初中數學教室的轉型：
如何培養學生人工智能素養

路德會呂祥光中學
程偉豪老師

學校背景

- 辦學理念
  - 基督教全人教育理念
- 教學特色
  - 以中文為主要教學語言
- 學校背景
  - 屯門區中學

核心問題

作為數學科教師,
為甚麼要關注人工智能素養？

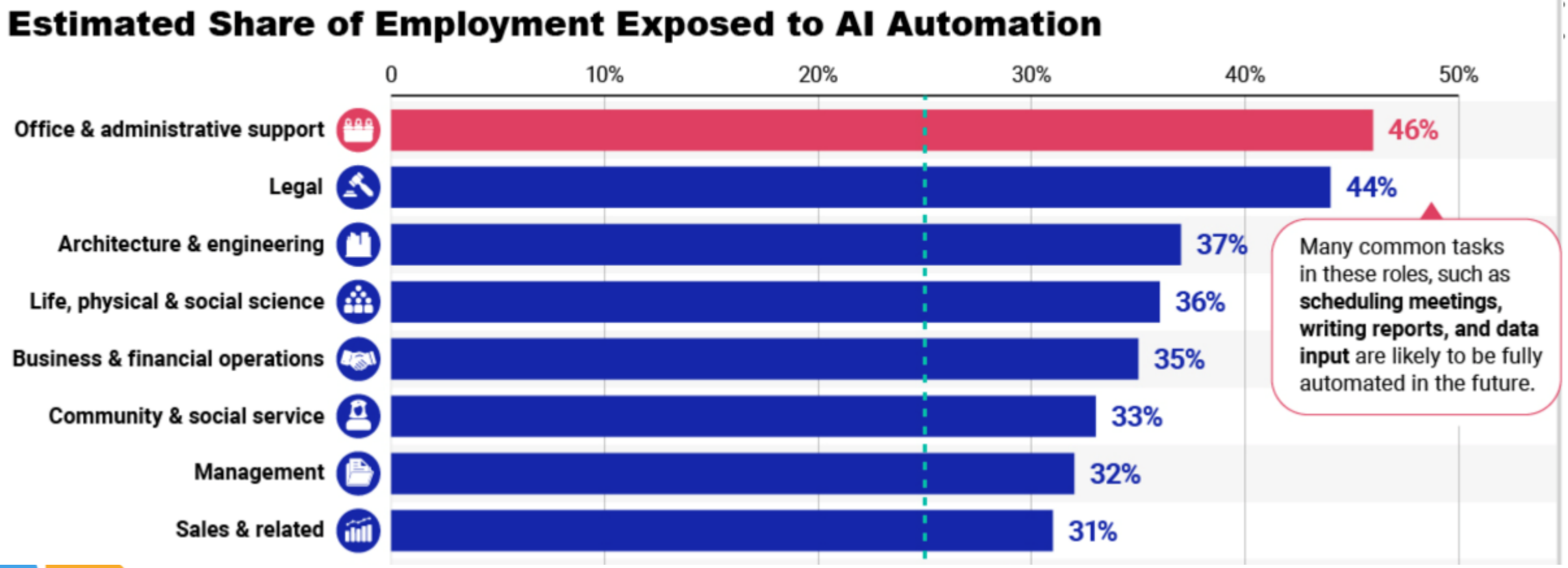
人工智能素養是甚麼？

如何促進學生人工智能素養,
以最大化提升他們學習？

「認識這個時代，帶領這個時代。」

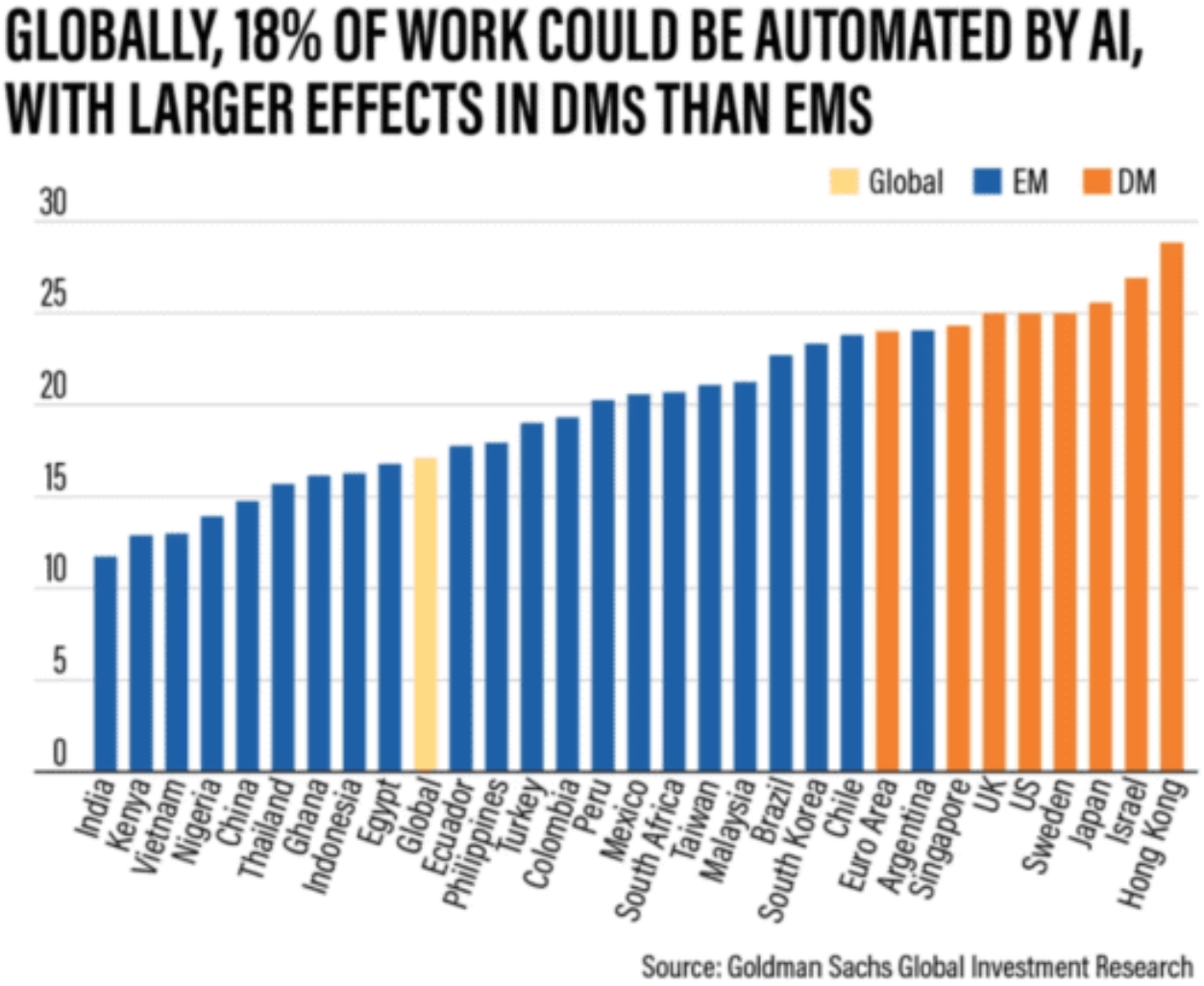
- 錢穆

AI 時代的變革

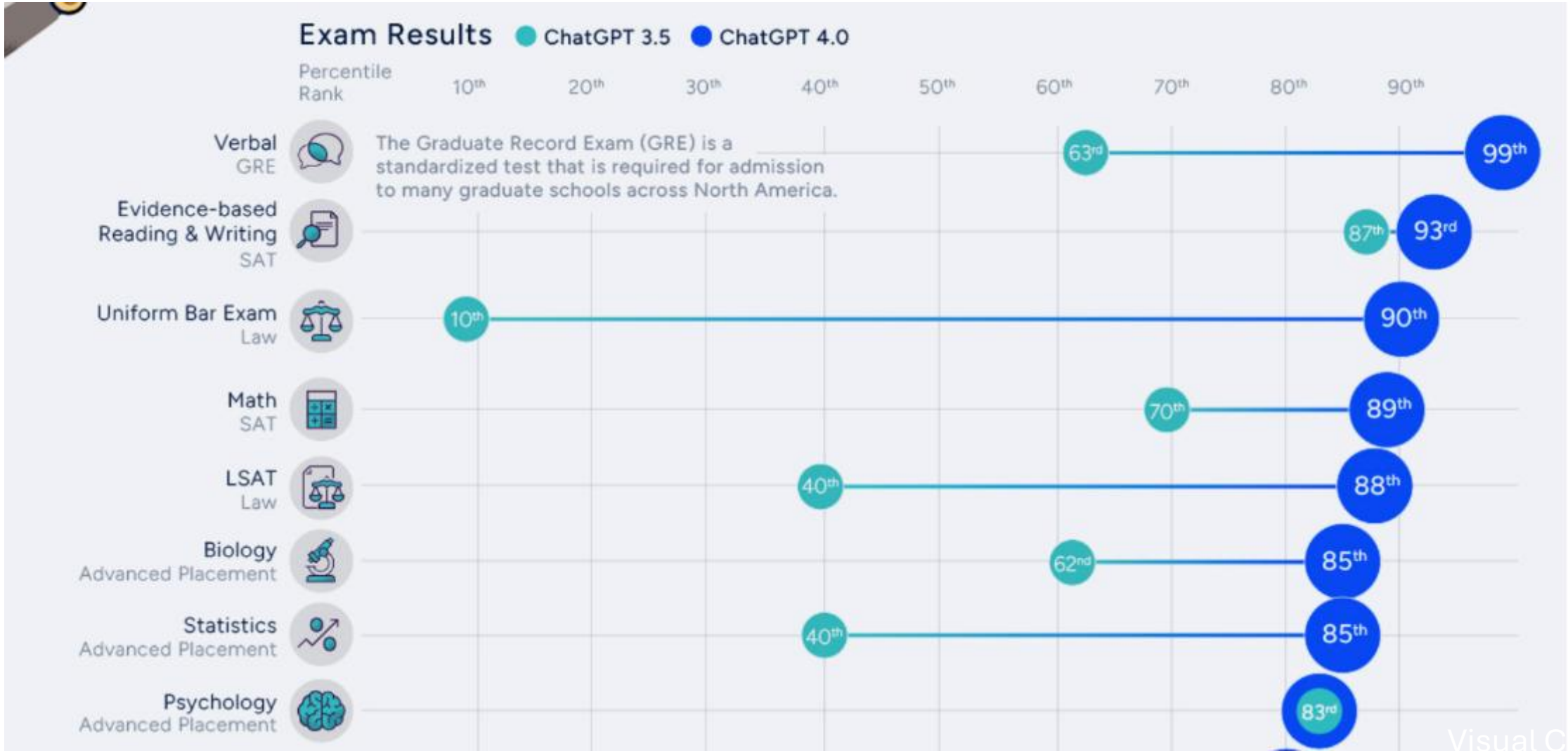

Estimated Share of Employment Exposed to AI Automation
0
10%
20%
30%
40%
50%
Office & administrative support
46%
Legal
44%
Architecture & engineering
37%
Life, physical & social science
36%
Business & financial operations
35%
Community & social service
33%
Management
32%
Sales & related
31%
Many common tasks in these roles, such as **scheduling meetings, writing reports, and data input** are likely to be fully automated in the future.

AI 時代的變革


恒生銀行 HANG SENG BANK
星島頭條
恒生裁員
員工或需「重新見工」
今次只是開始
料更多企業仿傚
提醒一類員工須「自求多福」
葉偉光
浸大商學院人力資源學者


GLOBALLY, 18% OF WORK COULD BE AUTOMATED BY AI, WITH LARGER EFFECTS IN DMS THAN EMS
Global
EM
DM
30
25
20
15
10
5
0
India
Kenya
Vietnam
Nigeria
China
Thailand
Ghana
Indonesia
Egypt
Global
Ecuador
Philippines
Turkey
Colombia
Peru
Mexico
South Africa
Taiwan
Malaysia
Brazil
South Korea
Chile
Euro Area
Argentina
Singapore
UK
US
Sweden
Japan
Israel
Hong Kong
Source: Goldman Sachs Global Investment Research

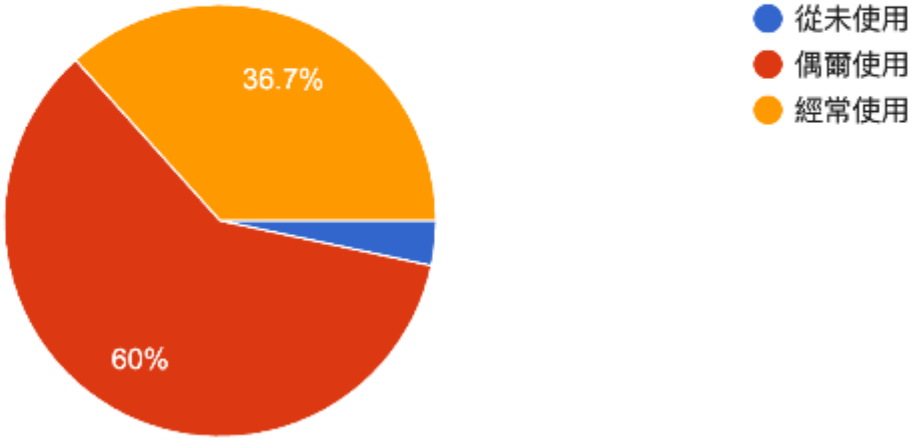
AI 時代的變革


Exam Results
ChatGPT 3.5
ChatGPT 4.0
Percentile Rank
10th
20th
30th
40th
50th
60th
70th
80th
90th
Verbal
GRE
The Graduate Record Exam (GRE) is a standardized test that is required for admission to many graduate schools across North America.
63rd
99th
Evidence-based Reading & Writing
SAT
87th
93rd
Uniform Bar Exam
Law
10th
90th
Math
SAT
70th
89th
LSAT
Law
40th
88th
Biology
Advanced Placement
62nd
85th
Statistics
Advanced Placement
40th
85th
Psychology
Advanced Placement
83rd

