

融入日常教學，協助學生掌握科本知識的學習策略

對象：中二級地理科

理念：

由於人文學科的知識量頗多，若按一般教科書的編排「依書直教」，不少學校老師也面對以下問題：

- 課堂教學偏向善重傳遞知識內容，較忽略相關學科學習技能的發展，未能銜接現時高中「能力導向」的課程要求；
- 學生對學習有關課題感乏味，課堂表現較為被動，相當局限學生自行繼續探究的興趣；
- 學生以憶記 (recall) 教科書或教師所預備的「精華式」筆記內容來應付校內測考，其分析 (analyze)、應用 (apply) 及轉移 (transfer) 能力較弱，在較為高階層次題目的表現仍有待加強 (如：資料回應題、分析及評鑑性題目等)；
- 課時有限，老師有感難以同時兼顧教授知識及學習策略。

即使是在第一組別學校，學生的學習能力較高，老師仍經常面對課時不足問題。計劃支援人員與一所成員學校的老師進行共同備課時，發現問題源自部份老師在教學過程中，慣於要把課文內容從頭到尾講一遍才感「安心」，以致課堂大部份時間均要花在解說一些基礎概念，缺乏時間和空間進行深入討論，有礙推動學生自主學習。

因此，支援人員與科組老師進行共同備課時，會引導老師因應教科書內容探討以下問題：

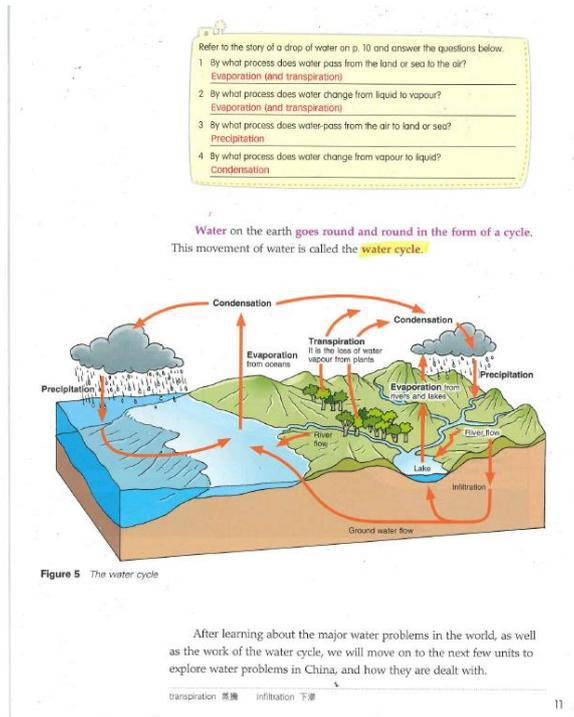
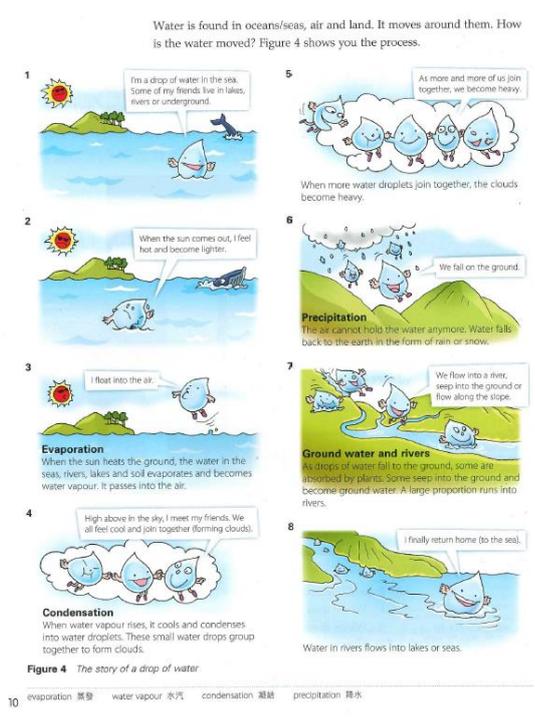
- 學生能靠自己學到什麼？我們可以把這些部份交給學生「動手做」，而非由老師講解嗎？
- 對學生來說，什麼才是真正的學習難點？老師如何在課堂上作點撥釋疑？
- 如何提出具挑戰性的問題或任務，以引發學生思考及延展其能力？

策略及效果：

i. 善用圖像組織作知識整理

以中二級地理科「Water Cycle」一課為例，支援人員估計若以第一組別學生的能力，應該可大致理解課文內容，惟未必能掌握地理科繪畫註釋圖 (annotated diagram) 的方法。而且，教科書往往把「最後答案」一早展示，缺乏建構過程之餘，亦令學生有感挑戰性不高，未能引發他們的學習興趣。

圖 1：教科書內容 Ch.3.2 Where does water come from?



