Professional Development Programme

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

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Workshop Agenda

- Importance of cross-curricular vocabulary learning and teaching
- Vocabulary in cross-curricular texts
- Vocabulary learning and instructional strategies
- Cross-curricular collaboration

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.

(e.g., Lawrence et al., 2022; Townsend et al., 2012; Townsend et al., 2020)

In reality… A paradox?

"In **subject matter learning** we **overlook the role of language** as a medium of learning. In **language learning** we **overlook** the fact that **content is being communicated**." (Mohan, 1986, p. 1)

"A **language** is a system that relates to ***what is being talked about (content)*** and ***the means used to talk about it (expression)***. Linguistic content is **inseparable** from linguistic expression." (Mohan, 1986, p. 1)

Language-aware

Content and Language Integration

Content-aware

"… ***every content teacher is a language teacher*** and ***every language teacher is a content teacher***. This statement brings ***language awareness to content lessons*** and ***content awareness to language lessons***, which should lead to teaching, learning, and assessing of language and content as **an integrated construct**." (deBoer & Leontjev, 2020, p. 259)

However, …
Content and Language Integration / Cross-curricular Collaboration

"… **is not a panacea** but an alternative means to ***providing opportunities for students to use language to learn*** **rather than** ***learning to use languages which is the core task of language lessons***." (Coyle, 2008)

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**

(e.g., Duke & Cartwright, 2021; Hwang & Duke, 2020)

Language Features

Vocabulary

Contemporary, familiar, conversational language	Contemporary, familiar, conversational; rarely overly academic	Fairly complex language that is sometimes unfamiliar, archaic, subject-specific, or overly academic	Complex, generally unfamiliar, archaic, subject-specific, or overly academic language; may be ambiguous

Sentence Structures

Mainly simple sentences	Primarily simple and compound sentences, with some complex constructions	Many complex sentences with several subordinate phrases or clauses and transition words	Mainly complex sentences with several subordinate clauses or phrases and transition words; sentences often contains multiple concepts

Adapted from: https://www.tn.gov/content/dam/tn/readready/documents/teacher-resources-/Qualitative%20Rubric%20Informational.pdf

Supporting Students' Literacy Development

"… what differentiated the success of the students tested did not seem to be located in what are usually referred to as comprehension skills – looking for the main idea, making inferences, drawing conclusions from evidence, etc. The difference, rather, appeared to lie in ***the abilities of students to successfully read and respond to harder, more complex texts*** – that is, ***to apply the comprehension skills and strategies they had been taught to increasingly more complex texts***. ***Those students who could read complex texts were more likely to be ready for college entry.*** Those who could not read complex texts were less likely to be ready for college.

Performance on complex texts ***was the clearest differentiator in reading*** between these groups of students." (Wray & Janan, 2013, p. 554)

Supporting Students' Literacy Development

"Perhaps the most important conclusion that emerges from the research is the ***importance of vocabulary knowledge*** in being able to understand and communicate in a foreign language. The studies reported above, among others, demonstrate this clearly, showing ***a moderate to strong relationship*** between ***vocabulary measures*** and ***the ability to read, write, listen, and it seems also speak, in the foreign language***. Generally speaking, the more words a learner knows, the more they are likely to know about them, and the better they are likely to perform whatever the skill. ***The single factor of vocabulary can explain up to 50% of the variance in performance in scores gained from tests of the four skills***." (Milton, 2013, p. 71)

Key Literacy Components

Decoding	• To decipher a **word** out of its letters
Morphology	• To form **words** from morphemes
Vocabulary	• To use **words** for written and spoken communication
Fluency	• To read texts accurately, smoothly and effortlessly
Text Comprehension	• To extract and construct meaning from **words**, and make sense of the information

(The National Institute for Literacy, 2007)

What KLAs are they related to?

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

Goals of Language Learning and Teaching

To use language
independently and proficiently

When using cross-curricular texts,

Comprehension

Vocabulary learning and teaching /

Linguistic analysis

Cross-curricular Texts in English Classrooms

Apart from textbooks / readers / past papers, where can we find cross-curricular texts?

What cross-curricular texts have you used?

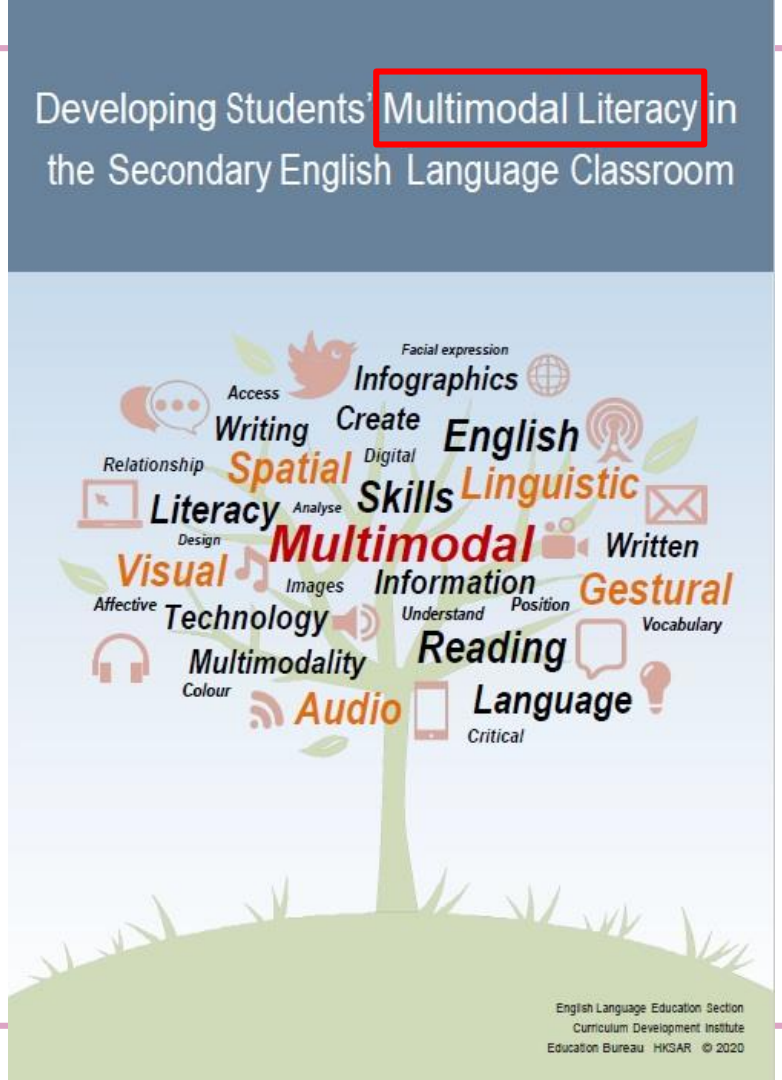
Possible Sources of Cross-Curricular Texts

Text based

- Newspapers
- Magazines
- Reports by NGOs
- Comics / Story books / Fictions
- Readers / Encyclopaedias
- Brochures
- Blogs
- …

Non-text based

- Movies / Documentaries
- Podcasts
- Infographics
- Songs
- Radio programmes
- TED talks
- YouTube videos
- …



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Criteria for Selecting Cross-curricular Texts

- Relevance to the language curriculum
- Relevance to students' lives
- Student interests and engagement
- Teacher expertise and interest
- Language level: vocabulary, grammar and sentence structures
- Authenticity – to reflect real-world language use
- Authentic tasks and activities
- Variety of text types
- Cultural diversity and inclusivity
- Language skills and objectives: Integration of different language skills
- Length and text complexity
- Text comprehensibility (e.g., headings, illustrations)
- Availability and resources
- Multimodality
- Differentiation

Word Knowledge

Vocabulary Knowledge Scale

I. I don’t remember having seen this word before.

II. I have seen this word before, but I don’t think I know what it means.

III. I have seen this word before, and I think it means _____. [synonym or translation]

IV. I know this word. It means _____. [synonym or translation]

V. I can use this word in a sentence: _____.

(Wesche & Paribakht, 1996)

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

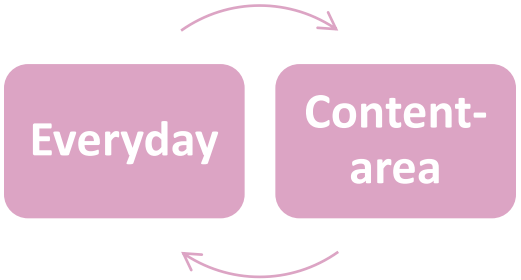
cell	draft	moment	bond	pilot
plane	rational	reciprocal	equilibrium	trial
mouse	code	wall	derivatives	ground
earth	degree	bank	circulation	square
mount	rear	pupil	feedback	quotient
ring	tank	wave	regulation	coordinates
model	force	power	depression	translation
noble	roots	volume	occupation	transcription
pressure	absolute	draw	hybrid	sympathetic

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**

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



- What meaning will they give?

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

Easily Confused Words

- Which of the following sentence best describes you?

I work hard.

I hardly work.

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.*

Dimensions of Word Knowledge

1. The **range** of meanings of a word (e.g., *effervescent*)

2. The **situations and contexts** to which the word applies (e.g., Casual conversations? Academic writing?)

3. The ways in which the **grammatical form** of a word affects its meaning (e.g., *effervesce* (v.), *effervescence* (n.), *effervescent* (adj.))

4. **Other words** that are likely to **occur** with the word

5. The **probability** of encountering the word

(Templeton et al., 2015, p. 9)

Dimensions of Word Knowledge

Form	**Spoken**	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express this meaning?
Meaning	**Form and meaning**	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concepts and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use	**Grammatical functions**	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use (register, frequency, etc.)	R	Where, when, and how often would we expect to meet this word?
		P	Where, when, and how often can we use this word?

