



如何啟發學生應用人工智 能及創作相關AI作品

To Nurture the Innovative AI Mindset of Student
and How to Apply in Our Daily Life

Peter Chung

Concordia Lutheran School

Introduction

Mr Chung Fu-yuen, Peter

Assistant Principal, Head of Academic Affairs, IT Coordinator,
Panel Head of Innovative Design and Development and ICT,
Concordia Lutheran School

Executive Committee members in AiTLE

Apple Learning Coach

Professional Advisor of STEAM Education and Research Centre of Lingnan University

Teacher Leader of CoolThink@JC InnoCommunity Resource Schools

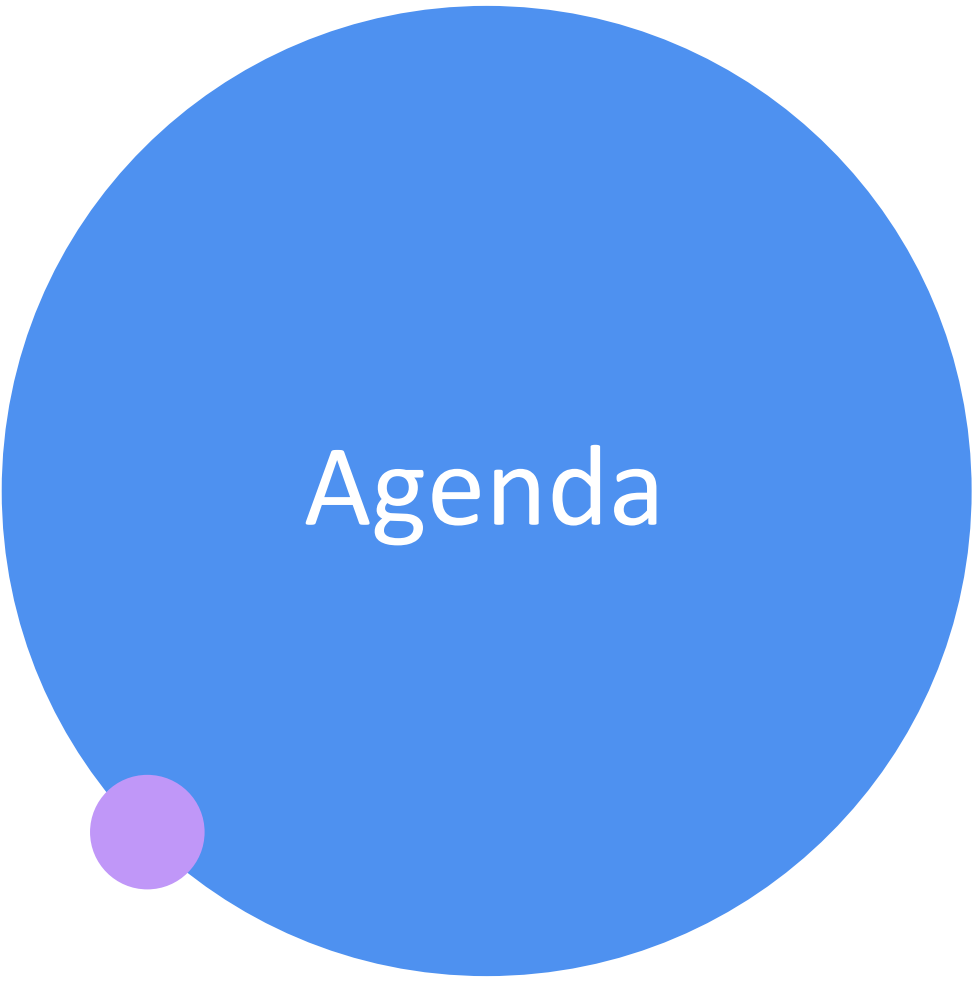
Teacher fellows in 2nd cohort of InnoPower@JC

Professional Advisor of CUHK JC AI for the Future Project

AI and e-learning Course Designer & Instructors of HKU e-Learning lab

STEM and e-learning Course Designer & Instructors of CUHK CLST





Agenda

Introduction to A.I.

P.D. to Teachers about Big Data and ChatGPT

Sharing AI Education experience

Sharing AI in Education experience

路德會協同中學

CoolThink@JC 資源學校



路德會協同中學 CUHK AI for the Future Champion Schools



路德會協同中學 開拓與創新教育 校本課程先導計劃 先導學校及顧問學校

開拓與創新教育校本課程先導計劃 課程框架

黃乾亨基金 與 教育燃新





VIRTUALTOURS



親身睇AI《一人之境》 忍唔住笑



自爆廿歲偷渡來港
用錢買過癮

尹光

下次可以整起林卓華
唔少理阿...

A hand is holding two smartphones. The phone on the left is dark blue with a triple-camera system. The phone on the right is light green with a quad-camera system. The background is a blurred outdoor scene with bare trees and a body of water.

**Suggest at least TEN A.I. related feature
by using smartphone without the Internet**





Education in Hong Kong

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Hong Kong / Education

2 universities in Hong Kong embrace use of ChatGPT, other AI tools to boost quality of teaching, learning

- University of Science and Technology gives staff free rein to decide best use of AI tools, while Chinese University says students will need permission from tutors
- HKUST senior staff say educators will have short-term flexibility to decide best use of AI tools, before offering range of integrated approaches in second semester

William Yiu

+ FOLLOW

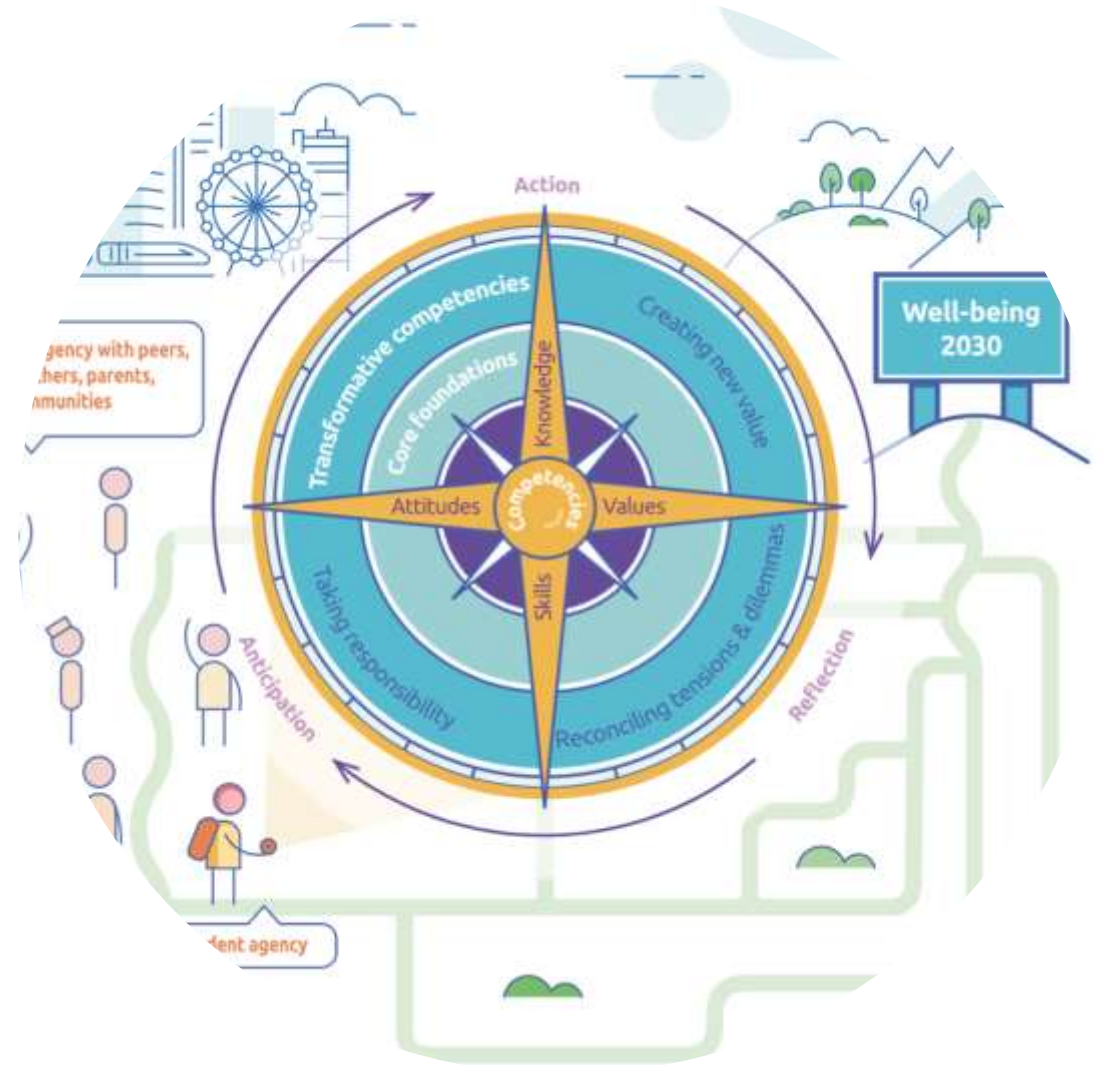
Published: 9:08pm, 3 Mar, 2023

[Why you can trust SCMP](#)

34



The OECD Learning Compass 2030



ChatGPT 能夠幫助老師處理那些工作？

- | | |
|--------------|------------|
| 1. 設計課程和教學計劃 | 6. 輔導學生 |
| 2. 準備教學資料 | 7. 線上答疑 |
| 3. 提供知識點解釋 | 8. 課堂活動設計 |
| 4. 批改作業 | 9. 教育研究 |
| 5. 設計評估方法 | 10. 提升教學效果 |

Prompt Engineering 如何問好一個問題

- Explicit
- Step-by-step
- Redundancy
- Examples
- Limit response length

Perplexity.ai

how to recreate a '90s yearbook photo using AI

✧ Copilot

🔍 Searching web

recreate '90s yearbook photo AI techniques

AI style transfer '90s yearbook photo

AI photo filters '90s yearbook

AI vintage photo effects

⚙️ Considering 18 sources

📖 Sources

How to create 90s AI
yearbook photos and tip...

🔌 pocket-lint • 1

People are posting AI-
generated yearbook...

📺 cnbc • 2

AI Yearbook Trend: How
To Ace This 90s Style...

🅐 augustman • 3

Add Vintage Photo Effects
to Image for Free with...

🌈 fotor • 4

How to Make Your Own AI
'90s Yearbook Photo -...

📖 lifehacker • 5

AI app EPIK hits No. 1 on
the App Store for its viral...

📺 techcrunch • 6

Vintage Photo Effect In
Photoshop And Its...

🌐 vanceai • 7

📺 M Up FC 📺 P

View 11 more

Perplexity.ai

≡ Answer

To recreate a '90s yearbook photo using AI, you can download and install the EPIK - AI Photo Editor app ^{1 2 11 12}. Once you open the app, select the AI Yearbook option and upload 8-12 selfies ^{1 2 3 11 12}. The AI will then generate a selection of impressive images that look exactly like '90s yearbook snaps ^{1 2 3 11 12}. You can choose your favorite photos and post them on social media ^{1 2 3 11 12}. The app is free to download, but you have to pay to generate your own '90s-inspired yearbook photos ^{2 11}. The standard tier costs \$5.99 and will generate photos within 24 hours, while the express tier costs \$9.99 and will generate photos within two hours ^{2 11}. Another option is to use Fotor's vintage photo editor, which provides a number of unique retro filters to add antique charm to your images ^{4 7}. Additionally, you can use VanceAI Photo Restorer to remove imperfections from vintage photos ⁷. Finally, Image Upscaler offers a vintage filter that can make any photo seem as if it were shot a long time ago ¹⁰.

Rewrite ▾ 🚩 [] 🗑️ ✎

Perplexity.ai

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✧ Copilot

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📖 lifehacker • 5

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Photoshop And Its...

📺 vanceai • 7

📺 M Up FC 📺 P

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or

Sign up with Email >

Demonstration by ChatGPT / Poe

write a python program that can calculation the sum of two input integers



ChatGPT

Poe



Certainly! Here's a simple Python program that calculates the sum of two input integers:

python

 Copy

```
# Get input from the user
num1 = int(input("Enter the first integer: "))
num2 = int(input("Enter the second integer: "))

# Calculate the sum
sum = num1 + num2

# Print the result
print("The sum of the two integers is:", sum)
```

Translation?

```
# Generate a random number between 1 and 100
t = r.randint(1, 100)

print("Welcome to the Hot or Cold game!")
print("I have chosen a number between 1 and 100.")
print("Try to guess the number!")

# Game loop
while True:
    # Get user's guess
    g = int(input("Enter your guess: "))

    # Compare the guess with the target number
    if g < t:
        print("Cold!")
    elif g > t:
        print("Hot!")
    else:
        print("Congratulations! You guessed the correct number!")
        break

print("Thank you for playing the Hot or Cold game!")
```



```
import random as r

# 在1到100之間生成一個隨機數
t = r.randint(1, 100)

print("歡迎來到熱與冷遊戲！")
print("我已經在1到100之間選擇了一個數字。")
print("嘗試猜出這個數字！")

# 遊戲迴圈
while True:
    # 獲取使用者的猜測
    g = int(input("請輸入您的猜測："))

    # 將猜測與目標數字進行比較
    if g < t:
        print("冷！")
    elif g > t:
        print("熱！")
    else:
        print("恭喜！您猜對了數字！")
        break

print("感謝您參與熱與冷遊戲！")
```

Debugging?

the following code cannot output any values, what is the error?

```
product = 0
for i in range(10):
    product *= i

sum_squares = 0
for i in range(10):
    i_sq = i**2
    sum_squares += i_sq

nums = 0
for num in range(10):
    num += num
```



```
product = 1
for i in range(1, 10):
    product *= i

sum_squares = 0
for i in range(10):
    i_sq = i ** 2
    sum_squares += i_sq

nums = 0
for num in range(10):
    nums += num

print("Product:", product)
print("Sum of Squares:", sum_squares)
print("Sum of Numbers:", nums)
```

In this corrected version, the code will calculate the product, the sum of squares, and the sum of numbers correctly, and the values will be printed as output.

