (P4 – 6)	Additional Text Types for KS3 (S1 – 3)	Additional Text Types for KS4 (S4 – 6)
- Advertisements - Captions - Cards - Cartoons and <u>comics</u> - Charts - Conversations - Coupons - Diaries - Directions - Fables and fairy tales - Forms - Illustrations - Instructions - Labels <u>Leaflets</u> - Lists - Menus - Notes and messages - Notices - Personal descriptions - Personal letters - Personal recounts - Picture dictionaries <u>Poems</u> - Postcards - Posters - Product information - Rhymes - Riddles - Rules - Signs - Songs - Stories - Tables - Timetables	- Accounts - Announcements - Autobiographies <u>Biographies</u> - Blogs <u>Brochures</u> - Catalogues - Children's encyclopaedias - Dictionaries - Directories - Discussions - Emails - Explanations of how and why - Formal letters - Informational reports - Jokes - Journals - Maps and legends - Myths - News reports - Pamphlets - Plays - Procedures - Questionnaires - Recipes - Telephone conversations - Tongue twisters - Weather reports - Webpages	- Book reviews/reports <u>Encyclopaedias</u> - Film reviews - Interviews - Itineraries - Letters to the editor - Manuals - Memoranda - Newspaper/<u>Magazine articles</u> - Presentations - Short films - Short novels - Social media texts <u>Talks</u> - Trailers	- Abstracts/synopsis - Agendas - Debates <u>Documentaries</u> - Editorials - Essays - Feature articles - Films - Minutes - Novels - Proposals <u>Speeches</u> - Resumes - Thesauri

print + non-print

At least: once every textbook unit? Once every month? Once every term?

Using cross-curricular texts to illustrate genre features

These text types are not unique to the learning and teaching of English.

Developing Students' Multimodal Literacy in the Secondary English Language Classroom



https://www.edb.gov.hk/attachment/en/curriculum-development/kla/eng-edu/references-resources/Multimodal%20Literacy_SS/Developing%20Students%20Multimodal%20Literacy%20in%20the%20Secondary%20English%20Language%20Classroom.pdf

Word Knowledge

Understanding Vocabulary

- Where do we see these words? What is their meaning?

Interest

Principal

Compound

Polysemantic Words

- Words that have **multiple, diverse and distinct meanings**
- In content-area reading, students often encounter **familiar words used in new ways**. The same word may have **a completely different meaning** in another discipline.
- To help students comprehend texts successfully, we need to alert them that a word can be defined in different ways.
- **Can you think of some examples of polysemantic words in content subjects?**

Polysemantic Words in Content Subjects

force	power	pressure	mode	negative
frequency	sample	factor	solution	variable
degree	element	cell	state	transfer
mass	equation	solid	image	substance
volume	significant	atmosphere	current	energy
function	plot	property	reaction	tension
tissue	value	store	compound	transport
alternate	area	barrier	charge	concentration
conserve	independent	reflection	treatment	wave

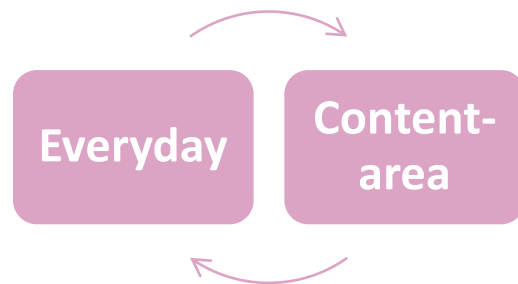
Polysemantic Words from Content Subjects

- If you ask your science students the meaning of the following words:

1. **momentum**
2. **osmosis**
3. **regurgitation**
4. **camouflage**
5. **paralysis**
6. **bypass**
7. **ripple**

- What meaning will they give?

Are these words also used in non-content subjects / our everyday life?



Word Knowledge

- What makes these words confusing?

stationary vs. stationery

principal vs. principle

compliment vs. complement

council vs. counsel

Word Knowledge

- What makes these words confusing?

increase (n.) vs. (v.)

digest (n.) vs. (v.)

bypass (n.) vs. (v.)

content (n.) vs. (adj.)

abstract (n.) vs. (v.) vs. (adj.)

Word Knowledge: Easily Confused Words

	Spelling	Pronunciation	Meaning	Examples
Homonyms	✓	✓	✗	left, scale
Homophones	✗	✓	✗	wrote-rote, pray-prey
Homographs	✓	✗	✗	bow, lead

Learning and teaching vocabulary in context!

Word Knowledge: Easily Confused Words

adapt vs. adopt	analysis vs. analyse
broad vs. board	border vs. boarder
concurrent vs. consecutive	continual vs. continuous
desert vs. dessert	everyday vs. every day
historic vs. historical	inflammable vs. inflammatory
immigrate vs. emigrate	lose vs. loose
marital vs. martial	moral vs. morale
precede vs. proceed	rise vs. raise

Teaching Vocabulary

- Imagine you are teaching the following words to a class of 30 Secondary 3 students of low to average ability:

1. temporary

2. unconventional

- How would you teach / explain these words?

Checking Understanding

- After giving the definition, remember to check students' understanding!
1. Think of several examples of **temporary** things, such as a *temporary* job, *temporary* housing, or a *temporary* solution to a problem
 2. Think of **real-life situations** where students have encountered **temporary** things, such as *temporary* road closures or *temporary* exhibitions at a museum

Concept-checking Questions (CCQs)

1. If something is **temporary**, does it last forever?
2. When a company hires **temporary** workers, do they plan to employ them permanently?
3. If you find a **temporary** solution to a problem, will you need to find another solution later?
4. If a city sets up a **temporary** shelter during a natural disaster, will people live there forever?
5. When a construction project requires a **temporary** road detour, will the detour be in place indefinitely?
6. If you have a **temporary** visitor pass, can you use it to enter a building anytime you want?
7. If a person has a **temporary** illness, will he/she be sick for a long time or a short time?
8. When a school uses a **temporary** classroom, do they plan to use it for many years?
9. If a store offers a **temporary** discount, will the lower prices last forever?
10. When a store closes **temporarily**, does it mean it will never open again?