(Nation, 2001)

Spelling Strategies

Spelling strategy	Definition of the strategy	Example of subject's answer
Retrieval	The immediate recall of an answer previously stored in memory	"That's easy. I just knew it." "I learned that a long time ago."
Sounding out	Using phonetic clues or sounds to spell all or part of a word	"I sounded it out." "I spelled it out."
Analogy	Using another word to assist in spelling	"I thought of the word cake (for lake)."
Rule use	Referring to specific rules that one has learned to spell a word	"'ea' has the sound /i:/."
Syllabification	Dividing a word into syllables or what a child thinks are the words syllables, and spelling the parts	"I broke it into pieces." "I did this, /rain/ /coat/ /s/."
Visual memory	Using a mental image of the word to spell it	"I thought of the window of my room and spelled it."
Visual checking	Writing the word, looking at it, and correcting it, if necessary.	[Observed behaviour]

(Baleghizadeh & Dargahi, 2011)

Considerations for Selecting Vocabulary Items

Topic	Questions to Ask
Representative	• Is the word representative of a family of words that students should know? • Is the concept represented by the word critical to understanding the text? • Is the word a label for an idea that students need to know? • Does the word represent an idea that is essential for understanding another concept?
Repeatability	• Will the word be used again in this text? If so, does the word occur often enough to be redundant? • Will the word be used again during the school year?
Transportable	• Will the word be used in group discussions? • Will the word be used in writing tasks? • Will the word be used in other content or subject areas?
Contextual Analysis	• Can students use context clues to determine the correct or intended meaning of the word without instruction?
Structural Analysis	• Can students use structural analysis to determine the correct or intended meaning of the word without instruction?
Cognitive Load	• Have I identified too many words for students to successfully integrate?

(Fisher & Frey, 2008, 2014; Fisher et al., 2009; Frey & Fisher, 2009)

Considerations for Selecting Vocabulary Items

- Words central to understanding the text
- Words frequently used in the text
- Words that might appear in other content areas
- Words with multiple meanings
- Words with affixes

(Baker et al., 2014)

Types of Vocabulary

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*)

(Muñoz, 2002, pp. 35-36)

Considerations for Selecting Vocabulary Items

- Academic Word Lists
    1. The Academic Word List (Coxhead, 2000)
    2. The Academic Spoken Word List (Dang et al., 2017)
    3. New Academic Word List (Browne et al., 2013)
    4. Academic Vocabulary List (Gardner & Davies, 2014)
    5. Academic Formulas List (Simpson-Vlach & Ellis, 2010)

Vocabulary Teaching Principles

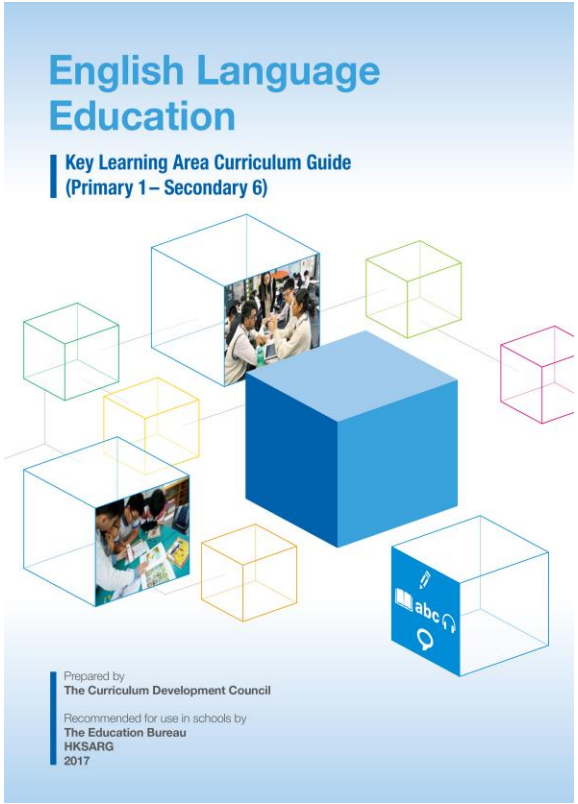
- Presenting vocabulary in context
- Multiple encounters in different contexts
- Form, meaning, use
- Relevance + Personalisation
- Incidental word learning vs. Intentional, explicit instruction
- Reception and production
- Cognitive depth vs. affective depth
- Prioritisation: What words to teach and how many to teach
- Pre-, While-, Post-
- Students' active involvement
- Authentic use
- Differentiation

Vocabulary Learning Strategies

Helping Students Develop Vocabulary Building Strategies

- **<u>Curriculum and Assessment Guide</u>**

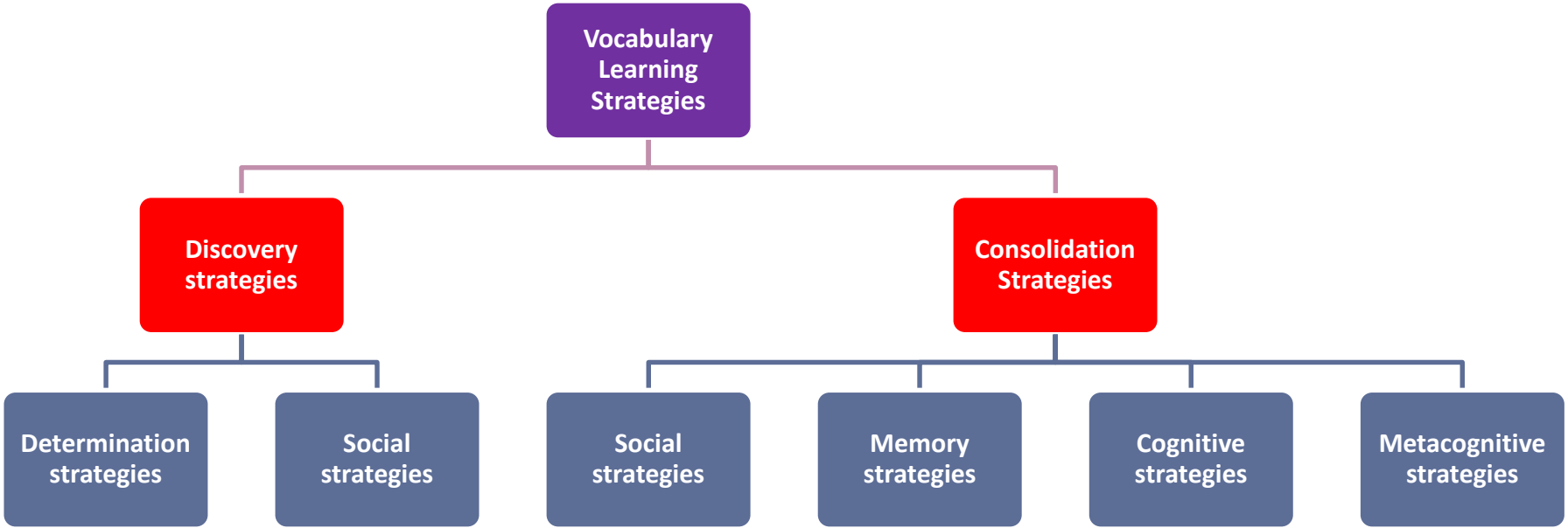
1. Using knowledge of word formation
2. Using knowledge of collocations
3. Using knowledge of lexical relations
4. Guessing meaning and inferencing with available clues
5. Using dictionaries and thesauri
6. Creating word webs to record words learnt
7. Retaining words using mnemonics



Nation's (2001) 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

Schmitt's (1997) Vocabulary Learning Strategies



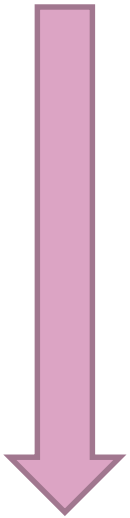
Gu’s (2018) Vocabulary Learning Questionnaire

- Beliefs about vocabulary learning (i.e., Words should be memorized vs. Words should be learned through use)
- Metacognitive strategies (i.e., selective attention)
- Inferencing
- Using dictionary
- Taking notes (e.g., Deciding what information goes into notes)
- Rehearsal (e.g., visual repetition)
- Encoding (e.g. use of word structure)
- Activation

Vocabulary Instructional Activities

Depth of Processing

How can we encourage deeper word processing?



Structural encoding (e.g., Is the word written in capital letters?)

Phonemic encoding (e.g., Does the word rhyme with “weight”?)

Semantic encoding (e.g., Would the word fit in the sentence?)

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?

Common Vocabulary Activities in ELT Textbooks

Aspects of Vocabulary Knowledge	Examples
Spoken form	• How many syllables are there in these words? • Listen and copy the intonation. • Practice with a partner. First partner: Say a word. Second partner: Touch it.
Written form	• Listen to the words. How do you spell them? • Complete the phrases. Write the missing letters. • Put the letters in bold in the correct order to complete the sentences.
Word parts	• Read the text again and find the adjectives that go with the nouns in Exercise 1. Example: happiness (noun) – happy (adjective) • Complete the sentences below with the correct form of the adjectives in brackets. • Match words from Column A with words from Column B to make compound nouns.
Form and meaning	• Match the photographs with the words in the box. • If you have a go at a new activity, you try it to see if you are good at it or like it. • Choose six items from the picture. Give your partner clues to guess the items.

(Brown, 2010)

Common Vocabulary Activities in ELT Textbooks

Aspects of Vocabulary Knowledge	Examples
Concept and referents	• Expressions with place: With a partner, discuss what kind of place you think is being discussed in these statements. • Discuss these questions with a partner. Use your dictionary to help you if necessary. [All questions are of the form: What's the difference between X and Y?] • What do you know about these jobs? List three things each person does.
Associations	• Match the words with similar meanings. • Match the greetings with the best response. • How quickly can you find eight pairs of opposites in the box?
Grammatical functions	• Rewrite these sentences. Put the words in brackets in the most natural place. • Put these expressions into two groups: (i) + clause / + noun or (ii) -ing • Complete the conversations with *so* or *neither* and *am*, *is*, *do* or *does*.

(Brown, 2010)

Common Vocabulary Activities in ELT Textbooks

Aspects of Vocabulary Knowledge	Examples
Collocations	• Work in two teams. Take turns choosing a word or expression in the box. The other team makes a sentence using *do* or *make*. • Match the verbs with the nouns to make expressions about things to do with work. • In the box below, find: five things that people *collect*; two games people *play*; two things that people might *make*; three things that people might *go to see*.
Constraints on use	• Which expressions are the most formal? Which are the least formal? • Which of the twelve questions in Exercise 1 above would you ask … 1. the first time you met someone? 2. once you knew them a bit better? 3. once you knew them really well? • Decide which word in each pair is more formal and which is less formal.