Documentation?

...

Write a markdown documentation of this program



ChatGPT

Poe

Sure! Here's a markdown documentation for the corrected code:

Program Documentation: Calculation of Product, Sum of Squares, and Sum of Numbers

This program calculates the product of numbers, the sum of their squares, and the sum of the numbers themselves. It performs the calculations using three separate loops.

Instructions

1. Run the program.
2. The program will calculate the product of numbers, the sum of the squares, and the sum of the numbers themselves.

3. The results will be displayed as output.

Code Explanation

The program consists of three loops to calculate the desired values:

1. The first loop calculates the product of numbers from 1 to 9. It initializes the product variable to 1 and then multiplies it by each value of `i` in the range. The product variable stores the final result.
2. The second loop calculates the sum of squares of numbers from 0 to 9. It iterates over the range and calculates the square of each number `i`. The `i_sq` variable stores the square of the current number, and it is added to the `sum_squares` variable.
3. The third loop calculates the sum of numbers from 0 to 9. It iterates over the range and in each iteration, it increments the `nums` variable.

Output

The program will display the following results as output:

- The product of numbers from 1 to 9.
- The sum of squares of numbers from 0 to 9.
- The sum of numbers from 0 to 9.

Example Output

```
Product: 362880
Sum of Squares: 285
Sum of Numbers: 45
```

In this example, the product of numbers from 1 to 9 is 362880, the sum of squares of numbers from 0 to 9 is 285, and the sum of numbers from 0 to 9 is 45.

Dry-run?

Line	product	i	sum_squares	i_sq	nums	num
1	1	-	0	-	0	-
2	1	-	0	-	0	-
3	1	-	0	-	0	-
4	1	1	0	-	0	-
5	1	1	0	-	0	-
4	1	2	0	-	0	-
5	1	2	0	-	0	-
...	...	...	...	...	...	...
4	1	9	0	-	0	-

17	362880	-	0	-	0	-
18	362880	-	0	-	0	-
20	362880	-	0	-	0	-
21	362880	-	0	-	0	-
23	362880	-	0	-	0	-
24	362880	-	0	-	0	-
26	362880	-	0	-	0	-
27	362880	-	285	81	0	-
28	362880	-	285	81	0	-



How's about ChatGPT vs teacher?



ChatGPT >

List out how to learn computational thinking through python



This bot may make incorrect statements. It does not have knowledge of events after 2021. Tap to learn more.

Here are some steps you can follow to learn computational thinking through Python:

1. Learn the basics of Python: Start by learning the basics of Python programming language, including syntax, data types, variables, operators, and control structures such as loops and conditionals.
2. Understand algorithms: Learn how to write and analyze algorithms, which are step-by-step procedures for solving problems. Basic algorithms include sorting, searching, and recursion.
3. Learn data structures: Data structures are ways to organize and store data in a computer program. Learn about basic data structures such as lists, dictionaries, and tuples.
4. Practice problem-solving: Use Python to solve problems, such as simple math problems, puzzles, and coding challenges. This will

...

Write a python code to sort 5 numbers using array

Sure! Here's an example Python code that uses an array to sort 5 numbers in ascending order:

```
from array import *  
  
# Create an array of 5 numbers  
nums = array('i', [5, 3, 1, 4, 2])  
  
# Sort the array in ascending order  
nums = sorted(nums)  
  
# Print the sorted array  
print("Sorted array:", nums)
```



The python code cannot use the built-in function including sorted(), re-write the python code

Sure! Here's an example Python code that sorts 5 numbers using an array without using any built-in sorting functions:

```
from array import *

# Create an array of 5 numbers
nums = array('i', [5, 3, 1, 4, 2])

# Sort the array in ascending order using bubble
sort
for i in range(len(nums)):
    for j in range(len(nums) - 1):
        if nums[j] > nums[j + 1]:
            # Swap the elements
            temp = nums[j]
            nums[j] = nums[j + 1]
            nums[j + 1] = temp

# Print the sorted array
print("Sorted array:", nums)
```

...



Can you explain how bubble sort works?

Yes, of course!

Bubble sort is a simple sorting algorithm that works by repeatedly swapping adjacent elements if they are in the wrong order. The algorithm gets its name from the way smaller elements "bubble up" to the top of the list like bubbles rising to the surface.

Here's how bubble sort works:

- 
1. Start at the beginning of the list and compare the first two elements. If the first element is greater than the second element, swap them.
 2. Move to the next pair of elements (i.e., the second and third elements) and compare them. If the second element is greater than the third element, swap them.



ChatGPT >

write a story using five characters to stimulate the bubble sorts

Once upon a time, there were five friends named Alice, Bob, Charlie, Dave, and Eve. They were all fans of the local basketball team and often went to games together.

One day, they decided to organize a tournament among themselves to determine the best player on their team. Each of them had their own unique skills, but they all wanted to win.

Alice was known for her speed and agility. Bob was a tall and strong player who could shoot from a distance. Charlie was a great defender and could steal the ball from opponents. Dave was a master of dribbling and could move the ball quickly down the court. Eve was an excellent team player and could coordinate their efforts.

To determine the winner of the tournament, they decided to use bubble sort. They wrote their names on pieces of paper and put them in a hat. Each round, they would draw two names from the hat and compare their skills. The winner would move on to the next round, while the loser would be eliminated.



ChatGPT >

write a story using five characters to stimulate the bubble sorts

Once upon a time, there were five friends named Alice, Bob, Charlie, Dave, and Eve. They were all fans of the local basketball team and often went to games together.

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SBA Teacher Handbooks

香港中學文憑考試

Hong Kong Diploma of Secondary Education Examination

2025

資訊及通訊科技

Information and Communication Technology

校本評核教師手冊

School-based Assessment Teachers' Handbook

2023 年 8 月更新

With updates in August 2023

Home > School-based Assessment (SBA) > Subject Information on SBA > Information ar

SBA for HKDSE - Elective Subjects: Information and Communication Technology - S

▶ SBA Teachers' Handbook 2026

▶ SBA Teachers' Handbook 2025 (with updates in August 2023)

▶ SBA Teachers' Handbok 2024 (with updates in August 2023)



Authentication of Students' Work

Fairness vs AI Tools

As Artificial Intelligence (AI) tools are developing rapidly and are increasingly becoming embedded in many aspects of our lives, teachers can also discuss the use of AI tools in learning and completing assignments in the context of SBA. Using AI tools in the learning process can undoubtedly offer new and exciting opportunities if used in a proper manner. However, using an AI tool to gain an undue advantage is considered to be malpractice and can have serious consequences. Students should also note that while AI tools are powerful and are likely to become even more powerful in the future, they cannot replace the actual learning experience. Overreliance and misuse of AI tools will diminish students' authentic learning opportunities. It should also be noted that AI tools are not without their shortcomings. Just as with other reference sources, it is important to realise that the use of AI tools in SBA must be properly acknowledged.

Learning experience?

Malpractice

Malpractice refers to any activities that allow a student to gain an undue advantage over others, examples of which include, but are not limited to:

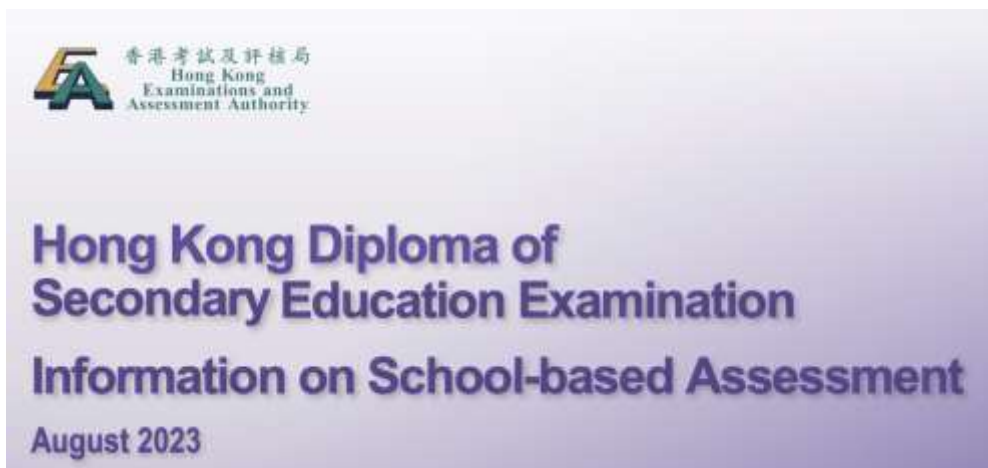
- presenting work completed by others, including those generated using Artificial Intelligence tools, in part or in whole, as one's own work; and
- including material copied directly, in part or in whole, from books, newspapers, magazines, CDs, the Internet or other sources without proper acknowledgement.

These behaviours are generally referred to as plagiarism.

Student Declaration Form for SBA

2. Student can make reference to sources but must not plagiarise when completing their work. They should write in their own words and should not simply copy others' words or ideas, including those generated using Artificial Intelligence tools, and present them as their own. If necessary, they can quote or make reference to something written by another author in their work, as long as they ensure that these quotes or references are identified and the sources properly acknowledged.

Citation of ChatGPT



https://www.hkeaa.edu.hk/DocLibrary/Media/Leaflets/SBA_booklet_eng.pdf

(e) AI tools

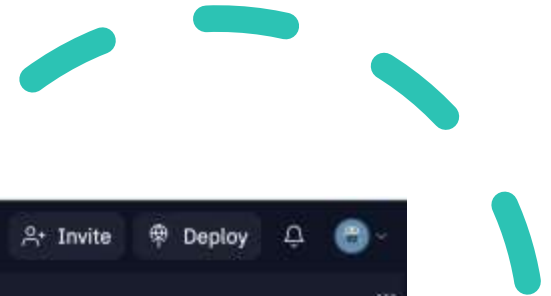
(The following example is related to the subject Chinese Language, only Chinese version is provided.)

所使用的人工智能工具：	ChatGPT
使用過程撮要：	我輸入了「小王子中的比喻」。
輸出撮要*：	ChatGPT 列出了《小王子》的五個片段，並說明了分別比喻什麼現象或待人處世的道理。

AI tool used:	ChatGPT
A short description of actions:	I input the prompt ' <i>Symbolism in To Kill a Mockingbird</i> ' on 11 July 2023.
Summary of output*:	ChatGPT provided four examples: the mockingbird; the Radley Place; the tree in the Radley yard; and the snowman. An explanation of each of these was given.

AI tool used:	ChatGPT
A short description of actions:	I input the following: A shift cipher is a simple encryption method. When encrypting a message, every letter in the original message is replaced by a different letter, k positions down the alphabet (modulo by 26), where k is an integer. In the following example, k = 8 Original message: WORK HARD, PLAY HARD! Cipher text: EWZS PIZL, XTIG PIZL! Write a python program to implement a shift cipher decrypter.
Summary of output*:	ChatGPT provided a sample program with remarks for me to understand the algorithm behind.

*The output from the AI tool should be saved. Your teacher might inspect the output for checking.

A screenshot of the Replit IDE interface. The left sidebar shows a file explorer with 'database.sqlite' and 'index.php'. The main editor displays a PHP script in 'index.php' that sets up a SQLite database and a login form. The right sidebar shows a 'Webview' tab with the rendered HTML form. The bottom of the interface includes a 'Console' and 'Shell' tab, and a chat prompt 'Ask chat' with a text input field.

```
1 <?php
2
3 try {
4     $db = new PDO('sqlite:database.sqlite');
5     $db->setAttribute(PDO::ATTR_ERRMODE,
6         PDO::ERRMODE_EXCEPTION);
7
8     $res = $db->exec(
9         "CREATE TABLE IF NOT EXISTS messages (
10             id INTEGER PRIMARY KEY AUTOINCREMENT,
11             title TEXT,
12             message TEXT,
13             time INTEGER
14         )"
15     );
16
17     $stmt = $db->prepare(
18         "INSERT INTO messages (title, message, time)
19         VALUES (:title, :message, :time)"
20     );
21
22     $stmt->bindValue(':title', 'message title' );
23     $stmt->bindValue(':message', 'message body' );
24
25     $formatted_time = date('Y-m-d H:i:s');
```

```
<form>
<div class="input-group">
  <label for="username">Username</label>
  <input type="text" id="username" name="username" required>
</div>
<div class="input-group">
  <label for="password">Password</label>
  <input type="password" id="password" name="password" required>
</div>
<div class="input-group">
  <button type="submit">Login</button>
</div>
</form>
</div>
</body>
</html>
```

Rubrics Assessment (Eduaide.AI)

Eduaide.AI <

Content Generator

Assistant

Feedback Bot

Eduaide Chat

Assessment Builder

Content

Saved Content

Settings

Content Generator

Subject

Career & Technical Training

Grade

Upperclass (Students Grade ...)

Resources

Planning

Information Objects

Independent Practice

Cooperative Le

Lesson Seed

Lesson outline with a range of techniques, strategies, and activities aligned to an objective.

Unit Plan

Well-sequenced unit plan, streamlining curriculum design for educators.

Prior Knowledge + Scaffolding

A list of methods for scaffolding prior knowledge necessary for students to engage with to-be-learned material.

Learning Objective + Success Criteria

Objective for the class and the scaffolded steps to reach that objective.

Engagement Activities

Spark curiosity, promote interest, and sustain learner investment.

Assessment Measures

Evaluate students' level of attainment in pursuing mastery of course content.

Rubric for Shift Cipher Decrypte...				
Rubric for Shift Cipher Decrypter Assignment				
Criteria	3 Points	2 Points	1 Point	0 Points
(a) Suitable data types and data structures are used	Appropriate data types and data structures are selected and effectively used.	Most of the data types and data structures selected are suitable and used adequately.	Some of the data types and data structures selected are suitable but not used effectively.	Inappropriate data types and data structures are selected or not used.
(b) Accurate letter frequencies of the cipher text are counted	Letter frequencies are accurately counted and presented clearly.	Most of the letter frequencies are counted accurately, but some may be missing or presented unclearly.	Some letter frequencies are counted accurately, but several are missing or presented unclearly.	Letter frequencies are not counted accurately or not presented.
(c) All possible values of k are determined	All possible values of k are identified correctly and explained clearly.	Most of the possible values of k are determined correctly, but some may be missing or not explained clearly.	Some possible values of k are determined correctly, but several are missing or not explained clearly.	Possible values of k are not determined correctly or not explained.