Illustrating Meaning

- Stories

*“Once upon a time, there was a young woman named Lily who had just moved to a new city for a **temporary** job assignment. **She knew she would only be there for six months**, so she decided to rent a **temporary** apartment instead of buying a house. On her first day in the city, Lily met a friendly neighbour who introduced himself as Jack. Jack offered to show Lily around the city and help her find **temporary** storage for some of her extra belongings. Lily was grateful for Jack’s assistance and knew that even though her stay in the city was **temporary**, she would make the most of her time there.”*

Illustrating Meaning

● Dialogues

A: I can't believe they closed down our favorite coffee shop!

B: Don't worry, it's only **temporary**. They're renovating the place and **will re-open in a month**.

A: That's a relief! I thought we'd have to find a new spot.

B: Nope, just a **temporary** inconvenience. We'll be back to our usual spot in no time.

A: Hey, I heard you're moving to London! That's so exciting!

B: Yeah, but it's only **temporary**. I'll be there for a year to complete a work project.

A: Oh, I see. So, you'll be coming back after the project is finished?

B: Yes. It's a great opportunity, but my **permanent** home is still here.

A: I need to find a place to stay while my house is being fumigated.

B: You can stay with me **temporarily** if you'd like. I have a spare room.

A: That would be great, thank you! I'll only need it for a week until the fumigation is complete.

B: No problem at all. It's just a **temporary** solution, but you're welcome to stay as long as you need.

Common Pronunciation Mistakes

mechanism	sword	refraction	monarchy
pendulum	organism	cleansing	reflection
debt	bleach	centripetal	sustainable
mortgage	opportunity	lightning	paralysis
limb	pneumonia	parachute	purchase

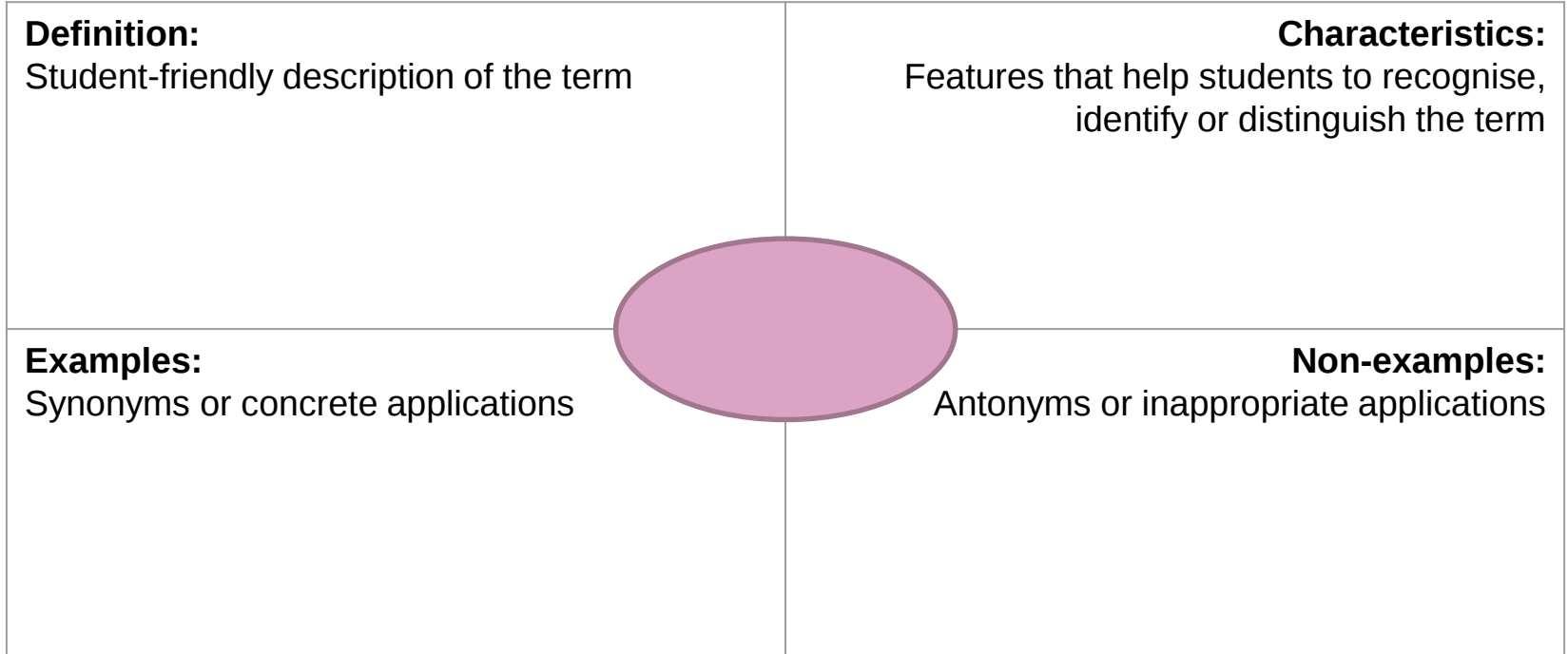
Can you categorise
the mistakes?

Shifts in Word Stress

1. analysis (n.) vs. analyst (n.) vs. analyse (v.) vs. analytical (adj.)
2. economy (n.) vs. economics (n.) vs. economical (adj.)
3. geometry (n.) vs. geometrical (adj.)
4. maintain (v.) vs. maintenance (n.)
5. necessary (adj.) vs. necessarily (adv.) vs. necessity (n.)
6. politics (n.) vs. politician (n.) vs. political (adj.)