(Brown, 2010)

Techniques: Learning and Teaching Vocabulary

- ABC brainstorm
- Semantic web (Sedita, 2020; Stahl & Nagy, 2006)
- Word questioning (Bintz, 2011)
- Word map
- Polar opposites (Bintz, 2011)
- Linear arrangement (Sprenger, 2017)
- Word association (Sejnost & Thiese, 2010)
- Vocabulary association triangle (Sprenger, 2017)
- Word sort / Concept sort (Sejnost & Thiese, 2010)
- Semantic feature analysis (Grant et al., 2015)
- Word mystery (Sejnost & Thiese, 2010)

Techniques: Learning and Teaching Vocabulary

- Story impression (Sejnost & Thiese, 2010)
- Anticipation guide (Bintz, 2011)
- Word family
- Prefixes
- Suffixes
- Roots
- Affix organizer (Sprenger, 2017)
- Syllapuzzles (Sprenger, 2017)
- Word puzzle (Richardson et al., 2009)
- Word search
- Hangman

Techniques: Learning and Teaching Vocabulary

- Collocations
- Collocation bingo
- Sentence completion (Sprenger, 2017)

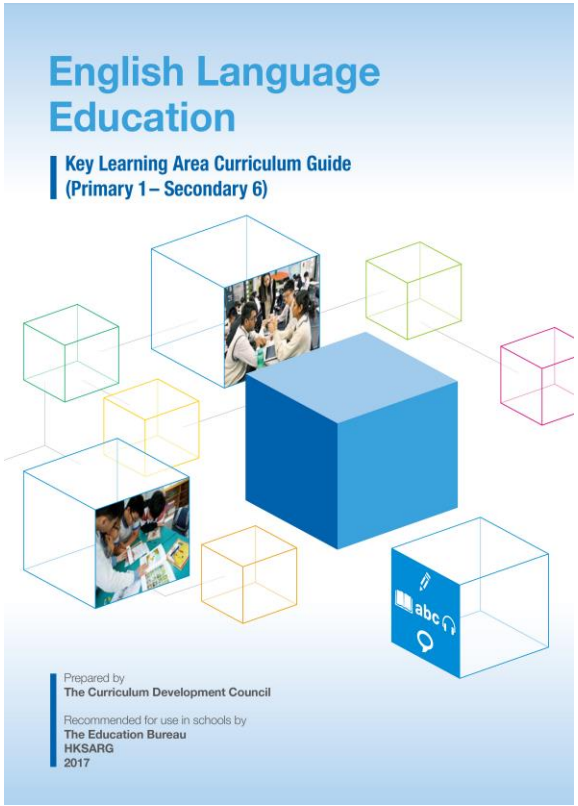
Sentence Completion

- Writing sentences that use and illustrate the meaning of the word
- To reinforce target vocabulary in a meaningful way
- Meaningful sentence:
  “We cannot learn reading by **osmosis**. Instead, _____”
- Non-meaningful sentence:
  “This process is known as **osmosis**.”

Context Clues

Clues	Example sentences
Definition / Explanation	A debilitating disease is a type of disease that impairs the strength of the body and significantly interferes with the activities of daily living.
Example	Like many other debilitating diseases, osteoarthritis affects every aspect of daily life. In addition to the pain, stiff ness, and lack of mobility, people may have trouble performing everyday activities.
Restatement / Synonym	Susan had to use a wheelchair to move around. She needed it because she has been suffering with the debilitating effects of osteoarthritis for years.
Contrast / Antonym	Susan's debilitating osteoarthritis made her feel exhausted, but Michelle felt invigorated after the walk.
Inference through general context	Going to physical therapy was Susan's highlight of the week; it helped her deal with the debilitating effects of osteoarthritis.
Punctuation	Susan's friend Mark suffered from muscular dystrophy, a debilitating disease, characterized with a progressive loss of voluntary muscle tissue and function.

(Zygouris-Coe, 2015)



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

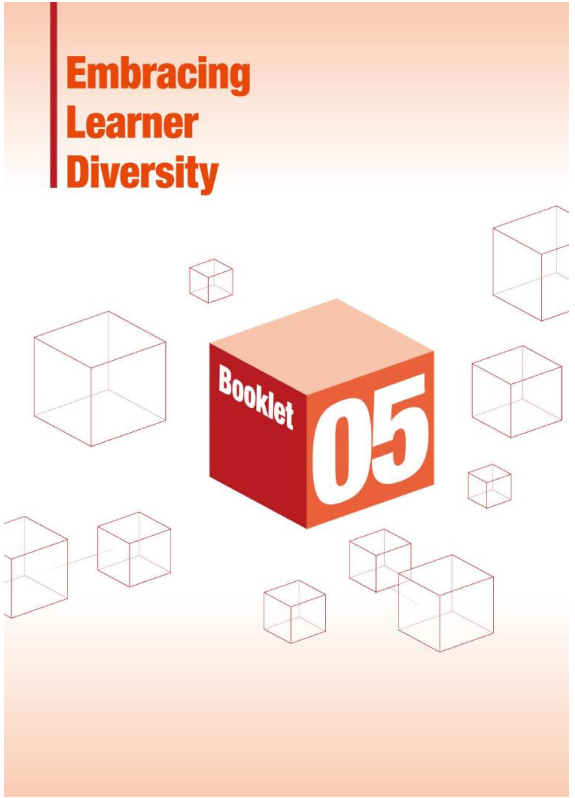
Catering for learner diversity in the senior secondary English classroom

[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://334.edb.hkedcity.net/new/doc/eng/ELE/SN2_Catering.pdf



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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

https://www.edb.gov.hk/attachment/en/curriculum-development/renewal/ELE/ELE_KLACG_P1-S6_Eng_2017.pdf

Cognitive Discourse Functions

Discussion

- How do we express knowledge?
- What language functions do we teach in English?
- What language functions are your students required to demonstrate in content subjects?
- Are your students good at communicating content knowledge? What support can we provide?

Language Items and Communicative Functions	*Examples*
Use adjectives, adverbs, formulaic expressions, etc., to make comparisons and give descriptions of processes and situations	Exercise will make you healthier and stronger. You cannot expect more pay for less work. John walks and talks like his father. Although the twins look alike, they are very different in character. To a large extent, the two pieces of work are similar in terms of content. It's an own goal! What a blunder!
Use imperatives, modals, adjectives, adverbial clauses, formulaic expressions, rhetorical questions, etc., to give and justify recommendations and make proposals	Stop buying electrical appliances or products that are not energy-efficient. In order to stop bullying, victims of bullying must be convinced that they can do something about it. I feel strongly that the government should redouble its efforts to stop discrimination against the disabled. It is of the utmost importance for the government to review Hong Kong's language policy. Would it not make more sense to promote the use of canvas bags instead of plastic bags? Another alternative is to encourage manufacturers to use recycled paper as far as possible.
Use a variety of tenses, prepositions, formulaic expressions, adjectives, adverb phrases, adverbial clauses, the passive voice, etc., to express factual information	According to the statistics, there has been a sharp rise in the number of visitors from Mainland China during the last eight months. As a matter of fact, more and more university students take up part-time jobs nowadays for a variety of reasons. Some do it because they have a real need to pay their increasingly high tuition fees. UNICEF's work is guided by the Conventions on the Rights of the Child. Family problems have become more and more acute these days.

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 absorption[7] – photolysis of water for the generation of NADPH – generation of ATP	• Outline the major steps of photochemical reactions and carbon fixation.
• Carbon fixation: Calvin cycle[8] – 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	• Understand the dependence of carbon fixation to the photochemical reaction.
• Conversions of photosynthetic products into other biomolecules	
• Factors (light intensity and carbon dioxide concentration) affecting the rate of photosynthesis	• 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	• Evaluate the impact and control of rapid human population growth.
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)	• Recognise the impacts of malpractices in fisheries and agriculture. • Account for the accumulation of toxic substances along a food chain.
Effects of urbanisation and industrialisation • Land clearance and reclamation • Health problems related to pollution	• 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)

Cognitive Discourse Functions

Function type	Communicative intention	Performative verbs
Categorize	I tell you how we can cut up the world	classify, compare, contrast, exemplify, match, structure, categorize, subsume
Define	I tell you about the extension of this object of specialist knowledge	define, identify, characterize
Describe	I tell you details of what can be seen (also metaphorically)	describe, label, identify, name, specify
Evaluate	I tell you what my position is vis-a-vis X	evaluate, argue, judge, take a stance, critique, comment, reflect, justify
Explain	I give you reasons for and tell you causes of X	explain, reason, express cause/effect, deduce, draw conclusions
Explore	I tell you something that is potential	explore, hypothesize, predict, speculate, guess, estimate, simulate
Report	I tell you about something external to our immediate context on which I have a legitimate knowledge claim	report, inform, summarize, recount, narrate, present, relate

(Dalton-Puffer, 2013; Dalton-Puffer & Bauer-Marschallinger, 2019)

Cognitive Discourse Functions

- "CDFs form ***a link between cognition and language*** or thinking and speaking/writing. As such, they are a bridge between content learning objectives, the specific types of communication (literacies) associated with academic subjects, and ***the language used to express knowledge and thinking***." (Morton, 2020, p. 8)

- "Using CDFs as building blocks provides ***a much more focused and principled integration of content, literacy and language*** than simply dealing with language in a random or incidental fashion. They also provide a framework for assessing learners' academic language competence, and this can be used both by teachers and researchers." (Morton, 2020, p. 11)

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

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Sentence Frames

- **Analysis**

1. *It is predicted that _____ causes _____.*
2. *_____ will happen because _____.*
3. *_____ might _____ because I know that _____.*
4. *If _____, then _____.*

https://achievethecore.org/content/upload/ELL%20Supports%20for%20Writing%20and%20Discussion.pdf

Sentence Frames

- **Explanation**

1. *One reason _____ may occur is because _____.*
2. *Another reason _____ may occur is because _____.*
3. *At first, I thought _____ but now I think _____ because _____.*
4. *I like/don't like _____ because _____.*
5. *The most important message is _____ because _____.*

https://achievethecore.org/content/upload/ELL%20Supports%20for%20Writing%20and%20Discussion.pdf

Sentence Frames

- **Cause and Effect**

1. _____ *is the most likely cause for* _____.
2. *The effects of* _____ *were* _____.
3. *The reason for* _____ *was* _____.
4. _____ *occurred, and consequently* _____.
5. *That wasn't caused by* _____ *because* _____.
6. _____ *was caused by* _____ *because* _____.