Demo (Guided Task) – ChatGPT 3.5 + Colab

```
▶ def count_letter_frequencies(cipher_text):  
    # Create a dictionary to store letter frequencies  
    letter_frequencies = {}  
  
    for char in cipher_text:  
        if char.isalpha():  
            char = char.upper() # Convert to uppercase for consistency  
            if char in letter_frequencies:  
                letter_frequencies[char] += 1  
            else:  
                letter_frequencies[char] = 1  
  
    return letter_frequencies
```

SBA

Notion.AI

Python ▾

Copy Caption ...

```
def shift_cipher(message, k):
    encrypted_message = ""
    for char in message:
        if char.isalpha():
            if char.isupper():
                encrypted_char = chr((ord(char) - ord('A') + k) % 26 + ord('A'))
            else:
                encrypted_char = chr((ord(char) - ord('a') + k) % 26 + ord('a'))
            encrypted_message += encrypted_char
        else:
            encrypted_message += char
    return encrypted_message

message = "This is a secret message."
k = 3

encrypted_message = shift_cipher(message, k)
print("Encrypted message:", encrypted_message)
```



main.py × +

main.py

```
1 def shift_cipher(text, shift):
2     cipher = ""
3     for char in text:
4         if char.isalpha():
5             ascii_val = ord(char)
6             shifted_ascii = (ascii_val - 97 + shift) % 26 + 97
7             cipher += chr(shifted_ascii)
8         else:
9             cipher += char
10    return cipher
11
12 # Example usage
13 plaintext = "Hello, World!"
14 shift_amount = 3
15 ciphertext = shift_cipher(plaintext, shift_amount)
16 print(ciphertext)
```

write a guideline on writing python code about Shift Cipher Decrypter

+ Sure, I'd be happy to help you with that!

If you're looking to write a Shift Cipher Decrypter in Python, there are a few guidelines you can follow to make the process smoother and more efficient. Here are some steps to get you started:

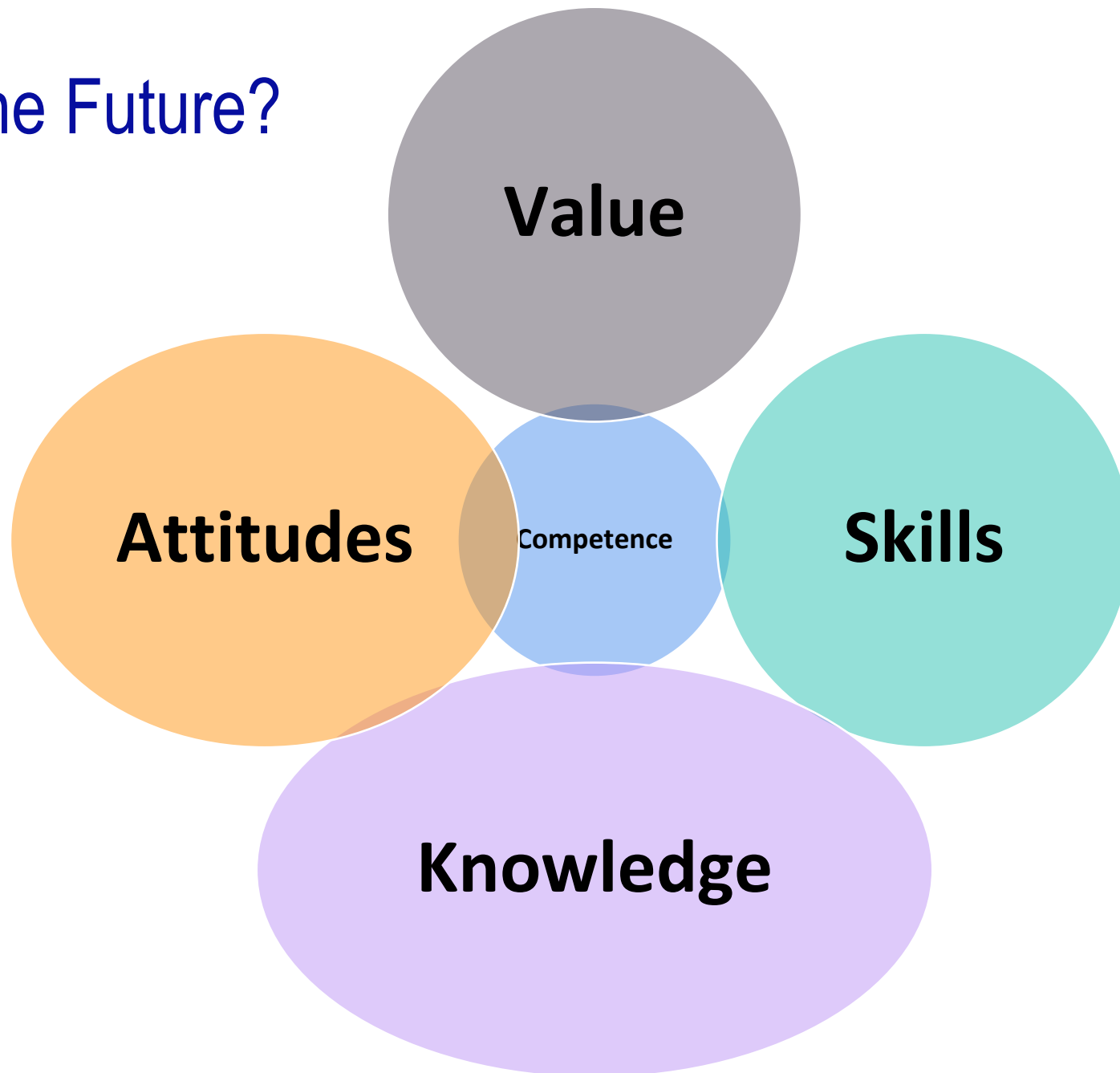
1. **Understand the Shift Cipher:** Before you begin writing code, it's important to have a good understanding of what the Shift Cipher is and how it works. In this cipher, each letter in a message is shifted a certain number of places down the alphabet. For example, if the shift is 3, the letter 'A' would become 'D', 'B' would become 'E', and so on. Make sure you have a clear understanding of how the cipher works before you begin coding.
2. **Define Your Functions:** Once you understand the cipher, you can start defining the functions you'll need to decrypt a message. You may want to create a function that takes in a message and a shift value, and returns the decrypted message. You could also create a function that automatically tries all possible shift values to find the correct one.

write a guideline on writing python code about Shift Cipher Decrypter

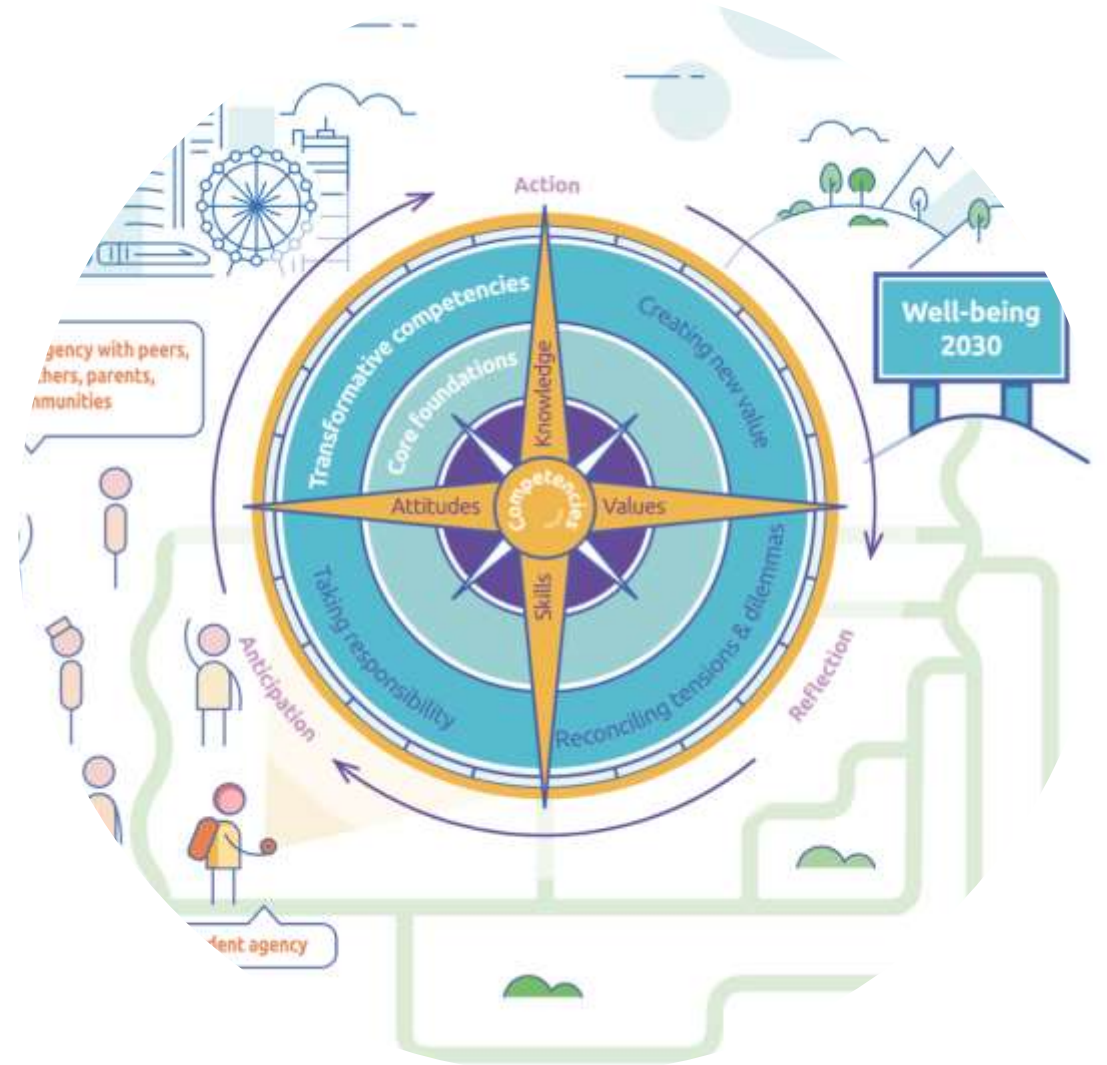




Education in the Future?



The OECD Learning Compass 2030



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How can educators respond to students presenting AI-generated content as their own?

How can educators respond to students presenting AI-generated content as their own?

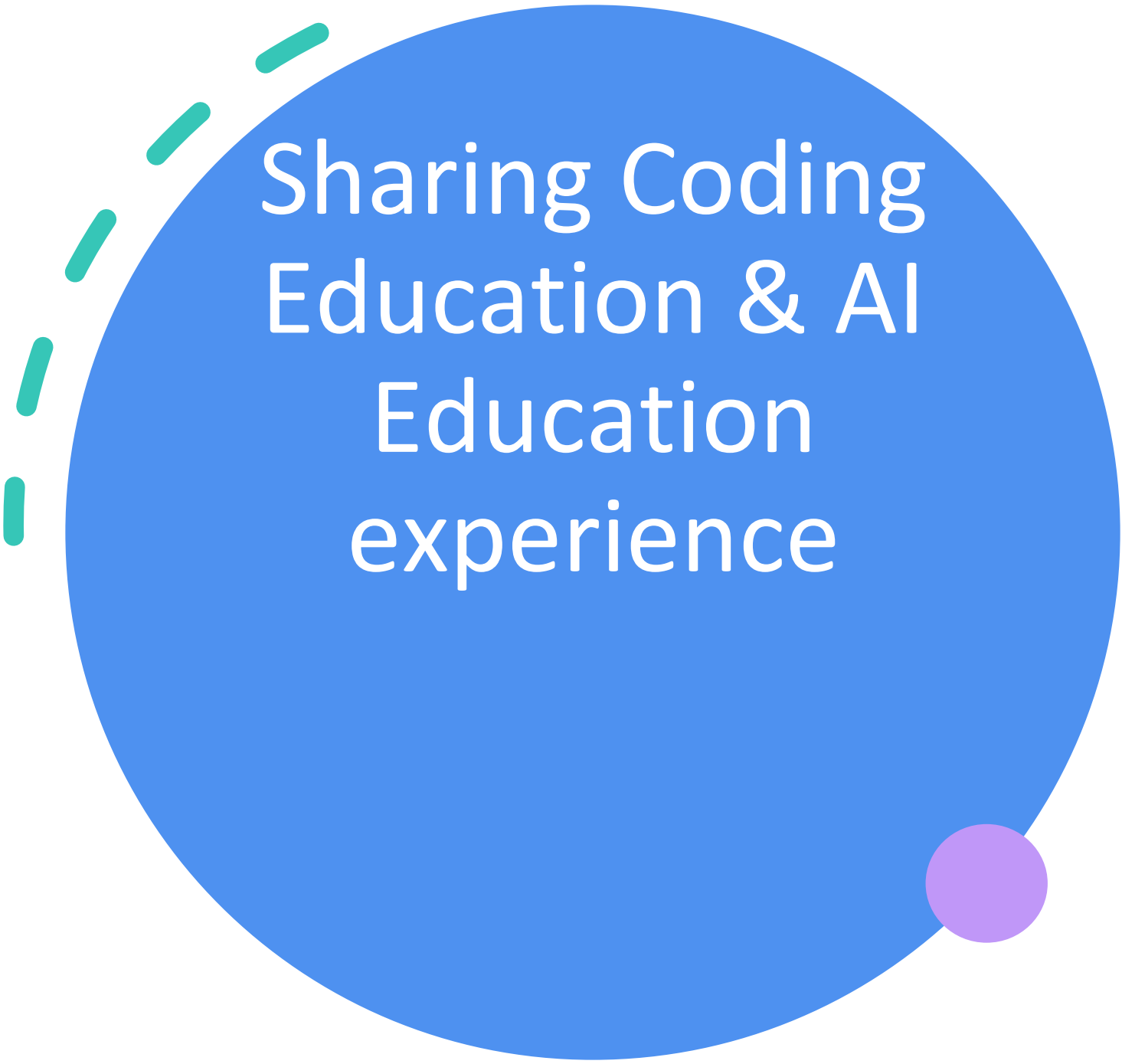
- **Showing their work and formative assessment:**

- Educators can analyze student interactions with ChatGPT to observe critical thinking and problem-solving approaches.
- Shared links can enable students to review each other's work, fostering a collaborative environment.
- By keeping a record of their conversations with AI, students can reflect on their progress over time. They can see how their skills in asking questions, analyzing responses, and integrating information have developed. Teachers can also use these records to provide personalized feedback and support individual growth.

