輔仁大學 108 年高教深耕計畫
【程式設計融入課程補助計畫】授課成效報告

基本資料

開課學院	外語學院	開課系/組	英國語文學系
學年度/學期	__107__ 學年度 / 第 _2_ 學期	學制別	大學 Ｖ日間部 □進修部
課程名稱	遊戲運用與程式設計	上課時間	星期三，09：10～12：00
開課代碼	10721000GFG2060G2060320388	修課人數	26
授課教師	劉紀雯、周德嫌	聯絡電話	(研究室分機) #3676
電郵信箱	034702@gapp.fju.edu.tw; 034702@mail.fju.edu.tw 126827@gapp.fju.edu.tw; 126827@mail.fju.edu.tw		

整體教學設計

跨域特色	This course aims to strengthen English majored students' storytelling skills, including story adaptations, plot designs, and storyboarding; also to develop their fundamental programming skills. To increase students' motivation in programming learning, this course adopted a visual programming tool – CoSpaces Edu, in which students can easily build 3D virtual environment from build-in library and templates. Also, students were introduced to learn the framework of interactive digital storytelling principle and flowchart design via peer collaboration environment. It is hope that, through visual programming environments, students' story-telling skills as well as their logical thinking ability could be both developed; and also, through project-based learning/ pair programming learning strategies, students' confidence and enjoyment levels of programming activities could be both enhanced.
程式語言	□ Python　□ APP Inventor 2　□ R　Ｖ Javascript　□其他 _____
教學目標	• **知識面目標** (期望學習者透過課程能習得哪些知識)： 1. 運算思維概念與實際應用 2. 故事/ 遊戲互動設計理論與框架 3. 學習基礎程式語言 • **學科專業技能目標** (期望學習者透過課程能展現哪些學科專業技能)： 1. 故事改編、情節篩選與改編 2. 腳本設計工具及步驟、流程圖設計 3. 3D/ 視覺化程式編輯能力 • **程式設計技能目標** (期望學習者透過課程能展現那些程式設計技能)： 1. 運算思維(拆解問題、抽象化、尋找規律、演算法設計、除錯..) 2. 認識視覺化程式設計工具操作 (序列、迴圈、平行、事件、條件式、運算子、資料(變數、列表、函式) 3. 積木式程式環境學習基礎操作

	4. 圖像、影像、旁白、音效等多媒體素材篩選與設計 5. 3D 空間思考訓練 6. 強化邏輯思考能力 7. AR/ VR 設計 • **態度面目標** (期望學習者修習完課程後能有哪些態度轉變)： 1. 培養跨領域素養 2. 培養互助合作與溝通能力 3. 培養程式設計的興趣 4. 建立做中學的習慣 5. 培養專注力與細心 6. 培養創意思考、換位思考
作業設計	個人報告：∨書面 <u>1</u> 次 ∨簡報 <u>1</u> 次 小組報告：∨書面 <u>2</u> 次 ∨ 簡報 <u>2</u> 次 程式設計(個人)： <u>4</u> 次 程式設計(小組)： <u>1</u> 次 ∨其他 <u>Hour of Code certificate</u> <u>1</u> 次 ∨ 演講反思 <u>2</u> 次

評量設計	• **形成性評量之規劃** (隨堂練習或小考等)：
	1. 1 hour of code certificate
	2. Storybook sharing
	    a. Reading a story book
	    b. Find a story book (individual)
	3 CoSpaces exercises
	    a. Knowing environment (3d environment, character library, animation)
	    b. Coding exercise (scene design, event, action, transform, camera setting)
	    c. Coding exercise II (parallel, switch scenes, multimedia, function, list, import/ export)
	    d. Coding exercise III (template adaptation, code modification) – computational thinking (decomposition, abstract, pattern recognition, algorithm).
	    e. Coding exercise IV (merge cube + exercise I~III)
	    f. Coding discussion: question boards, text boards, attach, condition, list, random, group items, variables, scores, counting down…)
	
	• **總結性評量之規劃** (期中考、期末考或專題成果等)：
	1. 期中考 – 期末專題計劃書
	    a. Brief introduce the selected story (title, theme, characters)
	    b. Plot (Beginning, rising action, conflicts, climax, resolution)
	    c. Storyboard (tools: Toontastic, storyboardthat, or Elementari, etc) provide 5 cells of storyboard.

	d. Flowchart (tools: ppt, or draw.io..) provide your interactive story flowchart diagram.
	   e. Rubrics
	    ● 4 dimensions of the interactive story design framework (multimedia, interface, education, cultural), or
	    ● 4 dimensions of game elements (motivational, interactive, fun, multimedia).
	