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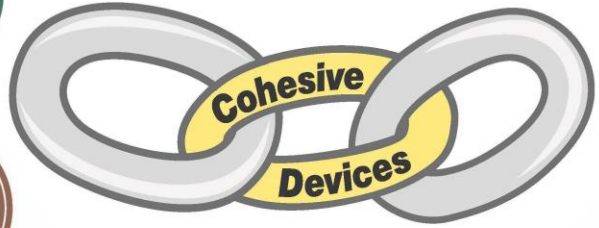
Sentence Frames

- **Contrast**

1. *_____ have _____, but _____ have _____.*
2. *Whereas _____ have _____, _____ have _____.*
3. *Despite the fact that _____ have _____, _____ have _____.*

Academic Use of English

Cohesive Devices for Different Purposes



Cause and Effect

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

Example

for example | for instance | in this case | such as

Comparison and Contrast

Similarities:
both | as...as | likewise | similarly

Differences:
in contrast | whereas | unlike

Clarification

namely | specifically | in other words | to put it simply

Emphasis

clearly | obviously | definitely | indeed | notably | above all

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

in brief | in conclusion | in summary | to conclude | to sum up

Order

first and foremost | subsequently | finally | last but not least

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Academic Use of English

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.

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Academic Use of English

(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, …

Academic Use of English

(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, …

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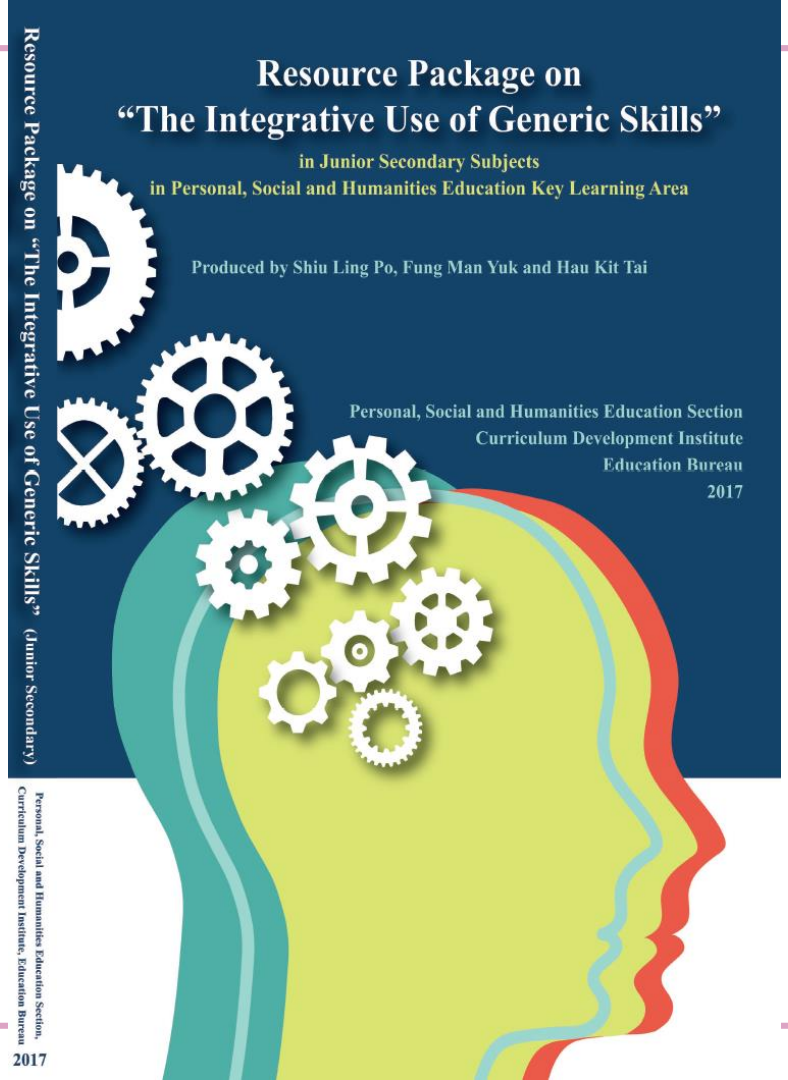
Graphic Organizers



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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

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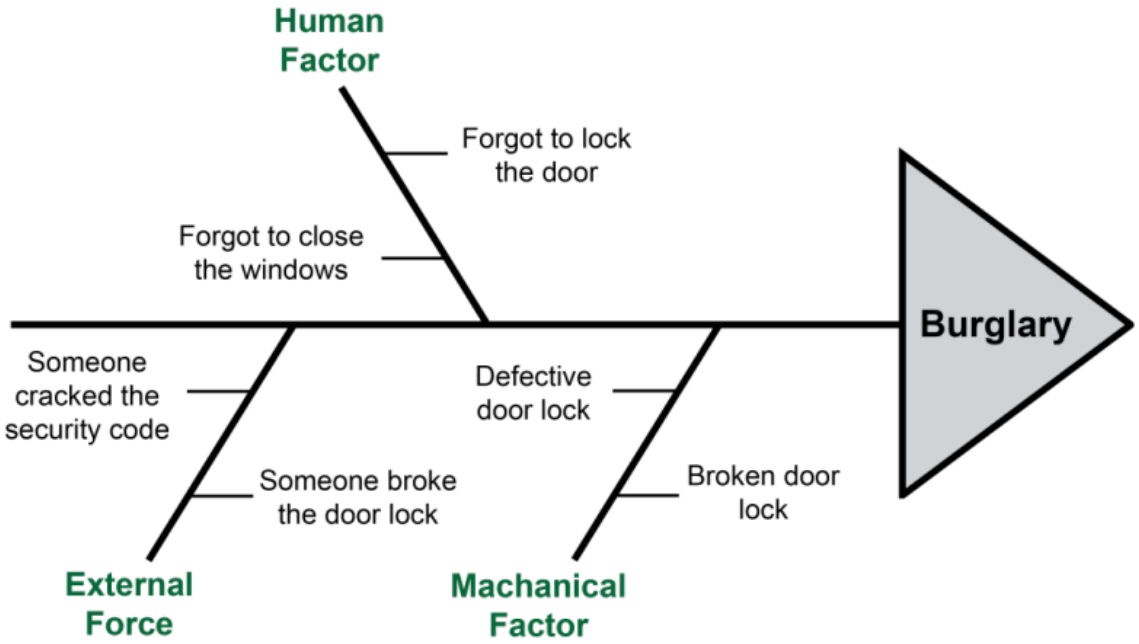

Figure 3.2 Example of a cause-and-effect fishbone diagram

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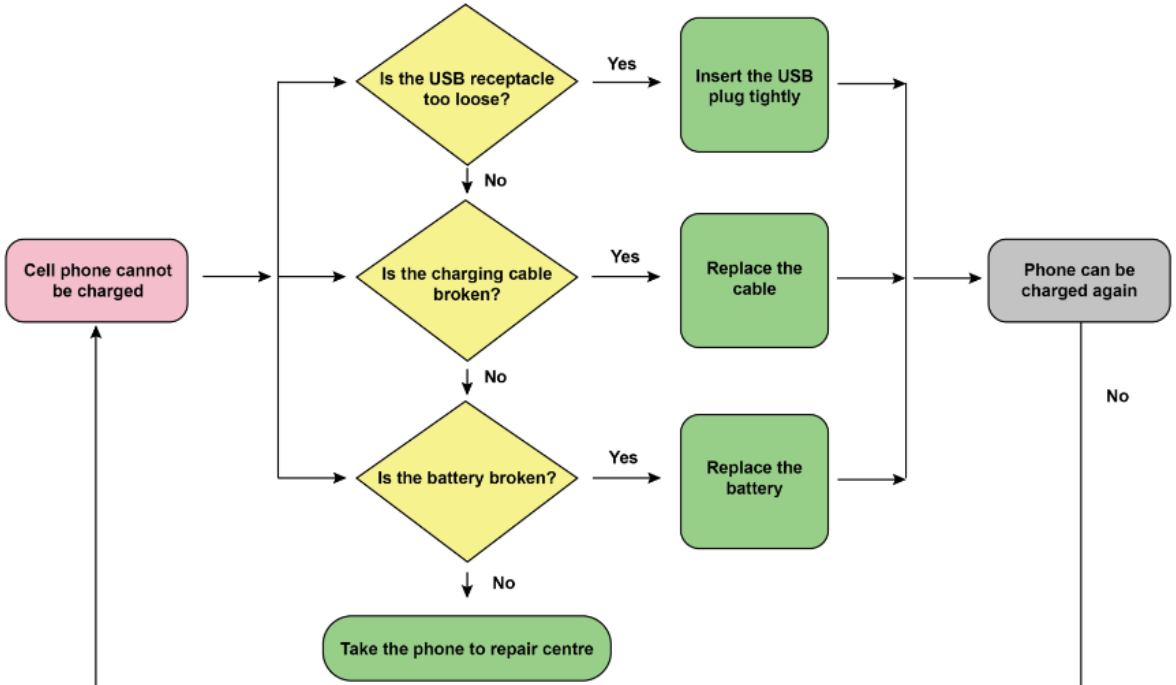

Figure 3.4 Example of a flowchart

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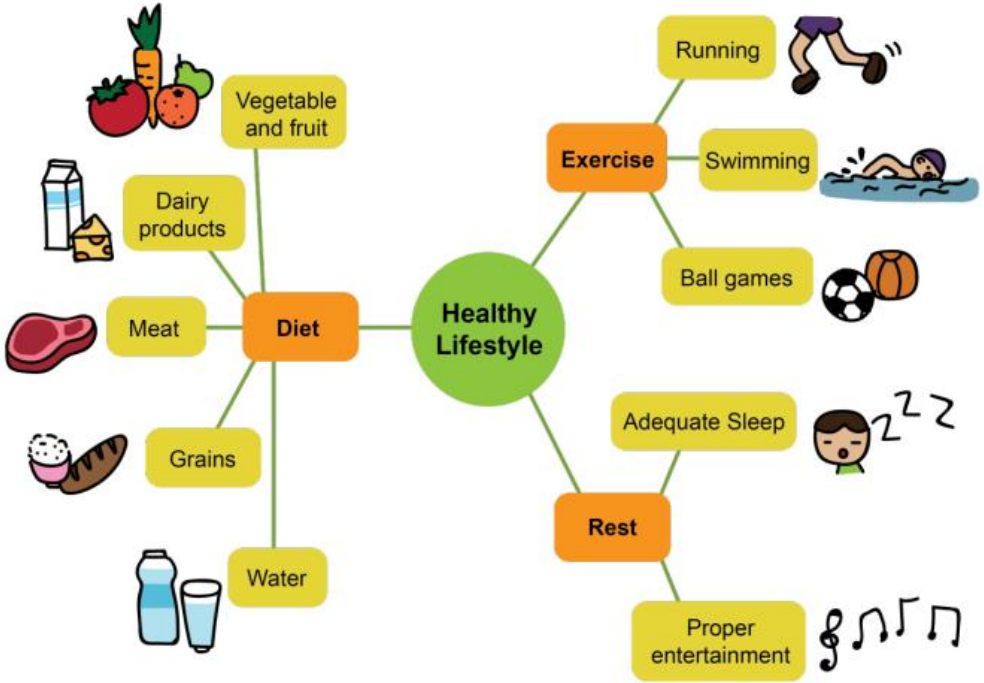