- **Information and AI literacy:**

- Students can demonstrate their ability to interact with AI and their understanding of the shortcomings of AI systems. Educators can assess the quality of the questions asked, the relevance of the information obtained, and how well the student understood to challenge, double-check, and consider potential biases in that information.
 - We anticipate a future where the use of AI tools like ChatGPT is commonplace. Encouraging responsible use helps students prepare for a future where they may be expected to leverage AI in different contexts.
- 

- 
- 
- **Creating accountability:** Sharing interactions with the model ensures that students are held accountable for the way they use AI in their work. Educators can verify that students are engaging with the tool responsibly and meaningfully, rather than simply copying answers.



Sharing Coding
Education & AI
Education
experience

教授AI的情況

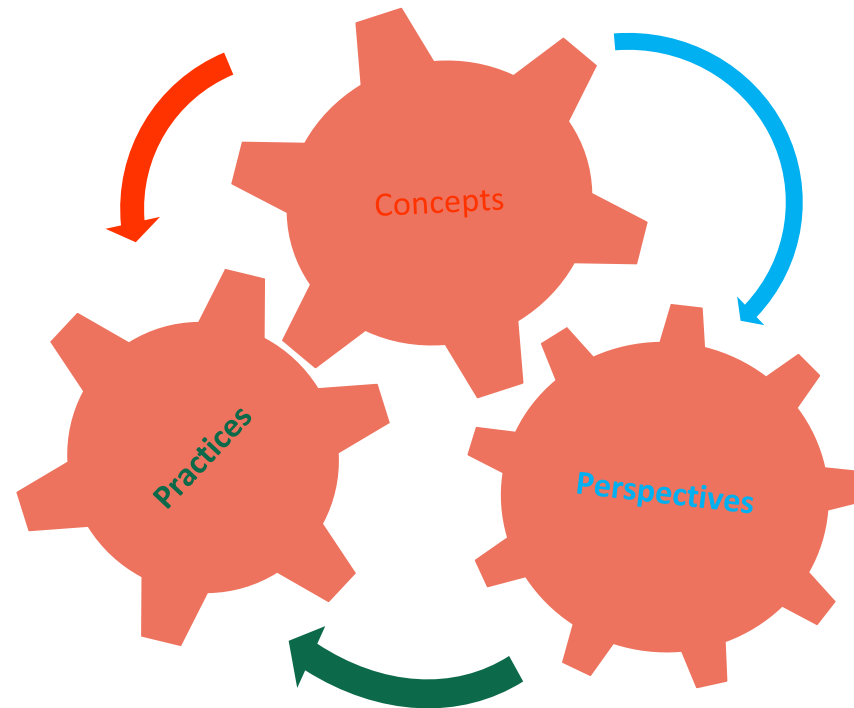


教授AI的情況



Curriculum Framework

(Brenan & Resnick, 2012)



Computational Thinking Concepts

- < **Sequences** / > : a series of steps for a task
- < **Events** / > : one thing causing another thing to happen
- < **Repetition** / > : run the same sequence multiple times
- < **Conditionals** / > : make decisions based on conditions
- < **Parallelism** / > : tasks happen at the same time
- < **Naming** / > : name variables and functions descriptively and distinguishable
- < **Operators** / > : support for mathematical and logical expressions
- < **Manipulation of data and elementary data structures** / > : basic ways data are formatted and stored as well as the way to store, retrieve and update values

Computational Thinking Practices

- < **Algorithmic thinking** / > : articulate a problem's solution in well-defined rules and steps
- < **Abstracting and modularizing** / > : explore connections between the whole and the parts
- < **Testing and debugging** / > : make sure things work – and find and solve problems when they arise
- < **Being incremental and iterative** / > : develop a little bit, then try it out, then develop
- < **Reusing and remixing** / > : make something by building on existing projects or ideas

Computational Thinking Perspective

- < **Expressing** / > : create and express ideas through this new medium
- < **Questioning** / > : feel empowered to ask questions about and with technology
- < **Connecting** / > : appreciate that others are engaged with – and appreciate – one's creation
- < **Digital empowerment** / > : develop the ability to see problems in the world as solvable through code
- < **Computational Identity** / > : See oneself as being able to enhance the world through coding

Computational thinking (Coolthink@JC)

CT Concepts

- < Sequences / > : identify a series of ordered steps for solving a programming task
- < Events / > : one thing causing another thing to happen
- < Conditionals / > : make decisions based on conditions
- < Operators / > : support for mathematical and logical expressions
- < Parallelism / > : make things happen at the same time
- < Repetition / > : run the same sequence multiple times
- < Naming and Variables / > : store information to be referenced and computed in a program
- < Data structures / > : basic ways data are stored, retrieved, and updated
- < Procedures / > : create code blocks to modularize and abstract sequences of commands



CT consideration

- **Senior Form & Future**
- **Technical vs Mindset**
- **Learnt CT VS not familiar with CT**
- **How does school decide CT/ coding as a major concern?**
 - Resources allocation

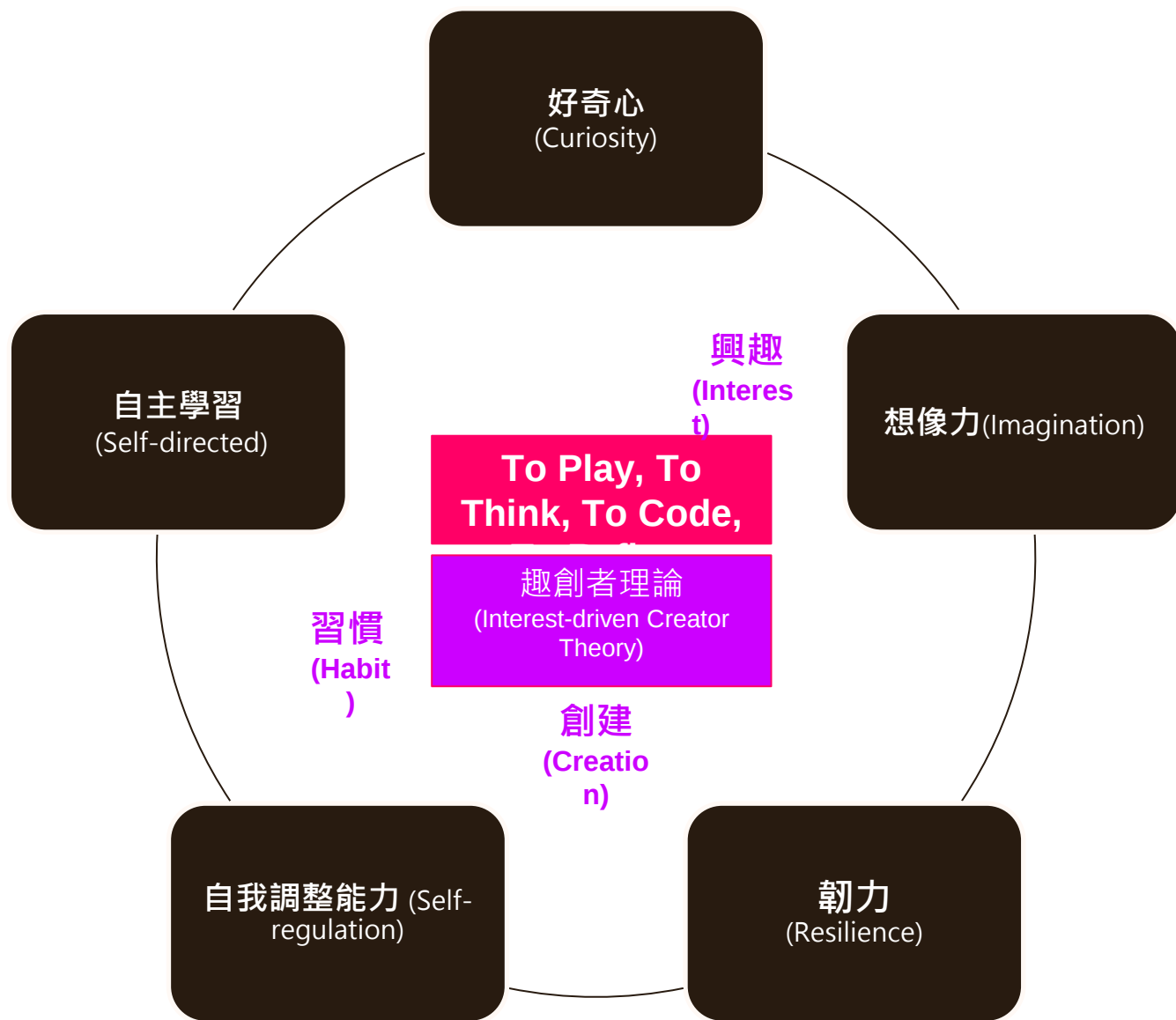


Human resources & Timetable allocation

	2019-2020學年	2020-2021學年 / 2021-2022學年 / 2022-2023學年
Periods	S1: 2 lessons per cycle S2: 2 lessons per cycle S3: 1.5 lessons per cycle	S1: 3 lessons per cycle S2: 3 lessons per cycle S3: 2 lessons per cycle S4: 2 lessons per cycle
Human Resources	S1-S3: co-teach (2 teachers per class)	S1-S3: co-teach (2 teachers per class) S1-S4: co-teach (8 teachers in the whole form)



培養學生發展能動性





CoolThink@JC 課程

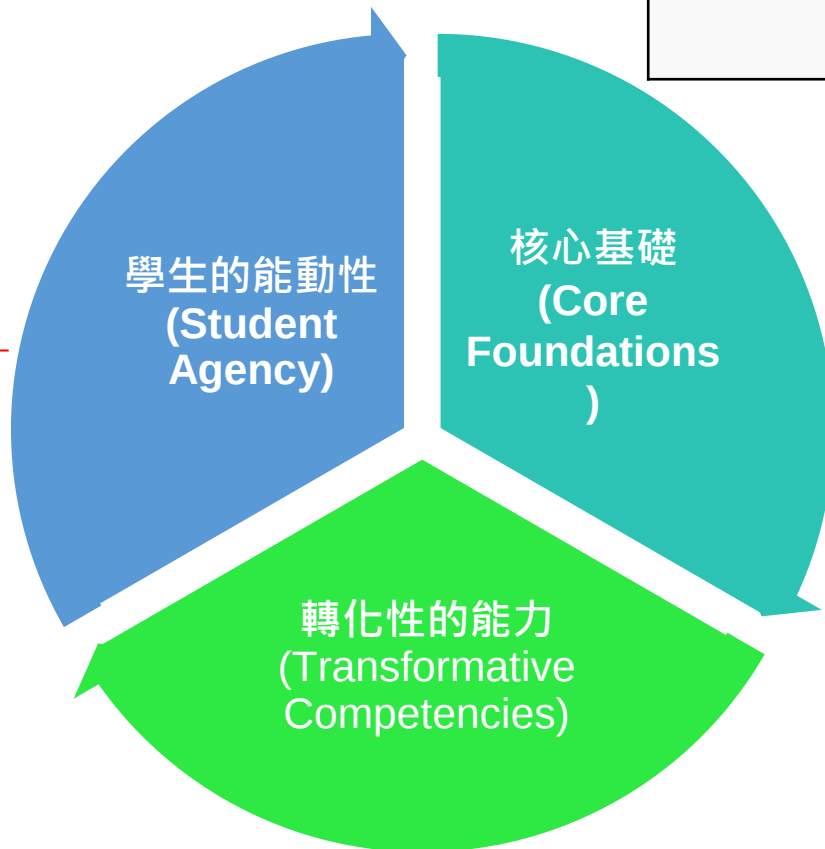
核心基礎 (CORE FOUNDATIONS)

• 讀寫能力 (Literacy) • 計算能力 (Numeracy)	• 體力上 (Physical) • 心理上 (Mental) • 幸福感 (Well-being)	• 道德 (Moral) • 倫理 (Ethics) • 數位素養 (Digital Literacy) • 數據素養 (Data Literacy)

學生的能動性 (STUDENT AGENCY)

需要建立:

- 好奇心 (Curiosity)
- 想像力 (Imagination)
- 韌力 (Resilience)
- 自我調整能力 (Self-regulation)
- 自主學習 (Self-directed)



轉化性的能力

(TRANSFORMATIVE COMPETENCIES)

- 以目標為本 (Sense of purpose)
- 好奇心 (Curiosity)
- 批判思維及創造能力 (Critical Thinking and Creativity)
- 合作能力 (Collaborations)
- 適應力 (Adaptability)



數碼充權 (Digital Empowerment)

Kong, S. C., Chiu, M. M., & Lai, M. (2018)





運算身份認同(Computational Identity)

社會身份認同(Social Identity)

Kong, S. C., & Wang, Y. Q. (2020)

一群樂於編程的人
具有歸屬感

A feeling of belongingness
and attachment to a group
people who share common
programming interests

連繫編程
(Programming
Affiliation)

設定編程目標
(Programming
Goal-setting)

透過目標設定，渴望
與一群編程專家一起
工作

The desire of working with a
group of programming
professional through goal-
setting

現時的身份認同
(Present Identity)