有見及此，計劃人員與老師便選了這部份內容，結合自主學習策略，讓學生「先做後教」，嘗試利用圖像組織整理其所理解的教科書知識內容：

圖 2：學校 A 工作紙設計：

在設計工作紙時，會清楚說明學習目標為「善用圖像組織來整理知識，並學習繪製註釋圖 (annotated diagram)」，強調地理科所需的學習策略。

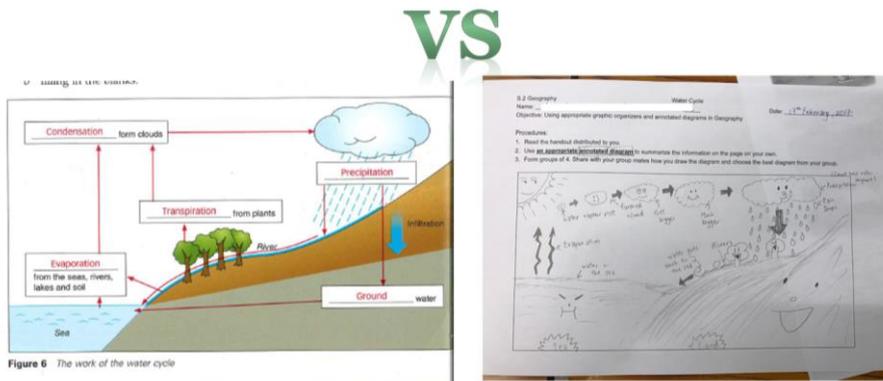
在施教時，由於擬避免學生直接抄錄教科書的註釋圖，因此課堂要另外印發此頁「原始資料」讓學生閱讀及消化，不能看教科書，而嘗試自行用方法把水循環的流程及內容用圖像組織整理知識和概念。

S.2 Geo...
Name: ... Date: 11-2-2017
Objective: Using appropriate organizers and annotated diagrams in Geography

Procedures:
1. Read the handout distributed to you.
2. Use an **appropriate annotated diagram** to summarize the information on the page on your own.
3. Form groups of 4. Share with your group mates how you draw the diagram and choose the best diagram from your group.

The diagram shows the water cycle with labels: Sunlight on sea, Evaporation, Condensation, Precipitation, Ground water and rivers, Sea, water storage, Normal mountain, and Totally normal piece of land.

圖 4：教科書與學生繪圖對照

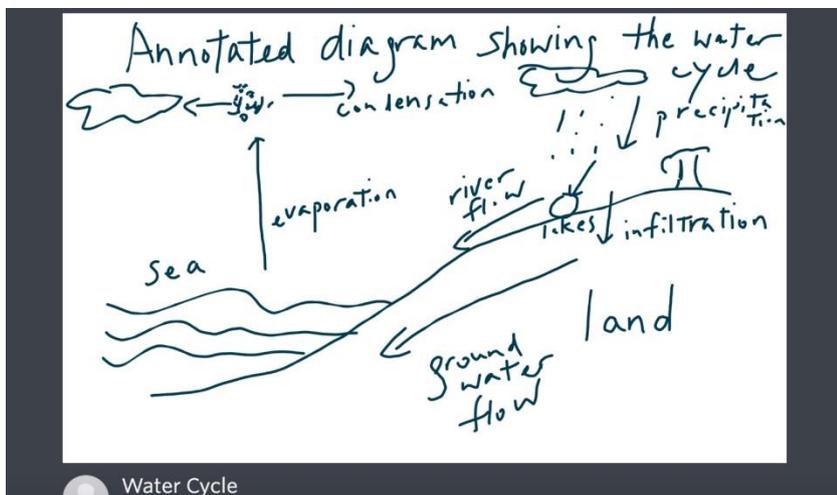


此做法能有助教師善用課堂時間，與學生進行較高階的分析和討論，促進自主學習。

iii. 運用電子學習照顧學習差異

為照顧不同能力的學生，協助同學課後作鞏固，老師親身示範繪製註釋圖的步驟及方法，並利用電子平台發佈短片給學生作鞏固及溫習之用。

圖 5：老師示範繪製註釋圖



iv. 「開本小測」(open-note quiz)