**Can you think of
other examples?**

Frayer Model



Types of Vocabulary: 3 Tiers Framework

1. **Everyday language:** language for representing ideas in non-technical ways (e.g., *dogs* instead of *canines*)
2. **Cross-disciplinary language:** common academic language used across content area contexts (e.g., *analyse, vital, consequence*)
3. **Technical language:** specialised language associated with a content area such as science and history (e.g., *mitosis, imperialism*)



Vocabulary Learning Strategies

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Vocabulary

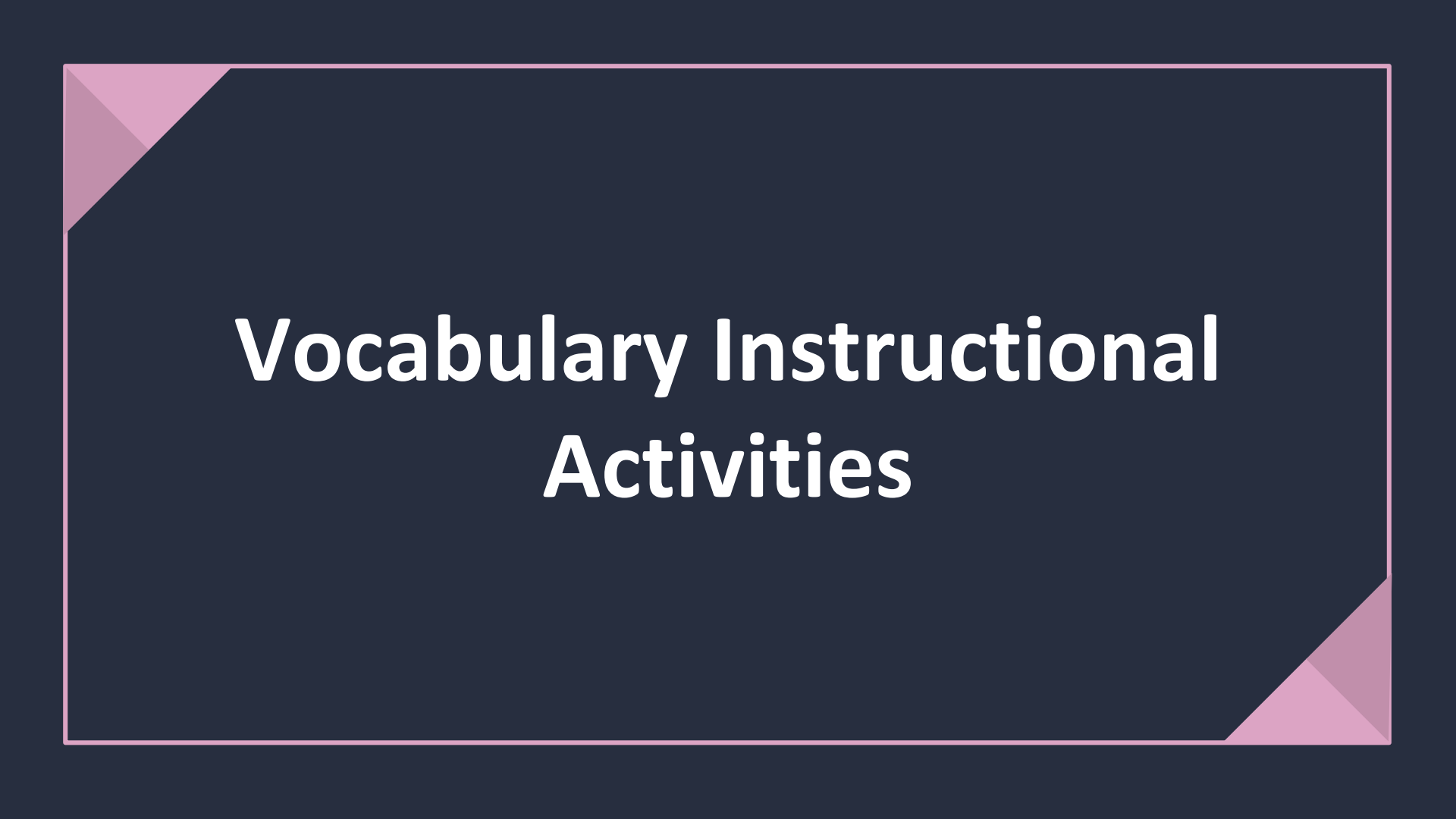
The vocabulary items that students encounter, acquire and use at each key stage vary with the tasks and the amount of language support that students experience in the learning process. Students need to be exposed to an increasingly wider range of vocabulary items, including phrasal verbs, idioms and fixed expressions to help them communicate and carry out various learning tasks effectively. Vocabulary is best introduced in context using reading, listening or multimodal texts, and practised through tasks and language games. In helping students build vocabulary, besides identifying whether the target words are for active or passive use, teachers should also take note of their frequency of occurrence across different text types and the vocabulary demand in non-language subjects. At both the primary and secondary levels, it is not advisable to prescribe a vocabulary list out of context or provide a list of unfamiliar words with explanations and their different parts of speech for rote learning.

In addition, it is essential to introduce students to a range of vocabulary building strategies such as:

- using knowledge of word formation;
- using knowledge of collocations;
- using knowledge of lexical relations;
- guessing meaning and inferencing with available clues;
- using dictionaries and thesauri;
- creating word webs to record words learnt; and
- retaining words using mnemonics.

Nation's (2022) Vocabulary Learning Strategies

General class of strategies	Types of strategies
Planning: Choosing what to focus on and when to focus on it	• Choosing words • Choosing the aspects of word knowledge • Choosing strategies • Planning repetition and spending time
Sources: Finding information about words	• Analysing the word • Using context • Consulting a reference source in L1 or L2 • Using parallels in L1 and L2
Processes: Establishing knowledge	• Noticing • Retrieving • Varied meetings and varied use • Elaboration
Skill in use: Enriching knowledge	• Gaining and coping with input through listening and reading • Gaining and coping with output through speaking and writing • Developing fluency across the four skills



Vocabulary Instructional Activities

Learning and Teaching Vocabulary

- What vocabulary learning and teaching activities can we use in an English classroom to focus on **form, meaning and use** of a word?
- Are vocabulary activities in your English textbooks well-designed? Do they cover form, meaning and use?

Vocabulary Instructional Activities

ABC
brainstorm

Semantic web

Visual
thesaurus

Word
questioning

Word map

Polar
opposites

Linear
arrangement

Word
association

Vocabulary
association
triangle

Word sort /
Concept sort

Word mystery

Story
impression

Anticipation
guide

Word families

Affix
organizer

Syllapuzzles

Word puzzle

Word search

Collocations
bingo

Sentence
completion

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4.3 Embracing Learner Diversity

Every class is made up of individuals who are different in terms of motivation, learning styles, preferences, needs, interests and abilities. Teachers can cater for learner diversity through effective curriculum planning and appropriate learning, teaching and assessment strategies.