將來的身份認同
(Future Identity)

透過沉浸於有意義
的編程活動而來的
主動學習過程

The active learning process
through fully immersion in
meaningful programming
activities

參與編程
(Programming
Engagement)

實現編程
(Programming
Actualization)

學習者對學習編程
的自我實現

Learners' self-actualization
in programming learning

個人身份認同
(Personal Identity)



Coolthink運算思維的教學法

“沒有單一的教學法能照顧深入學習(Deeper learning) 各式各樣的目標。”

“在廿一世紀中，**深入學習** (Deeper learning) 對於協助學生發展穩固而可轉移的知識和技能，變得愈來愈重要。它要求學生掌握核心教學內容、勇於解難、跟他人合作、有效地溝通及學習如何學習（例如：自主學習Self-directed learning）。

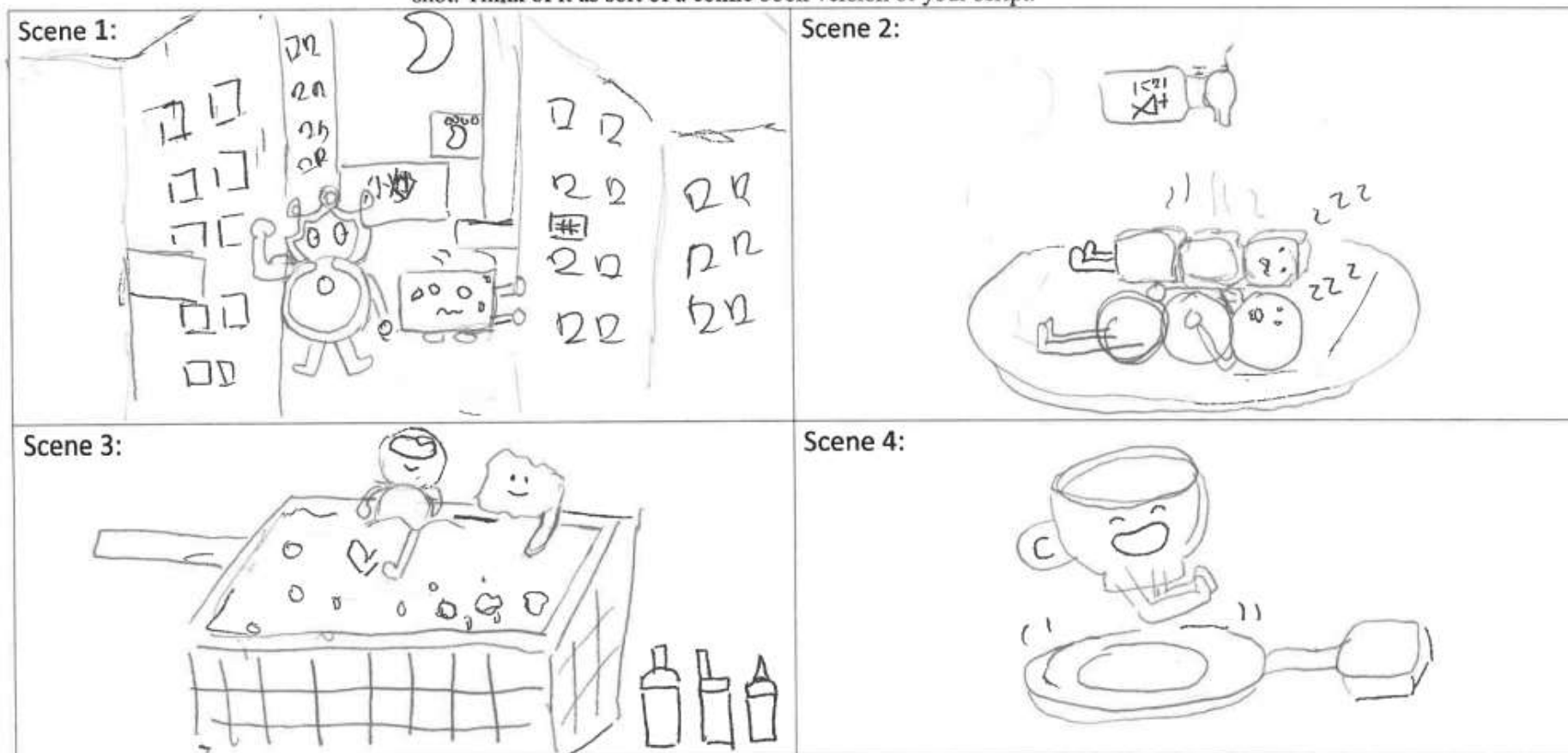
“這方法強調學生對轉化學習至為未來學習的需要，及指出深入學習是每人學習把所學到的應用到新範疇的過程



L1U8.4 Scratch Tell a joke (CT Concepts)

Storyboard(故事圖)

Before creating an animation, we create a story content and storyboard first. A storyboard is a graphic representation of how your video will unfold, shot by shot. It's made up of a number of squares with illustrations or pictures representing each shot, with notes about what's going on in the scene and what's being said in the script during that shot. Think of it as sort of a comic book version of your script.

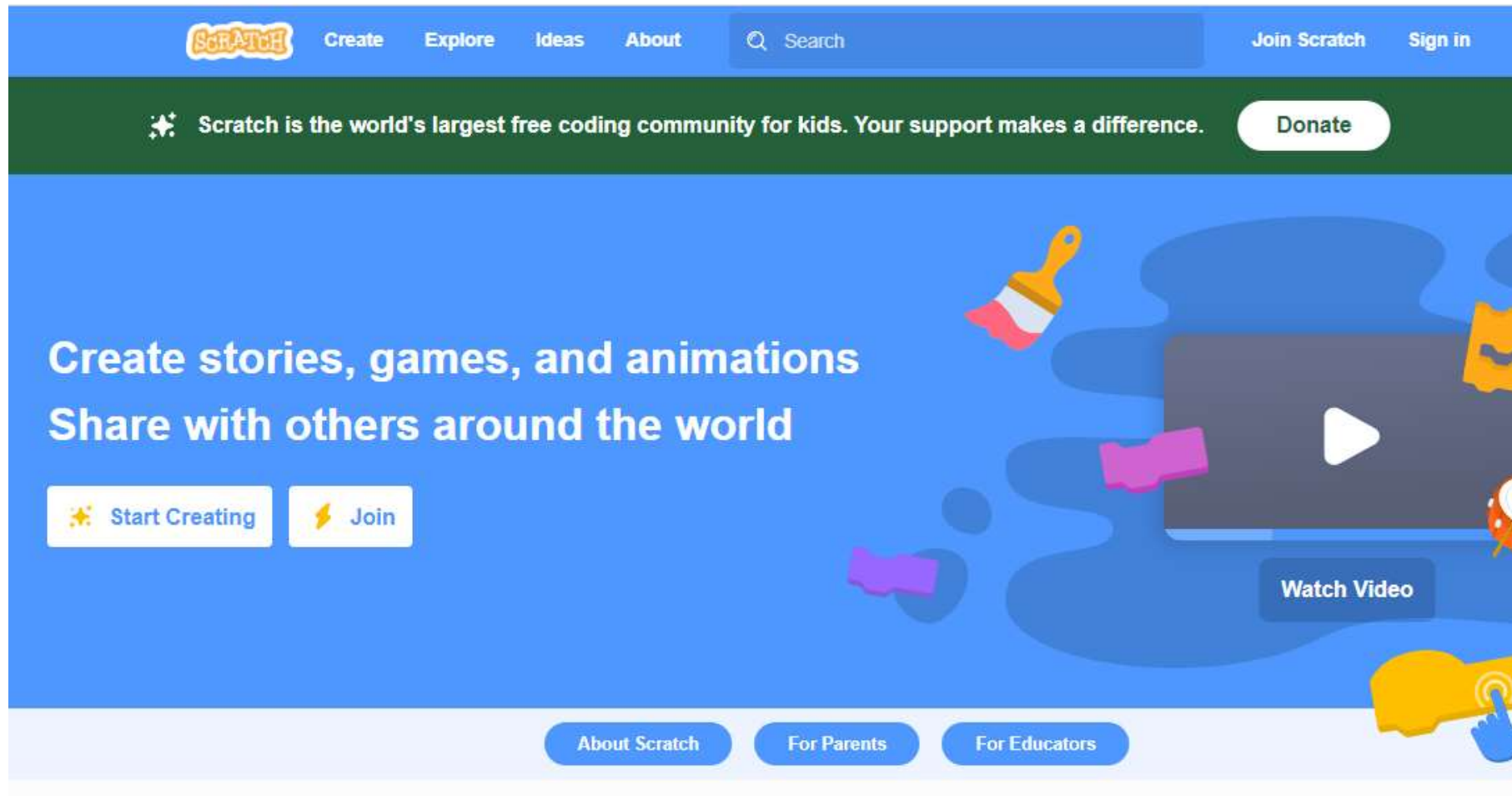


**You can edit the Scratch project with different effects and feature.



Activity: Scratch

<https://scratch.mit.edu/>





Difficulties promoting CT/ coding

- **CT mindset change of teachers**
- **Schools' resources**
- **Professional developments for teachers**
- **How to promote CT to other subjects**
- **Relations between CT and STEAM**
- **Whole-school approach vs ECA**



Tips

- **How to prepare a lesson.**
- **How to cater learning diversity.**
- **How to manage the IDE?**
- **How to assess the CT abilities?**
- **Block-based programming vs Text-based programming**
- **Best Programmable Robots To Teach Kids Code ?**
- **Blended learning**
- **...**

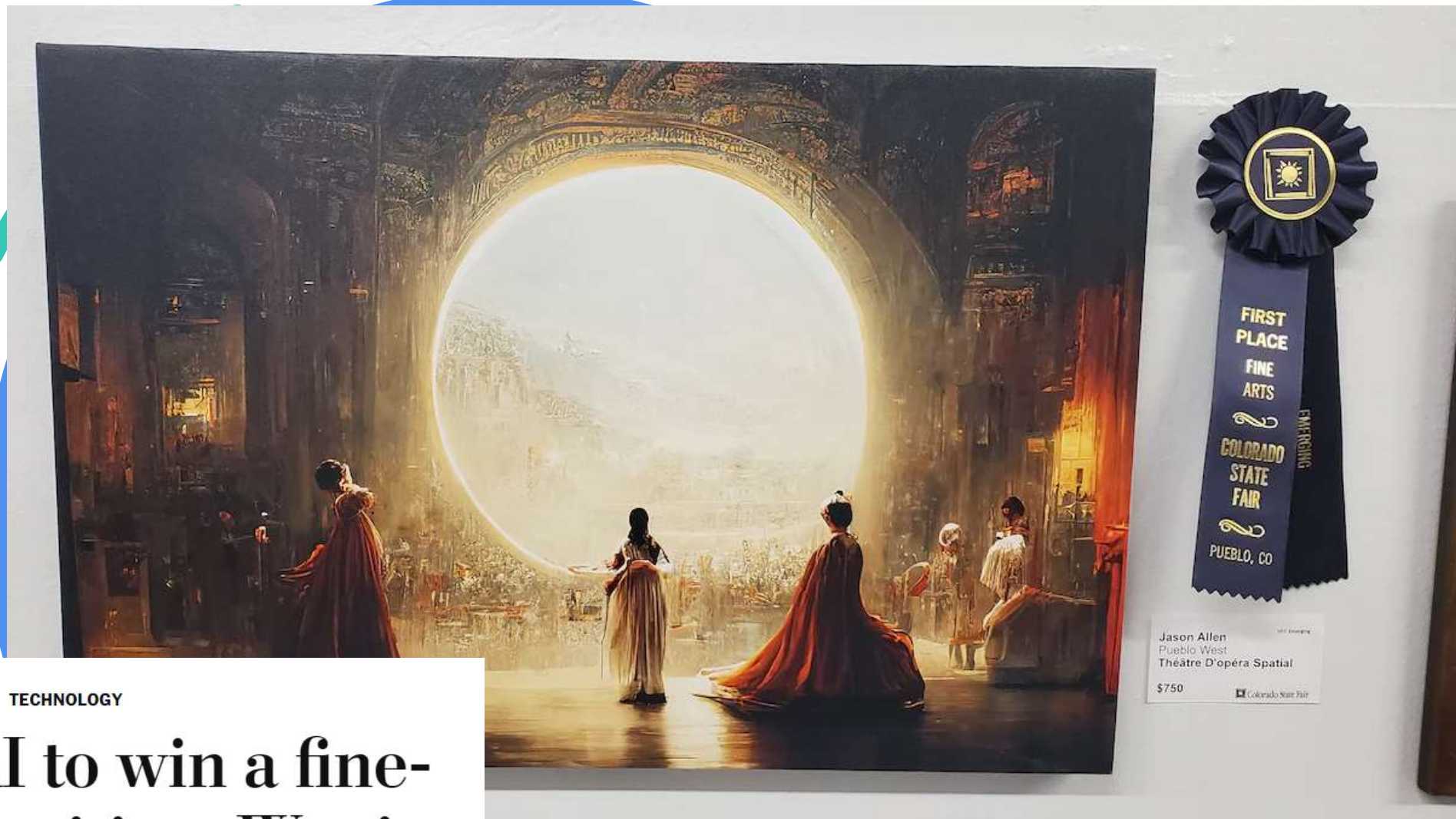


路德會協同中學 教授CT情況









TECHNOLOGY

He used AI to win a fine-arts competition. Was it cheating?

<https://www.washingtonpost.com/technology/2022/09/02/midjourney-artificial-intelligence-state-fair-colorado/>

No. student : 3 - 4 students per group

Content : Create an image in Midjourney discord

How to submit : Upload the following in the Google Slide

Group 00 (Sample)

Member
3B11
3B12
3B13
3B14

`/imagine` MULHER jovem, bonita, MISTERIOSA, cabelos longos, PINTURA, DAVINCI, fantasy style, DRAMATIC LIGHTING, 8K, widescreen





A01B : AI 圖片創作

csteacher3 cls • 9月8日

100 分

人數：3-4人一組

活動內容：創作可以創作AI圖片的句子

提交方式：每組提交一句英文句子

課程留言



新增課程留言...