人工智能使用習慣

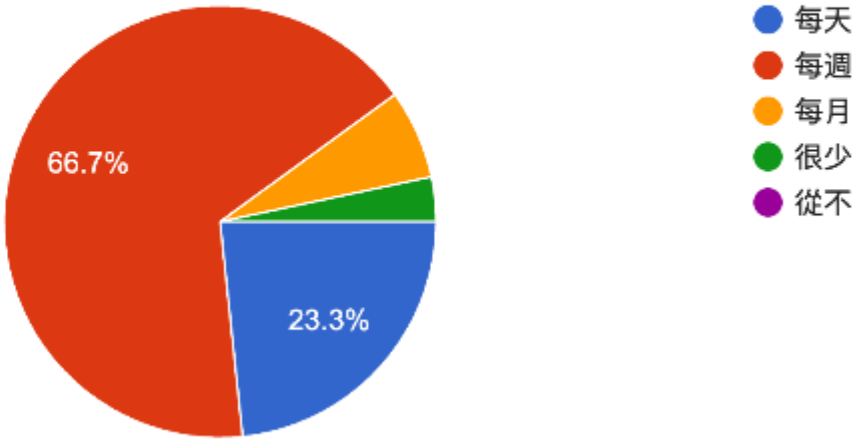
你是否有使用AI工具的經驗? （如ChatGPT、Poe、Suno等）

30 則回應



你多久使用一次AI工具（如ChatGPT、Suno、Poe等）？

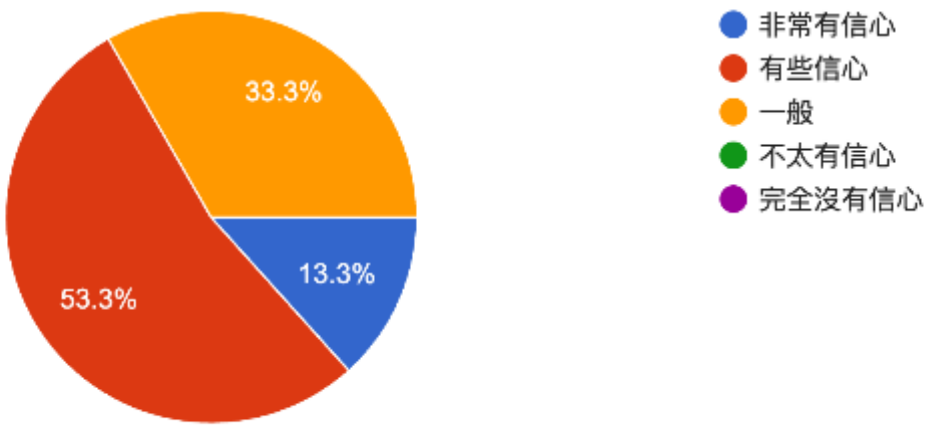
30 則回應



人工智能使用習慣

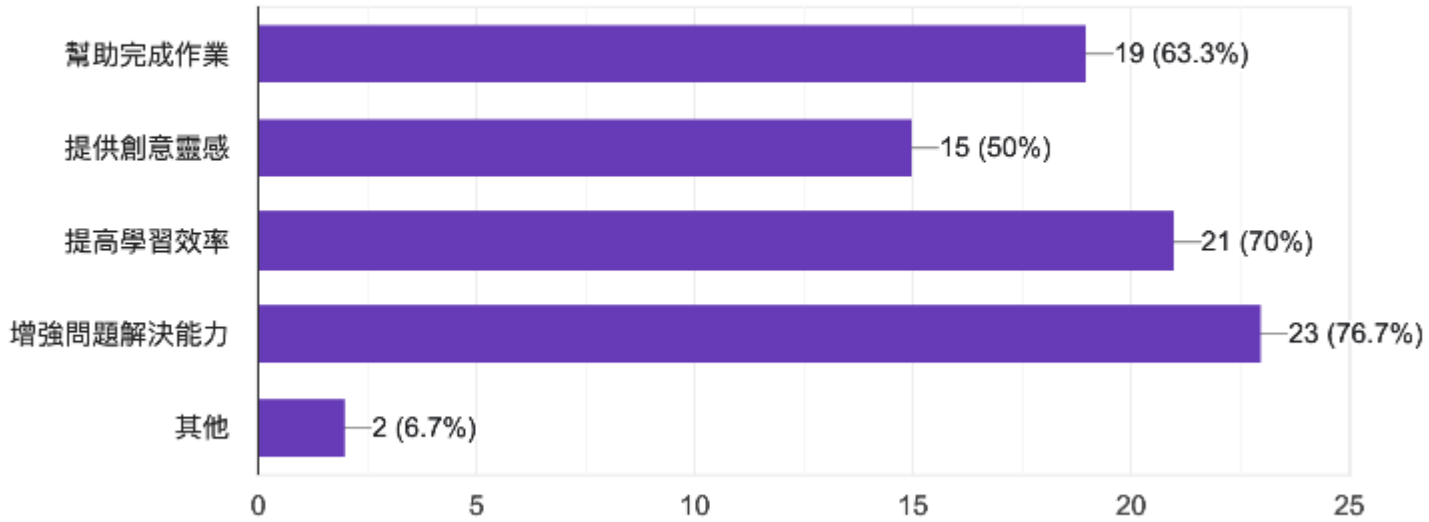
你對使用AI工具的信心程度如何?

30 則回應



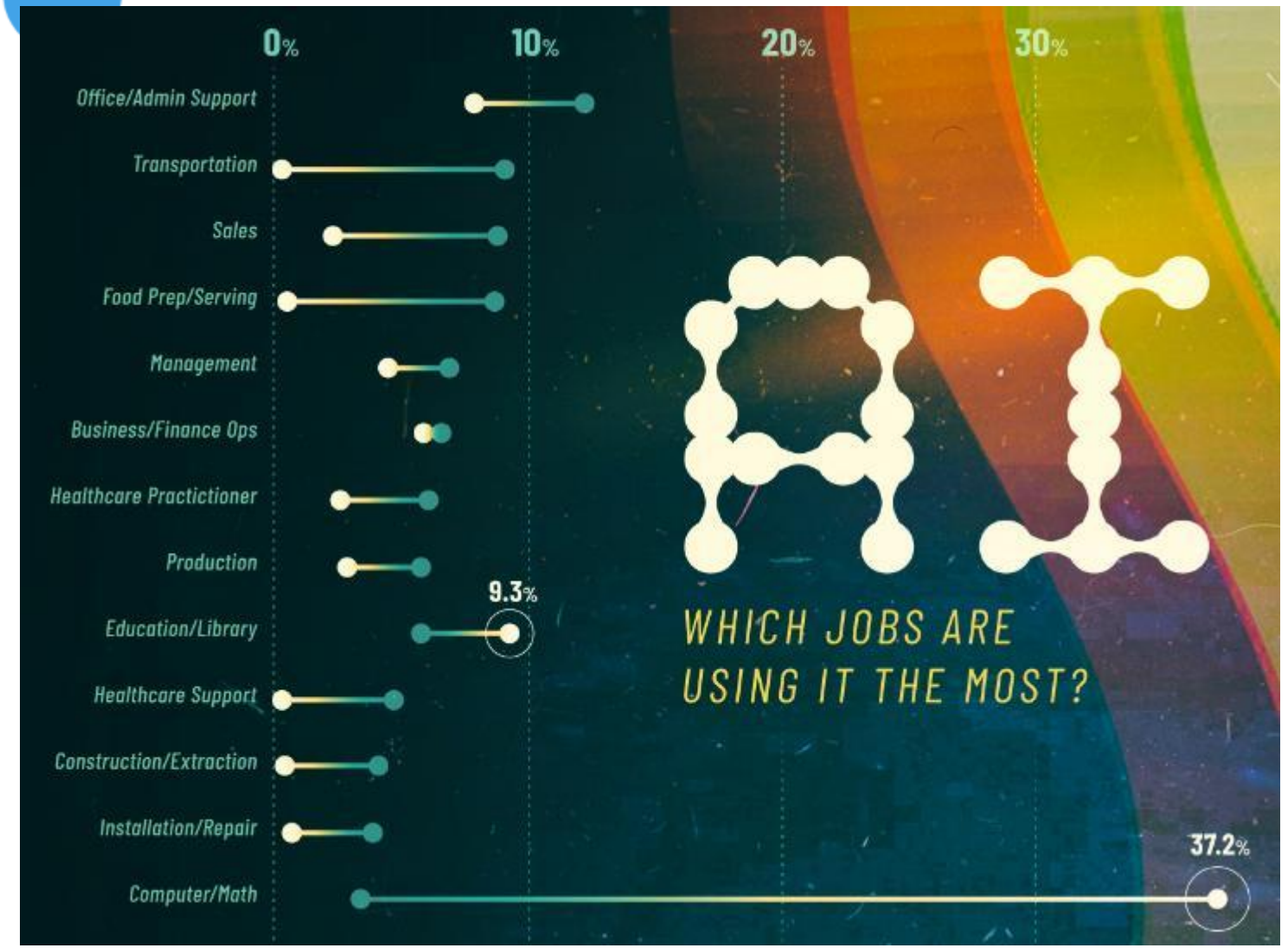
你認為AI工具在學習中的作用是什麼? （可選多項）

30 則回應



「AI 不會取代人的工作，

但卻會**被懂得用AI 的人取代**。」



數學科於AI 時代的重要性

培養人工智能素養重要性

促進數學科興趣

「見」到數學用途
直觀理解抽象概念

適應未來職場需求

學會數據解讀
提升職場競爭力

應對教育新趨勢

教育系統與時俱進
裝備應對 AI 時代能力

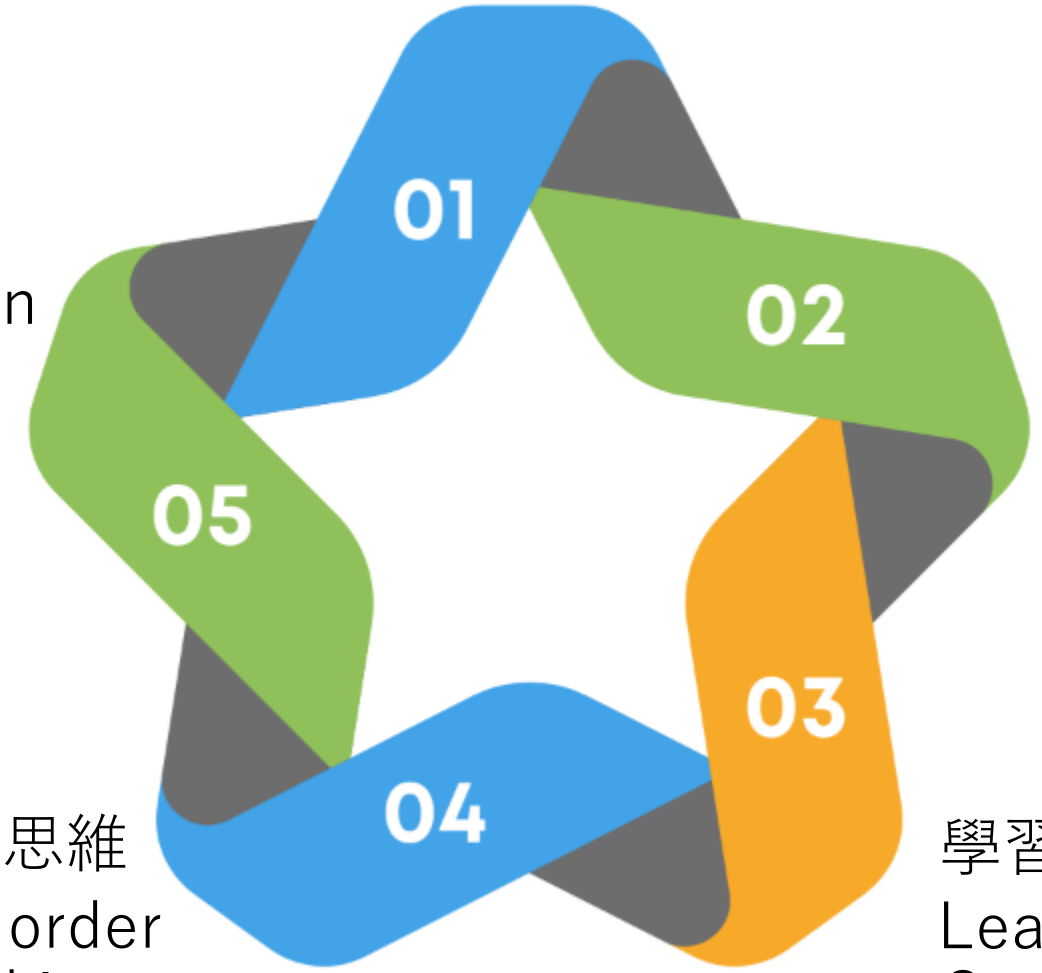
培養自主學習力

提升學生能動性
增加內在學習動機

自主學習
五支柱

學習動機
Learning Motivation

元認知
Metacognition



學習態度
Learning
Attitude

高階思維
High order
thinking

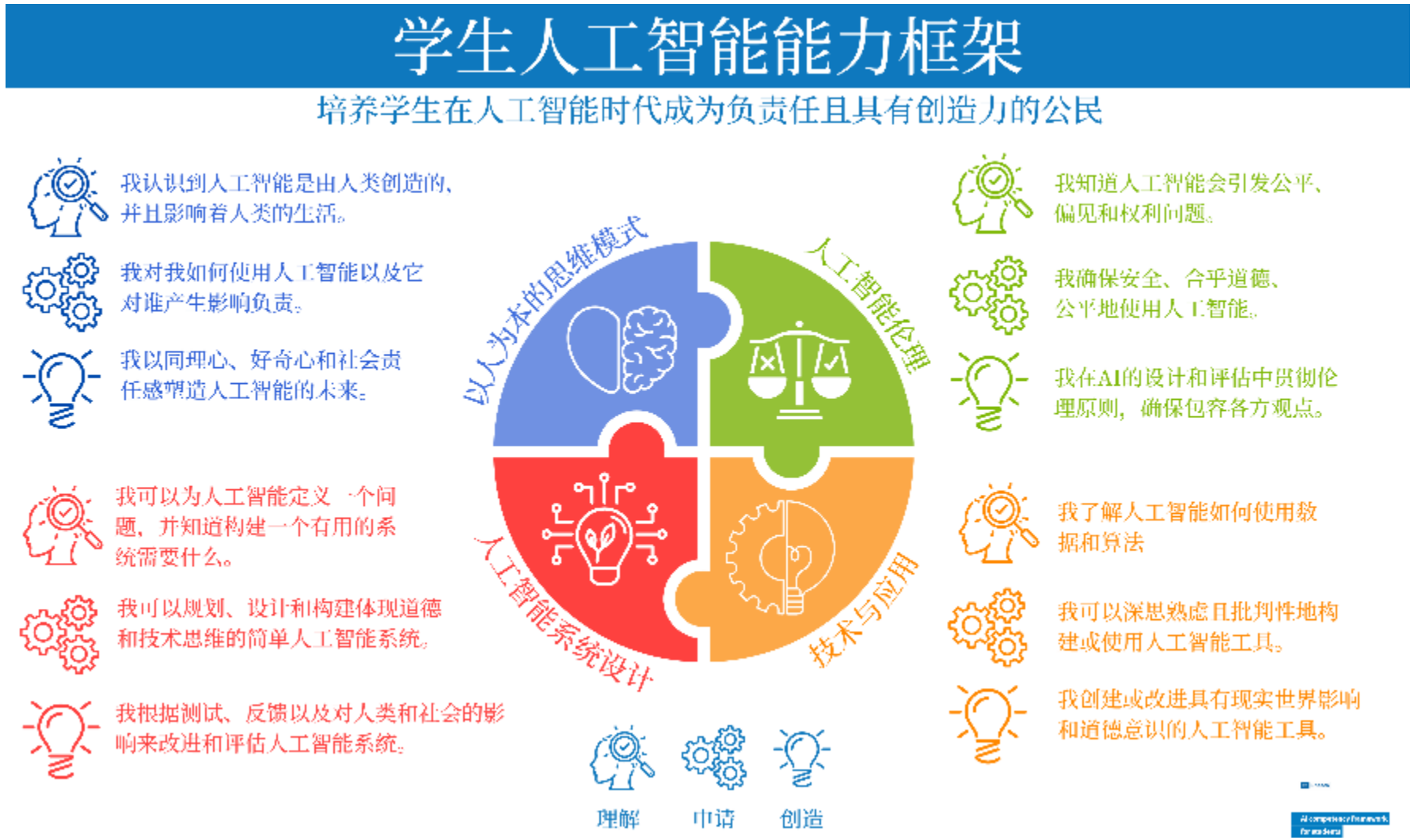
學習策略
Learning
Strategy

Zimmerman, B.J. (2000). “Attaining self-regulation: A social cognitive perspective”

「AI 素養是指個人**理解**、**應用**及**評估**人工智能技術的能力，以適應AI驅動的社會需求。」

- UNESCO聯合國教科文組織

參考藍本



UNESCO, AI Competency Framework for students

人工智能素養框架

知

- 掌握 AI 運作原理。
- 理解 AI技術基礎。

用

- 學習 AI 使用工具。
- 掌握與 AI 互動技巧。

評

- 評估 AI 輸出質量 。
- 分析 AI 生成內容。

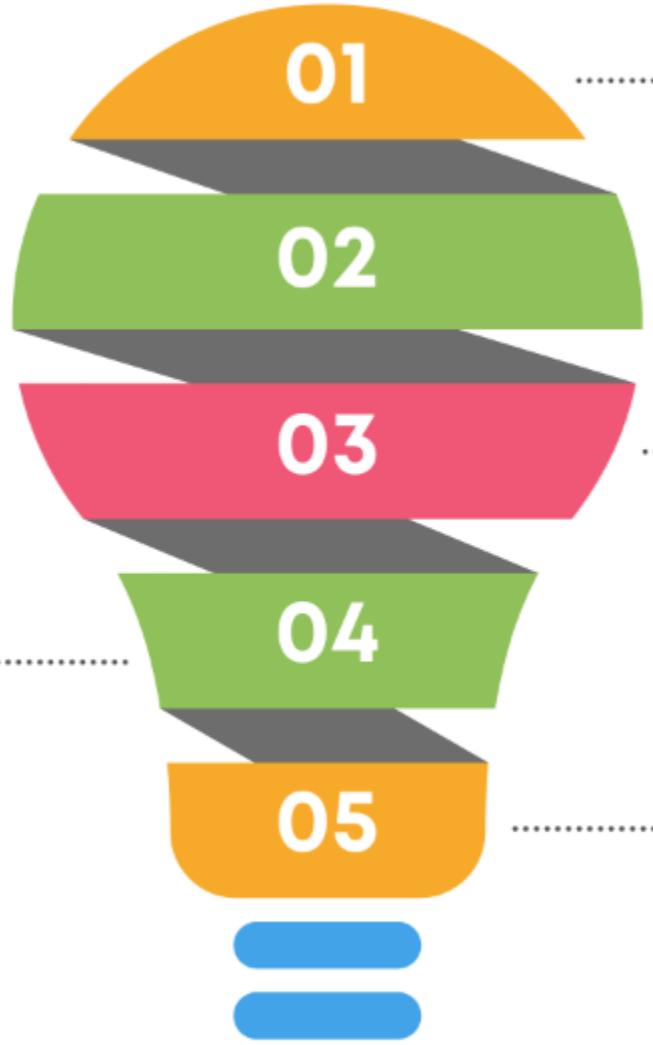
德

- 理解 AI 在倫理社會和法律層面的影響。

人工智能用途四層次

《香港人工智能教讓學生成為學習的主角 – 自主學習四學架構的理論創新與學校應用》

人工智能時代五大學習超能力 (QUEST)