Figure 3.5 Example of a mind map

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The Second World War

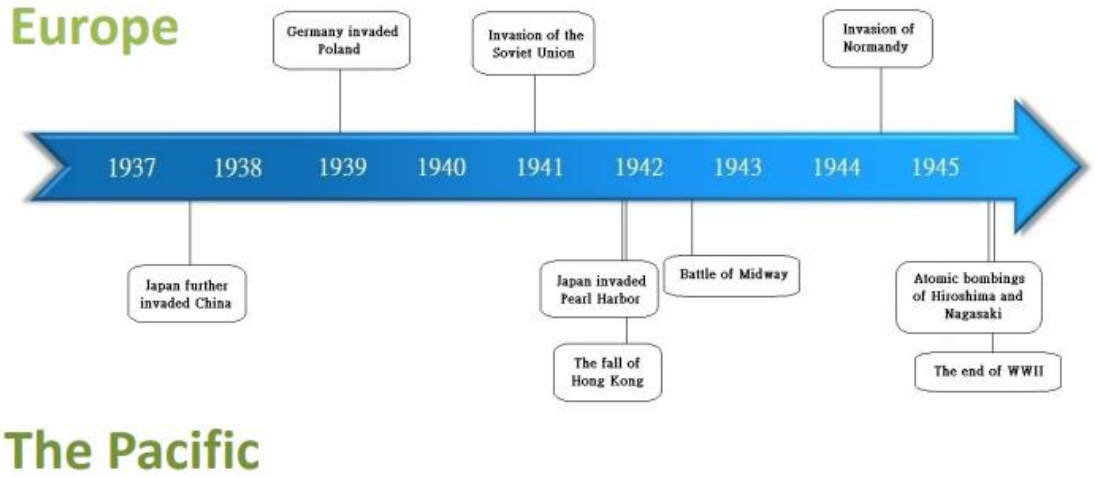

Figure 3.6 Example of a timeline

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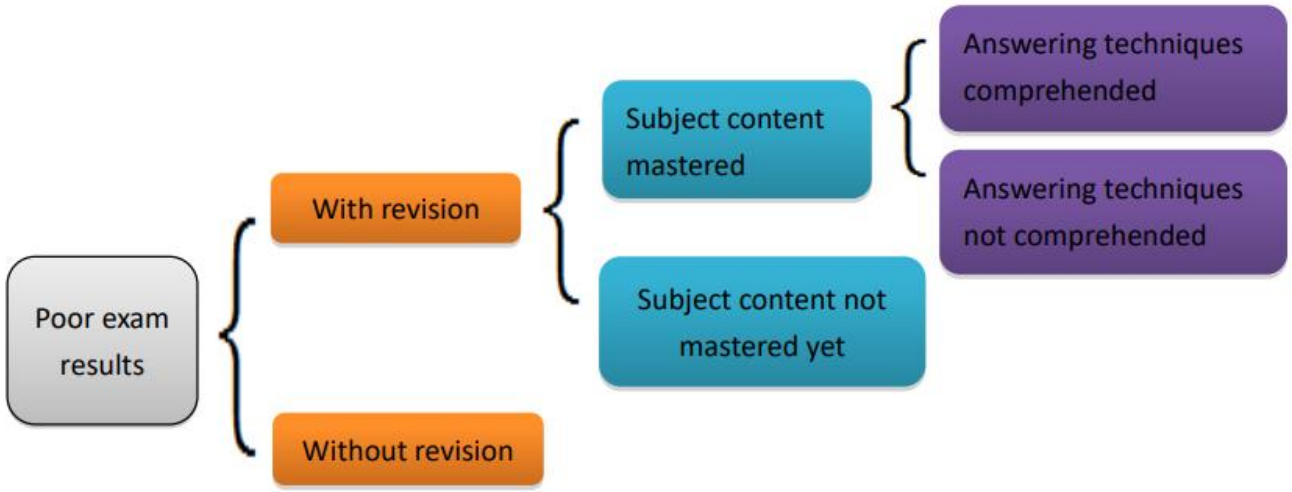

Figure 3.7 Example of a logic tree

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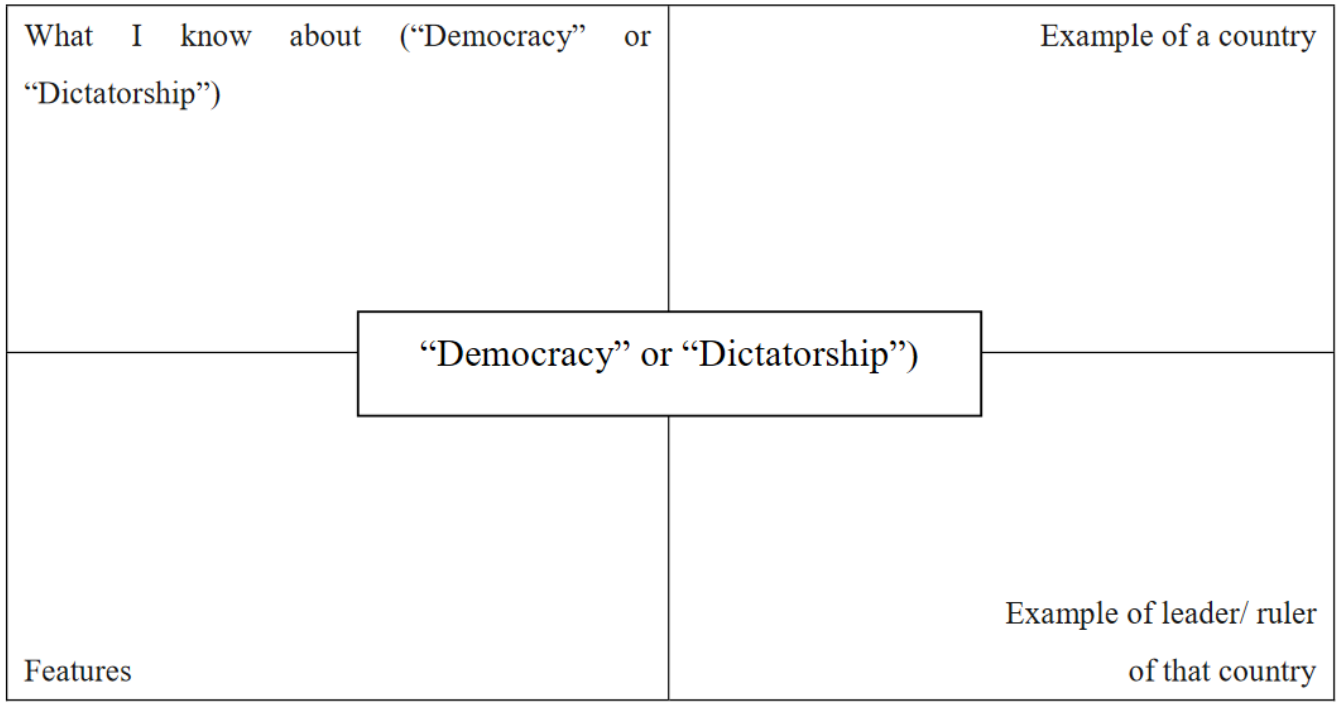
Fig. 4.5 Frayer Model



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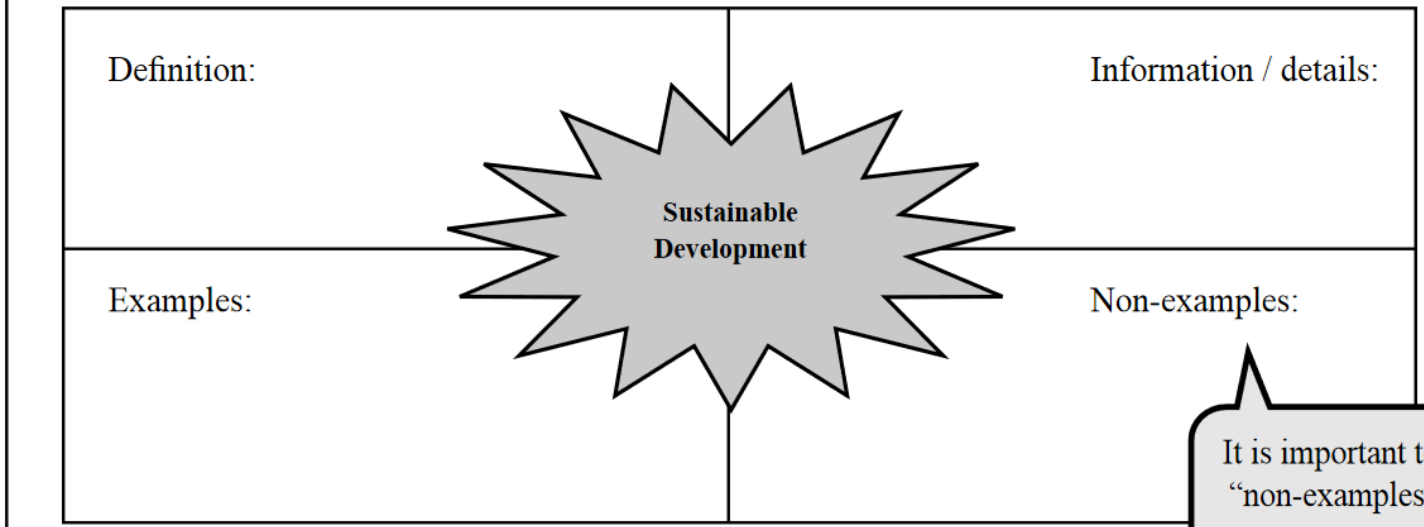
Name: _____ Class: _____

Complete the following diagram to show what you know about sustainable development.