3A08-范振希 3A08-FAN CHUN HEI 9月8日

a beautiful girl with a long hair and shinny eyes and a handsome boy with long legs like slender man playing basketball.



3A13-李映彤 3A13-LEE YING TUNG 9月8日

Flight fighter fight with other flight fighter in the sky



3A15-梁凱淇 3A15-LEUNG HOI KI 9月8日

a girl with a boy watching the sunset at the beach together. 12 15 16 18



3A20-吳梓濫 3A20-NG TSZ HO 9月8日

three pig heads no eyes a human body and eight Octopus legs a big mouth



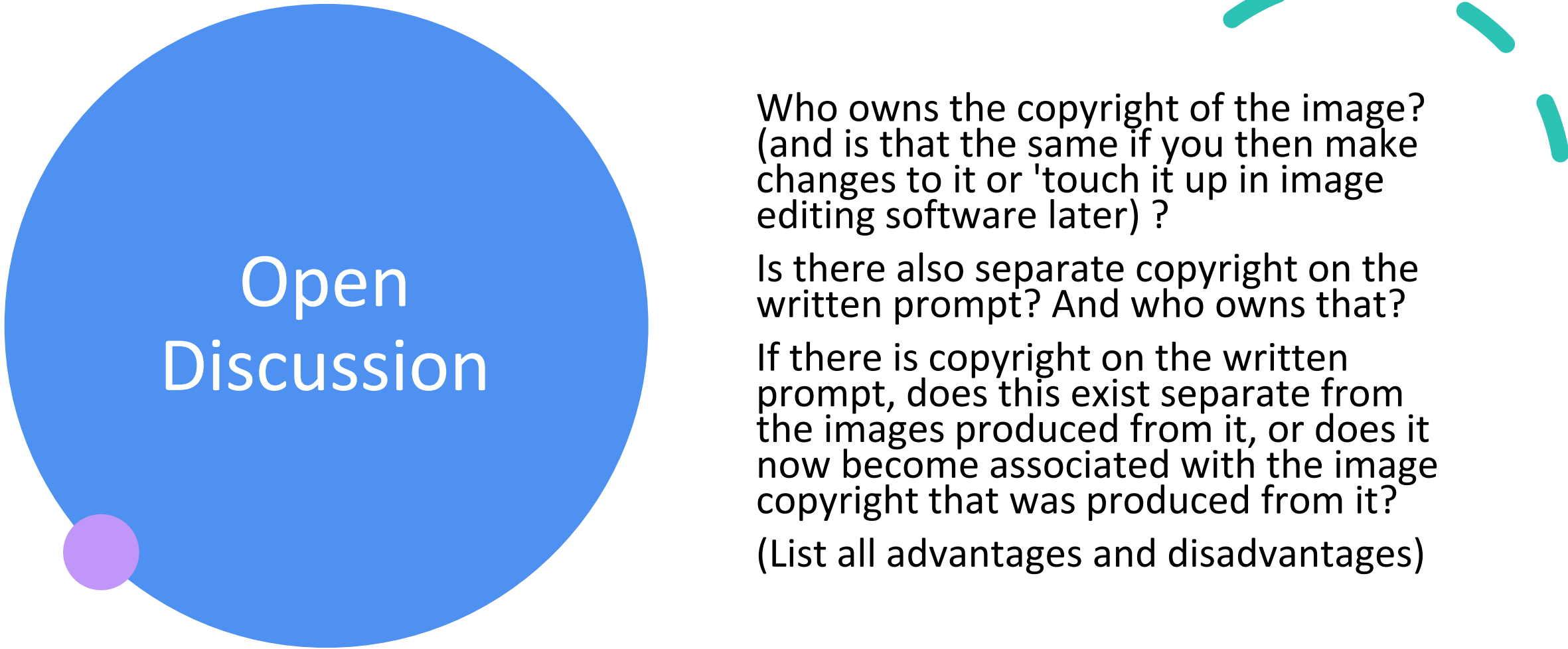
3A23-曾儀婷 3A23-TSANG YEE TING 9月8日

handsome guy with suit , black hair, blue eyes,rainy day,holding an umbrella for a beautiful girl
3a21,22,23,33



3A24-謝佩琦 3A24-TSE PUI KEI 12月5日

Two Max mouse in a zoo eat cherries very happy.
3a 24,26,27,28



Open Discussion

Who owns the copyright of the image?
(and is that the same if you then make
changes to it or 'touch it up in image
editing software later) ?

Is there also separate copyright on the
written prompt? And who owns that?

If there is copyright on the written
prompt, does this exist separate from
the images produced from it, or does it
now become associated with the image
copyright that was produced from it?

(List all advantages and disadvantages)



<https://makecode.microbit.org/>

VS

<https://classroom.microbit.org/>

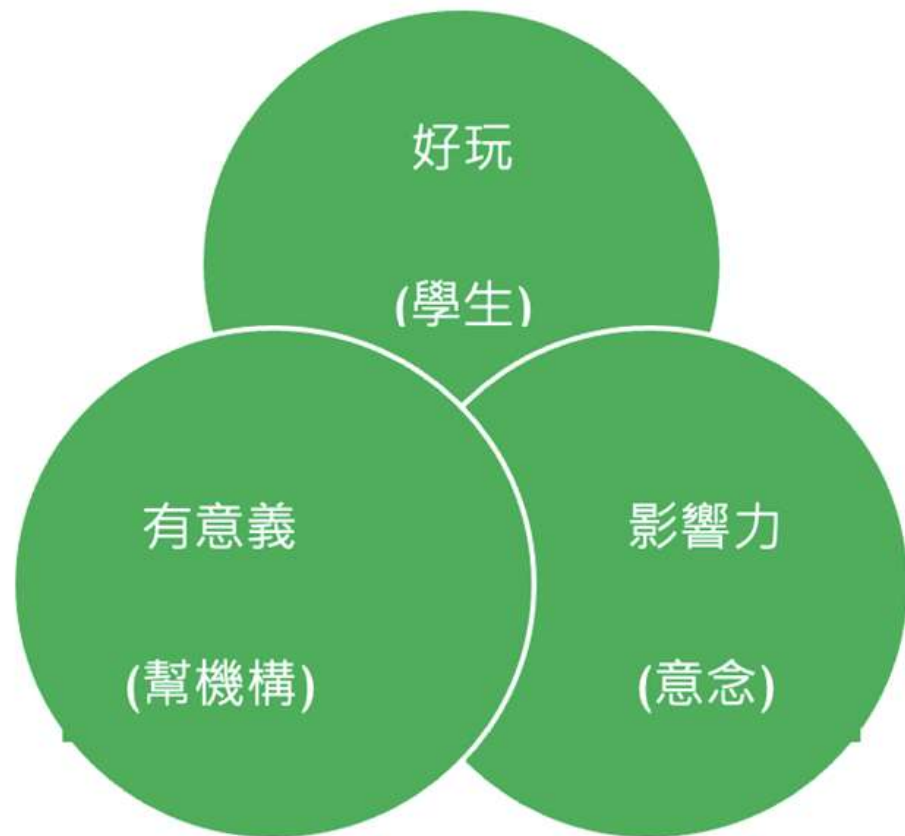


Design Thinking



Innovative approach (Business-School Partnership) to nurture students' CT and entrepreneurial spirit using authentic-based learning

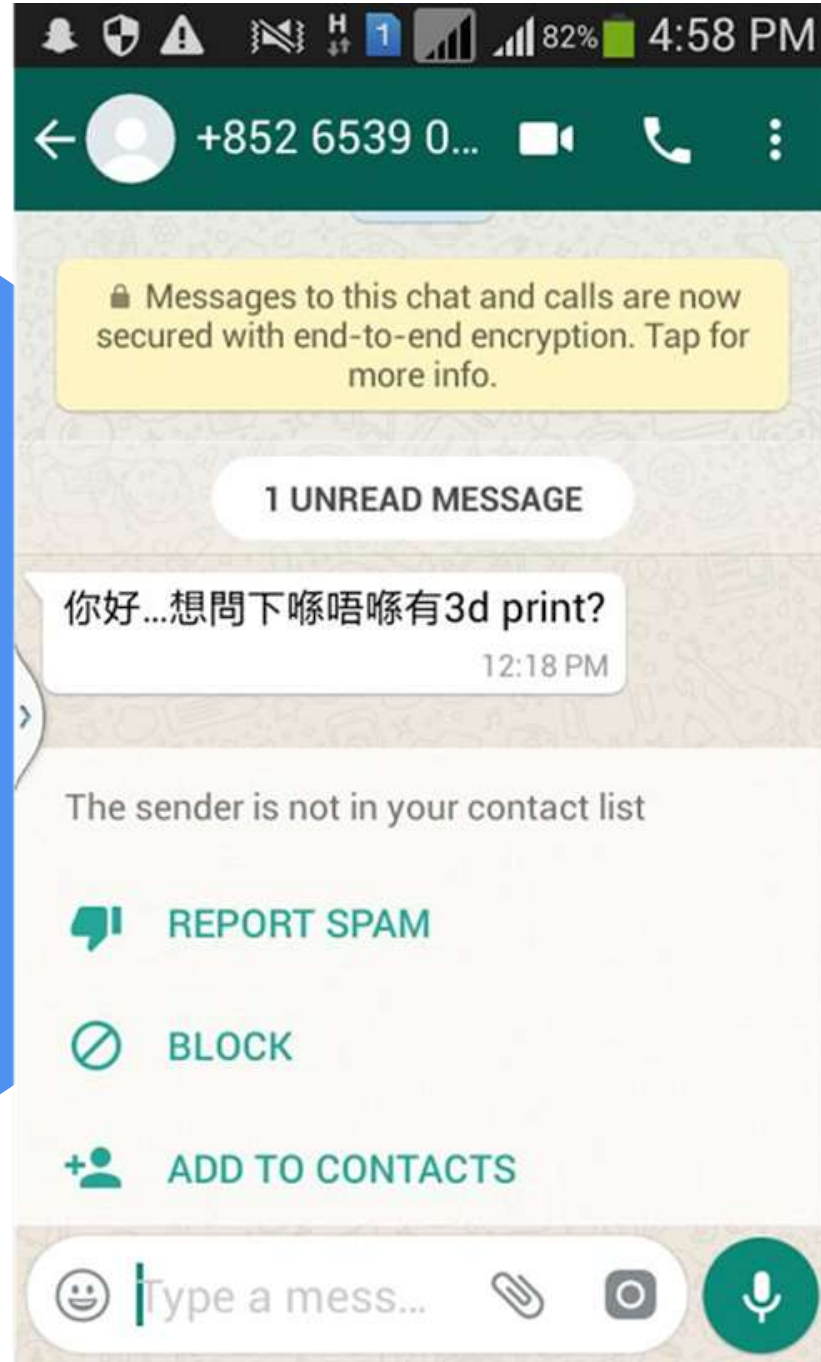
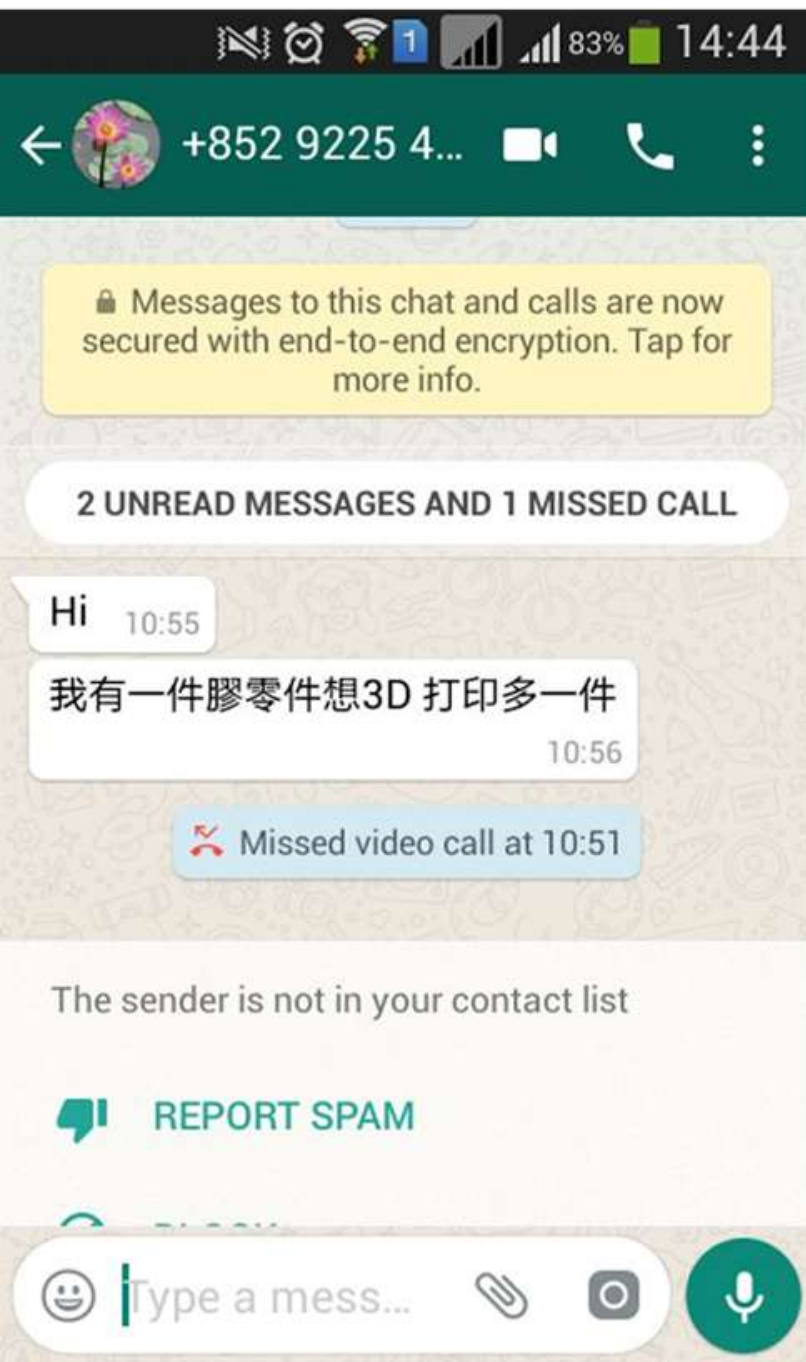