4.3.1 Curriculum Planning

- The curriculum can be appropriately adapted by trimming learning content and materials, making additions or a combination of both to suit students of different needs, interests, abilities and learning styles.
- The concept of modules, units and tasks can be adopted to organise learning and teaching to accommodate the needs of different students of the same year level or the same class. For the more able students, learning modules can be developed with challenging units and tasks that aim at expanding and enriching their learning experiences; whereas for the less able ones, learning modules should be designed with the inclusion of units and tasks that aim at helping them overcome their weaknesses in language learning and make progress (e.g. practising particular language forms).

Supplementary Notes 2

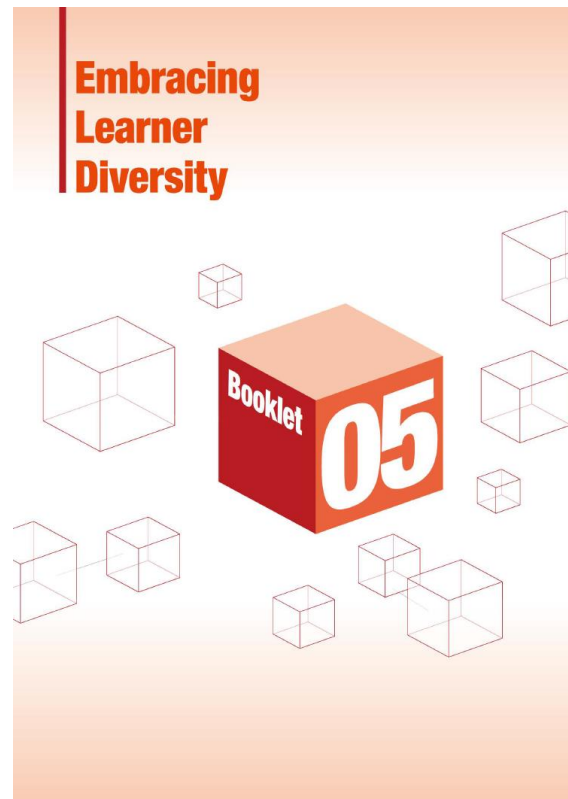
Catering for learner diversity in the senior secondary English classroom

*[Supplementary notes to Chapter 4.6 **Catering for Learner Diversity** in the English Language Curriculum and Assessment Guide (Secondary 4-6)(CDC & HKEAA, 2007), pp.101-103]*

Learner diversity is a challenge to the majority of teachers teaching English to senior secondary learners. To cater for learner diversity, different strategies can be adopted at the school, subject and classroom levels so that all learners can move forward along the learning continuum.

Some common strategies at the school level include streaming of learners according to their English abilities and arranging small/split class teaching for English lessons while those at the subject level include organising English remedial and enrichment lessons on top of the regular English lessons, adapting the English curriculum and setting different requirements for English tasks/assignments. However, these arrangements and planning will not have any substantial impact on learners unless effective strategies are used by teachers at the classroom level to address learners' varied abilities, interests and learning styles.

https://www.edb.gov.hk/attachment/en/curriculum-development/kla/eng-edu/references-resources/SN2_Catering.pdf



https://www.edb.gov.hk/attachment/en/curriculum-development/major-level-of-edu/secondary/curriculum-guides-documents/SECG_booklet_5_en.pdf

Catering for Learner Diversity

- Varying the input and output
- Varying questions in terms of language and cognitive demands
- Employing flexible grouping strategies
- Providing timely feedback
- Employing a variety of strategies to enhance interactive learning
- Selecting, adopting and adapting appropriate texts that incorporate different modes of representation
- Breaking tasks into small steps to facilitate understanding and sequencing the steps in the tasks
- Connecting the design of learning materials to students' life experiences to sustain their motivation and attention

Cognitive Discourse Functions

<i>Language Items and Communicative Functions</i>	<i>Examples</i>
Use adjectives, adverbs, formulaic expressions, etc., to make comparisons and give descriptions of processes and situations	Exercise will make you <u>healthier and stronger</u> . You cannot expect <u>more</u> pay for <u>less</u> work. John walks and talks <u>like</u> his father. Although the twins look <u>alike</u> , they are very <u>different</u> in character. To a large extent, the two pieces of work are <u>similar</u> in terms of content. It's an own goal! <u>What a blunder!</u>

Use imperatives, modals, adjectives, adverbial clauses, formulaic expressions, rhetorical questions, etc., to give and justify recommendations and make proposals	<u>Stop</u> buying electrical appliances or products that are not <u>energy-efficient</u> . <u>In order to</u> stop bullying, victims of bullying <u>must be convinced</u> that they can do something about it. <u>I feel strongly</u> that the government should redouble its efforts to stop discrimination against the disabled. <u>It is of the utmost importance</u> for the government to review Hong Kong's language policy. <u>Would it not make more sense</u> to promote the use of canvas bags instead of plastic bags? <u>Another alternative</u> is to encourage manufacturers to use recycled paper as far as possible.
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Use a variety of tenses, prepositions, formulaic expressions, adjectives, adverb phrases, adverbial clauses, the passive voice, etc., to express factual information	<u>According to</u> the statistics, there <u>has been</u> a sharp rise in the number of visitors from Mainland China <u>during the last eight months</u> . <u>As a matter of fact</u> , more and more university students take up part-time jobs nowadays for a variety of reasons. Some do it <u>because they have</u> a real need to pay their increasingly high tuition fees. UNICEF's work <u>is guided</u> by the Conventions on the Rights of the Child. Family problems have become more and more <u>acute</u> these days.
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**How do these language functions
relate to the learning outcomes of
different content subjects?**

Students should learn	Students should be able to
Mutation - Chromosome mutation (e.g. Down syndrome) and gene mutation (e.g. Sickle-cell anaemia) - Spontaneous and induced mutation - Causes of mutation (e.g. radiation and chemical)	Distinguish between chromosome and gene mutation.