Question
學會問「好問題」
將問題分成小問題
令事情更清楚

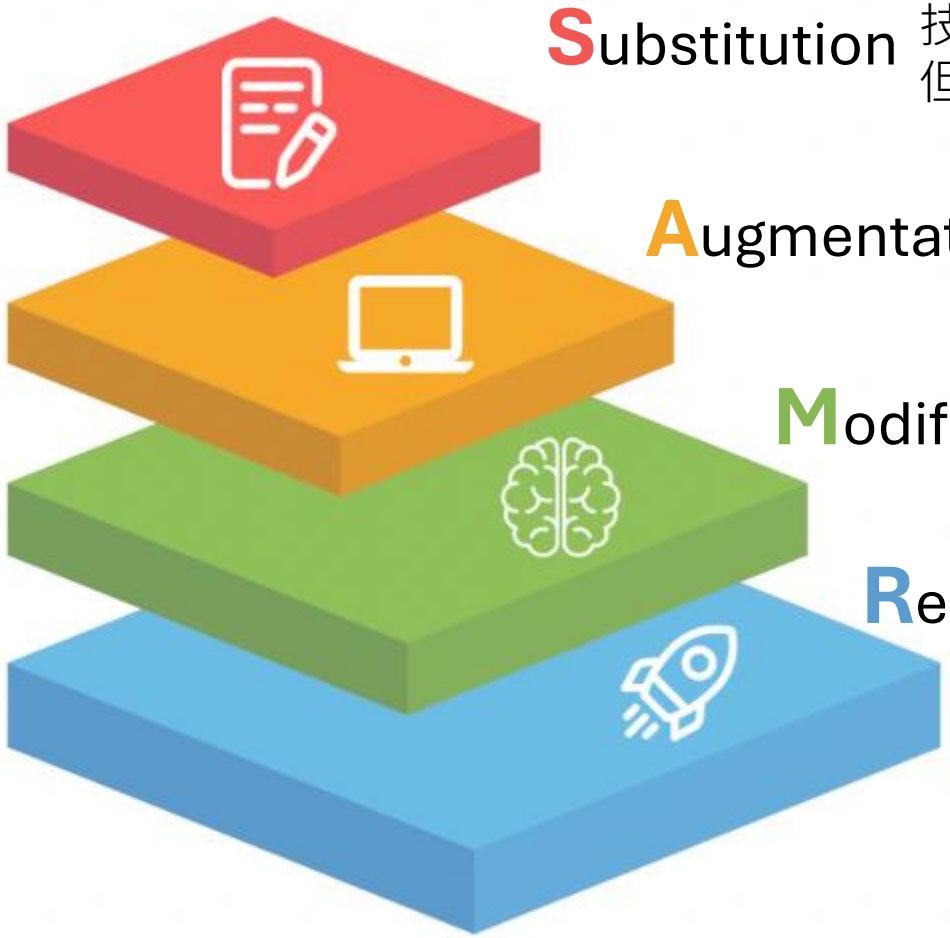
Unpack
搞清楚在說甚麼
檢查內容是否幫到忙
確保你和 AI 同步

Evaluate
檢查 AI 答案正確性
比較 AI 跟自己做法
優化自己想法

Synthesize
將 AI 資訊融合想法
變成新點子

Transform
把想法變成真實
過程經過試驗及改進

SAMR 模型



Substitution 技術直接取代傳統工具
但學習任務保持不變

Augmentation 技術替代傳統工具
並提升技能

Modification 技術改變學習任務的本質
促進更深入的參與

Redefinition 技術創造傳統無法實現
的新學習體驗

AI 素養育成企劃

代數分式
- AI 錯題簿

畢氏定理
- 虛擬博物館

面積與體積
- 廁紙厚度解難題

量度中誤差
- 尺來尺往

續統計圖表
- 生活中的直方圖

相似
- 歌曲創作

三角比
- 遊戲設計

AI 素養育成企劃

- 尺來尺往：花園周界量度 -

量度中誤差

Tape Measure
HeyGen

探究式學習
專題研習

尺來尺往：花園周界量度

量度工具：

1. 50 m 軟尺
2. 3 m 軟尺
3. iPad (Tape Measure)
4. 步距

尺來尺往
花園周界
量度

尺來尺往
花園周界
量度

尺來尺往：花園周界量度

搜尋方法/比較方法/驗證方法

Measurement Activity: Perimeter of School Garden

Group: 9

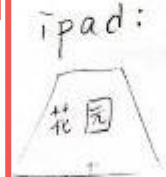
Strategy: 人物所看的方向位置不是花园的正中间上方，而是其中一边的上方，视角从斜边引出，会产生视线错觉，误以为花园是梯形，导致花园周界未测有误差，比实际较大。

Figure:

思考AI 限制

Explanation:

Ipad:



看落去，周界较大

Ruler:

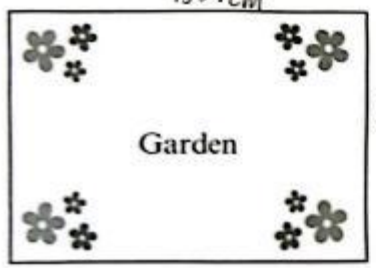
实際周界較左边！

Measurement Activity: Perimeter of School Garden

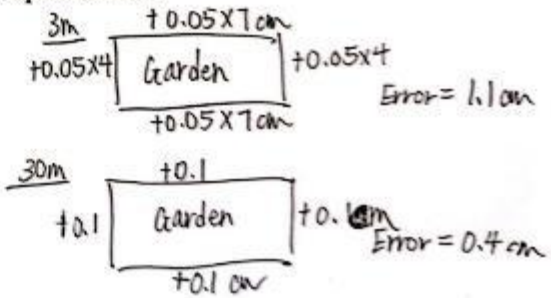
Group: Group 1

Strategy: measuring tape

Figure: 310cm



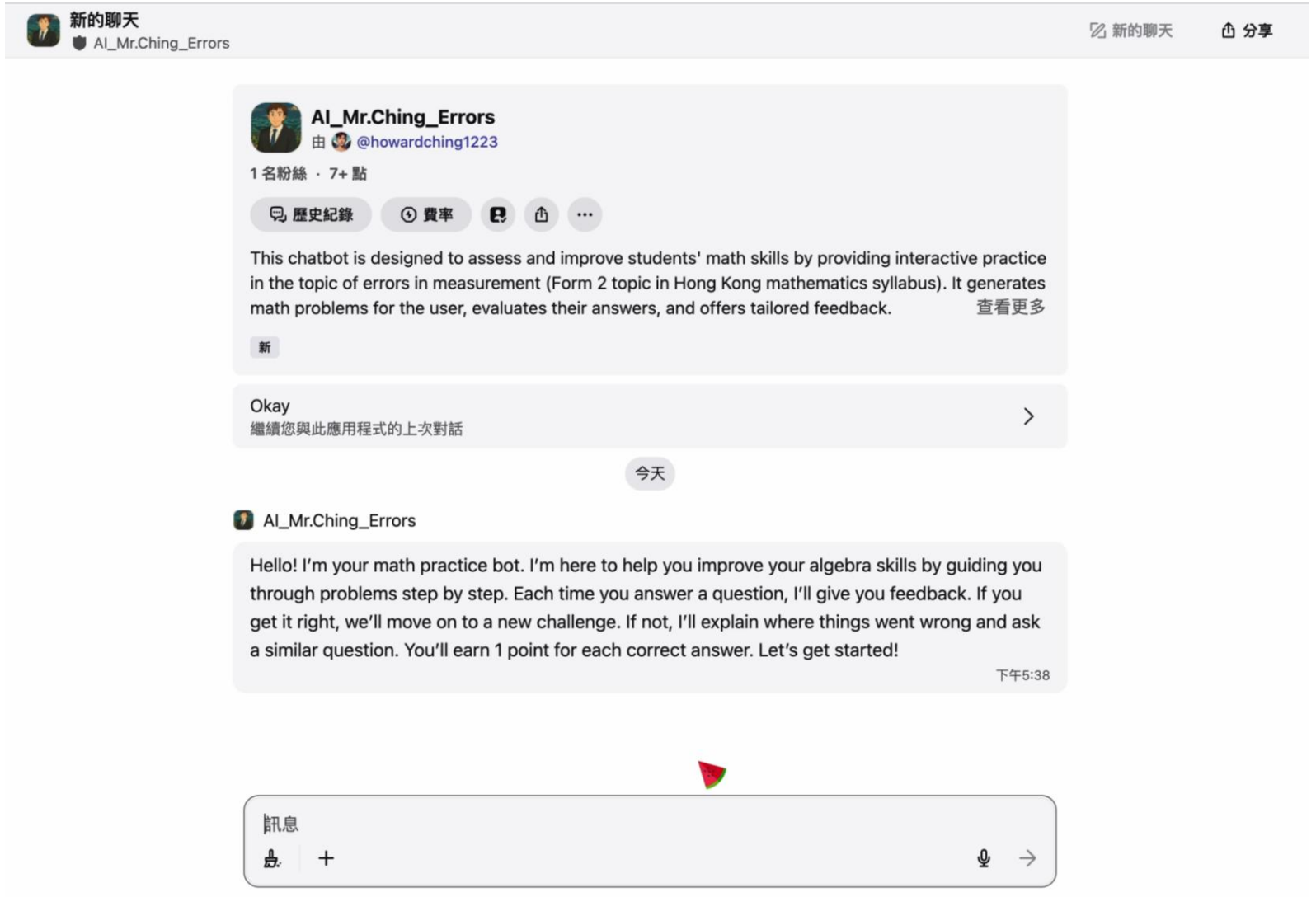
Explanation:



