

eREAP - Learnlex 教學建議

每個學生都有與生俱來的好奇心,不少教師亦常以此作為課堂的切入點,例如提出有趣的問題,去改善學生的學習動機。這份教學建議將以有向數這一課題為例,使用 Learnlex 解難平台激發學生的好奇心,並將負數以及有向數加減運算的概念生動地引入課堂。

課堂時長:40分鐘 目標學生:KS3 學生已有知識:於 KS1 及 KS2 學習的基本四則運算(加、減、乘、除) 目標 在課堂結束後,學生能: 明白「負數」的意思 把負數由小至大排列 - 使用帶有正數和負數(即有向數)的數線來查找兩個或多個數字之間的關係 利用數線計算答案 物資 ● 電子裝置,例如 iPad/平版電腦/電腦 ● A4 紙張(讓學生寫下答案) [10 分鐘 三至四人一組] 簡介 1. 將學生分組成三至四人一組 2. 針對有向數這一課題,提出一條具有挑戰性的問題(來自 Learnlex 的問題,如「Robot Commands」 見後頁圖片) • 著學生進行小組討論,旨在激發他們的思維 • 學生不需將答案輸入到 Learnlex, 只需在紙上寫下答案並略加解釋

• 邀請學生在課堂上發表自己的想法











延伸一 [10 分鐘 小組討論]

- 回應學生的意見
 - 能力較弱的學生:給他們一些提示並鼓勵他們繼續解答
 - 能力較高的學生:着他們講解自己如何得出答案
- 通過具挑戰性的問題帶出課題
 - 引入負數和數字線的概念
 - 關鍵概念:正數 = 數字線的右側,而負數 = 數字線的左側
 - 例如,當向左移時,數字的負值會更大;當向右移時,數字的正值則更大
 - 從最小到最大排列數字

延伸二 [15 分鐘 全班]

- 使用數線找出答案(加減法)
 - 關鍵概念:加法=向右移動,減法=向左移動
 - 提供一些問題
 - (-2)+3=從-2的位置開始向右移動 3個單位
 - ∴答案 = +1
 - (-2)-3=從-2的位置開始向左移動 3個單位
 - ∴答案 = -5
- 有向數的加減運算規則
 - 關鍵概念:
 - 正負得負,負正得負
 - 例如:(-2)+(-4)=-2-4=-6
 - 正正得正,負負得正
 - 例如:(-2) (-4) = -2 + 4 = +2
 - 提供一些例子

總結 [5 分鐘 全班]

- 書數線的重要性
- 正數和負數的位置
- 正負數加減運算的關鍵概念

作業/跟進

- 學生必須自行使用 Learnlex 再次完成問題
- 輸入答案並將最終答案提交至 Learnlex 平台
- 在提交答案後,學生可以在平台內查看詳細解釋,如對解釋感到困惑可於課上向教師提問
- 教師可以從班級報告中了解學生的學習進度,從而安排更多練習給能力較弱的學生

資料來源:在 Learnlex 中搜索「Robot Commands」

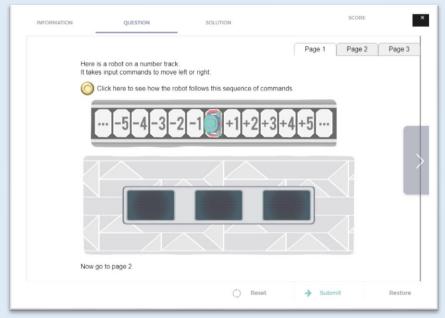


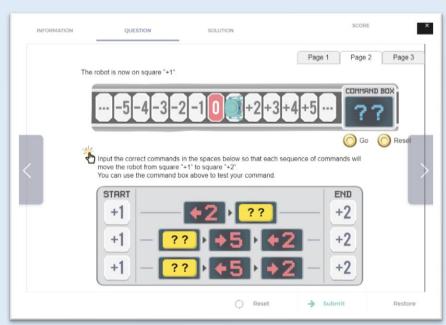
eREAP - Learnlex Suggested Lesson Plan

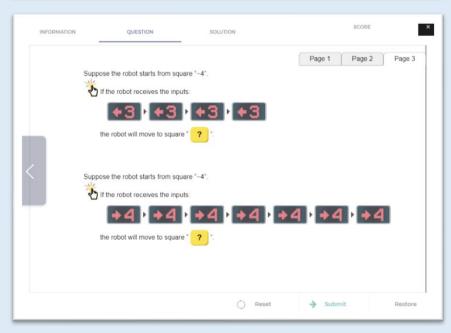
Every student is born with curiosity, and therefore teachers often start their classes with interesting questions as this helps ignite students' innate drive for learning. Taking the topic of directed numbers as an example, this teaching idea aims to stimulate students' curiosity with the use the problem-solving platform Learnlex, and introduce the concepts of negative numbers, and addition and subtraction of directed numbers.

Lesson Duration: 40 mins Level / target students: KS3 Prerequisite: Learnt the basic arithmetic operations (i.e. addition, subtraction, multiplication, division) in KS1 and KS2		
Objective	After the lesson, students will be able to understand the concept of 'negative number' arrange negative numbers in order from smallest to largest use a number line with positive and negative numbers (i.e. directed numbers) to find the relationship between two or more numbers calculate the answer by using number line	
Equipment Needed	 Electronic devices (e.g. iPads / tablets / computers) Pieces of paper for students to write the answer of the challenging question 	
Set / Introduction	 Divide students into groups of 3 to 4 Raise a challenging question of directed numbers (e.g. 'Robot Commands') found in Learnlex Ask the groups to discuss. This aims to stimulate students' thinking Students are not required to input the answers to Learnlex but simply write down the answers and how they come up with the answers on the paper Students are invited to present their ideas in front of the class The question is shown as below 	











Development 1	[10 mins Groups of 3-4]
	 Respond to students' ideas during presentation Less capable students: give them some hints and encourage them to continue More capable students: ask them how they obtain the answer
	 Using a challenging question as a transition to the topic of the lesson Introduce the concept of negative numbers and the number line Key concept: Positive numbers = the right-hand side of the number line, while negative numbers = the left-hand side of the number line For example, when you go to the left, the number will be more negative. The number will be more positive when you move to the right Arrange the numbers from the smallest to the largest
Development 2	[15 mins Whole class]
·	 Calculate the answer by using number line (addition & subtraction) Key concept: addition = moving rightwards, subtraction = moving leftwards Providing some examples (-2) + 3 = starting from the position of -2 and moving rightwards by 3 units
	. The answer = +1
	• (-2) -3 = starting from the position of -2 and moving leftwards by 3 units
	∴ The answer = -5
	The rules in addition and subtraction of directed numbers
	Key concept:
	Two like signs come together will become positive sign
	■ E.g. (-2) - (-4) = -2 + 4 = +2
	 Two opposite signs come together will become negative sign E.g. (-2) + (-4) = -2 - 4 = -6
	Providing some examples
Conclusion /	[5 mins Whole class]
Summary	Importance of drawing a number line
	The positions of positive numbers and negative numbers
	Key concepts about calculating the numbers with different signs
Homework /	Students are required to return to Learnlex and finish the questions again
Follow-up Work	Input and submit the answer to Learnlex
	 Students can refer to the detailed explanation on the platform and ask their teachers if they still feel confused with the answers
	Teachers can understand students' progress from the class report. More exercises can be arranged for relatively less capable students to catch up

Source: Search 'Robot Commands' in Learnlex