Students should learn	Students should be able to
- Photochemical reactions - light absorption⁷ - photolysis of water for the generation of NADPH - generation of ATP - Carbon fixation: Calvin cycle⁸ - Carbon dioxide fixation and formation of 3-C compound - Reduction of 3-C compound leading to the formation of glucose - Regeneration of carbon dioxide acceptor - Conversions of photosynthetic products into other biomolecules - Factors (light intensity and carbon dioxide concentration) affecting the rate of photosynthesis	- Outline the major steps of photochemical reactions and carbon fixation. - Understand the dependence of carbon fixation to the photochemical reaction. - Explain the effects of environmental factors on the rate of photosynthesis.

Students should learn	Students should be able to
a. Human impact on the environment Human population growth - Impact of rapid human population growth on the environment - Need for population control Use of resources - Types of resources: renewable and non-renewable resources - Fisheries and agriculture - Impacts - Overexploitation (e.g. in fisheries) - Environmental degradation (e.g. chemical pollution in agriculture) Effects of urbanisation and industrialisation - Land clearance and reclamation - Health problems related to pollution	- Evaluate the impact and control of rapid human population growth. - Recognise the impacts of malpractices in fisheries and agriculture. - Account for the accumulation of toxic substances along a food chain. - Explain the ecological impacts of land clearance and reclamation.

Guiding Questions	Explanatory Notes
5. What and where are the major plates and plate boundaries? 6. What are the related landform features found at plate boundaries? How are they formed? 7. How does plate movement create natural hazards that develop with these features? 8. Why are some earthquake and volcanic zones far away from plate boundaries?	- Brief description of the internal structure of the earth - The names and types of major plates and plate boundaries in the world, as well as their location - The major landform features at plate boundaries (fold mountain, island arc, ocean trench, volcano, mid-oceanic ridge and rift valley) and their formation - The relationship between plate movement and natural hazards - Earthquake and volcanic zones far away from plate boundaries, e.g. hot spots
9. What are the effects of earthquakes, volcanic eruptions and tsunamis? 10. How do these natural hazards affect the lives of human beings? 11. What has been done to reduce the impact of these natural hazards?	- Effects of earthquakes (primary and secondary effects), volcanic eruptions and tsunamis on human beings and the environment - Measures used to reduce the effects of earthquakes, volcanic eruptions and tsunamis (e.g. monitoring, predicting and warning systems for natural hazards, various disaster mitigation and preparation strategies, land use zoning) - Effectiveness of the above measures

Guiding Questions	Explanatory Notes
10. What would make a sustainable city? 11. What are the characteristics of such a city? 12. How can we make a city sustainable? 13. What is the price for developing a sustainable city?	- Definitions of “sustainable development” and a “sustainable city” - Characteristics of a sustainable city - Methods of developing a city into a sustainable one, e.g. better and careful planning of the city, regenerating and re-imaging the city - Price for developing a sustainable city
14. Is environmental degradation a necessary evil for improving living standards in a growing city? 15. How should we choose? Can we afford not to choose a sustainable future in the long run?	- Relationship between urban development, socio-economic development, living standards and environmental conditions - Consequences of not developing a city in a sustainable way in the long run (i.e. aggravation of urban problems and the impact on human beings and the environment)

**Books of Original Entry and
Types of Ledgers**

- Explain the functions of books of original entry and ledgers.
- Record transactions in books of original entry and post to ledger accounts.
- Identify the major types of ledgers.

Trial balance

- Explain the functions and limitations of a trial balance.
- Balance off the accounts and prepare a trial balance.

**Period-end Adjustments
Relating to the Preparation of
Financial Statements**

- Differentiate between cash accounting and accrual accounting.
- Distinguish between bad debts and allowance for doubtful accounts.
- State the meaning and objectives of providing depreciation in accounting.
- Distinguish between capital expenditures and revenue expenditures.
- Compare the commonly used methods of depreciation: straight-line, reducing-balance and

**Small and Medium
Enterprises (SMEs)**

- Describe the characteristics of SMEs.
- Explain the importance of SMEs to the Hong Kong economy.
- Explain the importance of entrepreneurship in business development.

Sources of Financing

- Compare different sources of financing: debt and equity financing, short-term and long-term financing, and internal and external financing.
- Apply the basic principles for selecting financing methods.

Capital Investment Appraisal

- Evaluate financial and non-financial factors affecting capital investment decisions.
- Apply the basic capital investment appraisal methods to evaluate capital projects: payback period, net present value (NPV), internal rate of return (IRR) and accounting rate of return (ARR).
- Compare the usefulness and limitations of different capital investment appraisal methods.

**Working Capital
Management**

- Explain the importance of working capital management.
- Describe the basic principles of cash management and the relevance of cash budgeting.

Topic	Learning Outcomes
a. Basic Machine Organisation (14 hours)	• Explain the functions of hardware within a computer system, namely input and output devices, processing units, bus system and storage devices. • Explain the structure and functions of a CPU and its components. • Outline the steps in the fetch-decode-execute cycle using a single processor, and describe the roles of and the interdependence among components, registers and buses in the machine cycle. • Describe the functions and characteristics of Random Access Memory (RAM), Read Only Memory (ROM) and memory cache. Realise the relationship among the size of the memory, the memory address, word length and the performance of the computer.

Topic	Learning Outcomes
	• State the functions and needs of utility programs and driver programs. • Distinguish the characteristics and applications of various modes of operation.

Cognitive Discourse Functions

- In content subjects when studying **ecosystems**, students may be asked to:
 1. **identify** characteristics of various ecosystems
 2. **describe** animal and plant adaptations to various ecosystems
 3. **compare** animal and plant adaptations in various ecosystems
 4. **explain** how animals and plants adapt to various ecosystems
 5. **evaluate** the consequences of changes in various ecosystems
- “key uses of academic language” (Gottlieb, 2016, p. 82)

Rhetorical Functions across KLAs (CDC, 2018)