學生 × 公司機構 的 合作模式



老人家(目標對象) × 青少年(學生) ×
網想正(機構)





受英國學校啟發

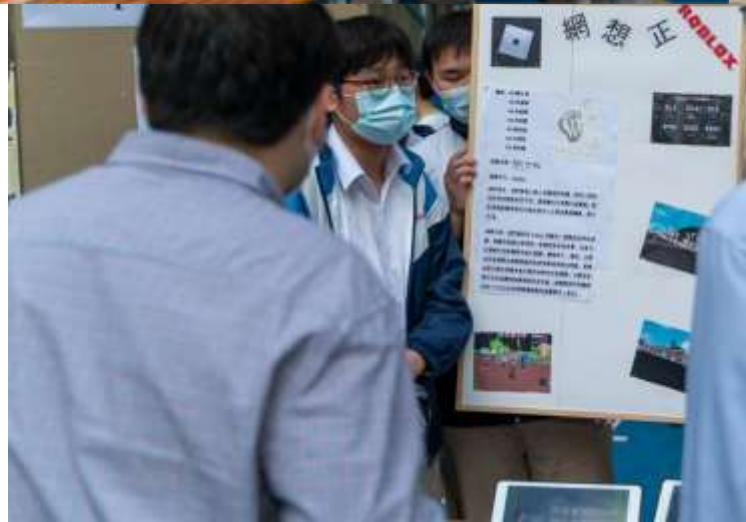


中四級開拓及創新設計科 InnoDesign 「想・創・日」(Pitching) 20-21





中四級開拓及創新設計科 InnoDesign 「想·創·日」(Pitching) 20-21





中四級開拓及創新設計科 21-22

「想·創·日」



JC **inNOPOWER**
賽馬會教師社工創新力量



教育局
Education Bureau



嶺南大學STEAM教育及研究中心
STEAM Education and Research Centre, Lingnan University



UpGrade 自修室 DSE 專用全方...

upgrade_hk



你好，本人是 UpGradeHK 自修室負責人 Ricky。

鑑於疫情嚴峻，各自修室及共享空間無奈地同樣受到影響。近日，本公司便有警員報稱收到舉報而到 UpGradeHK 自修室進行排查，因此旗下全線自修室須於 2 月 13 日起暫停對外開放。

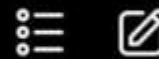
自疫情發展以來兩年多，各行各業生意上都受到嚴重影響，而服務業便首當其衝。自修室及共享空間作為服務行業下其中一種範疇，生意難免低迷，同業或需另覓方法絕處逢生。於疫情爆發期情況更為嚴峻，同業為了不觸犯日漸收緊的防疫政策而作出有限度開放，甚至全面暫停開放，令生意額雪上加霜，全面步入寒冬。

可是，政府從未曾對自修室及共享空間提供任何針對性的援助，孤苦無援，艱難求存。

11:49



< greenhouse_hk ▾



Q Search



Primary

General

Requests



DSE 的 ME

想知其實你地地址係邊 🤔 🐱 🐶 · 2h



公司理念



李思恩 徐學楚 關銘源
負責老師：鍾富源老師







Questions for all

- CT = coding?
 - CT = STEAM?
 - Value vs Attitudes vs Skills vs Knowledge
 - Coding = STEAM?
 - Thinking vs Coding?
 - ...
- 



CT vs coding?

- **While computational thinking is the problem-solving process that can lead to code, coding is the process of programming different digital tools using algorithms.**
- 

What is the difference between the terms 'equation' and 'algorithm'?

They cannot. An **equation** is a relation between two *expressions* A, B , stating that they are equal

$$A = B$$

An **algorithm** is a series of steps (usually in *pseudo-code*) to be taken in order to solve a given problem (or approximate the solution). An algorithm may for example consist of an initial guess x_0 , an *iteration function* f and the "code"

$$x_{n+1} = f(x_n)$$



How's about ChatGPT vs teacher?



ChatGPT >

List out how to learn computational thinking through python



This bot may make incorrect statements. It does not have knowledge of events after 2021. Tap to learn more.

Here are some steps you can follow to learn computational thinking through Python:

1. Learn the basics of Python: Start by learning the basics of Python programming language, including syntax, data types, variables, operators, and control structures such as loops and conditionals.
2. Understand algorithms: Learn how to write and analyze algorithms, which are step-by-step procedures for solving problems. Basic algorithms include sorting, searching, and recursion.
3. Learn data structures: Data structures are ways to organize and store data in a computer program. Learn about basic data structures such as lists, dictionaries, and tuples.
4. Practice problem-solving: Use Python to solve problems, such as simple math problems, puzzles, and coding challenges. This will

...

Write a python code to sort 5 numbers using array

Sure! Here's an example Python code that uses an array to sort 5 numbers in ascending order:

```
from array import *  
  
# Create an array of 5 numbers  
nums = array('i', [5, 3, 1, 4, 2])  
  
# Sort the array in ascending order  
nums = sorted(nums)  
  
# Print the sorted array  
print("Sorted array:", nums)
```



The python code cannot use the built-in function including sorted(), re-write the python code

Sure! Here's an example Python code that sorts 5 numbers using an array without using any built-in sorting functions:

```
from array import *

# Create an array of 5 numbers
nums = array('i', [5, 3, 1, 4, 2])

# Sort the array in ascending order using bubble
sort
for i in range(len(nums)):
    for j in range(len(nums) - 1):
        if nums[j] > nums[j + 1]:
            # Swap the elements
            temp = nums[j]
            nums[j] = nums[j + 1]
            nums[j + 1] = temp

# Print the sorted array
print("Sorted array:", nums)
```

...



Can you explain how bubble sort works?

Yes, of course!

Bubble sort is a simple sorting algorithm that works by repeatedly swapping adjacent elements if they are in the wrong order. The algorithm gets its name from the way smaller elements "bubble up" to the top of the list like bubbles rising to the surface.

Here's how bubble sort works:

- 
1. Start at the beginning of the list and compare the first two elements. If the first element is greater than the second element, swap them.
 2. Move to the next pair of elements (i.e., the second and third elements) and compare them. If the second element is greater than the third element, swap them.



ChatGPT >

write a story using five characters to stimulate the bubble sorts

Once upon a time, there were five friends named Alice, Bob, Charlie, Dave, and Eve. They were all fans of the local basketball team and often went to games together.

One day, they decided to organize a tournament among themselves to determine the best player on their team. Each of them had their own unique skills, but they all wanted to win.

Alice was known for her speed and agility. Bob was a tall and strong player who could shoot from a distance. Charlie was a great defender and could steal the ball from opponents. Dave was a master of dribbling and could move the ball quickly down the court. Eve was an excellent team player and could coordinate their efforts.

To determine the winner of the tournament, they decided to use bubble sort. They wrote their names on pieces of paper and put them in a hat. Each round, they would draw two names from the hat and compare their skills. The winner would move on to the next round, while the loser would be eliminated.



ChatGPT >

write a story using five characters to stimulate the bubble sorts

Once upon a time, there were five friends named Alice, Bob, Charlie, Dave, and Eve. They were all fans of the local basketball team and often went to games together.

One day, they decided to organize a tournament among themselves to determine the best player on their team. Each of them had their own unique skills, but they all wanted to win.

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Links

Computational Thinking – Coding Education: Supplement to the Primary Curriculum

https://www.edb.gov.hk/attachment/en/curriculum-development/kla/technology-edu/curriculum-doc/CT_Supplement_Eng%20_2020.pdf

Technology Education Key Learning Area Curriculum Guide (Primary 1 - Secondary 6) (2017)

https://www.edb.gov.hk/attachment/en/curriculum-development/kla/technology-edu/curriculum-doc/TE_KLACG_Eng_5_Dec_2017_r2.pdf

DSE2025 ICT

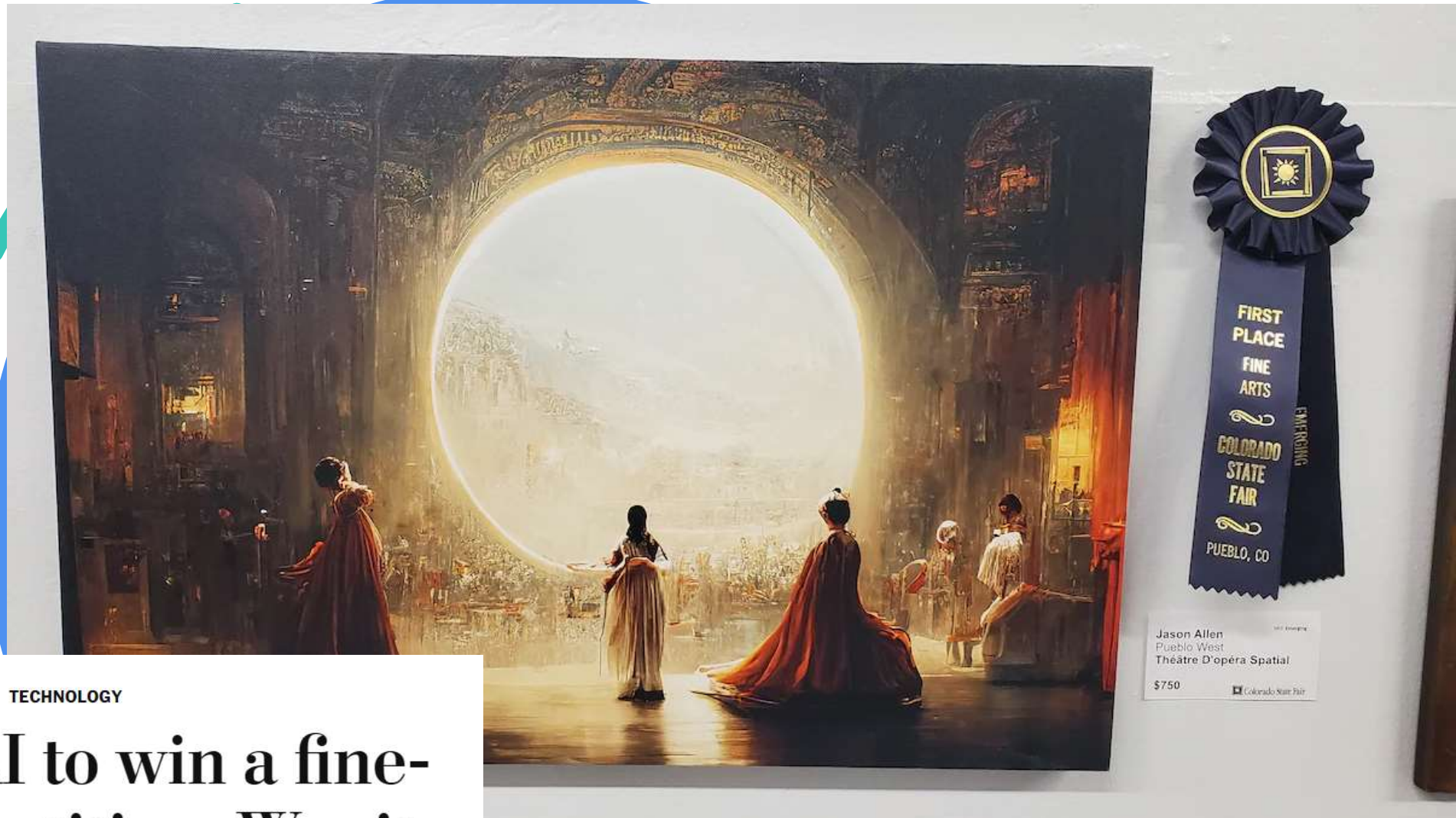
https://www.edb.gov.hk/attachment/en/curriculum-development/kla/technology-edu/curriculum-doc/ICT_C&A_Guide_e_final.pdf

How to make awesome 3d games in Scratch

https://www.youtube.com/watch?v=M1c5TcdITVs&ab_channel=griffpatch

Wi-Fi AP

<https://www.tp-link.com/tw/business-networking/ceiling-mount-ap/eap115/>



TECHNOLOGY

He used AI to win a fine-arts competition. Was it cheating?