為提升學生做筆記的意識及技巧，支援人員建議老師在課堂上讓學生進行「開本小測」(open-note quiz)。學生須在課堂的指定時間內，嘗試運用圖像組織整理課文內容，製作相關的溫習筆記，並即堂利用有關筆記進行「開本小測」，繼而解說科本做筆記的技巧及注意事項。

學生在做筆記前，老師會給予以下提示：

- 要避免直接抄寫教科書內容，要嘗試利用符號/圖像組織加以整理；
- 要考慮地理科的特點，記下「重點」；
- 思考有哪些方法能有助日後的記憶及溫習。

在選取有關素材及設計小測題目時，會有以下考慮點及元素：

- 教科書有關內容表面看來屬較為事實性的知識；但現時地理科的課程會要求學生作比較及分析，因此在設計小測題目時要融入資料回應題。
- 學生在溫習地理科時大多只關注文字內容，往往忽略地圖，未能辨認地理位置及相關特徵；小測題目會要求學生辨認地理位置。

圖 6：教科書相關內容

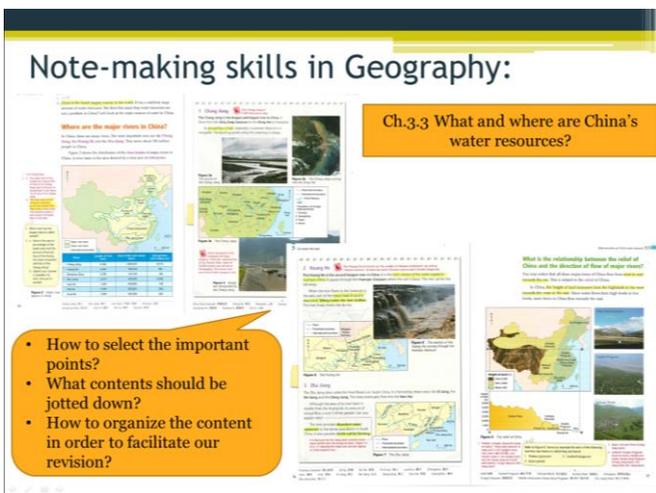
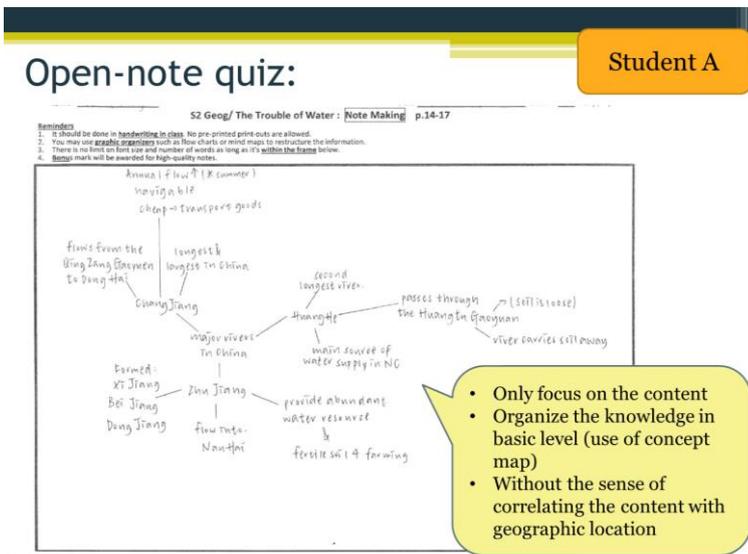


圖 7：學生即堂做的溫習筆記例子



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Student B

Reminders
 1. It should be done in handwriting in class. No pre-printed print-outs are allowed.
 2. You may use graphic organizers such as flow charts or mind maps to restructure the information.
 3. There is no limit on font size and number of words as long as it's within the frame below.
 4. Bonus mark will be awarded for high-quality notes.