尺來尺往
花園周界
量度

提出問題/探討問題

Poe



AI 素養育成企劃

- AI 改錯簿 -

代數分式

Photomath

反思性學習

AI 錯題簿

第一階段

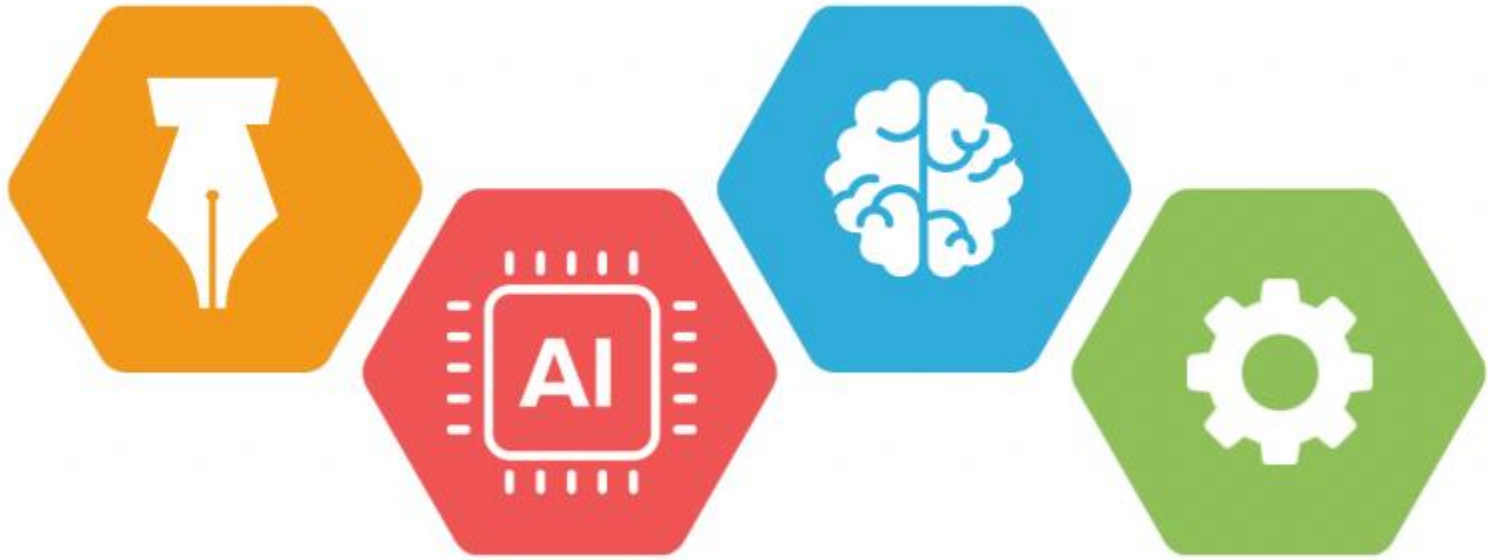
第二階段

預習、練習

反思、調整、自評

學生回答問題

學生反思答題



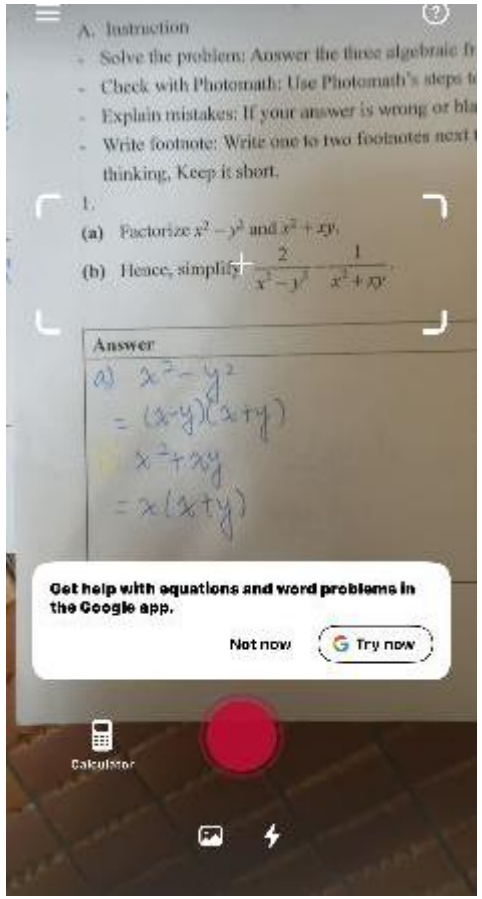
AI 提供答案

學生反思 AI 答案

AI 錯題簿

Photomath

手機相機掃描數學題目



顯示答案並提供詳細步驟

AI 錯題簿

學生答案　　Photomath　　個人反思　　反思AI 答案

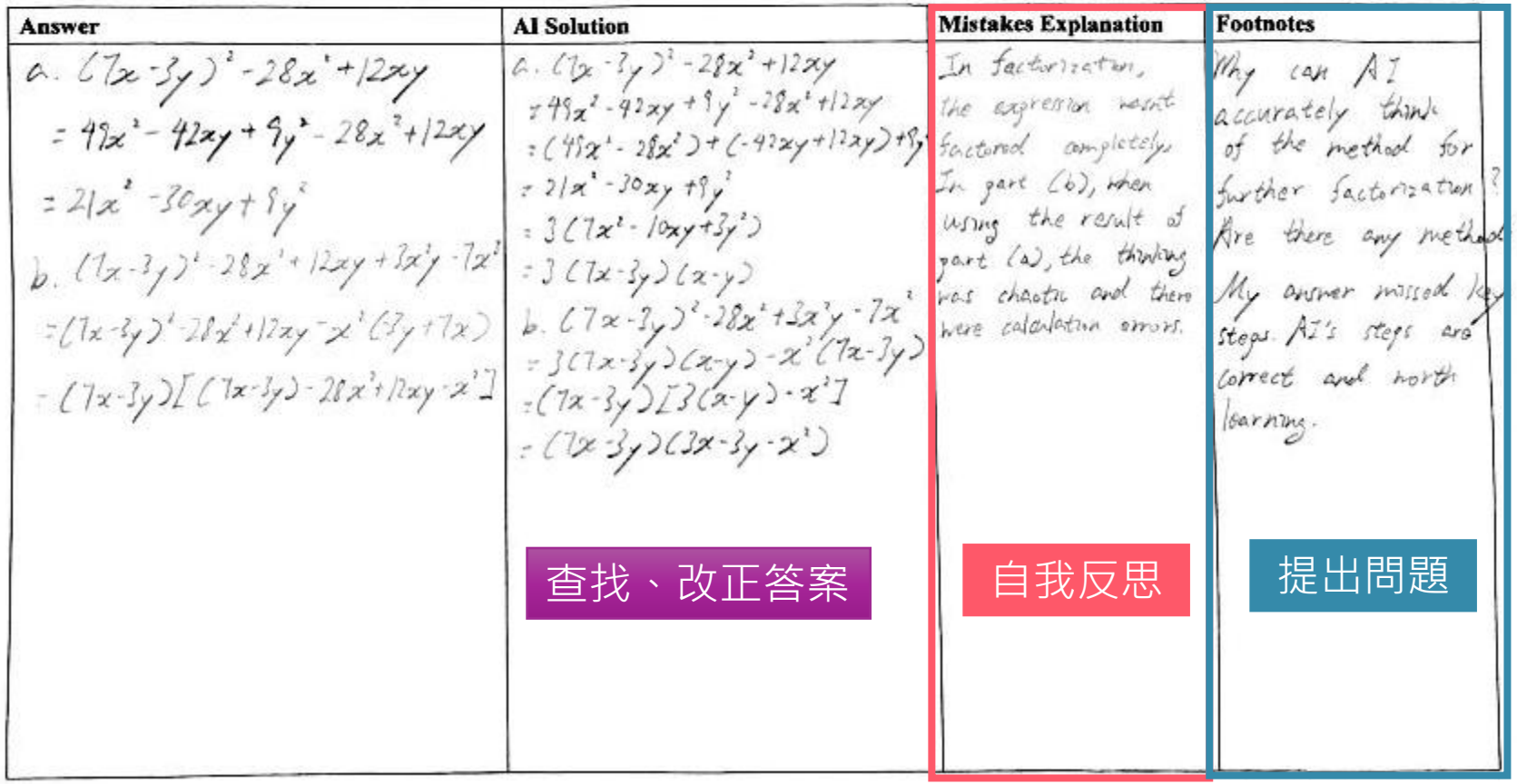
Answer	AI Solution	Mistakes Explanation	Footnotes
$\frac{2}{x^2-y^2} - \frac{1}{x^2+xy}$ $= \frac{2}{(x+y)(x-y)} - \frac{1}{x(x-y)}$ $= \frac{2x(x-y) - 1}{x(x-y)(x+y)(x-y)}$ $= \frac{2x(x-y) - (x+y)(x-y)}{x(x+y)(x-y)^2}$ $= \frac{2x-(x+y)}{x(x+y)(x-y)^2}$ $= \frac{2\cancel{x}}{\cancel{x}(x-y)^2}$ $= \frac{2}{(x-y)^2}$	$= \frac{2x-x+y}{x(x-y)(x+y)}$ $= \frac{x+y}{x(x-y)(x+y)}$ $= \frac{1}{x(x-y)}$ $= \frac{1}{x^2-xy}$	My answer is missed I didn't do the common denominator correctly. Therefore I go the wrong answer. I learned to be carefully to do the question.	Why does AI do it this way? Are there other feasible methods? AI's step are correct; I need to cheak my mistakes?

AI 錯題簿

Student Footnote:
My answer missed key steps. AI's steps are correct and worth learning."

查找答案/ 改正答案/ 修正答案

2.
(a) Factorize $(7x - 3y)^2 - 28x^2 + 12xy$.
(b) Using the result of (a), factorize $(7x - 3y)^2 - 28x^2 + 12xy + 3x^2y - 7x^3$.



Answer	AI Solution	Mistakes Explanation	Footnotes
a. $(7x-3y)^2-28x^2+12xy$ $=49x^2-42xy+9y^2-28x^2+12xy$ $=21x^2-30xy+9y^2$ b. $(7x-3y)^2-28x^2+12xy+3x^2y-7x^3$ $=(7x-3y)^2-28x^2+12xy-x^2(3y+7x)$ $=(7x-3y)[(7x-3y)-28x^2+12xy-x^2]$	a. $(7x-3y)^2-28x^2+12xy$ $=49x^2-42xy+9y^2-28x^2+12xy$ $=(49x^2-28x^2)+(-42xy+12xy)+9y^2$ $=21x^2-30xy+9y^2$ $=3(7x^2-10xy+3y^2)$ $=3(7x-3y)(x-y)$ b. $(7x-3y)^2-28x^2+3x^2y-7x^3$ $=3(7x-3y)(x-y)-x^2(7x-3y)$ $=(7x-3y)[3(x-y)-x^2]$ $=(7x-3y)(3x-3y-x^2)$	In factorization, the expression wasn't factored completely. In part (b), when using the result of part (a), the thinking was chaotic and there were calculation errors.	Why can AI accurately think of the method for further factorization? Are there any method? My answer missed key steps. AI's steps are correct and worth learning.

查找、改正答案　自我反思　提出問題

《香港人工智能教讓學生成為學習的主角 – 自主學習四學架構的理論創新與學校應用》

AI 錯題簿

Student Footnote:
"Why does AI factor $a^4 - 16b^4$ twice? Can skip?"

查找答案/ 改正答案/ 修正答案

(ii) Factorize $a^4 + 8a^2b^2 + 16b^4$.

(b) Hence, simplify $\frac{a^4 - 16b^4}{5a^2 + 10ab} \times \frac{ab - 2b^2}{a^4 + 8a^2b^2 + 16b^4} \times \frac{15a^2}{a^2 - 4ab + 4b^2}$.

Answer	AI Solution	Mistakes Explanation	Footnotes
ai) a^4-16b^4 $=a^4-(2b)^4$ aii) $a^4+8a^2b^2+16b^4$ $=a^4+2(4)(ab)^2+(2b)^4$	ai) a^4-16b^4 $=(a^2-4b^2)(a^2+4b^2)$ $=(a-2b)(a+2b)(a^2+4b^2)$ aii) $a^4+8a^2b^2+16b^4$ $=a^{2x2}+2a^2\times4b^2+4^2b^{2x2}$ $=(a^2)^2+2a^2\times4b^2+4^2\times(b^2)^2$ (Q3ai) $=(a^2)^2+2a^2\times4b^2+(4b^2)^2$	- I messed up full factorization, stopping at $a^4-(2b)^4$ instead of breaking down further like AI. - I forgot the pattern for $a^4+8a^2b^2+16b^4$,	- My answer stops early, why does AI factor a^4-16b^4 twice? Can skip? (Q3ai) - How does AI spot the the trick to see it?

查找、改正答案　自我反思　提出問題

- 《香港人工智能教讓學生成為學習的主角 – 自主學習四學架構的理論創新與學校應用》

AI 錯題簿

Question

- Why does AI do this first? Can I do …… first instead?
- Why does AI say this? What happen if I skip this step?
- Why does AI …… I don't know how to start.
- Why does AI calculate in this way? What did I miss?

Unpack

- I understand doing in this way, it makes the answer simpler.
- I understand that AI does it to ……

Evaluate

- AI's steps are correct; I need to check my mistakes.
- I don't know how to …… AI's steps are correct.
- My answer missed a step; AI is correct because it ……
- My answer matches AI's answer.
- AI's answer is simpler and correct, but my answer is ……

Synthesize

- I will try a new method, such as…….

Transform

- I will modify the question, recalculate using AI's method, and see if AI's method is effective.

AI 素養育成企劃

- 生活中的直方圖 -

續統計圖形

Poe

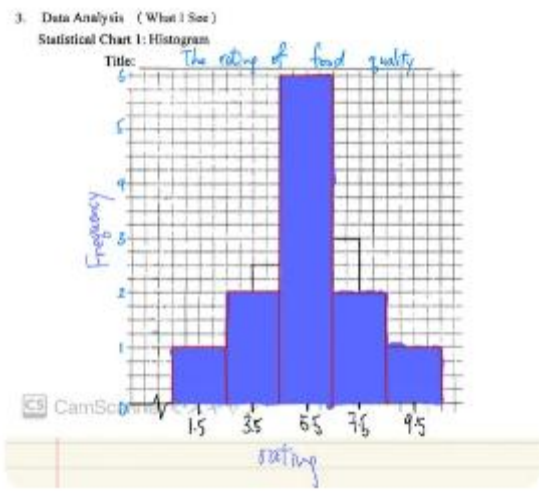
專題研習

生活中的直方圖

生活中的直方圖

2B 28 Wan Yui Ting Rex
4個月 之前

4. Histogram

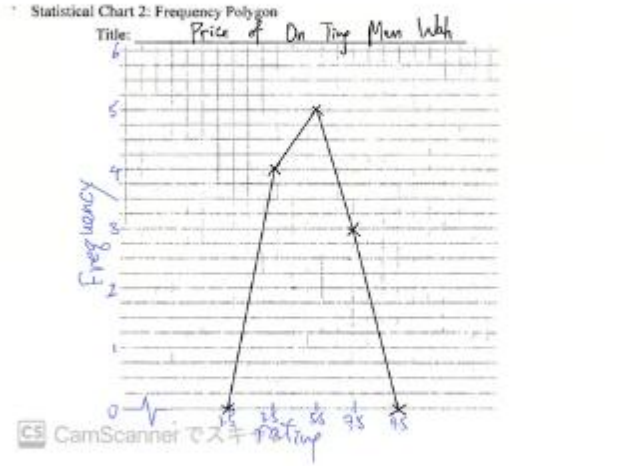


0 0

新增評論

2B 28 Wan Yui Ting Rex
4個月 之前

5. Frequency Polygon



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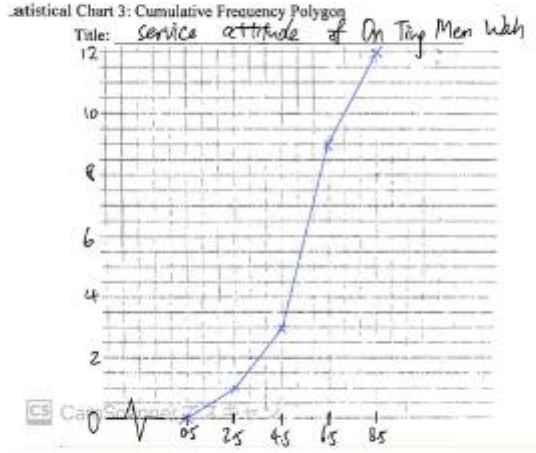
新增評論

2B 28 Wan Yui Ting Rex
4個月 之前

6. Cumulative Frequency Polygon



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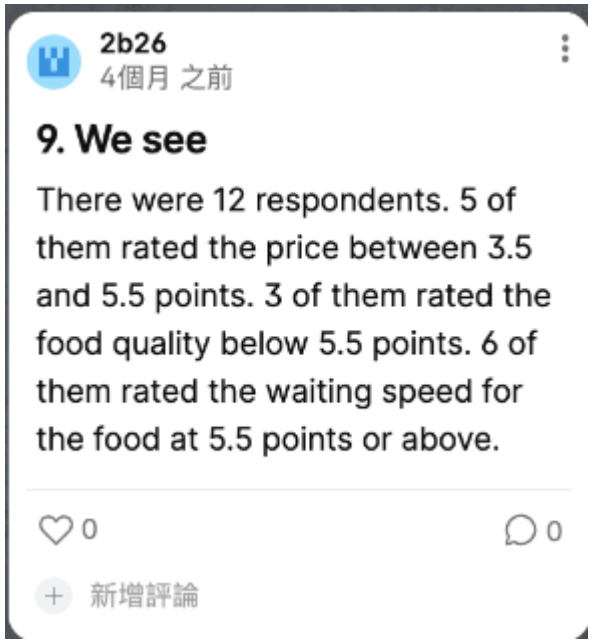
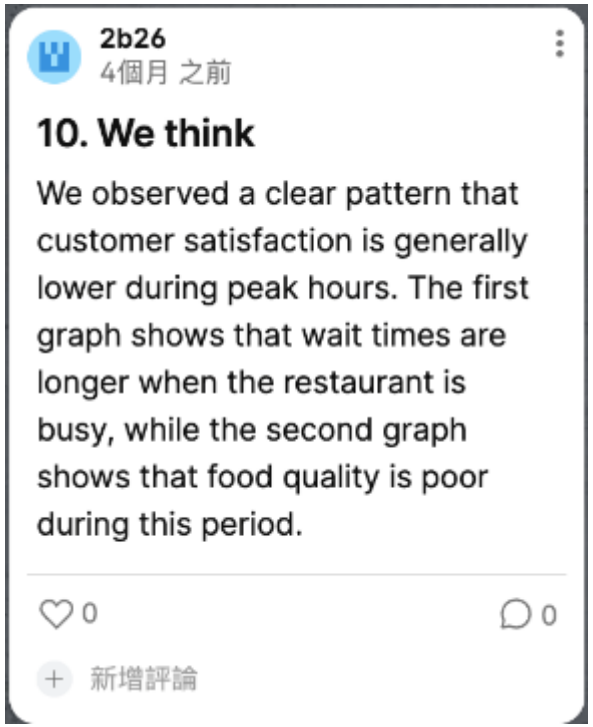
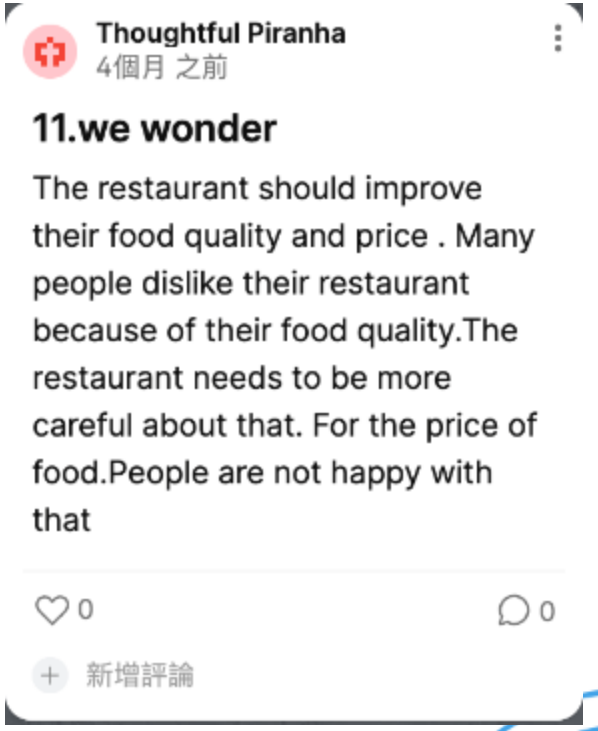
新增評論

生活中的直方圖


2b26
4個月 之前
9. We see
There were 12 respondents. 5 of them rated the price between 3.5 and 5.5 points. 3 of them rated the food quality below 5.5 points. 6 of them rated the waiting speed for the food at 5.5 points or above.
0
0
新增評論


2b26
4個月 之前
10. We think
We observed a clear pattern that customer satisfaction is generally lower during peak hours. The first graph shows that wait times are longer when the restaurant is busy, while the second graph shows that food quality is poor during this period.
0
0
新增評論


Thoughtful Piranha
4個月 之前
11.we wonder
The restaurant should improve their food quality and price . Many people dislike their restaurant because of their food quality.The restaurant needs to be more careful about that. For the price of food.People are not happy with that
0
0
新增評論

生活中的直方圖

查找答案/ 改正答案/ 修正答案

12.Ask Poe AI

Improving food quality while managing costs is essential for restaurants to enhance customer satisfaction and profitability. Here are several strategies:

1. **Sourcing Quality Ingredients**

- **Local Suppliers:** Partner with local farms and suppliers for fresh, seasonal ingredients.
- **Organic Options:** Consider organic or sustainable products, which can improve quality and attract health-conscious customers.

2. **Menu Engineering**

- **Cost Analysis:** Regularly review menu items to identify high-cost, low-margin dishes. Adjust recipes or pricing accordingly.
- **Seasonal Menus:** Introduce seasonal dishes that utilize fresh ingredients, reducing costs and improving quality.

投訴信

Subject: Complaint Regarding ***[Employee Welfare/ Customer Service] at *** [company's name]

Dear ***[Recipient's Name],

I am writing to express my deep concern regarding the ***[poor employee welfare policies/ customer service] and practices at ***[restaurant name] As a loyal customer, I believe it is important to address this issue and seek your attention to initiate the necessary improvements and follow-up actions.

I recently came across some distressing statistics within your organization. According to a survey conducted by us, it was revealed that ***[list out 2-3 statistical inference drawn from the histogram], and we believe that the ***[their/ our] needs are adequately met. This alarming statistic highlights a significant gap in the provision of essential benefits and support from your company.