Write as much as you can.



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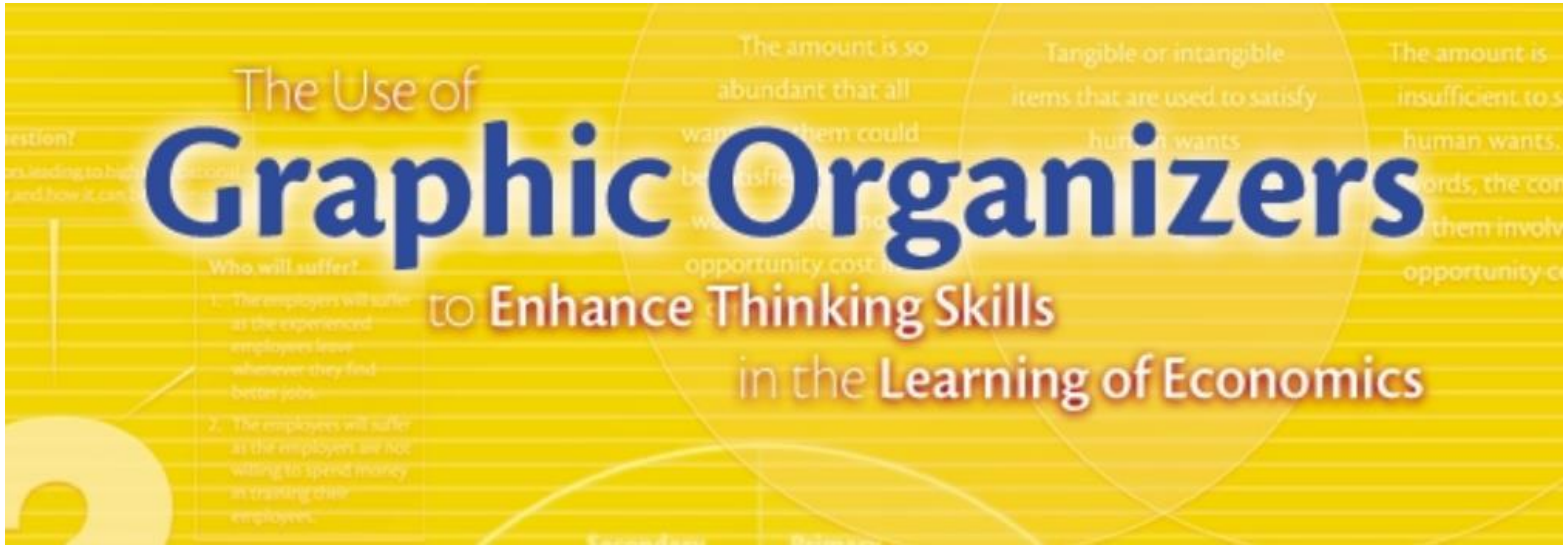

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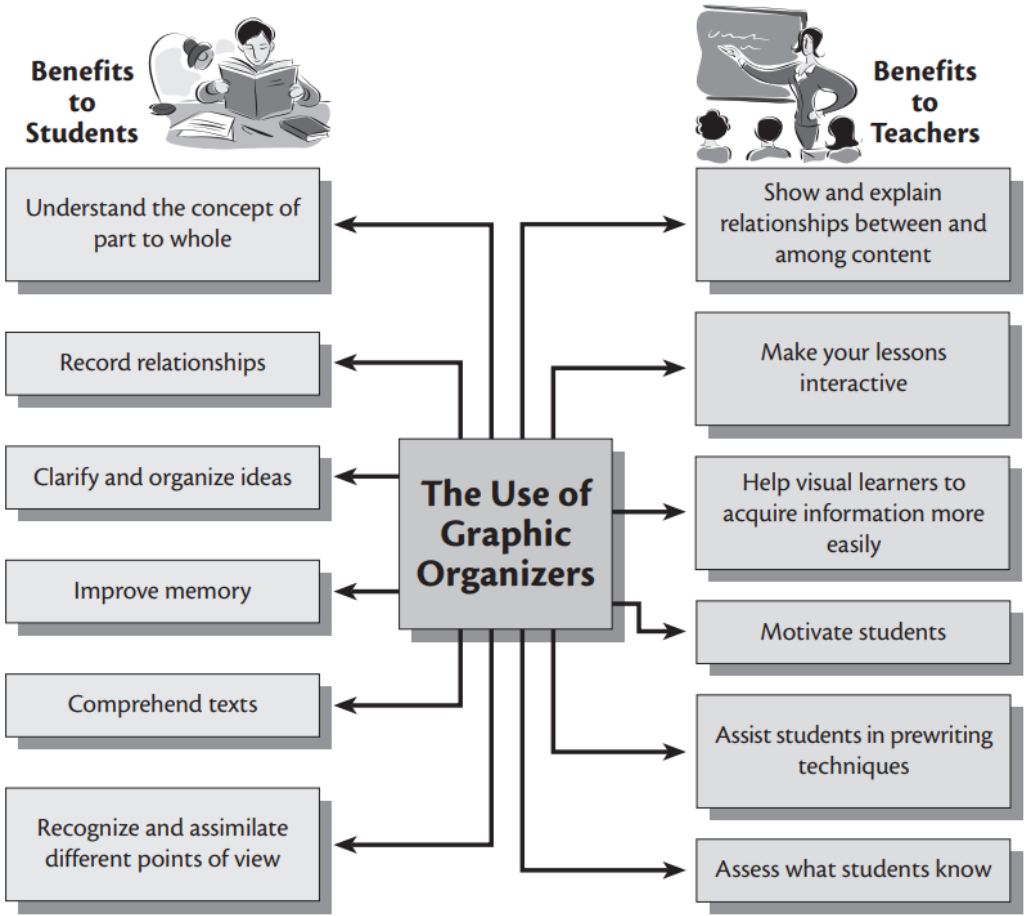

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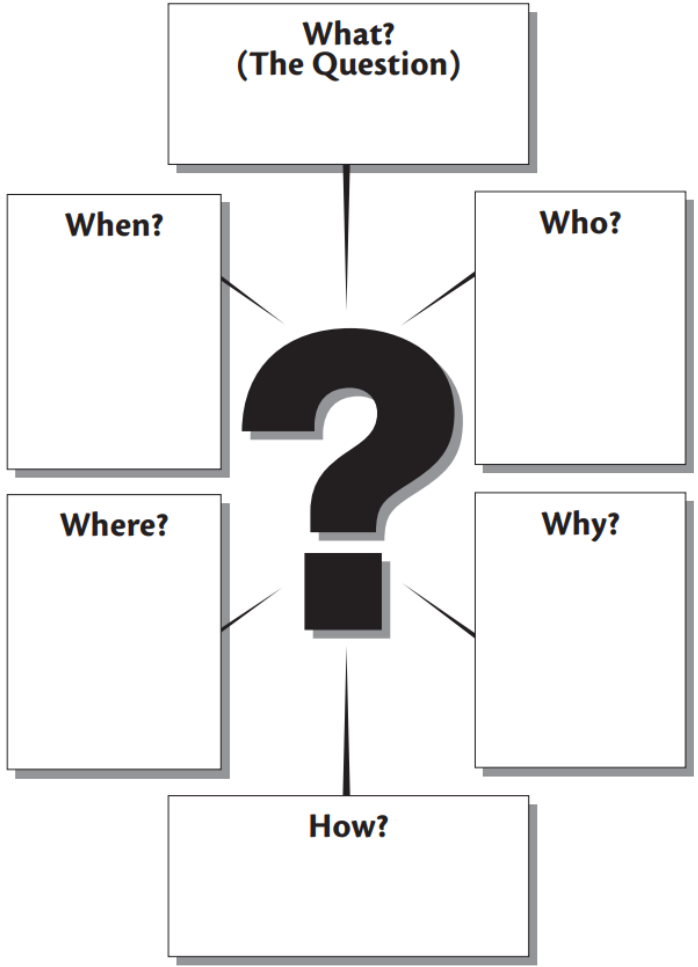
Big Question Map



Topic :
Occupational Mobility of Labour

What is the question?
What are the factors leading to high occupational mobility of labour and how it can be minimized?

When did the problem start?
The problem has been existing for a long time. It becomes more serious when employees strongly feel that they are unfairly treated by their employers.

Who will suffer?
1. The employers will suffer as the experienced employees leave whenever they find better jobs.
2. The employees will suffer as the employers are not willing to spend money in training their employees.

Where can we seek help to solve the problem?
1. The Labour Department
2. The Labour Union
3. The Trade Union
4. Research experts

How comes the problem?
1. Employers are inexperienced in improving employer-employee relationship.
2. Employees feel that they are underpaid and poorly treated.
3. The searching cost is relatively low as the access of information of new jobs is easy.

How can we solve the problem?
1. Conduct research and interviews to identify the causes of high mobility of labour.
2. Conduct research and interviews to identify what employers are willing to do to improve labour loyalty to their companies.
3. Encourage communication between employers and employees to solve the problem of high mobility.