Examples of Rhetorical Functions	Language Items (Examples)	Examples
Comparing/Contrasting	"However", "on the contrary", "similarly"	Some historians think that the paintings had entertainment functions. <u>However</u> , these paintings were usually found at...(PSHE)
Sequencing	"After", "before", "then"	Clean the food thoroughly <u>before</u> cooking...(TE)
Explaining	"Since", "because of", "as a result (of)"	<u>As a result</u> , more sulphur dioxide is produced...(SE)
Describing	Adjectives, relative clauses	<u>Larger</u> current makes the bulb <u>brighter</u> ... (SE)
Defining	"Refers to", "is known as"	Osmosis <u>refers to</u> the diffusion of fluid...(SE)
Making suggestions	"Can", "may", "suggest"	The government <u>can</u> make better use of the land through...(PSHE)
Giving instructions	Imperatives	<u>List</u> the characteristics of the four phases in the long jump...(PE)
Presenting facts	Present tense	A computer system <u>consists of</u> ...(TE)
Presenting past events	Past tense	The waltz <u>was</u> originally a peasant dance in Austria...(AE)
Making assumption	Conditional clauses, "let", "suppose"	<u>Suppose</u> Jane's salary is \$10,000 now. What is the percentage of... (ME)

Cohesive Devices for Different Purposes

Followed by a clause:

since because as therefore as a result

Followed by a noun/noun phrase:

because of due to owing to
thanks to

for example for instance

in this case such as

Similarities:

both as...as likewise similarly

Differences:

in contrast whereas unlike

**Cause
and
Effect**

Example

**Comparison
and
Contrast**

Clarification

namely
specifically
in other words
to put it simply

Emphasis

clearly obviously
definitely indeed
notably above all

**Cohesive
Devices**

Condition

if in case unless
provided that
on condition that

Addition

besides moreover
furthermore
in addition
not only...but also

Generalisation

on the whole
in most cases
in general

Summary

Order

first and foremost
subsequently finally
last but not least

in brief in conclusion

in summary to conclude to sum up

Comparison & Contrast

Comparing and contrasting is an important skill in academic writing. It can be done at the text or paragraph level.

Differences

Transition words followed by **a clause**

- although/even though
- but/however/nevertheless
- whereas/while
- on the one hand ... on the other hand
- on the contrary

Similarities

- alike
- as ... as
- both, too, also
- like, similar to
- likewise, similarly
- in the same way
- the same as
- equally
- just as

Differences

Transition words followed by **a noun/noun phrase**

- unlike
- despite/in spite of
- different from
- instead of



Mammals

- warm-blooded
- have live births
- have hair

- vertebrates
- breathe with lungs
- reproduce sexually

Reptiles

- cold-blooded
- lay eggs
- have scales



Describing similarities and differences

An Example: Mammals vs Reptiles

Mammals and reptiles are **both** vertebrates and they share some **similar** characteristics. They **both** breathe with lungs. **Like** most vertebrates, mammals and reptiles reproduce sexually. **However**, they also differ in a number of ways. For example, mammals are warm-blooded, **whereas** most reptiles are cold-blooded. **Unlike** mammals which have live births, most reptiles lay eggs. Hair is a defining characteristic of all mammals. Reptiles, **on the contrary**, do not have hair. They have scales instead.



(a) Expressions showing cause-and-effect relationships

Some expressions (including verbs, nouns, adverbs and conjunctions) help to show **cause-and-effect relationships** within and across paragraphs, examples of which are provided in the table:

Purposes	Expressions
to show the cause-and-effect relationship	• Cause causes/leads to/brings about/results in/contributes to/ gives rise to/triggers off result. • Cause is a cause of/the origin of/a contributing factor to result. • Result stems from/results from/arises from/is caused by/ can be attributed to cause. • The root/main cause/origin of result is cause. // The reason for result is cause. • Result is the result/consequence/impact/corollary of cause. • The impact/consequence/backwash of cause is result. • Given/Owing to/Due to/Because of/As a result of cause, result.
to explain the effects	• Consequently/As a result, result. • Therefore/Hence/Thus, result.
to sum up main ideas	• In conclusion/In summary/In short, ... • To conclude/To sum up, ...



(a) Expressions indicating problems and solutions

Some phrases and expressions help to connect ideas within and across paragraphs in texts involving the use of the “**problem and solution**” structure. Examples are provided in the table:

Purposes	Expressions
to point out the problems	• The first/second/third problem of (issue/situation) is ... • Another problem is ... • ... is a major/main problem of (issue/situation). • (issue/situation) may cause/lead to/bring about/result in ...
to suggest solutions	• To solve/alleviate/handle/deal with/cope with/address the problem, ... • One way to solve this problem is ... • Another solution to the problem is ...
to sum up main ideas	• In conclusion/In summary/In short, ... • To conclude/To sum up, ...