	2. 期末報告
	  a. PPT
	    ● Topic
	    ● Target user
	    ● Purpose
	    ● Tool used
	    ● Key features/ highlights 2-3 scenes/ coding
	    ● Work distribution
	  b. Rubrics
	    ● Completion:
	    ● Complexity:
	    ● Presentation
	    ● Creativity
	    ● Dimensions of the interactive story design framework (multimedia, interface, education, cultural), or 4 dimensions of game elements (motivational, interactive, fun, multimedia).
	  c. Presentation* (W18 20190620)
	    ● Time: 3 min.
	    ● PPT 3 min.
	    ● Peer evaluation.
	  d. Project report* (W19 20190630)
	  * C, D are required for LOD students.

學習輔助 資源	線上資源：□Codecademy □Coursera □Code school ∨其他 Code.org, Scratch 實體資源：∨專題演講 □其他

參考與延
伸學習資
料
	Merge cube examples
	  1. 57 degree north https://mightycoconut.com/57north/
	  2. Merge cube library https://miniverse.io/cube
	Audio library
	  1. Youtube music/ sound effect library
	    https://www.youtube.com/audiolibrary/music
	Audio editing tool
	  1. Online Audio cutter https://www.bearaudiotool.com/

	Text to speech
	  1. Industrial Technology Research Institute Text-To-Speech Web service
	      http://tts.itri.org.tw/
	  2. Soundoftext https://soundoftext.com/
	2D image creation tools
	  1. Google Autodraw https://www.autodraw.com/
	3D Object creation tools
	  1. Tinkercad https://www.tinkercad.com/

教學設計

	日期	課程單元名稱	學習目標	教學設計重點
1	02/21	Course Intro.	Introduction of programming, Scratch, CoSpaces Edu.	
2	02/28	228 停課		
3	03/07	Everyone can code	Computational thinking One hour of code certificate	1. 運算思維概念與練習 2. 認識積木式程式設計環境
4	03/14	專題演講	梁世佑老師 遊戲化應用：如何使學習變得更有趣	動漫、遊戲與學習 Gamification 遊戲設計原則 AIDMA/ AISAS
5	03/21	Interactive storytelling	Interactive storytelling design framework Story adaptation	1. 互動說故事原理與框架 2. 腳本改編 3. 情節篩選
6	03/28	專題演講	呂奎漢老師 今晚誰來 Code Scratch	Scratch Computational thinking and why should we learn coding?
7	04/04	春節停課		
8	04/11		Storyboarding Flowchart	1. 分鏡腳本工具介紹 2. 流程圖介紹
9	04/18	Midterm	Proposal (group)	
10	04/25	Midterm	Proposal (individual)	
11	05/02	Knowing CoSpaces Edu.	Google 華人講師培訓中心講師介紹 Knowing environment	1. CoSpaces Edu. 應用介紹 環境介紹 2. 操作練習 3d environment, character library, animation

12	05/09	CoSpaces Edu. Coding exercise	Coding I	scene design, event, action, transform, camera setting
13	05/16	Coding exercise II	Coding II	parallel, switch scenes, multimedia, function, list, import/ export
14	05/23	Coding exercise III	Template adaptation, code modification)	computational thinking decomposition, abstract, pattern recognition, algorithm
15	05/30	Coding exercise IV + discussions	merge cube + exercise I~III Individual group discussions	Introduce merge cube Individual group project discussions
16	06/06	Coding discussion:	Individual group discussions	Question boards, text boards, attach, condition, list, random, group items, variables, scores, counting down…
17	6/13	Final presentation		同儕互評
18	6/20	Final presentation		LOD 專題同學分享 後測

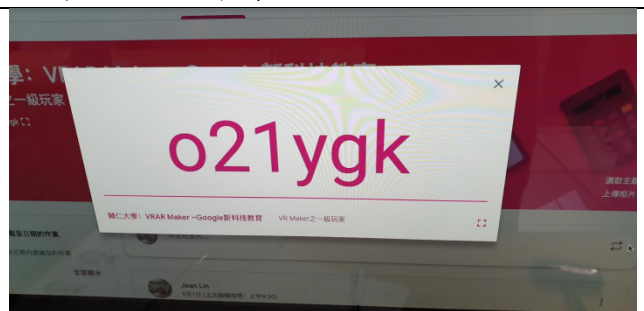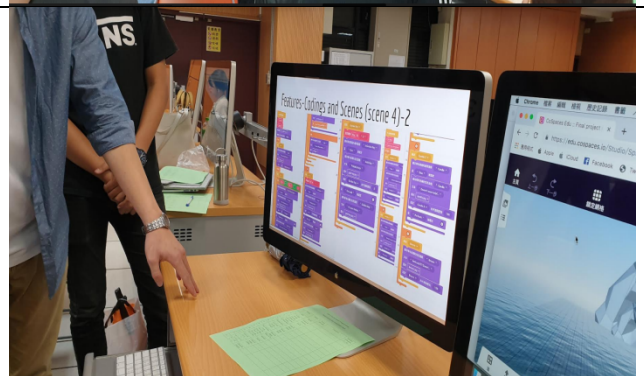課堂活動剪影 (至少 2 張)