<https://www.washingtonpost.com/technology/2022/09/02/midjourney-artificial-intelligence-state-fair-colorado/>

No. student : 3 - 4 students per group

Content : Create an image in Midjourney discord

How to submit : Upload the following in the Google Slide

Group 00 (Sample)

Member
3B11
3B12
3B13
3B14

`/imagine` MULHER jovem, bonita, MISTERIOSA, cabelos longos, PINTURA, DAVINCI, fantasy style, DRAMATIC LIGHTING, 8K, widescreen



Step 01: Join the Midjourney

URL to AI



Step 02: Login the discord account

URL to AI



您已被邀请加入

✓ **Midjourney**

● 404,999 人在线 ● 5,484,299 位成员

用户名

希望大家怎么称呼您？



继续

已经拥有帐号？

进行注册即表示您同意 Discord 的[服务条款](#)和[隐私权政策](#)。

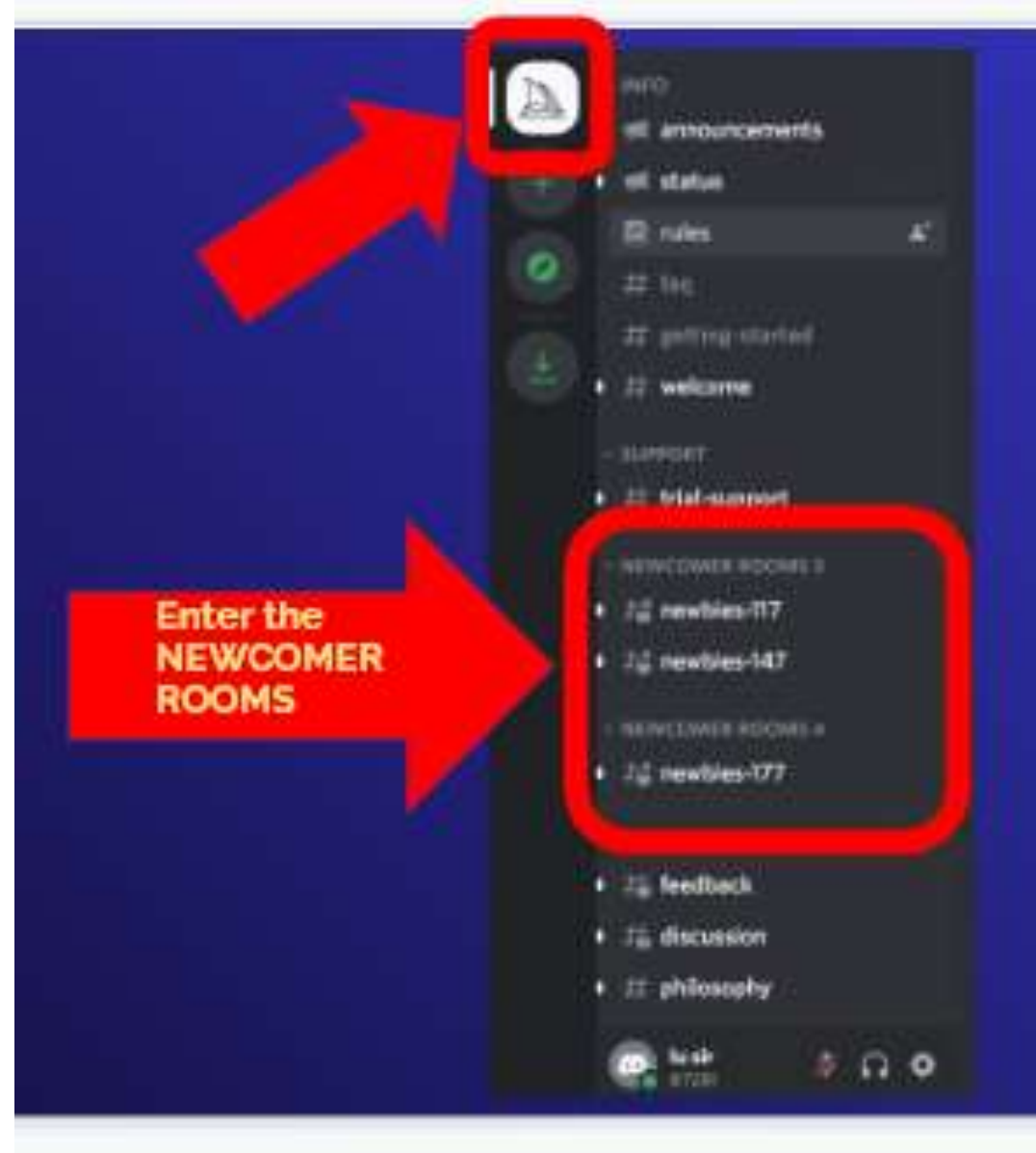
Step 02: Login the discord account

URL to AI

Email Address	Password	Discord AC	
CLS_CS_Demo01@cls.edu.hk		Created	Group 01
CLS_CS_Demo02@cls.edu.hk		Created	Group 02
CLS_CS_Demo04@cls.edu.hk		Created	Group 03
CLS_CS_Demo05@cls.edu.hk		Created	Group 04
CLS_CS_Demo07@cls.edu.hk		Created	Group 05
CLS_CS_Demo08@cls.edu.hk		Created	Group 06
CLS_CS_Demo09@cls.edu.hk		Created	Group 07
CLS_CS_Demo10@cls.edu.hk		Created	Group 08
CLS_CS_Demo11@cls.edu.hk		Created	Group 09
CLS_CS_Demo17@cls.edu.hk		Created	Group 10

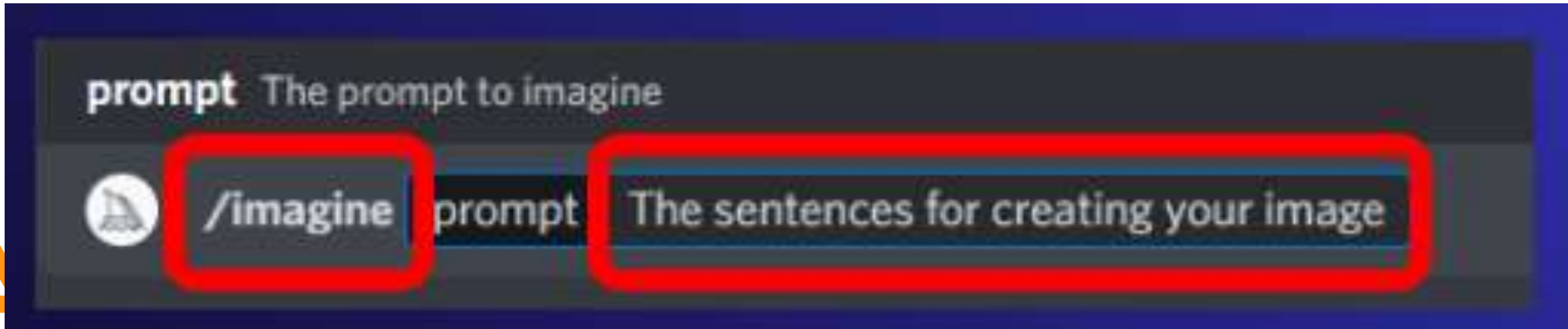
Step 03: Choose the chat room

URL to AI



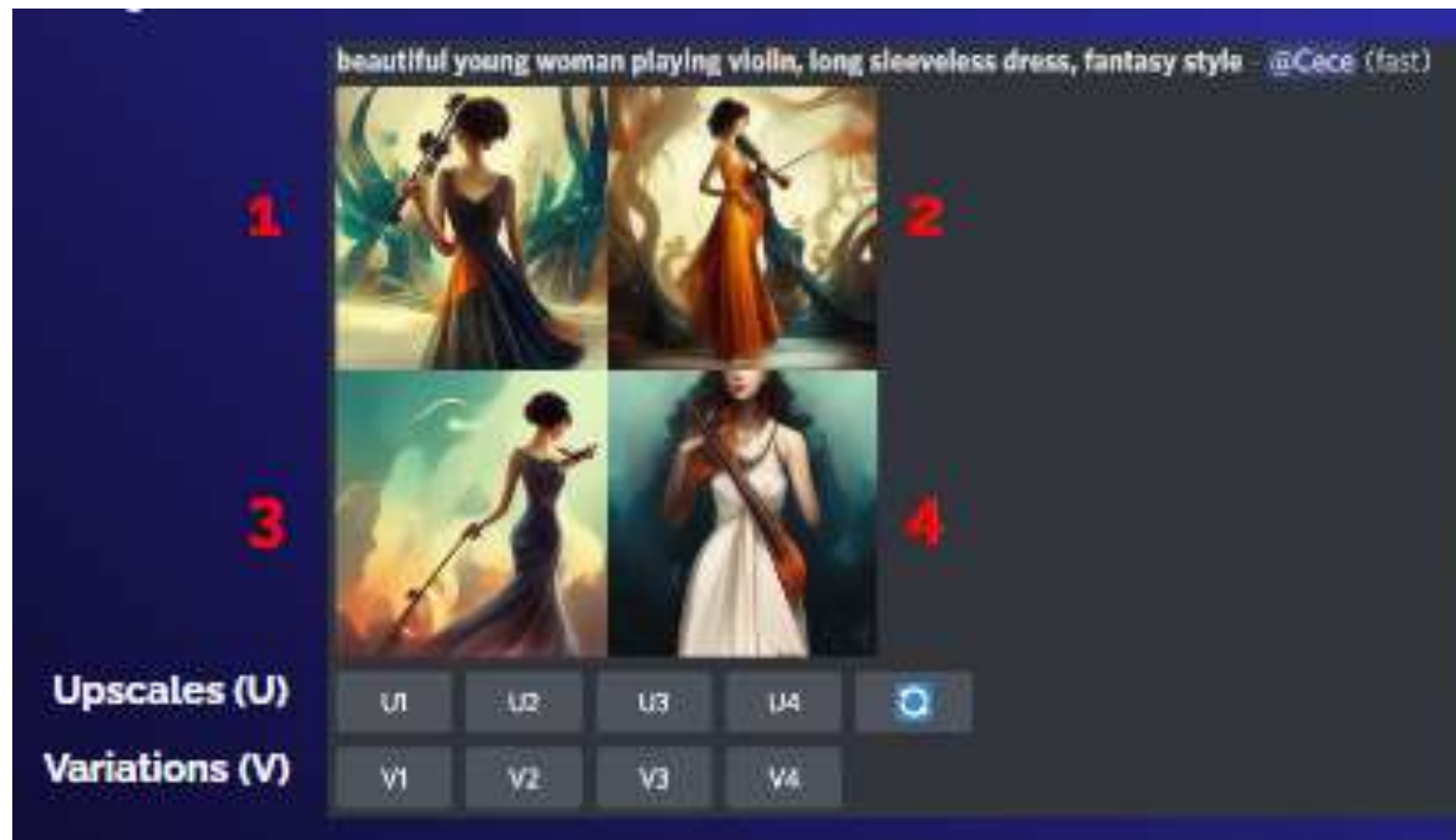
Step 04: Enter your sentence

URL to AI



Step 05: Train the AI and evolve

URL to AI



Step 06: Complete the google slide

[Google Slide](#)

nple)

/imagine MULHER jovem, bonita, MISTERIOSA, cabelos longos, PINTURA, DAVINCI, fantasy style, DRAMATIC LIGHTING, 8K, widescreen



Limitation

Limitation

- Discord Account problem
- AI limitation
 - Wording
 - English platform
- Google slide editing problem





A01B : AI 圖片創作

csteacher3 cls • 9月8日

100 分

人數：3-4人一組

活動內容：創作可以創作AI圖片的句子

提交方式：每組提交一句英文句子

 課程留言



新增課程留言...



3A08-范振希 3A08-FAN CHUN HEI 9月8日

a beautiful girl with a long hair and shinny eyes and a handsome boy with long legs like slender man playing basketball.



3A13-李映彤 3A13-LEE YING TUNG 9月8日

Flight fighter fight with other flight fighter in the sky



3A15-梁凱淇 3A15-LEUNG HOI KI 9月8日

a girl with a boy watching the sunset at the beach together. 12 15 16 18



3A20-吳梓濫 3A20-NG TSZ HO 9月8日

three pig heads no eyes a human body and eight Octopus legs a big mouth



3A23-曾儀婷 3A23-TSANG YEE TING 9月8日

handsome guy with suit , black hair, blue eyes,rainy day,holding an umbrella for a beautiful girl
3a21,22,23,33



3A24-謝佩琦 3A24-TSE PUI KEI 12月5日

Two Max mouse in a zoo eat cherries very happy.
3a 24,26,27,28

Objective

1. Explore the potential of AI
2. Learn the process of AI training
3. Hands-on experience in AI application
 - a. Creation from AI
 - b. AI ability to → analysis/simulate the aesthetics of human



Limitation (MidJourney AI)

- What is the length limit for prompts?
- A: Anything over around 60 words will not affect the output, so don't write a novel. (It must stay under 6000 characters.)
- Hong Kong (Asia) related objects are not accurate (Why?)



Is Midjourney art copyrighted?

Copyright

- A copyright is a type of intellectual property that gives its owner the exclusive right to copy, distribute, adapt, display, and perform a creative work, usually for a limited time
- The creative work may be in a literary, artistic, educational, or musical form. Copyright is intended to protect the original expression of an idea in the form of a creative work, but not the idea itself
- A copyright is subject to limitations based on public interest considerations, such as the fair use doctrine in the United States.

Your rights

- If you are using a free or a trial account for Midjourney, you are granted a Commons Noncommercial 4.0 Attribution International License, which means that you'd be able to use the images as long as you don't sell them or make money off them, and as long as you give credit ("attribution") to Midjourney.

Open Discussion

- Who owns the copyright of the image? (and is that the same if you then make changes to it or 'touch it up in image editing software later) ?
- Is there also separate copyright on the written prompt? And who owns that?
- If there is copyright on the written prompt, does this exist separate from the images produced from it, or does it now become associated with the image copyright that was produced from it?
- (List all advantages and disadvantages)

Open Discussion

- Who owns the copyright of the image? (and is that the same if you then make changes to it or 'touch it up in image editing software later) ?
- Firstly copyright is a bundle of rights granted to a human author "natural person" is the legal term. They are not part of an image per se but grant the author of an image exclusive rights.
- ...

Open Discussion

- Is there also separate copyright on the written prompt? And who owns that?
- In the EU an eleven word sentence was considered enough to be protected but it still must meet an originality requirement that imbues the personality of the author. (Infopaq, Painer)
- Text and images are not the same work. For instance a writer would have copyright in their writing and an illustrator would have copyright in their image. To make an image from text means making a separate work which is derivative from the text. It's hard to imagine another way to look at it.

Open Discussion

- If there is copyright on the written prompt, does this exist separate from the images produced from it, or does it now become associated with the image copyright that was produced from it?
- There are no "proprietary rights" to account for
- Other people have not "contributed" to the output in the ways title chain would apply
- Trademark clearance isn't required for artwork creation. If you were to sell that image, or use it in such a way as to cause confusion, that's a different issue beyond the legal responsibility of the various AIs, just as if you created a children's book and included trademarked characters.
- Its typical application is around motion pictures. This is not that.



Useful resources

- <https://scratch.mit.edu/>
- <https://makecode.microbit.org/#editor>
- <https://www.tinkercad.com/>
- <https://appinventor.mit.edu/>
- <https://www.w3schools.com/>
- <https://www.codecademy.com/>
- <https://codehs.com/>
- <https://replit.com/>
- <https://dancingwithai.media.mit.edu/>
- <https://ide.mblock.cc/>
- <https://thunkable.com/#/>
- <https://developers.google.com/blockly>



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Thank you

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