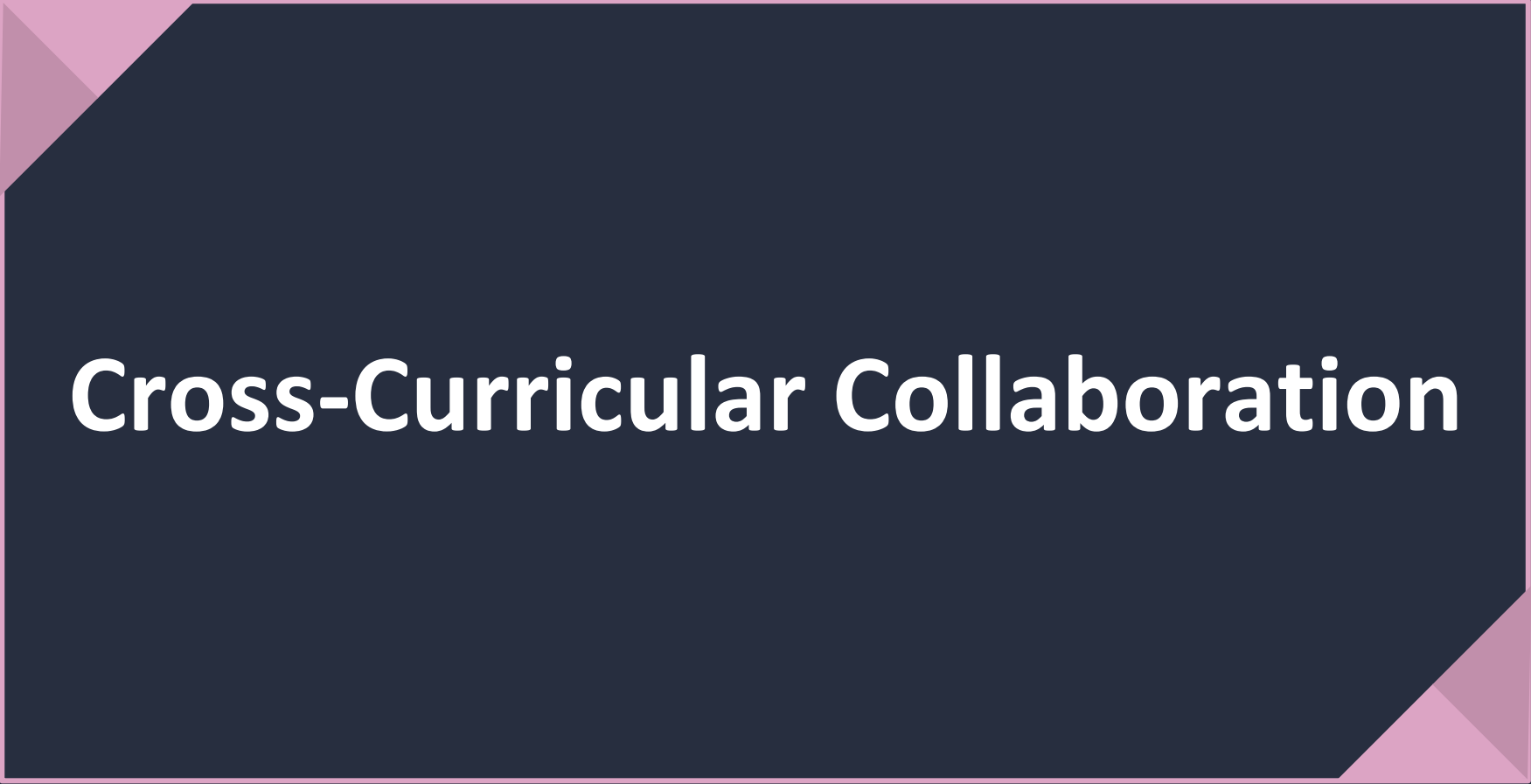
<https://www.edb.gov.hk/en/curriculum-development/kla/eng-edu/references-resources/Academic-Eng/home.html>

The image features a dark blue background with a thin pink border. The top-left and bottom-right corners are folded over, revealing a lighter pink layer underneath. Centered on the blue background is the text "Graphic Organizers" in a large, white, sans-serif font.

Graphic Organizers

Graphic Organisers / Cognitive Tools

- Visual representations: Collect, organise, process, and present data and information
- Can assist students in their thinking and expression of ideas, as well as strengthen their cognitive functioning
- Can delineate the relationship between different ideas
- Can reduce cognitive load and help learners construct and plan their ideas



Cross-Curricular Collaboration

Science Education

Key Learning Area Curriculum Guide
(Primary 1 – Secondary 6)



Table 4 Linkage of Science Education KLA with other KLAs

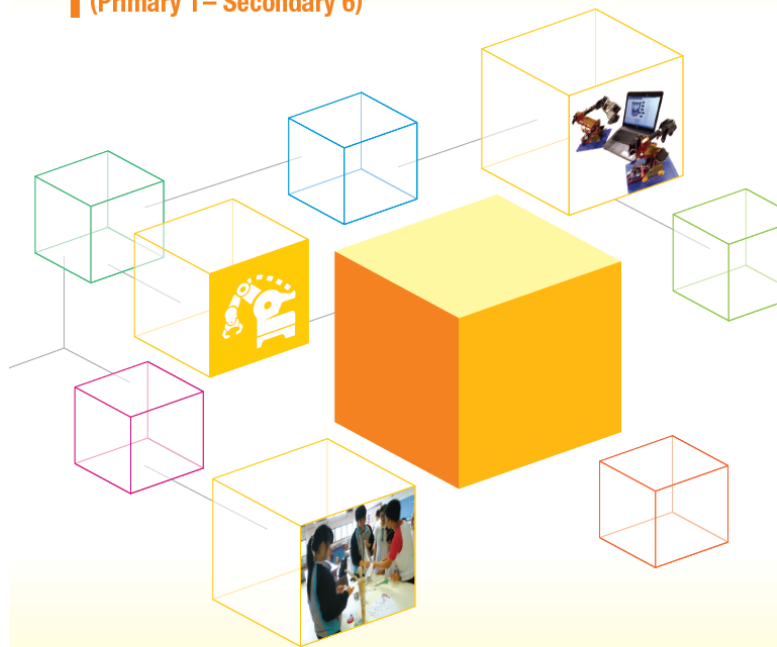
KLA	Examples
Chinese and English Language Education	• Promoting Reading across the Curriculum (RaC), e.g. arranging students to read science fiction, stories of scientific discoveries and famous scientists to stimulate their interest in science and STEM-related fields • Engaging students in drama activities, debates, etc. on themes related to science and technology • Designing writing tasks (e.g. writing articles, journals and advertisements) on issues related to the advancement in science and technology

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HKSARG
2017

Technology Education

Key Learning Area Curriculum Guide
(Primary 1 – Secondary 6)



3.3 Cross Key Learning Area Linkage

As technology learning is not compartmentalised, it can contribute to and gain from the learning of other KLAs. Technology learning activities may provide opportunities, which are generally complementary in nature, for students to demonstrate their learning in more than one KLA. Some examples of the linkage between TE and other KLAs and Liberal Studies are given below:

3.3.1 With Chinese Language and English Language Education

Students communicate ideas and present solutions appropriately and accurately orally and in writing.

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Personal, Social & Humanities Education

Key Learning Area Curriculum Guide
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(7) Language across the Curriculum

- Language plays a crucial role in facilitating the learning of PSHE subjects. Students need to conceptualise the subject content through language and practise their language skills for communicating clearly about the content based on subject-specific conventions and styles. Students studying PSHE subjects will need language support in both Chinese and English to cope with demands on the use of specific language features in presenting the subject content.
- Terminologies and vocabulary used in PSHE subjects usually carry rich meanings or abstract concepts and the content is often presented in a precise and concise manner. These styles of language use may hinder student learning or make it difficult for students to present their understanding in written words. This is particularly true when the language features vary from subject to subject in this KLA.
- There has been an increased attention on providing language support to address students' needs in studying PSHE subjects in past years, particularly in the areas of terminologies/vocabulary and writing skills. There is continued need to place Language across the Curriculum as a key focus for curriculum development for enhancing students' learning effectiveness.