It is disheartening to learn that your company's stature and reputation has fallen short in prioritizing ***[their/ our] needs. As an integral part of your success, these hardworking individuals deserve to receive fair treatment, competitive compensation, and comprehensive benefits. By neglecting their welfare, you not only risk compromising their overall job satisfaction but also undermine the quality of service provided to customers.

I strongly urge you to take immediate action to rectify this situation.

Firstly, ***[list out the action that you hope the company should do based on your statistics result].

Secondly, ***[list out the action that you hope the company should do based on your statistics result]

In addition, I would appreciate a written response from you regarding the steps that will be taken to address this issue. Please provide details of the initiatives that will be put in place to enhance ***[customer service/ employee welfare] and the measures that will be taken to monitor and evaluate their effectiveness. This will not only demonstrate your commitment to improving the situation but also assure concerned ***[employees/ customers] that their voices are being heard.

AI 素養育成企劃

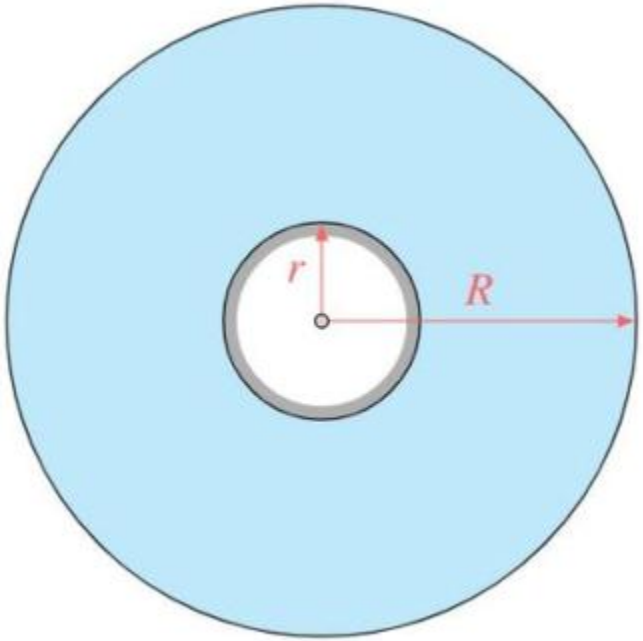
- 廁紙厚度解難題 -

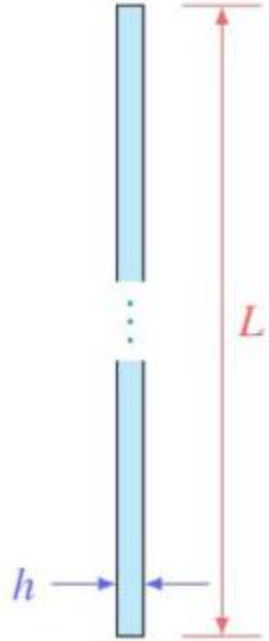
面積與體積 II

Poe

探究式學習

廁紙厚度解難題





廁紙厚度解難題

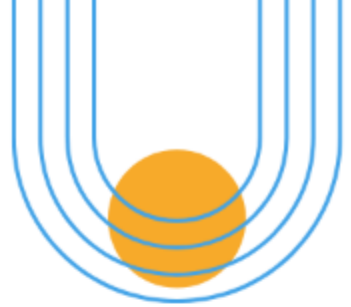
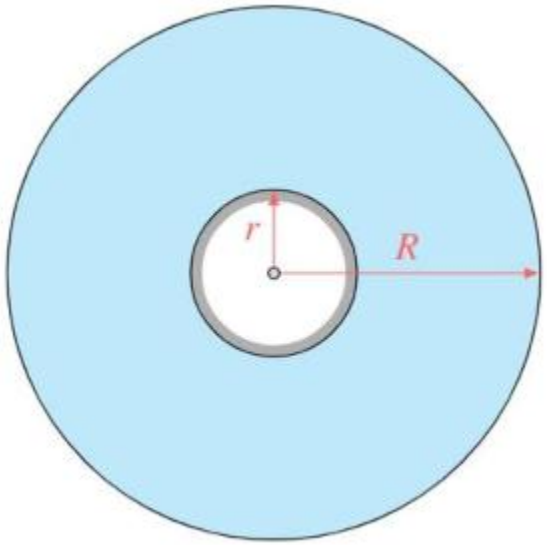
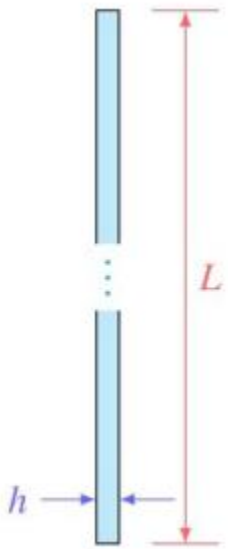


图 6: 等面积模型示意图





如图 6 左所示，未展开的厕纸卷侧面可近似为一个外半径为 R，内半径为 r 的圆环，其面积为

$$A = \pi R^2 - \pi r^2 = \pi(R^2 - r^2)$$

如图 6 右所示，如果把厕纸卷展开，则侧面圆环变成长度为 L，厚度为 h 的矩形。因此，侧面积还可以表示为

$$A = Lh$$

由以上两式得到的面积相等，可得一卷厕纸的总长度为

$$L = \frac{\pi(R^2 - r^2)}{h} = \pi\frac{(R+r)(R-r)}{h}$$
$$= \pi n(R+r) = 2n\pi r + n^2\pi h$$

廁紙厚度解難題

Estimate the thickness of a sheet of tissue paper.

廁紙厚度解難題

Ask AI about how to measure the thickness of a sheet of tissue paper using mathematical method.

AI say I can use stack measurement, we need a stack of toilet paper sheets as 100 sheet use some heavy objects to pressure, and then use ruler and measure it

the average thickness per sheet:

$$\text{per sheet} = \frac{\text{thickness of paper sheet}}{\text{number of paper sheet}}$$

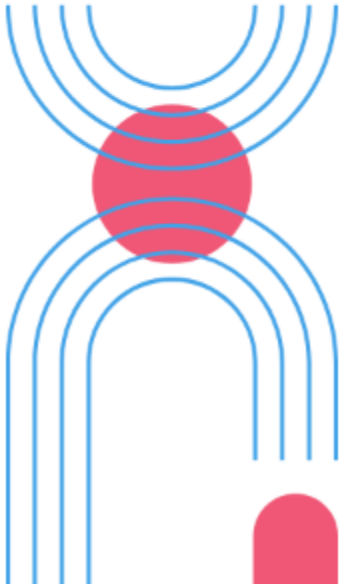
搜尋方法/比較方法/驗證方法

廁紙厚度解難題

Is the AI-suggested method feasible? Why?

Yes. The AI-suggested method is feasible, because the tools needed in the calculation process are all available to students. Moreover, stacking multiple sheets and measuring the total thickness then dividing by the number of sheets can effectively reduce the error of measuring a single thin sheet, making the result relatively accurate.

Yes. The cumulative method amplifies the tiny thickness, making it measurable with common tools. The operation is simple, and the cost is low. Though there may be small errors from uneven stacking, it is a practical basic method.



搜尋方法/比較方法/驗證方法

廁紙厚度解難題

Design a more precise measurement method by combining AI suggestions and manual method.

《香港人工智能教讓學生成為學習的主角 – 自主學習四學架構的理論創新與學校應用》

廁紙厚度解難題

驗證方法

List out error(s) you may encounter during your measurement.

The ruler is not accurate enough. There are 0.05 cm maximum absolute error. Also, the thickness of tissue paper are different. It cannot be measured that accurate.

Tissue paper has different adhersion to each other so there will be errors when measuring the radius and diameter.

Instrumental error, human error. For example, when measuring 0.05 cm using a ruler with a minimum scale of 0.1 cm, estimation may introduce uncertainty.