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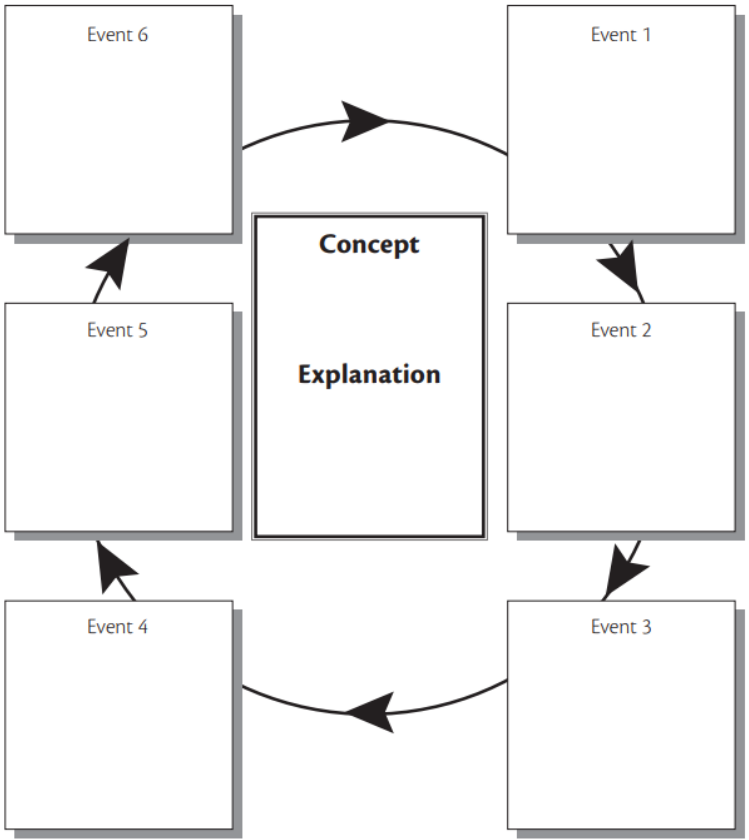
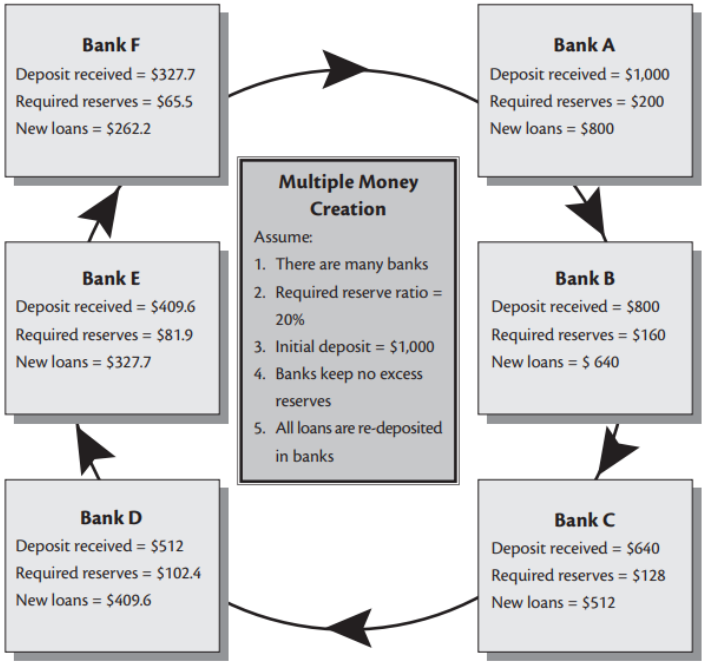
Circle Organizer



Topic : Multiple Money Creation

Assume the new loans from bank F are re-deposited into Bank A and the process goes on and on.

The total money supply thus created (including the initial amount) would be: $1,000 x 1/0.2 = $5,000



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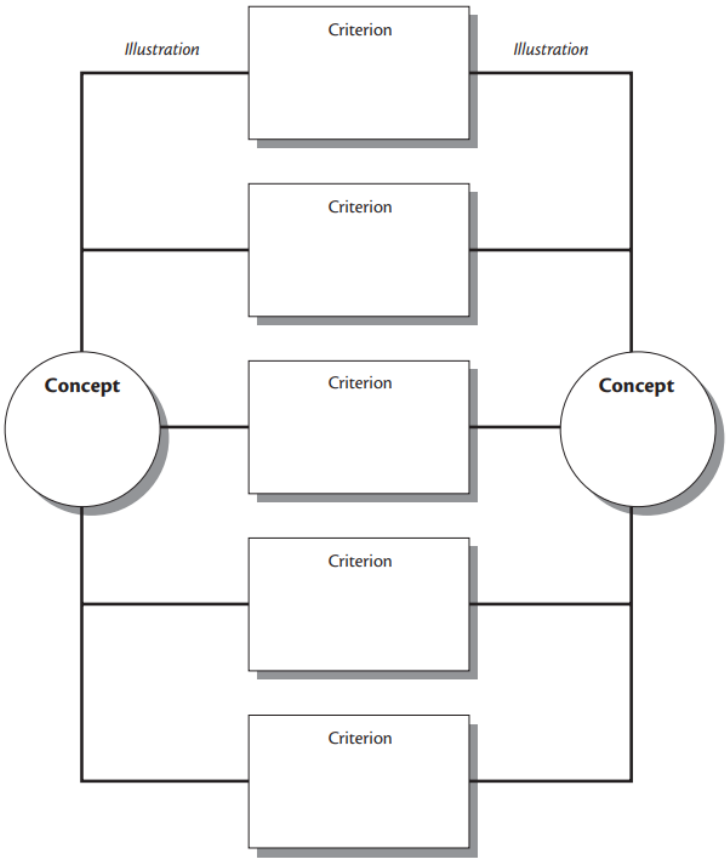
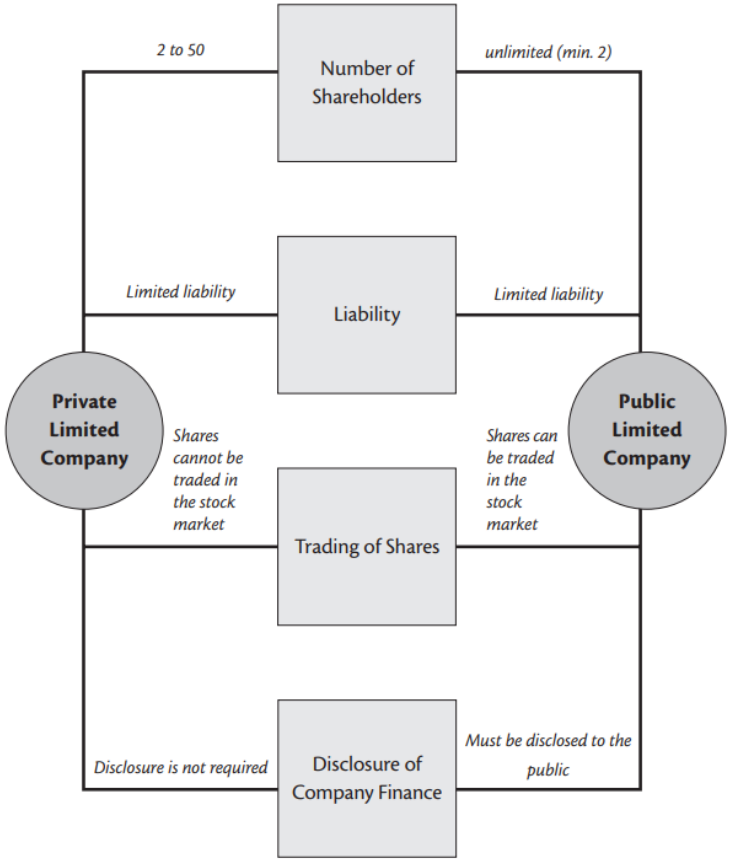
Compare Map



Topic : Private and Public Limited Companies



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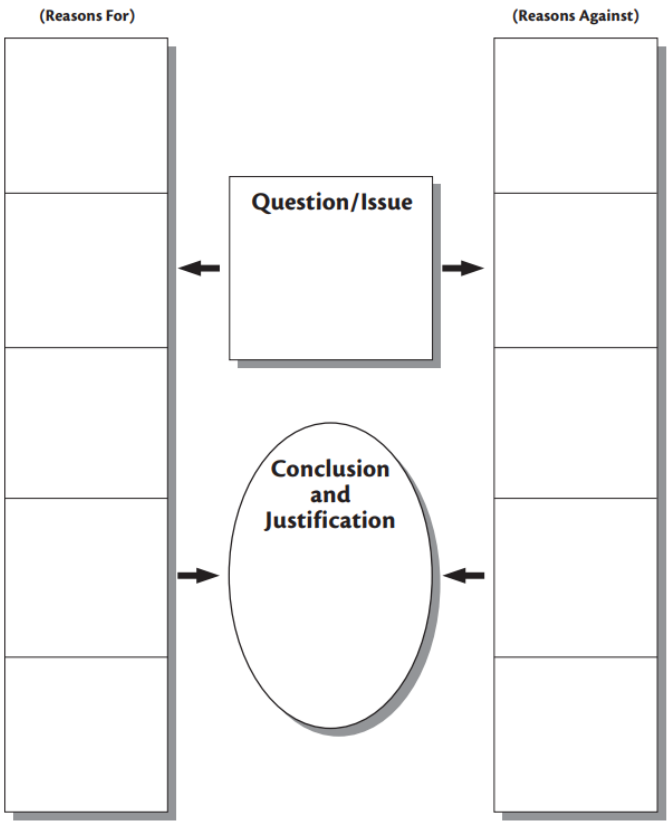
Discussion Map



Topic : Protectionism

(Reasons For)		(Reasons Against)
The local computer industry can develop under the protection	**The Issue** **Hong Kong should impose a tariff on the import of computer products from other countries.**	The variety of computer products is limited
The reduction of import will lead to a reduction of trade deficit		More local resources are allocated to the production of computer products which are not yet efficient in resource utilization
The development of the local computer industry will bring along with an increase in employment rate	**Conclusion and Justification** **Hong Kong should not impose tariff on imported computer products as this would limit our choice in using high technological products. In turn, our computer literacy would then be lowered.**	Total world production of computer products is reduced
Local computer producers are willing to spend more money in researching new products as their market are secured		The price of locally produced products will be higher than those imported from abroad

https://www.edb.gov.hk/attachment/en/curriculum-development/kla/pshe/references-and-resources/economics/use_of_graphic_organizers.pdf

Graphic Organisers	Language Patterns	Examples
Venn diagrams (Comparing two or more ideas)	• *Both …* • *Similar identical to …* • *One has … but the other does not.* • *In contrast*	
Cycles (Connecting a series of events / processes)	• *Before … after …* • *To begin … at the end …* • *Initially … subsequently …* • *In the first place … followed by … concluded with …*	
Cause and effect (Establishing a relationship)	• *When / If … then …* • *Because …* • *Unless …* • *Without … cannot/will not …*	
Semantic web (Identifying related ideas to a theme or concept)	• *These are all …* • *These are different ways …* • *There are connections among …* • *These are linked to …*	
T-chart (Showing two sides of a topic, e.g., for or against)	• *One argument for …* • *An advantage of …* • *When comparing … and …* • *One notable characteristic of …*	

(Bentley, 2010; Gottlieb, 2006, 2016)