Personal, Social & Humanities Education

Key Learning Area Curriculum Guide
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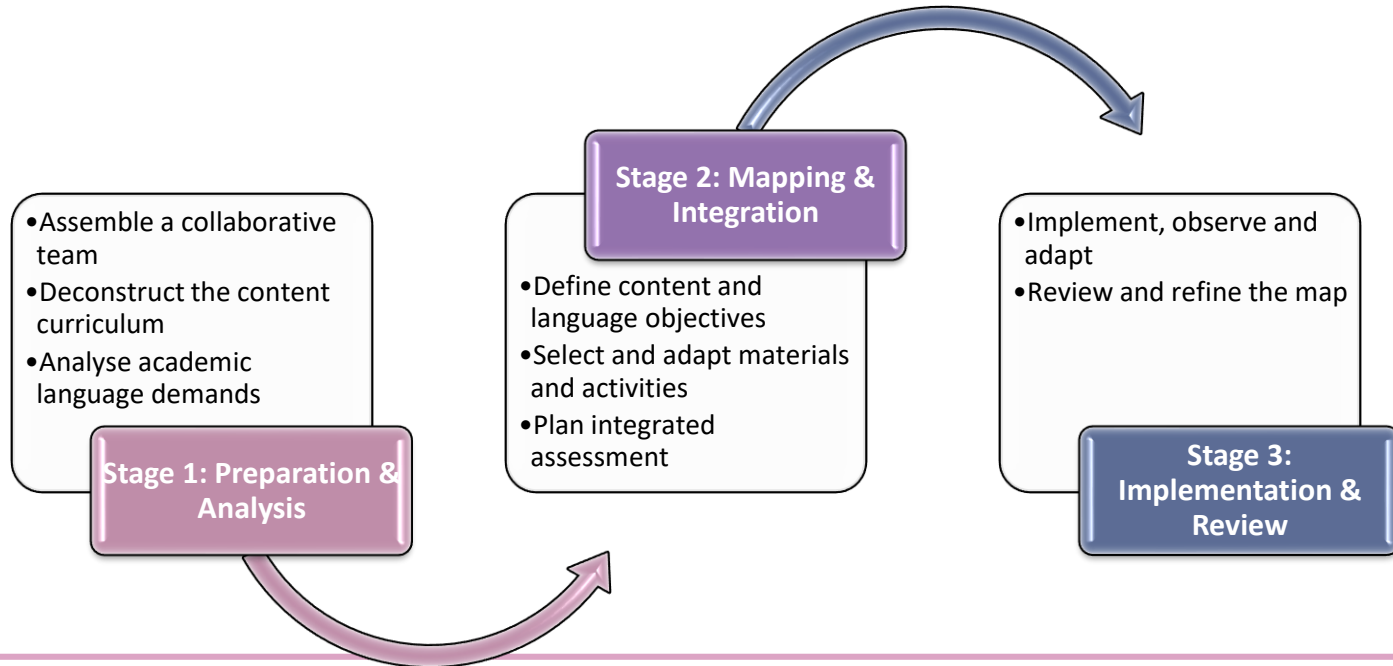
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4.2.7 Language across the Curriculum

- To provide language support to facilitate student learning, PSHE teachers may consider the following suggestions:
 - Identify the language demands in the teaching materials and consider students' language abilities.
 - Provide students who need more language support with extra assistance such as:
 - Simplifying the subject matter and language and adjusting the teaching pace at the beginning of a school term to support students' content learning and acquisition of subject-specific language knowledge and skills;
 - Making use of visual aids such as graphic organisers to enhance students' understanding of the materials; and
 - Providing examples of using vocabulary in context, and scaffolding students' mastery of subject-specific writing skills from vocabulary to sentence structures to text types.

Curriculum Mapping

- To ensure a coherent alignment between content and language objectives



S.3 Biology: The human digestive system

Form a team of content and language teachers. Agree on mapping goals, scope (e.g., a grade level or subject), etc.

Go through core topics, concepts and skills in the scheme of work. Identify the key cognitive discourse functions (e.g., describe, explain, compare, argue) students must use.

For each topic, identify: (1) Genre (e.g., lab report, explanation); (2) Vocabulary (Tier 2 and Tier 3 words); (3) Grammar & Functions (e.g., passive voice for processes); (4) Skills (e.g., justifying a viewpoint)

For each unit/lesson, identify objectives that combine content mastery with specific language use (e.g., "Students will explain the process of digestion using sequenced steps and passive voice").

Choose/co-create materials (e.g., texts, videos) that support the content and language objectives identified. Design scaffolded activities (e.g., graphic organisers, jigsaw tasks) that require communicating content using language.

Design assessments evaluating both content and language. Ensure that rubrics include separate criteria for content and language to provide clear feedback.

- Content: Structures (e.g., mouth, stomach) and processes (e.g., mechanical vs. chemical digestion)
- CDF: To describe a process and explain the function of components

- Target genre: Sequential explanation
- Key vocabulary: Technical terms (e.g., enzyme, peristalsis) and academic verbs (e.g., break down, transform)
- Grammar: Passive voice (e.g., food is broken down) and sequential connectors (e.g., first, then, finally)

- Jigsaw reading: Students in expert groups read different texts on one organ, complete a structured note-taking frame (scaffolding language), then teach their peers

- Assessment: A diagrammatic poster explaining digestion
- Rubrics: Content (e.g., correctly sequence the digestive organs) + language (e.g., use passive voice and sequencing words appropriately)

School-based Example

1 subject



**Multiple
subjects**

**Reading Anthology
(Reading across the
Curriculum)**



**Cognitive Discourse
Functions**

School-based Example

“What is the true cost of my [chosen product]?”

English language

**A persuasive
narrative**

Mathematics

Statistical data



Science

Study biodiversity loss

Material composition, Pollution from production / disposal

Geography

Global supply chain of the product

Carbon footprints

Local waste management systems

Economics / BAfS

Market forces and circular economy

Language

Content

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