AI 素養育成企劃

- 虛擬畢達哥拉斯博物館 -

畢氏定理

Canva AI
HelloHistory.ai

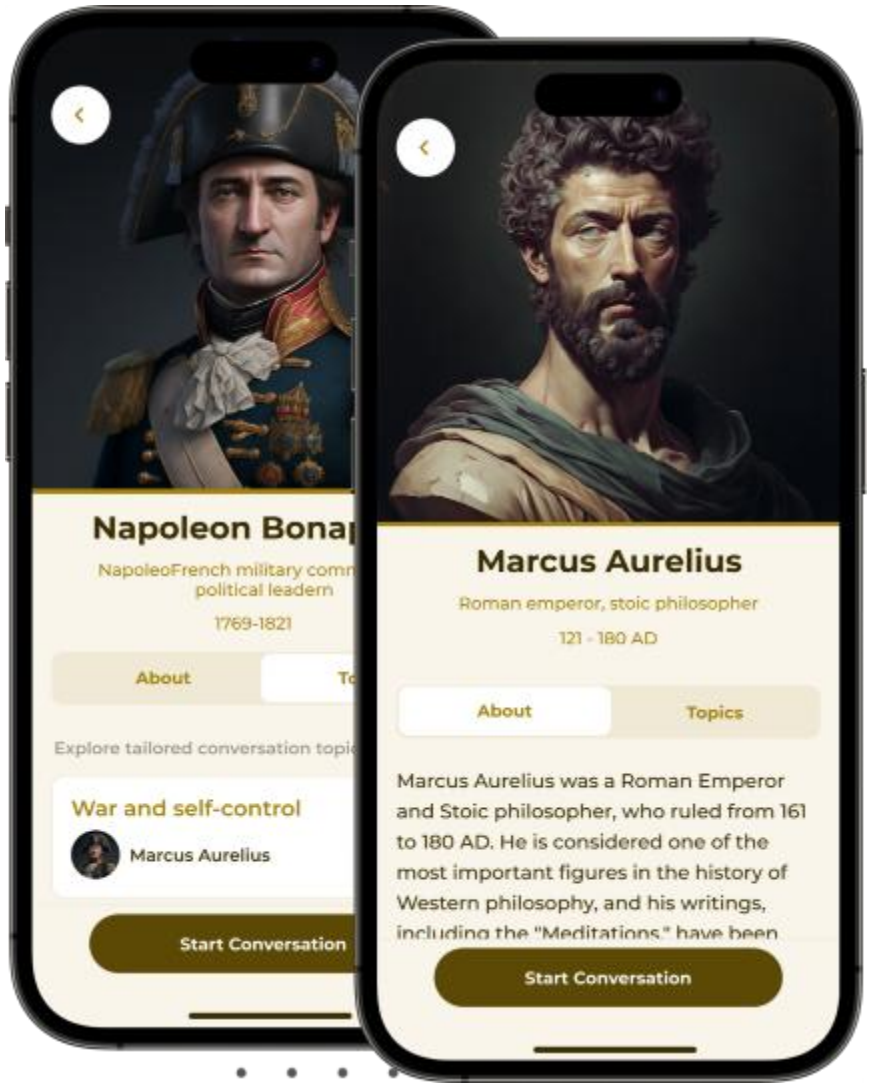
專題研習

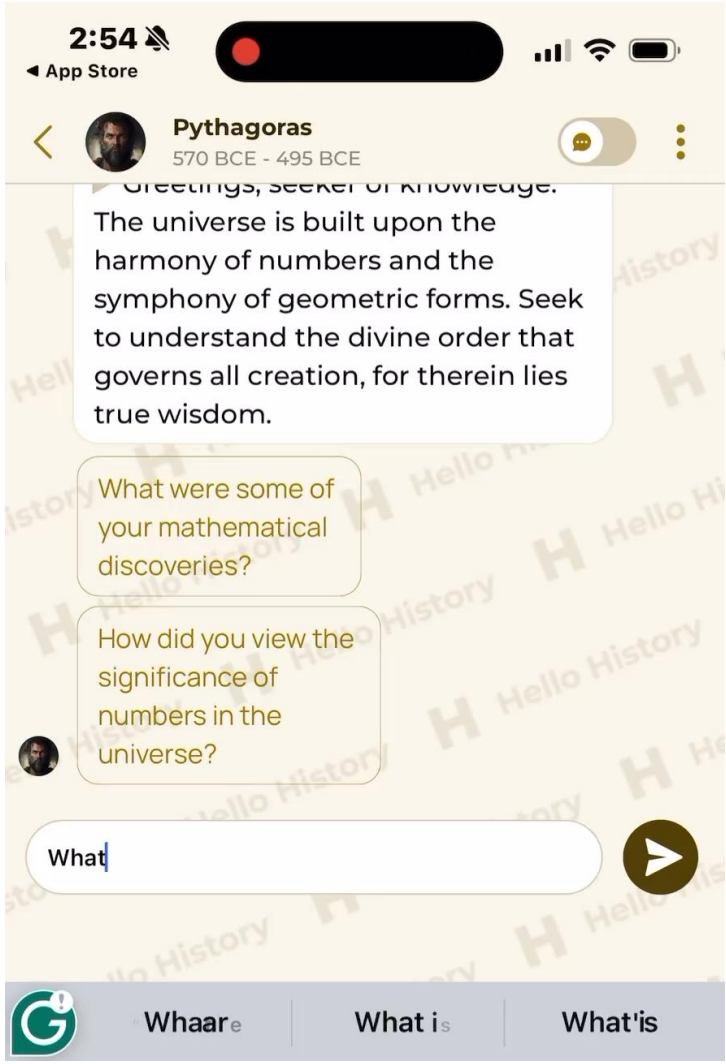
虛擬畢達哥拉斯博物館

虛擬畢達哥拉斯博物館

虛擬畢達哥拉斯博物館

Hello History

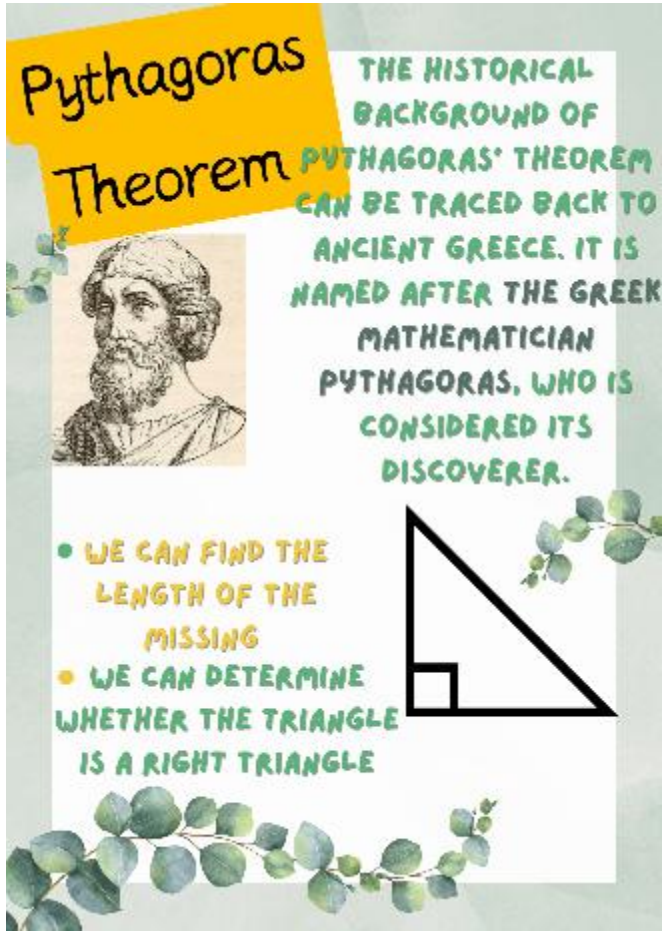




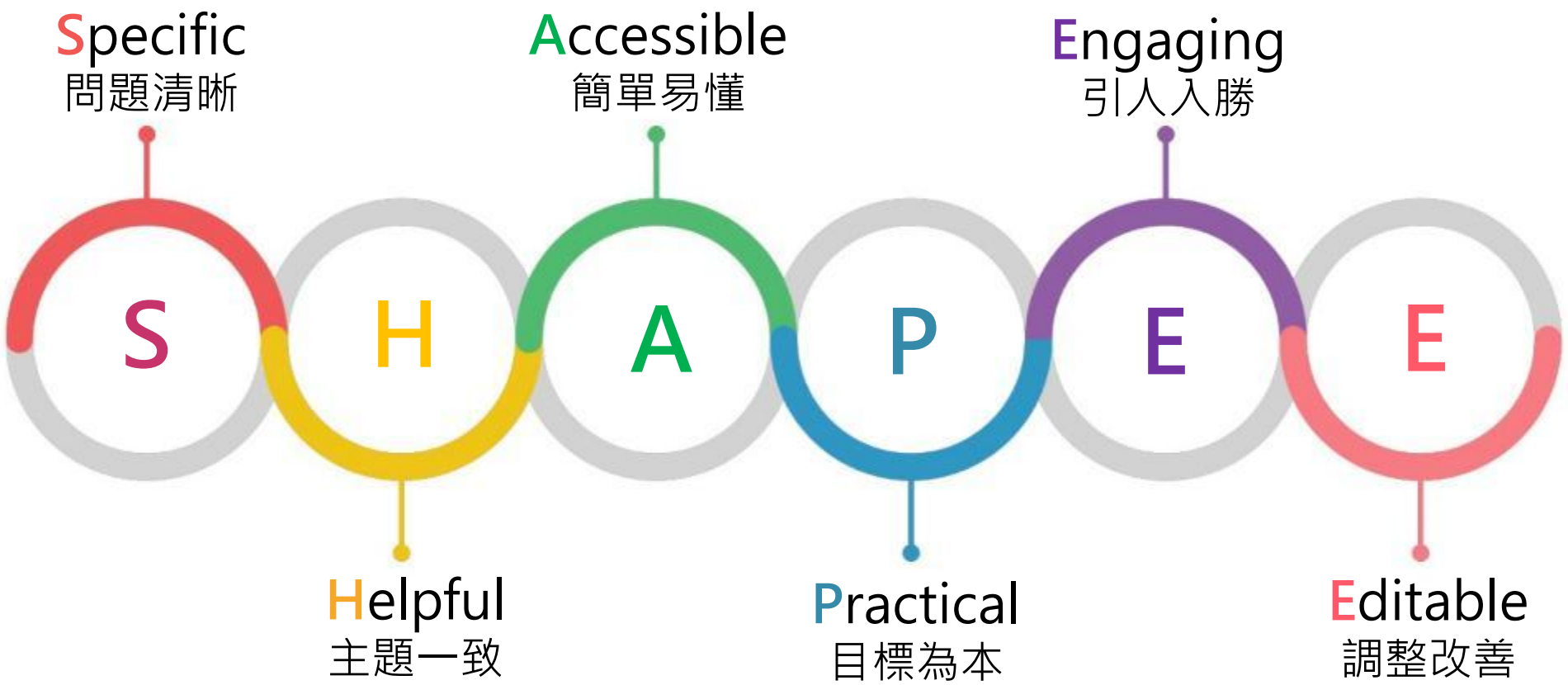
虛擬畢達哥拉斯博物館


ZAZZFung
Most great Mathematicians:
PYTHAGORAS
Who is Pythagoras?
Pythagoras was a Greek mathematician and musician who was created quite a lot law of mathematics . His most famous contribution is the Pythagorean theorem(a² + b² = c²) , which asserts that the square of the hypotenuse's length—the side opposite the right angle—in a right-angled triangle equals the sum of the squares of the lengths of the other two sides. This theorem has profound implications in geometry and mathematics and is still widely studied for general today.


This is who find Pythagoras' Theorem
Name:Pythagoras
(c.570–c.495 BC)
About Him
Famous Discovery


Pythagoras Theorem
THE HISTORICAL BACKGROUND OF PYTHAGORAS' THEOREM CAN BE TRACED BACK TO ANCIENT GREECE. IT IS NAMED AFTER THE GREEK MATHEMATICIAN PYTHAGORAS, WHO IS CONSIDERED ITS DISCOVERER.
WE CAN FIND THE LENGTH OF THE MISSING
WE CAN DETERMINE WHETHER THE TRIANGLE IS A RIGHT TRIANGLE

虛擬畢達哥拉斯博物館


Specific
問題清晰
Accessible
簡單易懂
Engaging
引人入勝
S
H
A
P
E
E
Helpful
主題一致
Practical
目標為本
Editable
調整改善

虛擬畢達哥拉斯博物館

Specific 問題清晰

- 專注於一個明確主題，確保得到針對性的回答。

Helpful 主題一致

- 回答與主題相關。

Accessible 簡單易懂

- 清晰明確且簡單語言回答。

Practical 目標為本

- 可以直接用於專題研習中。

Engaging 引人入勝

- 能激發好奇心，並對專題研習提供創意角度。

Editable 調整改善

- 可以輕鬆修改提示，確保提示具適應性。

虛擬畢達哥拉斯博物館

Write Your Own Question: Ask another question about his early life. Use SHAPEE.

Specific 問題清晰　Accessible 簡單易懂

Your Question: I am a Form 1 student. Please tell me in simple language what is the impact of the Pythagoras Theorem.

AI Response (Key points):

Helpful 主題一致　Practical 目標為本　Editable 調整改善

Your Question: I am a Form 1 student. Please tell me in simple language why did you invent the Pythagoras Theorem.

Your Question: I'm a Form 1 student. Please tell me how to use Pythagoras Theorem

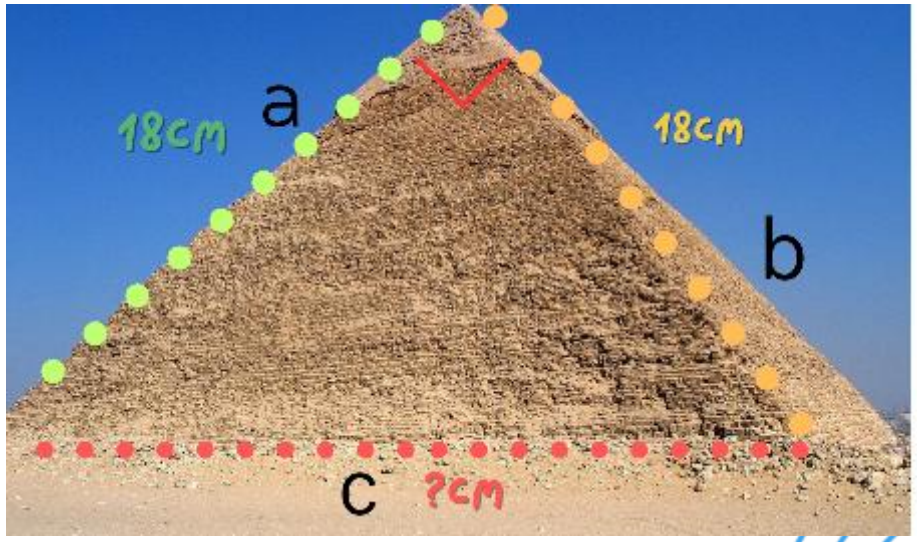
Engaging 引人入勝

Your Question: I'm a Form 1 student. Please tell me a fun story about your daily life.

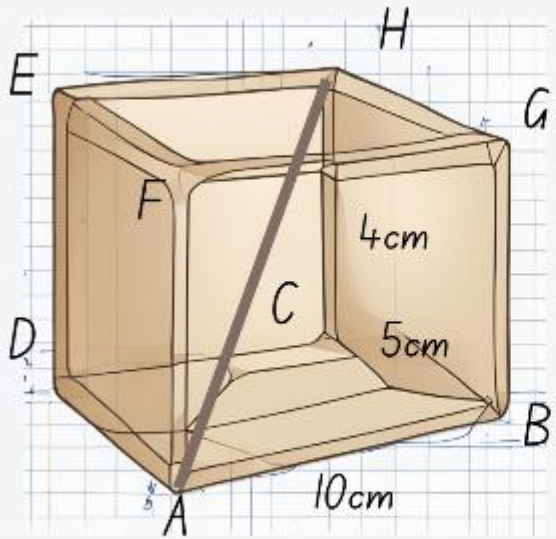
AI Response (Key points):

虛擬畢達哥拉斯博物館

Magic School



虛擬畢達哥拉斯博物館

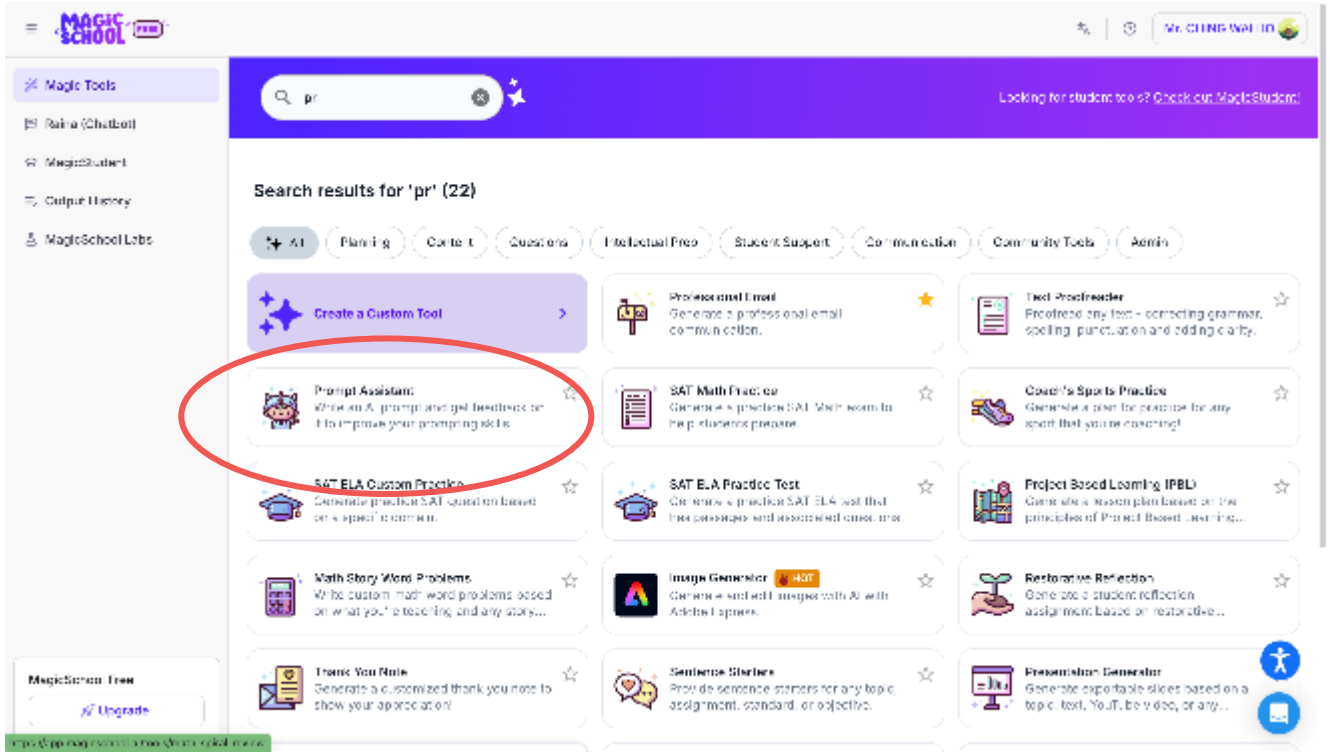


In the figure, ABCDEFGH is a cuboid. If AB = 10cm, BC = 5 cm, CH = 4cm, find AC and CH.

-2A03

The length of one side of the field is 40 m, while the length of the other side is 30 m. A farmer wants to construct a diagonal fence from one corner of the field to the opposite corner. What is the length of the diagonal fence?

虛擬畢達哥拉斯博物館


Magic Tools
pr
Search results for 'pr' (22)
Create a Custom Tool
Prompt Assistant
SAT Math Practice
Coach's Sports Practice
SAT ELA Custom Practice
SAT ELA Practice Test
Project Based Learning (PBL)
Math Story Word Problems
Image Generator
Restorative Reflection
Thank You Note
Sentence Starters
Presentation Generator
Upgrade