Huang He - 2 longest
 - pass through basin
 - carry the soil & cause the delta

Chang Jiang - 1 longest
 - start point - QingZang Gaoyuan

direction - from high to low
 - west to east

start point - QingZang Gaoyuan

• With Geographical sense
 • Try to draw the map, but only with limited content

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Student C

Reminders
 1. It should be done in handwriting in class. No pre-printed print-outs are allowed.
 2. You may use graphic organizers such as flow charts or mind maps to restructure the information.
 3. There is no limit on font size and number of words as long as it's within the frame below.
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Major Rivers in China

Chang Jiang River basin tributaries	1st Chang Jiang water flow transport - cheap	2nd Huang He Soil loss carry soil away river shallow	3rd Zhuo Jiang fertile soil dust
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West → → → → East

Kunlun Shan → Helof → Hsiangtu Gaoyuan → Hubei Pingyuan

• Organize the knowledge in advance level (digest the content and use his own way to organize the points)
 • Try to correlate the content with geographic location and do comparison
 • Appropriate selection of main points in this chapter

老師在小測後，會提問學生以下問題：

- 你是否滿意自己這次「開本小測」的成績？為什麼？
- 你認為所做的筆記能否有助你應付小測題目？
- 回想剛才做筆記的過程，有哪些困難？
- 試比較上述同學A、同學B和同學C的筆記，你認為哪一位同學的筆記最好？為什麼？

圖 8：同學筆記及相應的「開本小測」(open-note quiz)例子：

China - 700 million ppl
River basin = Area drained by a river and its tributaries (流域)

1. Chang Jiang
- longest & largest in China
- flows from Qing Zang Gao Yuan to the East to Shanghai
- annual flow high esp in summer
- most of it is navigable
- transporting goods using this waterway is cheap

2. Huang He
- second longest & largest river in China
- main source water in northern China
- passes through the Huang He basin where the soil is LOOSE
- River carries soil away
- when this to the lowlands in the east pt of the beach of land is deep
- silting makes it finally enters Bohai

Songhua Jiang basin
Liao He basin
Huang He basin
Huai He basin
Chang Jiang basin
Zhu Jiang basin

Chang Jiang basin
6901 km² 1828 km³ annual flow
annual flow 951.6 billion m³

Zhu Jiang basin
221 km² 453 km³ annual flow
annual flow 333.4 billion m³

同學D的筆記及小測

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A. Zhu Jiang
B. Huai He
C. Huang He
D. Chang Jiang

- Name Rivers i, ii and iii. i. C ii. D iii. A
- Which river has the highest flow in China? D
- Which of the following is NOT a tributary of the Zhu Jiang?
A The Dong Jiang
B The Nan Jiang
C The Xi Jiang
D The Bei Jiang b
- Match the landform features A to D with the locations i to iv
A. Huangtu Gaoyuan
B. Qing Zang Gaoyuan
C. Yungui Gaoyuan
D. Sichuan Pendi

Height of land in m:
Over 2000
1,000-2,000
Below 1,000

- Which of the river (basin) area the most suitable for farming? A
b Why? It is because the water there is a cleaner than water in Huang He.
- Describe the direction of the river flow in China?
It flows from highland in west to low land in east.

12/2
13/13
B

同學E的筆記及小測

Relationship: Relate to the relief of China
=> The height of land ↓ from the highlands in the west towards the east to the east

S2 Geog/ The Trouble of Water : Quiz 3.3 (1) p.14-17

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C. Yungui Gaoyuan
D. Sichuan Pendi

Height of land in m:
Over 2000
1,000-2,000
Below 1,000

- Which of the river (basin) area the most suitable for farming? A
b Why? Because it provide fertile soil & high rainfall
- Describe the direction of the river flow in China?
From west to east

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從上述兩個學生的筆記可見，較能掌握地理科學習技巧的學生懂得記下地圖的重要地理位置，亦會嘗試比較中國不同地方的地勢及河流特徵。老師可透過是次教學活動，了解學生平日做筆記的方法及水平，適時作點撥及示範。此外，對學生而言，「開本小測」也是體驗式的學習，能即時取得回饋，反思何謂「好」筆記？如何做有助科本學習的筆記？並能互相學習，取長補短。