Cross-Curricular Collaboration

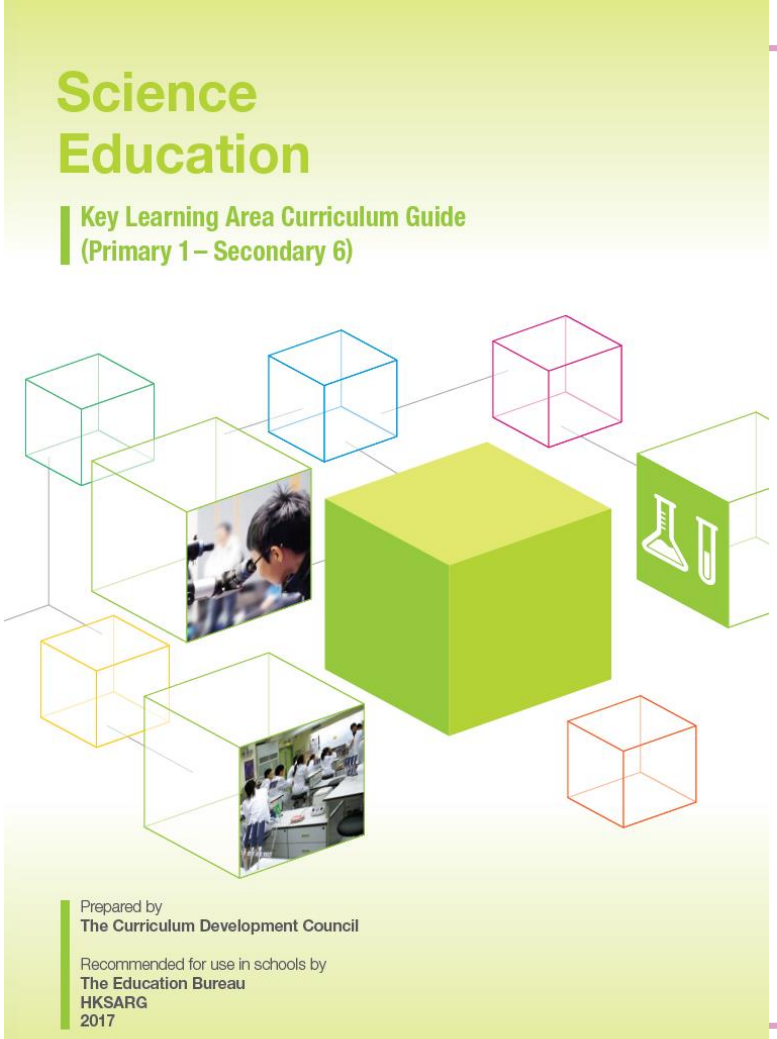


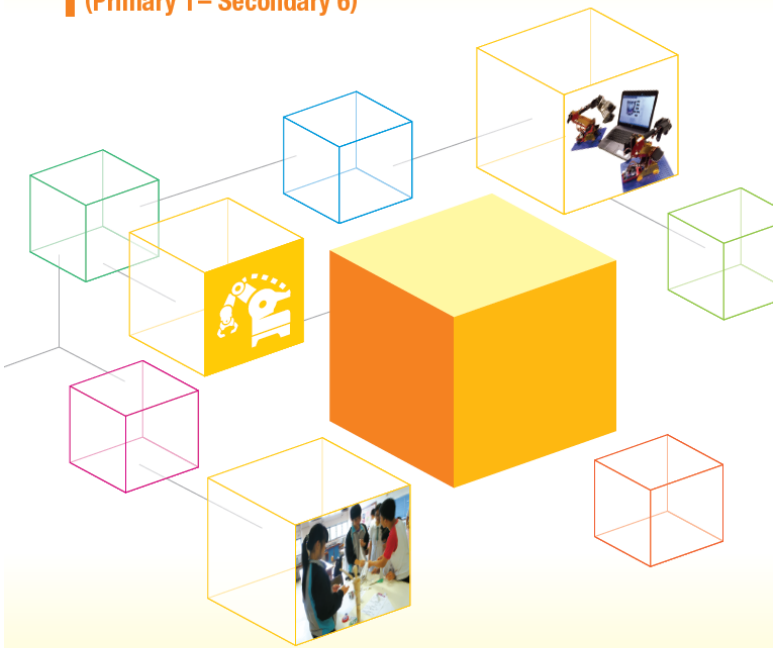
Table 4 Linkage of Science Education KLA with other KLAs

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

https://www.edb.gov.hk/attachment/en/curriculum-development/renewal/SE/SE_KLACG_P1-S6_Eng_2017.pdf

Technology Education

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



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The Education Bureau
HKSARG
2017

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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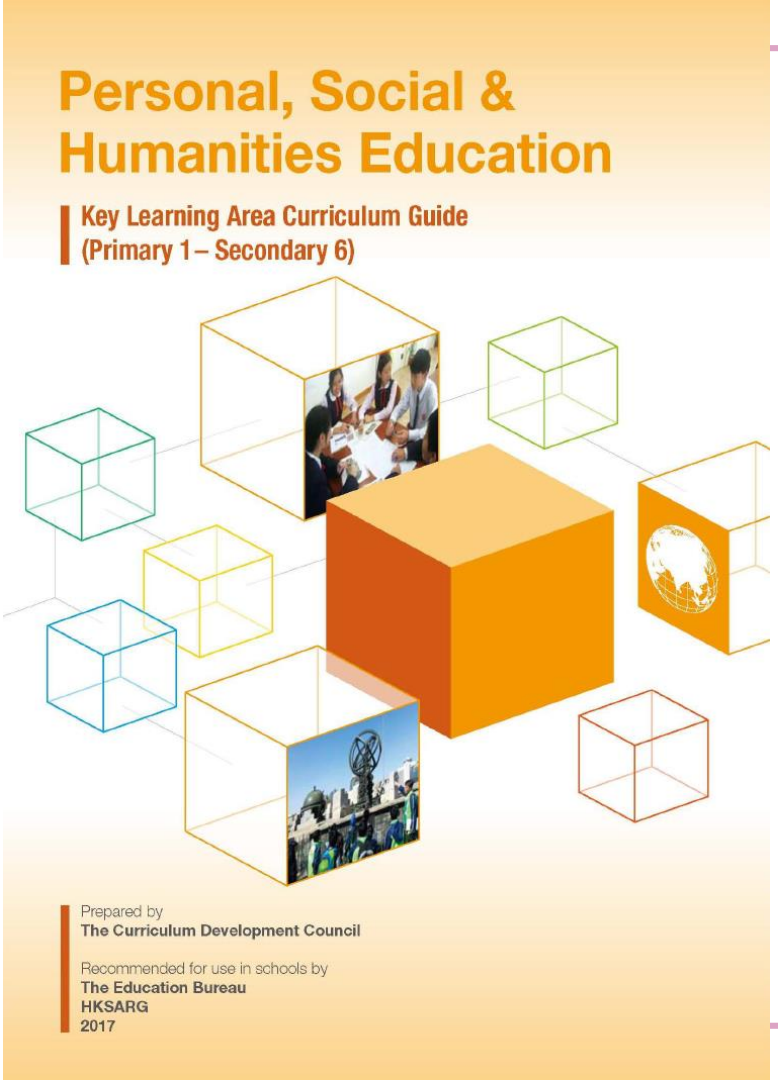


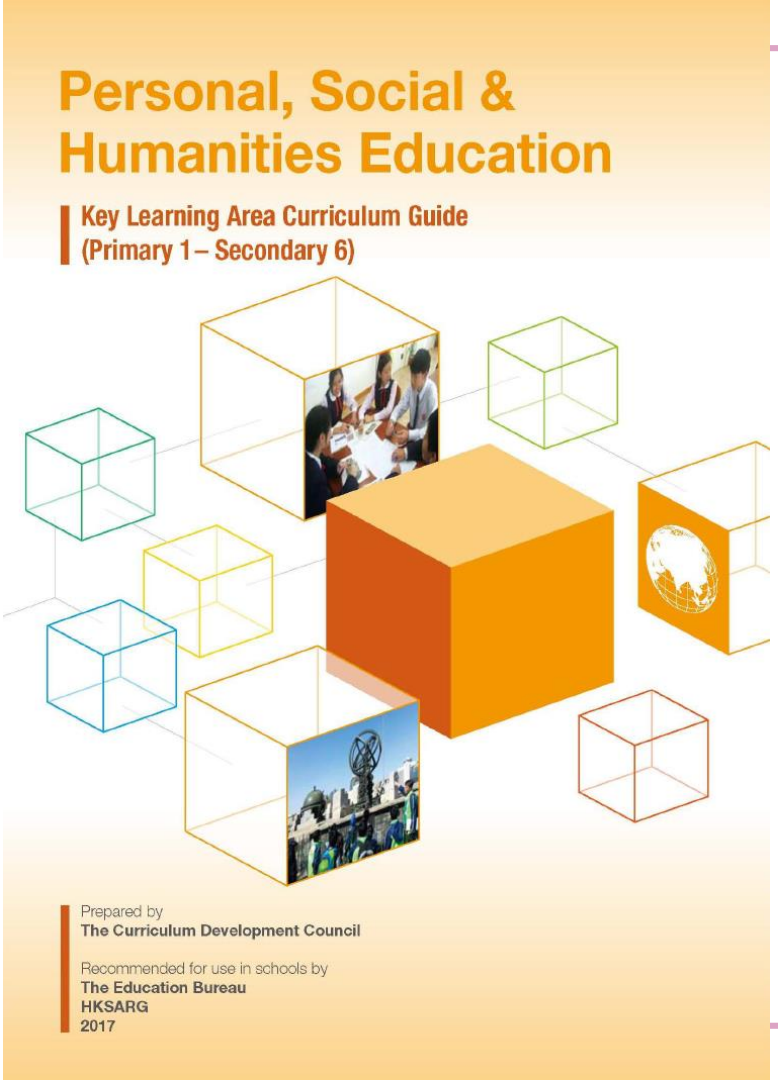
(7) Language across the Curriculum

- 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.

https://www.edb.gov.hk/attachment/en/curriculum-development/renewal/PSHE/PSHE_KLACG_P1-S6_Eng_2017.pdf



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.

https://www.edb.gov.hk/attachment/en/curriculum-development/renewal/PSHE/PSHE_KLACG_P1-S6_Eng_2017.pdf

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