AI 素養育成企劃

- AI 歌曲創作 -

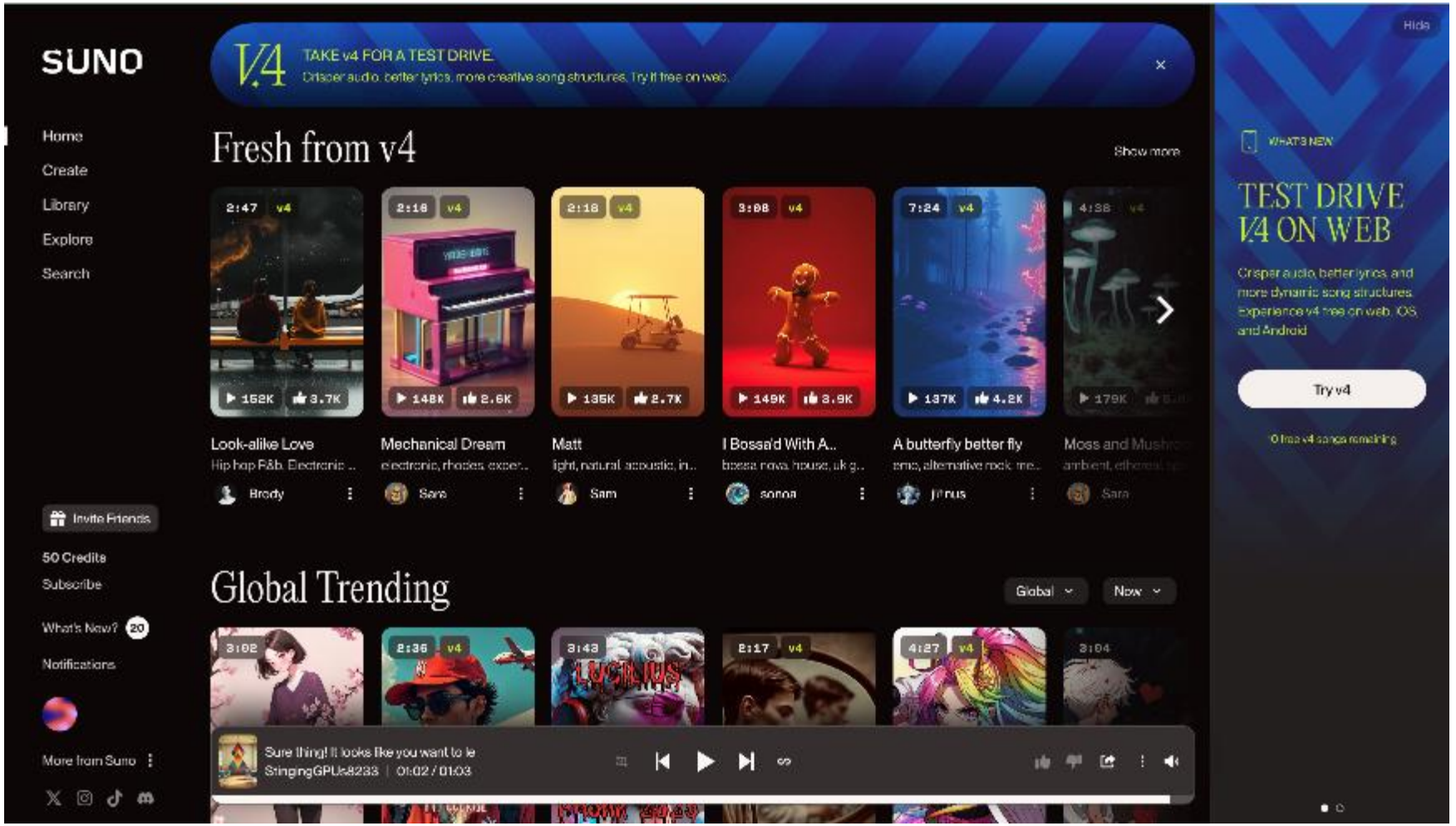
相似

Suno

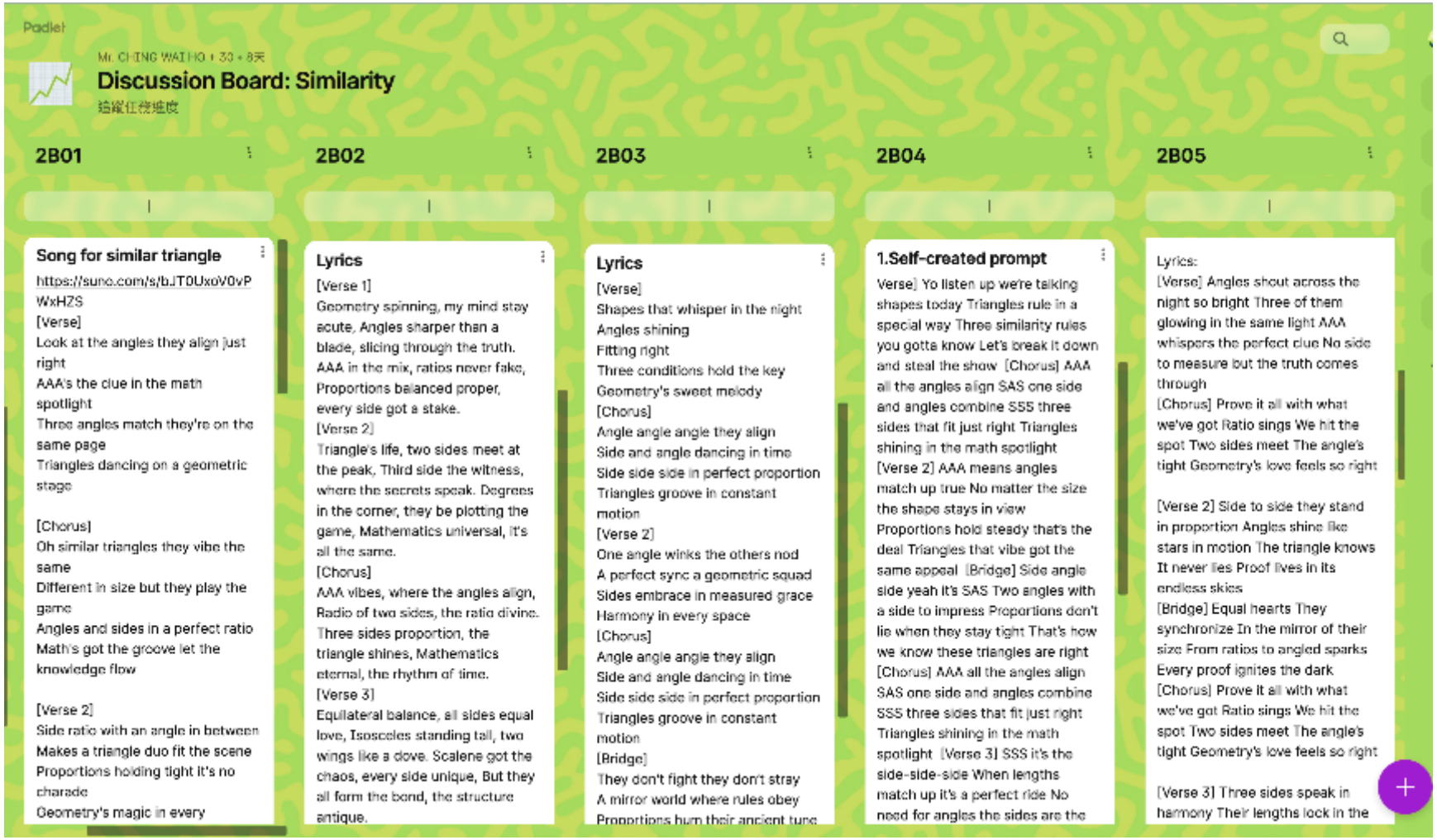
創意學習法

AI 創作歌曲

Suno


SUNO
TAKE v4 FOR A TEST DRIVE
Crisper audio, better lyrics, more creative song structures. Try it free on web.
Home
Create
Library
Explore
Search
Fresh from v4
Show more
Look-alike Love
Mechanical Dream
Matt
I Bossa'd With A...
A butterfly better fly
Moss and Mush
Invite Friends
50 Credits
Subscribe
What's New?
Notifications
More from Suno
Global Trending
Global
Now
Sure thing! It looks like you want to le
SingingGPUs8233 | 01:02 / 01:03
Hide
WHAT'S NEW
TEST DRIVE V4 ON WEB
Crisper audio, better lyrics, and more dynamic song structures. Experience v4 free on web, iOS, and Android
Try v4

AI 創作歌曲



https://suno.com/s/xMW4yKQVei1nEX0c

AI 創作歌曲

引導學生列出歌詞期望出現關鍵詞：

Proportion

Similiarity

Equal

Proof

Corresponding

3 sides proportional

A.A.A.

Ratio of 2 sides, included angle

AI 創作歌曲

製作成果/查核成果/評估成果

a Prompt for a song about AAA, ratio of two sides included angle and 3 side proportion.

Requirements:

- Choose a musical style (e.g. op, hip-hop, rap, R&B, jazz, Folk) .
- Include clear references to the conditions to prove for similar triangles.
- Use English.

Prompt (30 – 50 words):

Create a fun, catchy pop song on similar triangles, covering AAA, ratio of two sides included angle and 3 side proportion. Make the melody engaging to make math exciting and memorable.

Create a fun, catchy pop song on similar triangles, covering AAA, ratio of two side included angle and 3 sides proportional. Make the melody engaging to make math exciting and memorable.

Use Poe to generate a Suno-compatible Prompt..

Example:

"Create a detailed and engaging Prompt for Suno to generate a hip-hop song about ..... for proving similar triangles in mathematics. Use English, make lyrics clear and teen-friendly, with a catchy chorus."

Prompt (30 – 50 words):

Create a detailed and engaging Prompt for Suno to generate a hip-hop song about AAA for proving similar triangles in mathematics. Use English, make lyrics clear and teen-friendly a catchy chorus.

Create a detailed and engaging prompt for suno to generate a hip-hop song about AA for proving similar triangles in mathematics. Use English, make lyrics clear and teen-friendly a catchy chorus.

AI 創作歌曲

製作成果/查核成果/評估成果

Complete the following evaluation form.

1 – Lowest Mark　　5 – Highest Mark

Rubrics	Explanation	Song A	Song B
Lyric Structure 歌詞結構	Lyric clearly and accurately include all similar triangle conditions. 歌詞清晰且準確地包含了所有相似三角形的條件。	4	4
Melody Style 旋律風格	Melody is engaging, matches the mathematical theme. 旋律引人入勝，與數學主題相匹配。	4	3
Memorability 記憶性	Song is highly memorable, with catchy lyrics and melody that makes recalling very easy. 歌曲非常容易記住，朗朗上口的歌詞和旋律使回憶變得非常簡單。	3	3
AI Tool Application AI 工具應用	Demonstrates excellent use of Suno by creative prompt to generate high quality song. 通過創意提示巧妙地使用 Suno，創作出高質量的歌曲。	4	4

AI 創作歌曲

製作成果/查核成果/評估成果

words):

1. **If you could revise your Prompt, what changes would you make to improve Song A?**

I would add more details such as 'Use upbeat electronic beats and classroom-friendly lyrics for teens.' in my prompt to make the song more relevant and better sounding. I can also provide some sentences to Suno so that its work can better meet my requirements to improve Song A. in my prompt

C. **Reflection (at least 50 words):**

1. **If you could revise your Prompt, what changes would you make to improve Song A?**

I will make the Prompt clearer, ensure it is specific and explain the desired tone and style. Also, I will required structure. Specify the structure of the song, such as how many sections and choruses it should contain.

AI 素養育成企劃

- AI 遊戲製作 -

三角學

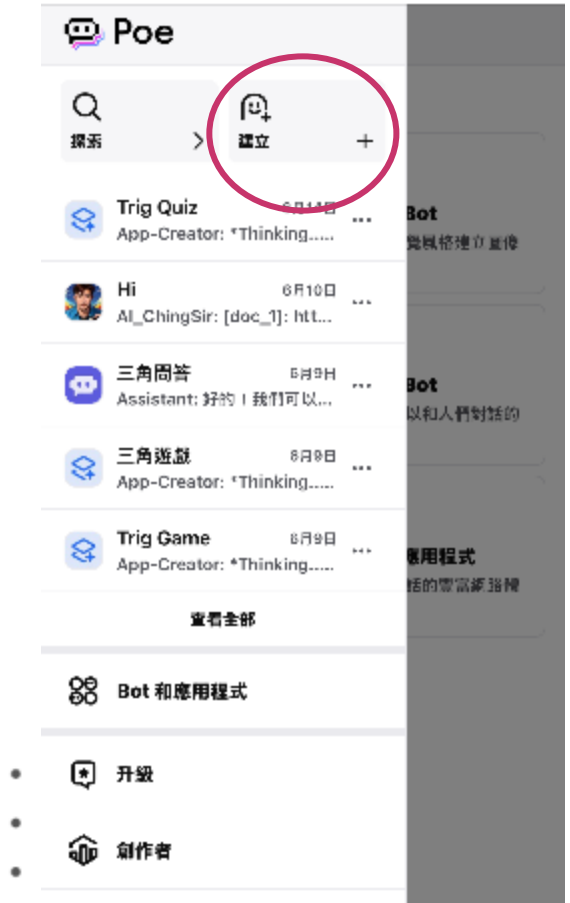
Poe

創意學習法

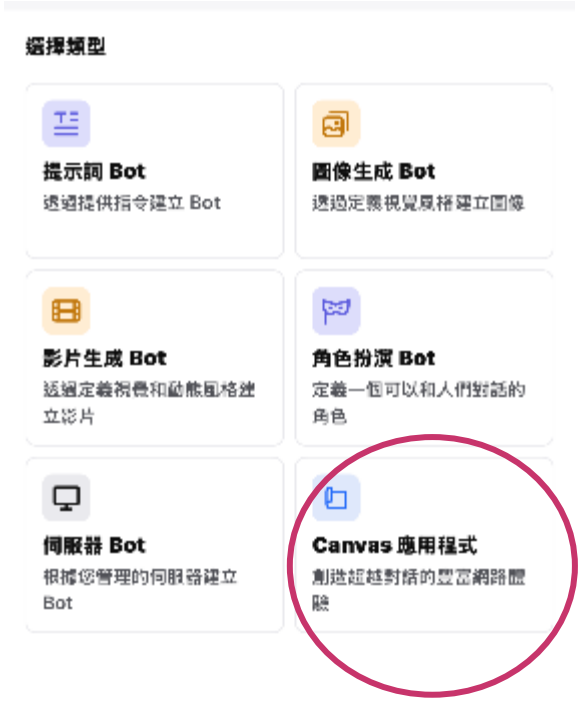
AI 遊戲製作

Poe

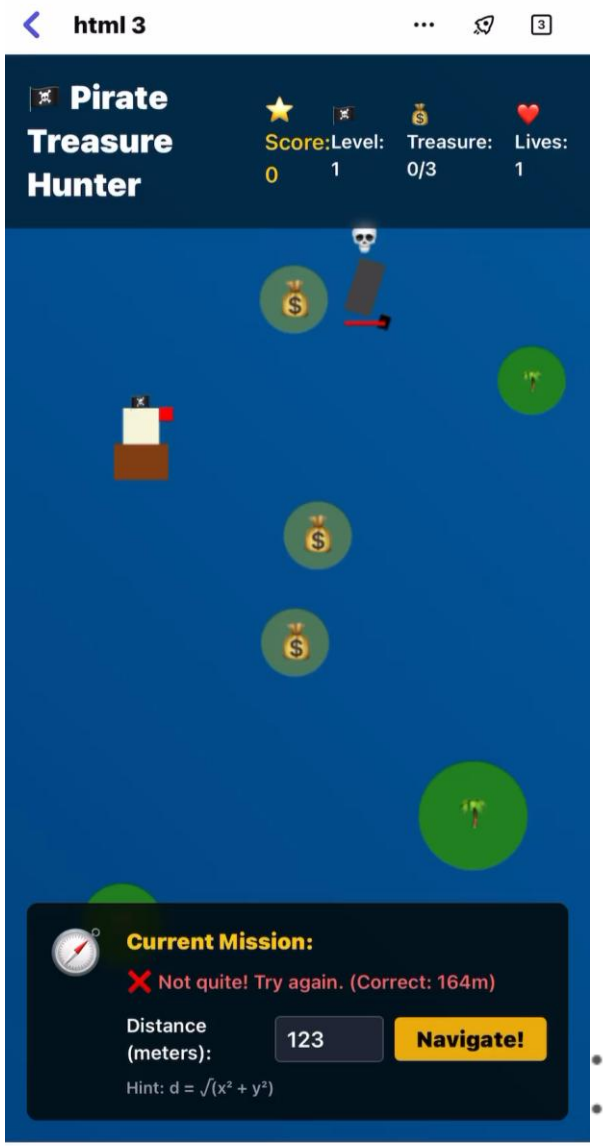
點選「建立」鍵



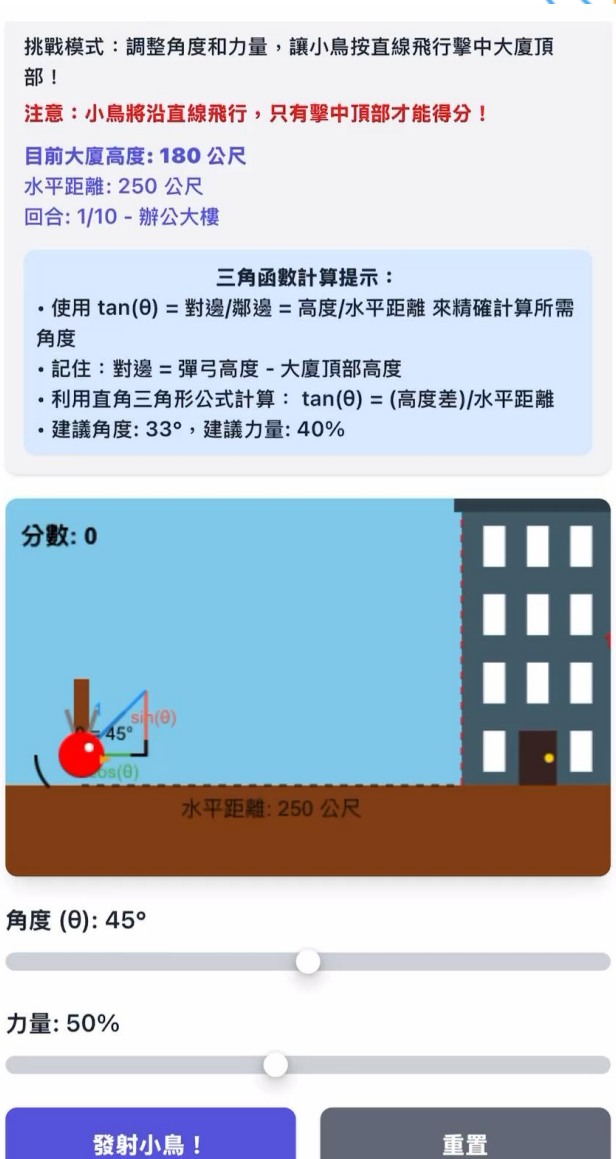
點選「Canvas 應用程式」鍵



製作成果/ 評估成果


html 3
Pirate Treasure Hunter
Score: 0
Level: 1
Treasure: 0/3
Lives: 1
Current Mission:
Not quite! Try again. (Correct: 164m)
Distance (meters):
123
Navigate!
Hint: d = √(x² + y²)


三角函數值
角度 θ: 90.0°
sin θ: 1.000
cos θ: 0.000
tan θ: 16331239353195370.000
距離: 2.00
學習提示
90°: 垂直向上，cos=0, sin=1
a b c d e f g h


挑戰模式：調整角度和力量，讓小鳥按直線飛行擊中大廈頂部！
注意：小鳥將沿直線飛行，只有擊中頂部才能得分！
目前大廈高度: 180 公尺
水平距離: 250 公尺
回合: 1/10 - 辦公大樓
三角函數計算提示：
• 使用 tan(θ) = 對邊/鄰邊 = 高度/水平距離 來精確計算所需角度
• 記住：對邊 = 彈弓高度 - 大廈頂部高度
• 利用直角三角形公式計算： tan(θ) = (高度差)/水平距離
• 建議角度: 33°，建議力量: 40%
分數: 0
45°
水平距離: 250 公尺
角度 (θ): 45°
力量: 50%
發射小鳥！
重置

學習反思

How does using AI toll help you learn math? What are their limitations?

AI tools revolutionize math learning by transforming abstract concepts into catch song and interactive dialogues. Its approach enhances memorization of theorem, while at the same time provides instant explanation.

Using AI tool provides interactive learning and personalized support, making math engaging and flexible. However, these tools many lack depth in understanding complex concepts and might struggle with nuanced problems.

AI-generated songs transform relevant formulas into catchy songs, making them easier to memorize. But AI can confuse rhyme in the right places. And AI struggles to explain more deeply, for example, why other formulas don't work for equilateral triangles.