3/14 交通大學梁世佑老師演講

3/28 花蓮縣網呂奎漢老師 Scratch 教學

5/2 Google 華人講師培訓中心講師教學
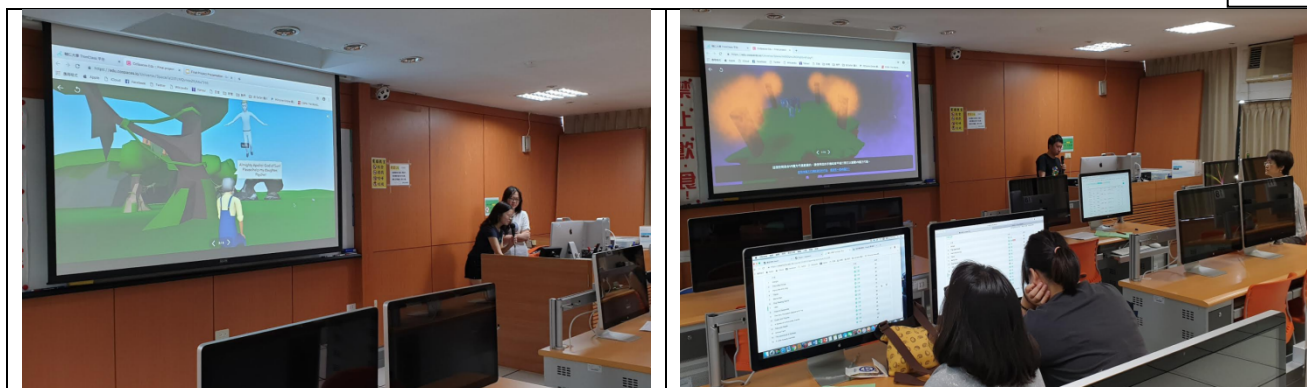
期末報告

期末專題成果

A. 文字遊戲 Text based game

1. A smart kid

   https://drive.google.com/folderview?id=10NfQl9bArQgAiY4HL1EJVn_tpM6VJkDW （遊戲軟體：橙光文字遊戲

   https://drive.google.com/file/d/1Cu3YYvtX9qnYBBpNjKnUrvM20zbaz37r/view?usp=drivesdk）

B. AR/ VR 遊戲

1. The Very Persistent grappers of frip: https://cospac.es/uqVA

2. A series of unfortunate events: https://cospac.es/PXdG
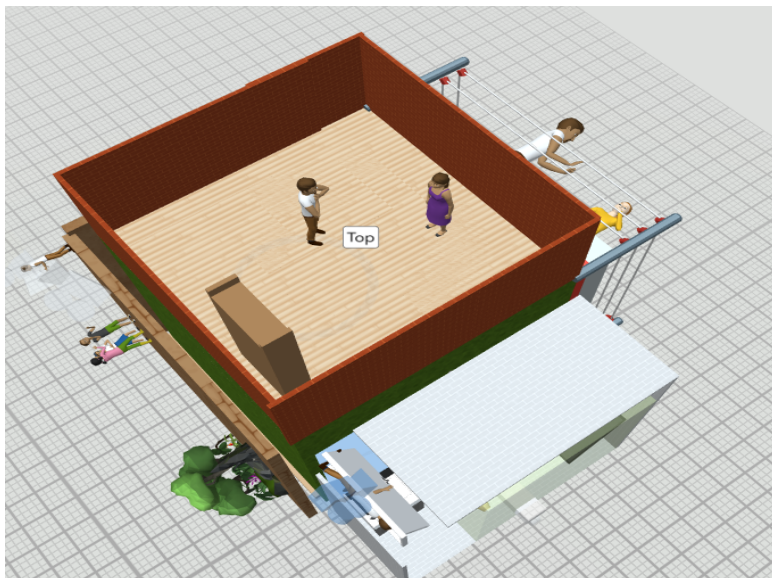
3. Dangle: https://cospac.es/MKyz

4. