公帑資助學校專項撥款計劃

計劃編號：	2022/0457(修訂版)
學校名稱：	保良局百周年李兆忠紀念中學 Po Leung Kuk Centenary Li Shiu Chung Memorial College
計劃名稱：	以電子黑板加強互動教學 Enhancing interactive teaching and learning with Smartboard
受惠目標：	中學
預計直接受惠人數：	學生: 480人(中三至中六) 教師:53 人 家長:0 人 其他(請註明): 0 人 ()

1. 計劃需要

1.1計劃目標

該項目旨在中三至中六課室安裝互動觸控智能黑板，為本校學生提供更完善的學習環境及網上教學配套，加強課室電子學習的互動元素、增強學生學習動機和興趣。

1.2校本創新元素

利用老師已設計好的教學資源為基礎，增潤一系列的電子學習模式，透過互動觸控智能黑板，作為教學媒介，增強課室間師生的互動。

現時課室投影系統未能支援平板電腦，學生於課堂上使用平板電腦的學習成果，難以展示給其他學生，同儕學習機會減少。互動觸控智能黑板具有投屏功能，在課堂時，學生可個人或分組使用平板電腦，把學生作品或學習過程，以投屏方式投射在互動觸控智能黑板上，展示給其他學生評鑑，加強師生及學生間之互動及豐富學生語文的興趣。

當老師講解較艱澀或抽象概念的課題時，老師可在互動觸控智能黑板上截圖，旋轉圖片，並可輔以文字和圖案說明。互動觸控智能黑板內置電腦及可配合無線網絡，讓學生有更多機會互相分享學習成果，提升課堂中的互動氣氛。

現時課室的投影機使用多年，大部分的投影機已老化及損毀，質素影像參差及模糊，嚴重影響學生於課堂上的理解。 互動觸控智能黑板可改善影像質素，對有視力模糊的學生幫助尤為重要；加上，老師可利用電子黑板的設備，包括播放影片、書寫繪圖、觸控功能等，令原本沉悶的課堂變得充滿互動，輕鬆有效地向學生教授及傳遞新知識，加強學生的學習動機。

1.3計劃配合學校需要/ 學生的多樣性需要

項目：與本周期學校發展計劃/關注事項相關

學校其中(2023-2026)的關注事項： 培養具備有效學習技能和廣闊視野的終身學習者

在課室安裝電子互動屏幕可以為培養具備有效學習技能和廣闊視野的終身學習者提供一個更加現代化、豐富多樣的學習環境。電子互動屏幕可以用於顯示多媒體教學資源、課堂互動、學生展示等多種功能，有助於提高學生的學習興趣和參與度，從而更好地實現培養具備有效學習技能和廣闊視野的終身學習者的目標。

互動電子黑板在課室使用的好處主要有以下幾個:
1. 提供互動式學習體驗：電子黑板可以讓教師和學生進行互動式教學，透過手寫、繪圖、演算等方式呈現教材，讓學生更加投入學習，並且能夠實時回饋教學效果。

2. 透過增強視覺效果, 更令學生在課堂更專注：電子黑板能夠將教材呈現在大屏幕上，透過多媒體元素、顏色和圖像等方式，增強教學的視覺效果，可以吸引學生的注意力, 讓學生更容易理解和記憶教材, 有助於提高學習的效率。

3. 方便保存和分享教學資源：教師可以通過電子黑板輕鬆地將教學內容保存下來，並且可以方便地分享給學生或其他教師使用，節省了教學資源的成本和時間。

2. 計劃可行性

2.1計劃的主要理念/依據

本計劃的主要意念來自：
項目：參考教育局課程文件

依據教育局2015年學校電子學習試驗計劃研究報告顯示，電子學習對啟發學生學習動機、資訊素養、溝通能力等都有正面的效果，在自主學習等 學生表現範疇亦有明顯進步。報告指出，「 教師若適當使用科技及設計教學法，便能在課堂上清晰表述電子學習並發揮其最大的潛能，以支援學 生取得正面的學習成果，包括資訊素養、自主學習、學習差異、明辨性的 思考能力及同儕協作」。

故本校期望進一步推動校本電子學習，透過高互動性的智能電子白板， 於課堂中吸引學生的注意力，為學生帶來傳統黑板/白板不能做到的課堂學習體驗，增加高互動性及趣味性的課堂活動。從而提升學生學習積極性、興趣及創意，啓發學生及增強學生學習興趣及提升教學效能。

2.2學校的準備程度

項目：學校已具備的相關經驗及硬件設備

在推動資訊科技教育和電子學習方面，學校因應現時資訊科技的發展，更新伺服器、無線網絡、電腦和投影機等硬件設備。兩年前，學校已自費安裝10部互動電子黑板，老師及同學對使用電子黑板有很高的評價，故本校期望透過申請優質教育基金在其餘課室安裝互動電子黑板，以全面提升學校的電子設備 。學校已購買一百多部平板電腦，方便學生於課堂內進行電子學習。另外本校大部份老師已接受使用互動黑板的培訓，老師已能掌握如何運用電子黑板於課堂上作教學用途。

2.3校長和教師的參與

學校人員：校長 **職責：**監察督導, 擬定計劃
學校人員：副校長 **職責：**統籌 / 協調, 課程/活動規劃
學校人員：科主任 **職責：**帶領 / 參與活動
學校人員：科任教師 **職責：**帶領 / 參與活動
學校人員：計劃統籌 **職責：**處理撥款, 擬定計劃

2.4計劃時期

計劃開始及完成日期：由 7/2024 至 07/2025
合共需時 1 年 1 月

2.5計劃活動的詳情

a. 推行計劃措施

活動 1：英文科課堂

推行時期：

11/2024 - 05/2025

學習階段及學習範疇/學科/學習元素	內容	節數
• Target: S3	The smartboard is a useful tool in enhancing English language learning in the classroom setting. With the help of smartboards teachers can fully utilize the e-books from the publishers to create effective and engaging learning for students. Here are some examples in which smartboard can be used in classroom: 1. Listening lessons: - Teachers can use interactive e-book for answer-checking of listening exercise and use the touch-screen function of the smartboard to illustrate and explain answers on the screen. 2. Reading lessons: - Teachers can display the e-book on the smartboard and highlight key words on the passage so that students can easily follow the flow of lesson. By displaying the passages on the screen, teachers can explain the meaning of the vocabulary more clearly by writing directly on the smartboard. Teachers can also use the multimedia resources on the e-book in class such as videos, recording and images for a more interactive and diversified reading lesson. 3. Grammar lessons - Teachers can highlight the key words, grammar rules or examples in the e-books when explaining the grammar items. For practice,	• 5 lessons • (40 minutes per lesson)

	students can be invited to write answers directly on the smartboard so that teachers can comment on their answers and offer instant feedback. It is also easier to check answers with students in class and facilitate their learning by helping them to locate the answers on the touchscreen.	

參與學校人員及/或受聘計劃人員數目及職責：

- English Teachers

預期成效：

- The mirroring and touch-screen function can be utilized to enhance teacher-student interactions and Facilitate teaching and learning in class.

活動 2：經濟科課堂

推行時期：

11/2024 - 05/2025

學習階段及學習範疇/學科/學習元素	內容	節數
受惠對象：中五級經濟科同學	Topic: Aggregate demand and Aggregate supply The eBlackboard is an essential tool for teaching economics, as it allows for the easy creation of various graphs and charts, including the aggregate demand and aggregate supply diagrams. With this technology, teachers can draw and modify these diagrams in real-time, making it easier for students to understand complex economic concepts. The eBlackboard's flexibility and convenience also allow for the quick and easy movement of diagrams and annotations, making it easier for teachers to emphasise critical points and organise their thoughts. Additionally, the cleaning feature of the eBlackboard is simple and efficient, saving teachers valuable time that can be spent focusing on delivering high-quality lessons to their students.	• 5 lessons • (40 minutes per lesson)

參與學校人員及/或受聘計劃人員數目及職責：

- Economics Teachers

預期成效：

- The eBlackboard offers a bigger and more colorful screen that makes it easier to visualize complex economic concepts. The eBlackboard provides bright colors and crisp images that engage and inspire students, which can help students understand these concepts better. By visualizing learning, students are more likely to retain the information and succeed in their economics studies.

活動 3：Mathematics

推行時期：

11/2024 - 05/2025

學習階段及學習範疇/學科/學習元素	內容	節數
Target: F4	Topic: Graphs of Trigonometric Functions, Graphical Solutions of Trigonometric Equations Graphs of Trigonometric Functions Use the Smartboard to display the graph of a trigonometric function, such as y = sin(x) or y = cos(x). Use the pen tool to annotate the graph and highlight key points, such as the x-intercepts and maximum/minimum values. Demonstrate how to adjust the amplitude, period, and phase shift of the function by changing the coefficients in the equation. Have students come up to the board and create their own graphs of trigonometric functions. Graphical Solution of Trigonometric Equations: Use the Smartboard to display a trigonometric equation, such as sin(x) = 1/2. Use the pen tool to sketch the graphs of y = sin(x) and y = 1/2 on the same axes. Demonstrate how to find the solutions to the equation by identifying the points of intersection of the two graphs. Have students come up to the board and solve their own trigonometric equations graphically.	• 3 lessons • (40 minutes per lesson)

參與學校人員及/或受聘計劃人員數目及職責：

數學科教師

預期成效：

Smartboards allow for a more interactive and engaging learning experience, which can help students grasp the concepts more easily and retain the information better.

The interactive nature of Smartboards encourages students to actively participate in the learning process, which can increase their engagement and motivation to learn.

Smartboards provide a visual tool that can help students understand abstract concepts and visualize mathematical representations more clearly.

b. 教師培訓(如適用)

活動 1：工作坊

推行時期：

09/2024 - 10/2024

內容：

- 受惠對象：全體教師
- 使用互動觸控智能黑板的技巧

節數：

- 一節約1.5 小時

校內 / 受聘培訓人員：

- 外聘培訓導師/講者

預期成效：

- 教師學會使用互動觸控智能黑板的技巧

a. 其他措施與活動(如適用)

2.6財政預算

a. 設備開支

項目	設備規格	單項價格 ($)	數量	單位	預算開支 ($)	理據
基本電腦套裝連顯示屏 (連安裝)	互動觸控智能黑板 86 吋	50,000	16 部 中三級至中六級課室	套	800,000	為了增加書寫空間，電子黑板書讓老師可在中間顯示屏位置書寫，或利用可移動黑板書寫，使老師書寫空間位置增大。電子黑板不但保留足夠的書寫空間，同時提升教學內容的顯示質素，老師可利用互動觸控智能黑板的多媒體設備，輕鬆及有效地向學生教授新知識，增強了更多的互動教學。 在不同科目課堂上，老師可應用新的互動觸控智能黑板設備學習，老師在已準備的教學內容上隨課堂的發展圈出關鍵的字詞，並在互動觸控顯示屏寫上筆記，另外，老師可透過配合的軟件設計的互動教學活動，例 如：圖文配對、即時學生意見發佈欄等。增進課堂的師生互動， 提高學生的學習興趣；此外，電子黑板上的書寫內容都能馬上電子化並儲存並匯出，有利學生課後溫習。

設備開支預算總額:	**800,000**

b. 應急費用

項目	預算開支($) (下調至最近的整數)
計劃應急費用	24,000
應急費用預算總額 :	**24,000**

c. 審計費用

	預算開支($)
審計費用	5,000
審計費用總額 :	**5,000**
申請撥款總額:	**829,000**

3. 計劃的預期成果

3.1成品/ 成果及對學校發展正面的影響

項目：科目發展

英文科方面，我校英文科老師期望能增強師生上的互動，讓老師能在教授課題時，讓同學在觸控黑板上展示成果，發揮用處。

在數學科中的智能互動白板，可以增加學生的參與度和喚起他們的學習興趣。 學生因此可以加深他們的科目知識,包括掌握各種函數及其圖形表示。 通過與屏幕上的函數互動,學生更好地理解有關概念。

使用電子黑板教授經濟課程可以更加清晰地呈現總需求和總供應的關係圖，並可以使用不同顏色的線條區分不同的轉變。這樣可以幫助學生更好地理解經濟體系的運作和調整方法，提高教學效果和學習成效。

3.2評鑑

評鑑方法：問卷調查

成功準則：

以教師觀課、學生問卷，收集評鑑計劃的成效：

1. 70%教師及學生認同「互動觸控智能黑板」有助課堂的互動性和學生的參與度。
2. 70%教師和學生同意計劃有助提高學習動機和興趣。
3. 70%教師和學生同意計劃有助培養學生共通能力，例如運用資訊科技能力。

3.3計劃的可持續發展(只適用於申請撥款總額超過 20 萬元的申請)

- 善用相關設備及器材，在計劃完結後繼續舉辦學與教活動
- 透過不同的教師專業交流活動、培訓等網絡，安排分享環節，使計劃的成功經驗得以傳承

3.4推廣(只適用於申請撥款總額超過 20 萬元的申請。)

項目：座談會/分享會

計劃所得學習資源、計劃成品和影片將上載至學校網站供學界同工參考。歡迎友校到本校參觀。

學校在撰寫本計劃書時，有否參考優質教育基金(基金)網頁的公帑資助學校專項撥款計劃計劃書示例/已獲批撥款計劃

有

相關計劃書示例編號：

已獲批撥款計劃編號：2020/0420

4. 校方聲明

1. 本校確保會善用新購的互動觸控智能黑板及維持高的使用率；
2. 本校會加強教師的專業培訓，讓他們掌握各活動的設計和教學法，以確保計劃完結後的延續性；
3. 本校會注意安裝互動觸控智能黑板的結構負重能力，並定期進行檢查、保養及維修；如有需

要，應尋求認可人士的意見；

4. 本校確保所有貨品（包括設備）及服務的採購是以公開、公平及具競爭性的方式進行，並須採取措施以避免採購過程出現任何實際或被視為有利益衝突的情況；

5. 本校確認計劃成品的版權屬優質教育基金所有，並嚴禁服務供應商複製、改編、分發、發布或向公眾提供成品作商業用途；

6. 本校明白優質教育基金的資助是一次性的，本校須承擔往後的支出，包括維修費用、日常運作費用及其他可能引致的支出／後果；及

7. 本校確保擬發展的學與教材料切合學生的學習需要、程度、年齡和能力，並確保有關內容及資料正確、完整、客觀和持平。

5. 資產運用計劃

類別	項目/說明	數量	總值($)	建議的調配計劃
視聽器材	互動觸控智能黑板 86 吋	16	800,000	計劃完結後，本校將會繼續善用相關設備舉辦學與教活動，以豐富學生的學習經歷。

6. 本校承諾準時按以下日期遞交合規格的報告

計劃管理		財政管理	
（須透過「網上計劃管理系統」提交）		（須連同證明文件的硬複本， 以郵寄方式或親自提交）	
報告類別及涵蓋時間	**報告到期日**	**報告類別及涵蓋時間**	**報告到期日**
計劃進度報告 01/07/2024 - 30/06/2025	31/07/2025	中期財政報告 01/07/2024 - 30/06/2025	31/07/2025
計劃總結報告 01/07/2024 - 31/07/2025	31/10/2025	財政總結報告 01/07/2025 - 31/07/2025	31/10/2025

Appendix

Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	Form 3	**No. of students:**	28
Term/ Month:	October	**Lesson Time:**	40 mins
Subject:	Biology		
Topic:	Understanding Enzymes		

Objectives
By the end of the lesson, students should be able to: 1. define enzymes and their role in biological processes 2. understand the concept of enzyme-substrate specificity 3. explain the factors that affect enzyme activity

Prior Knowledge
1. Organic chemical constituents of organisms 2. Examples of proteins found in living organisms

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
10 mins	**Introduction** ❖ Begin the lesson by asking students if they know what enzymes are and where they might have heard the term before. Use the Smart Board to display their responses. ❖ Introduce the topic: Enzymes are biological catalysts that speed up chemical reactions in living organisms. Use the Smart Board to display a simple diagram of an enzyme and a substrate.		
20 mins	**Direct Instruction** ❖ Explain the concept of enzyme-substrate specificity using the **lock and key model**. Use the Smart Board to display a detailed diagram of the model. ❖ Discuss the **active site** of an enzyme and how it binds to the substrate. Use the Smart Board to illustrate this with animations. ❖ Introduce the concept of **enzyme inhibitors** and their impact on enzyme activity. Use the Smart Board to display a diagram showing how inhibitors work.		
15 mins	**Guided Practice** ❖ Use an interactive enzyme activity simulation on the Smart Board. This will help students visualize how enzymes work. Encourage students to interact with the simulation. ❖ Discuss the factors that affect enzyme activity, such as temperature and pH. Use the simulation to demonstrate these effects. Ask students to predict what will happen when these factors change.		
10 mins	**Independent Practice** ❖ Have students answer a set of questions on the Smart Board about enzymes, their function, and factors affecting their activity. Use the		

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
	Smart Board's interactive features to make this a collaborative activity.		
5 mins	**<u>Review and Closing</u>** ❖ Summarize the key points of the lesson on the Smart Board. Use a mind map or a similar visual tool to help students remember the information. ❖ Encourage students to ask questions or share something new they learned during the lesson. Display their questions and comments on the Smart Board for discussion.		

Materials & References
❖ Smart Board ❖ Diagrams of enzyme action ❖ Interactive enzyme activity simulation

Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	Form 3	**No. of students:**	30
Term/ Month:	2nd term	**Lesson Time:**	40 mins
Subject:	Physics		
Topic:	Circuit		

Objectives
1. To know how to use the ammeter to measure current 2. To know the current is same in series circuit and different in parallel circuit

Prior Knowledge
1. The meaning of current 2. I=Q/t

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
8 mins	Revision the meaning of current	Answer the question by teacher	Students can use the app to answer the questions in the same time and use the Smart Board to display the answer and correct rate of students
8 mins	Teach how to connect an ammeter in series circuit		Use the Smart Board to draw the circuit diagram
10 mins	Demonstrate experiment about using ammeters to measure the current in a series circuit	Do the experiment	Use the Smart Board to show the demonstration
10 mins		Do another experiment by using ammeters to measure the current in a parallel circuit	Use the Smart Board the show the circuit diagram in a parallel circuit
4 mins	Conclusion and give homework		

Materials & References
❖ Smart Board ❖ Ammeters and other apparatus

Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	Form 3	**No. of students:**	27
Term/ Month:	February 2024	**Lesson Time:**	40 mins
Subject:	Financial Management		
Topic:	T-account		

Objectives
Understand the T-account system and know how to transfer the double entry into T-account

Prior Knowledge
1. Learnt accounting equation 2. Learnt Dr, Cr. double entry system

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
5 mins	Recap main concepts learnt in previous chapters ❖ Emphasize the importance of Dr, Cr entries ❖ Select students to answer questions	Refer to notes of previous chapters ❖ Recall memories on how to do double entry	Highlight keywords from notes to remind students the common mistakes with Smart Board
10 mins	Explain the functions of T-account ❖ Demonstrate how to transfer the Dr, Cr. to the corresponding T-account by using 1 example	Complete the example on notes together with teacher	Use Smart Board's drawing function to demonstrate the example step by step
15 mins	Ask students to complete 1 exercise on notes ❖ Allow peer discussion and encourage capable students to teach less capable ones ❖ At the same time, pick 3-4 students to come out and do the question ❖ Patrol around the classroom to see their progress and offer helps to students in need	Complete the exercise on notes ❖ Discuss with neighbors for unsure answer	❖ Set timer of 15 mins with Smart Board ❖ 3-4 students came out to write their answer on Smart Board by using different color pens
7 mins	Check the answer with students ❖ Ask students to mark their answer together ❖ Explain the difficult ones ❖ Ask if there's any confusion	❖ Check their answer with red pens ❖ Highlight key points and common mistakes	❖ Use Smart Board red pens to mark the answer ❖ Remind students common mistakes by highlighting in Smart Board
3 mins	Wrap up with the key techniques in doing T-account	Jot down the key steps	Show the steps again on Smart Board

Materials & References
❖ Notes ❖ Frank Wood's Accounting Textbook

Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	Form 4	**No. of students:**	20
Term/ Month:	1st term	**Lesson Time:**	40 mins
Subject:	BAFS		
Topic:	Income statement & Balance sheet		

Objectives
At the end of the lesson, pupils should be able to: 1. prepare income statement 2. prepare a balance sheet 3. deal with items like other income, net loss and expenses 4. identify accounting terms in annual reports in several Hong Kong Listed companies (in HKEX) **Ask students to identify the special items that will only be appeared in income statement

Prior Knowledge
Knowledge in the format of income statement & balance sheet

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
2 mins	Perform the Set.	Listen and answer teacher's questions.	
1 min	Distribute the worksheets for classwork.		
2 mins	Briefing for the objective and instruction for doing the case study. Show students the annual reports in several Hong Kong Listed companies (in HKEX).	Students start to preview the question and find out the special items. Students themselves can find out the net profit made by listed companies from the reports showing on Smart Board.	The real reports are showing on Smart Board. Students can have a look on several companies' reports that are shown on Smart Board. They can also visit some companies' website immediately on the Smart Board.
16 mins	Ask students to find out the gross profit, total expenses and net profit. Walk around, help and give guidance to students for each group.	Students can discuss in pairs and do the classwork. Ask teacher to check the gross profit figure when they finish.	Help those students who still can't finish the first part.
12 mins	Ask students to prepare the balance sheet. Check students' progress and see if they have fundamental problems.	Ask teacher for help if necessary.	Help those students who still can't finish the second part. Check the answer with students showing on Smart Board.
2 mins	Conclude the lessons and announce homework.		

Materials & References
❖ Smart Board for showing Annual Reports of Listed companies ❖ Worksheets

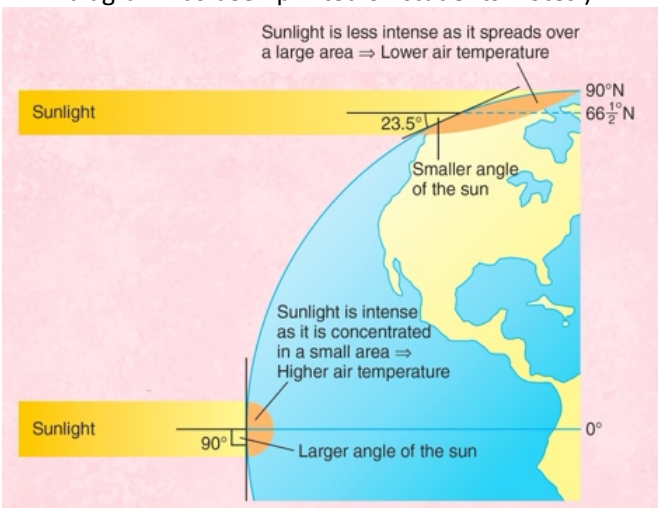
Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	Form 5	**No. of students:**	16
Term/ Month:	1st term	**Lesson Time:**	40 mins
Subject:	Geography		
Topic:	Factors affecting insolation received		

Objectives
After the lesson, students should be able to: 1. realize the insolation received is unevenly on the earth's surface 2. understand how angle of the sun is different in higher or lower latitude 3. understand how angle of the sun affects seasons 4. understand how angle of the sun affect insolation received **Key Concepts:** 1. Angle of the sun 2. Insolation spreads over / concentrated in larger / smaller area 3. Season (summer, winter, spring, autumn) + autumnal/spring equinox & summer/winter solstice 4. More intense/ less intense sunlight received

Prior Knowledge
1. Greenhouse effect 2. Incoming solar radiation = insolation = short wave radiation 3. Processes of solar radiation when it enters the atmosphere (including absorption, penetration, reflection, scattering) 4. Energy (heat) will be released from the atmosphere to space as long wave radiation 5. Energy absorbed = energy released (energy budget is balanced)

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
5 mins	**Motivation / Setting:** Recalling students' memory about solar radiation taught. **Question to be asked:** ❖ How do we call the solar radiation that reaches the earth's surface? (insolation) ❖ What happens when solar radiation reaches the earth surface? / What processes occur when solar radiation reaches the earth surface? (absorption, penetration, reflection, and scattering) (students might find it difficult to answer the question, related pictures (diagrams) can be shown on the Smart Board) ❖ Why is the atmosphere warm? Write the above processes on the Smart Board to facilitate further discussion on what those processes refer to.	Answer the questions raised by the teachers	Jot down students' response immediately on the Smart Board
5 mins	Showing students a diagram which shows the average annual insolation over the Earth's surface. **Debrief the diagram:** **Key concept:** ❖ the insolation received is uneven. Generally, insolation received declines with increasing latitude.	Observe the diagram and describe the general global pattern receiving insolation	Display the diagram on the Smart Board for a larger and clearer image

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
	❖ However, the highest insolation is not found near the equator but around 23.5oN/S **<u>Ask the following question:</u>** ❖ Other than latitude, is there any factors affecting insolation received? (Yes)	Complete the notes Attempt to answer the question raised	
5 mins	**<u>Angle of the sun (the angle at which sunlight strikes the earth's surface)</u>** Use a torch to imitate the sun's ray at different angle on a piece of paper (the earth's surface). Expected outcome: When the angle is smaller, the light spreads over a larger area. And vice versa. **<u>Ask the following questions:</u>** ❖ How is the area receiving light on the paper different at different angle? (with a larger angle, the area receiving the light is smaller) ❖ If the energy released from the torch is constant, with a smaller or larger area receiving the light, the energy received is greater? (smaller) ❖ Why? (because the energy concentrates in a smaller area) ❖ In opposite, why is the energy received smaller in a larger area? (the energy spreads over a larger area) Debrief the above experiment. ***The larger the angle of the sun, the more concentrated and more intense the insolation*** Introduce "overhead sun" (when the angle of the sun is 90°)	Observe the experiment Answer the question and take notes	A torch & a piece of paper Notes
10 mins	**<u>How latitude affects angle of the sun</u>** With the prior experiment, students are expected to understand how insolation received varies with different angle of the sun. Display an image of Earth on the Smart Board and draw sun's rays striking on it. (Similar incomplete diagram has been printed on students' notes.)  Ask the students to draw the sun's rays and angle of the sun.	Follow teacher's instruction and complete the diagram Answer the question raised by the teacher	Notes Use an iPad to take photos of students' works and project on the Smart Board to review their drawings of the annotated diagram

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
	Ask the following question: ❖ Along which latitude have more intense sunlight? Why? (Lower latitude. The lower the latitude, the larger the angle of the sun. With a larger angle of the sun, insolation concentrated in a small area, thus, the sunlight is more intense.) **How time of a day affects insolation received** **Ask the following questions:** ❖ Why is there night and day in a day? (rotation of the earth) ❖ Is there any time in a day that you cannot see the sun? (at night) ❖ When do you feel the brightest sunlight? (noon) ❖ Why? (the students might find this question difficult to answer) Hints: the earth rotates (draw a dot on a piece of paper) **Debrief:** The insolation at noon is the most intense.	Answer the question raised by the teacher	
10 mins	**Season** As the earth revolves around the sun and the axis of the earth is tilted at an angle of 23.5o to the vertical, creating different seasons. **Ask the following question:** ❖ When it is winter in Hong Kong, what season is it in Australia? Why? (HK is in N.H, Aust. is in S.H) **Debrief:** The season is different in different Hemispheres. Invite a student to come out. His/her head imitates the Sun, and he/she has to hold a torch to imitate sunlight. The teacher will hold a globe (imitating the Earth), walking around the "Sun". While the teacher is walking around the sun, the torch is directly striking at different part of the Earth (globe). **Ask the following questions:** ❖ At this time, in which hemisphere is the sun is directly striking at? (e.g. Northern Hemisphere) ❖ What season is that Hemisphere experiencing? (Summer) ❖ Why? (the overhead sun is located at N.H, with a larger angle of the sun, insolation concentrates in a smaller area. With more intense sunlight, the air temperature is higher) Demonstrate 4 situation showing 4 different seasons. (summer, winter, spring, autumn) **Ask the following questions:** ❖ When the overhead sun is at 23.5oN, it is the hottest day in the N.H. How do we call this day? (Summer solstice) ❖ Ask about winter solstice, autumnal and spring equinox like the above question.	Answer the question raised by the teacher Observe the experiment and take notes Answer the question raised by the teacher Observe the experiment and take notes	A torch & a globe & Notes

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
	Debrief: In N. summer, the angle of the sun is larger in the N.H. N.H. is receiving more intense sunlight than S.H. The pattern is reversed during N. winter. When it is spring and autumn, both hemispheres receive roughly equal amounts of insolation.		
5 mins	**<u>Conclusion and Evaluation</u>** Summary the main points covered in the lesson. Draw 1-2 students to briefly explain: ❖ How does angle of the sun affect insolation received in terms of latitudinal difference? ❖ How is different seasons form in N. Hemisphere?		

Materials & References
❖ Textbook: Senior Secondary Exploring Geography (Oxford) Book 4 (3rd Edition)

Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	中五	**No. of students:**	11
Term/ Month:	上學期	**Lesson Time:**	40分鐘
Subject:	中國歷史		
Topic:	抗日戰爭		

Objectives
讓學生學會評價抗戰勝利因素的重要性

Prior Knowledge
學生已學會抗戰經過，並預習抗戰勝利原因

Development			
Time	**Teacher Activity**	**Student Activity**	**Remarks**
5 mins	提問兩項資料就抗戰勝利原因有何不同	學生引用資料內容，分辨兩則資料不同的抗戰勝利原因	課本第165頁練習第1題
15 mins	提問學生較同意哪項主張：盟國援助vs中國實力	學生分組討論，利用電子黑板展示在 arguman.org平台上輸入的立場、論點及論據，簡單報告討論結果	課本第162-164頁課文，第165頁練習第2題
10 mins	老師利用電子黑板，在學生的電子答案上畫寫下可加減的論點、論據和駁論等		
10 mins	老師展示電子書作答示例，在檔案上畫寫下要點		課本第165頁練習第2題答案

Materials & References
電子課本第162-165頁

Po Leung Kuk Centenary Li Shiu Chung Memorial College

Lesson Plan			
Class:	Form 6	**No. of students:**	27
Term/ Month:	November	**Lesson Time:**	40 mins
Subject:	Chemistry (Elective part: Analytical chemistry)		
Topic:	Determine the structure of an unknown carbon compound bya combination of analytical methods Qualitative analysis (Tests for common gases and water)		

Objectives

After the lessons, students are expected to able to:

1. analyze data from primary sources and draw evidence-based conclusions
2. from secondary sources, including textual and graphical information, and draw evidence-based conclusions
3. communicate information, and justify and defend evidence-based conclusions in both written and oral forms

Prior Knowledge

In the previous lesson, students were able to:

1. identify the groups from an IR spectrum and a given correlation table
2. identify the following groups from a mass spectrum: R+, RCO+ and C6H5CH2+

Development

Time	Teacher Activity	Student Activity	Remarks
5 mins	Show a DSE past paper question.	5 students are arranged in a group. They are discussing with members how to predict the structure of an organic compound using given IR and Mass spectrum.	Teacher show the question to students using Smart Board.
30 mins	Teacher listen the presentation and give feedback.	2 groups are selected to have a presentation. Students highlight the peaks of Mass spectrum to deduce the fragmentation. They also deduce the functional group of compound by highlight the absorption peak of IR spectrum by using the tools of Smart Board.	
5 mins	Consolidate the content of this lesson. Give two more exercises to students. Ask them do it at home. They will have similar activities in next lesson.		

Materials & References

- Chemistry notes
- Textbook