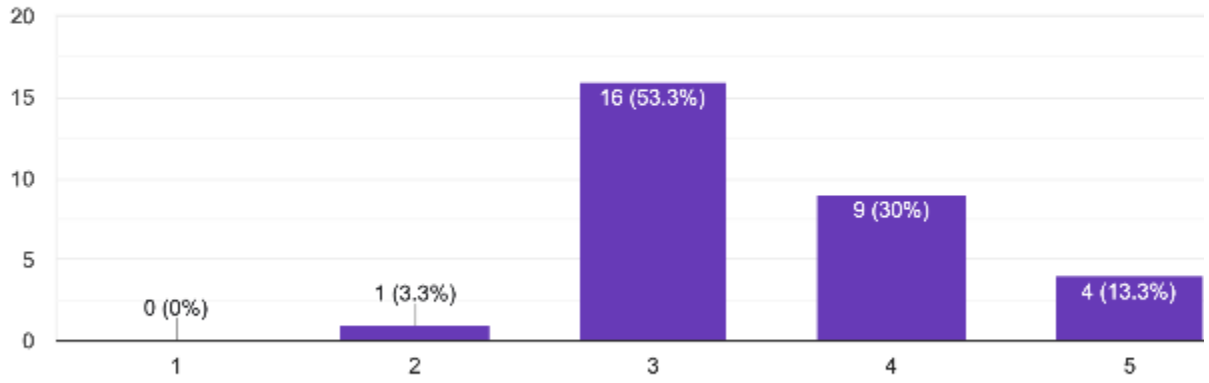
When using AI tools to learn math, they can turn math concepts into songs for better memory, and also it can offer problem-solving ideas. However, they can't replace teachers, and their answers may be wrong and incomplete.

問卷調查

Question （提問）

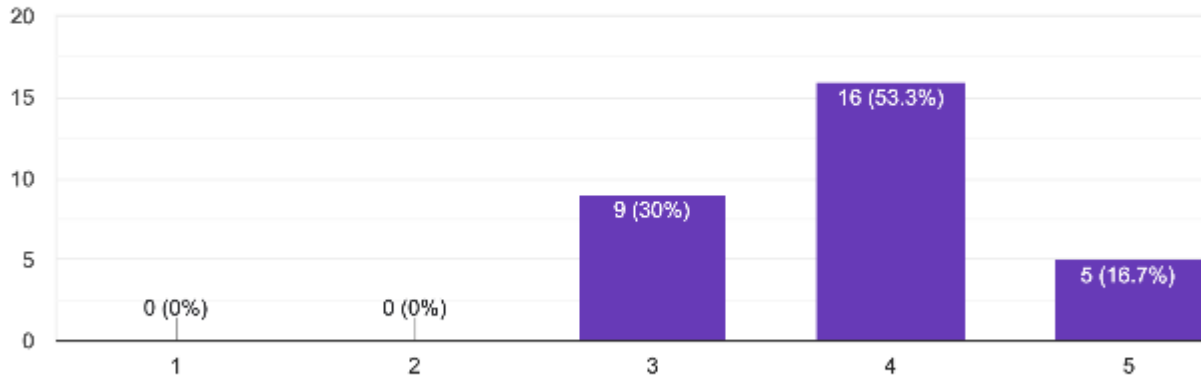
我能夠設計清晰的問題或提示（prompt），讓AI生成我想要的結果。

30 則回應



我會思考如何改進我的問題或提示，以讓AI的回答更準確或有用。

30 則回應

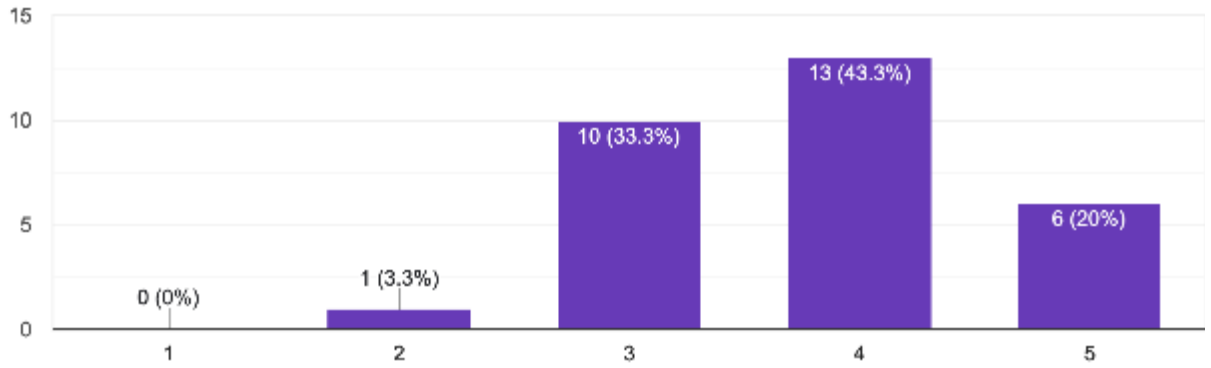


問卷調查

Unpack （拆解）

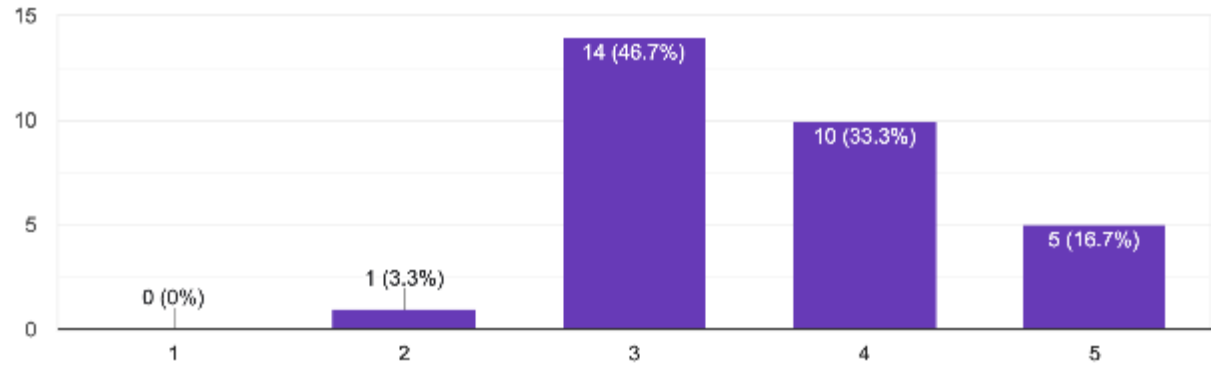
我能理解AI生成內容的含義，並判斷它是否與我的學習目標相關。

30 則回應



我會檢查AI的回答是否符合數學或專題研習的背景知識。

30 則回應

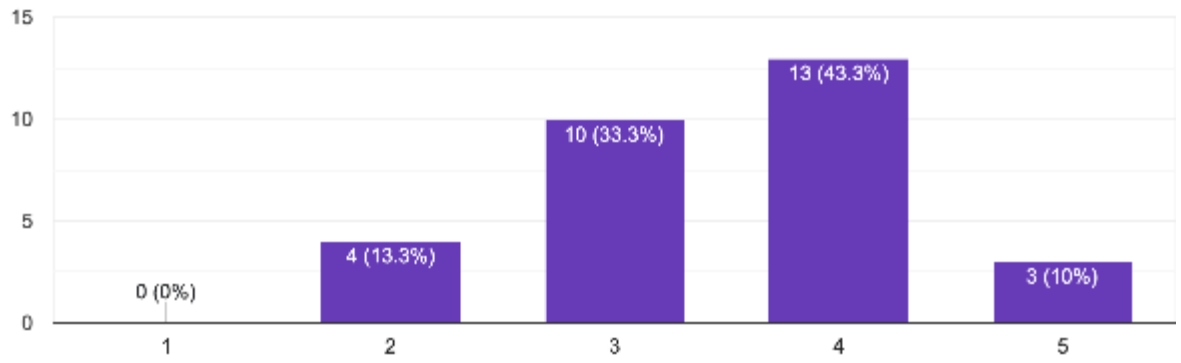


問卷調查

Evaluate （評估）

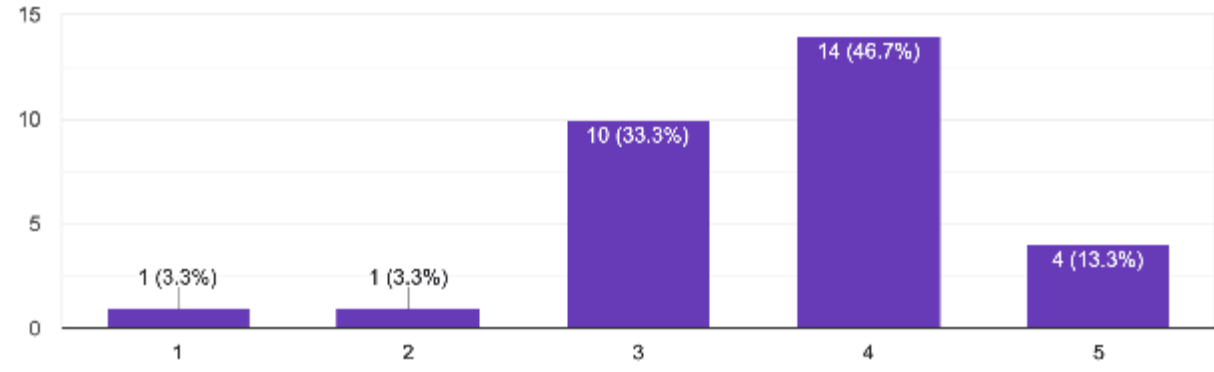
我能夠辨別AI生成內容中的錯誤或不準確的地方。

30 則回應



我會比較AI生成的作品與自己的作品，找出優缺點。

30 則回應

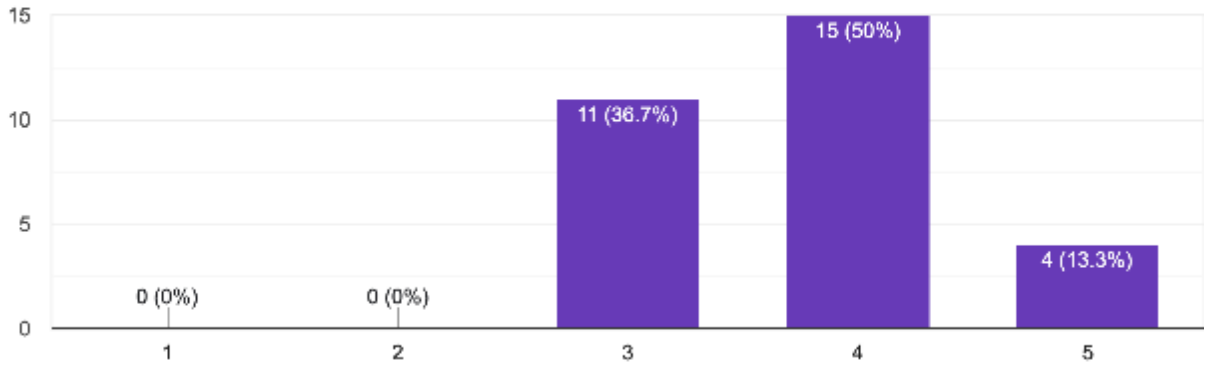


問卷調查

Synthesis （綜合）

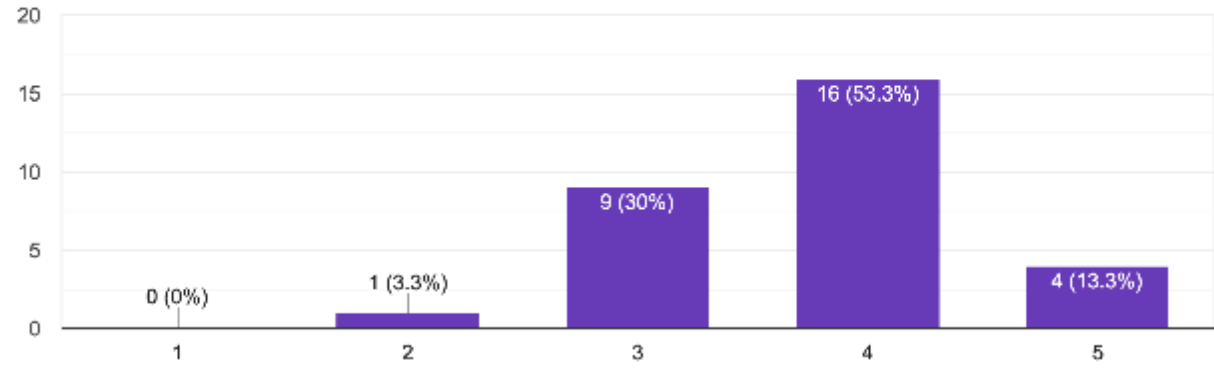
我能夠將AI生成的資訊與自己的知識結合，創造新的解決方案。

30 則回應



我會分析AI的輸出並重新組織內容，以更好地完成專題研習。

30 則回應

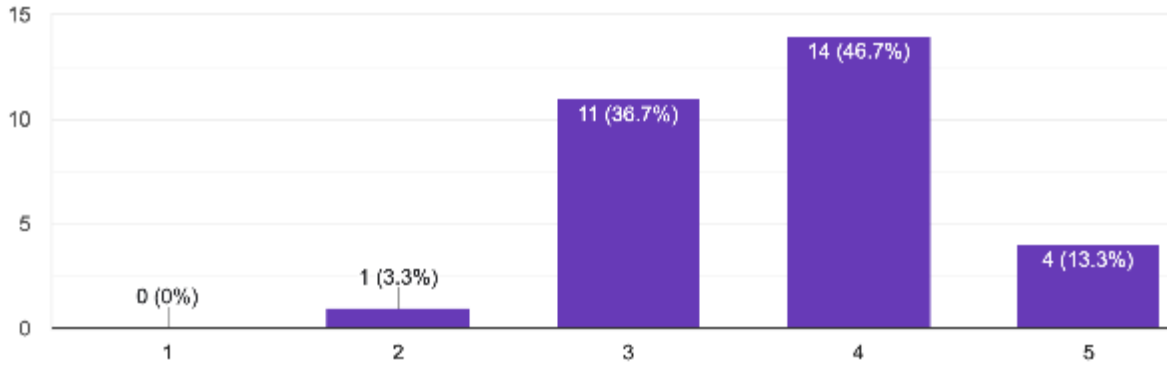


問卷調查

Transform（轉化）

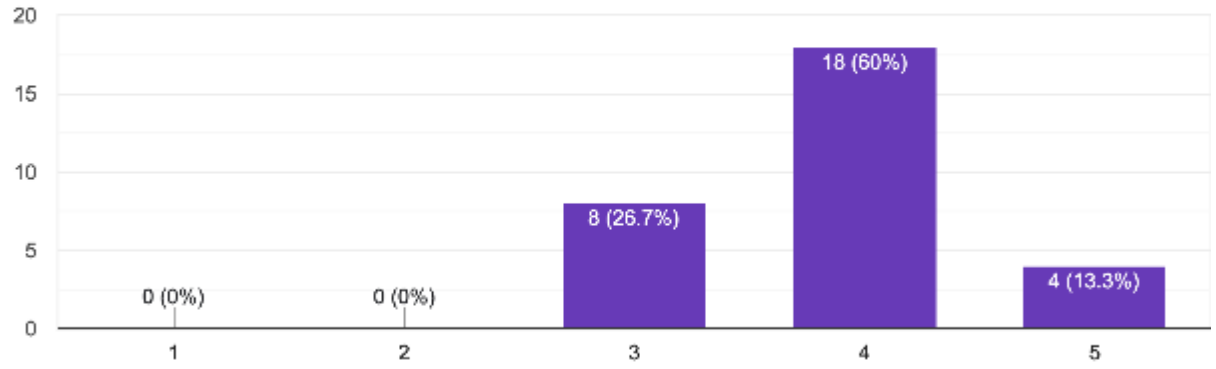
我能使用AI工具將我的創意想法轉化為具體成果。

30 則回應



我會反覆修改提示或調整AI輸出，以優化最終成果。

30 則回應




認識
認識 AI 的正確使用方法
經驗
增加實際應用 AI 的經驗
討論
討論 AI 的影響與倫理問題
接觸
跟 AI 領域專家接觸及學習

提升 AI 素養方法

教師
角色轉化

《人工智能與自主學習的整合：教師雙重促進者角色與策略》

推動
AI 素養困難

教師專業知識
- 實務指導不足
- 知識趕不上變化

課程整合規劃
- 缺乏統一課程框架與資源

資源與基礎知識
- 優質本地化教學資源不足

AI 如何重塑教育

問學才有學問

- 用探險心態面對變化
- 問得與眾不同，帶出新觀點

專題式學習迎 AI

- 培養動手做，做了才算的態度
- 練習把知識用出，跨越科目局限

擁抱成長型思維

- 守護孩子好奇心與創意
- 廣度學習，成為 T 型人才

多謝

2450 3618

chingwh@g.lck.edu.hk

www.chingsir.com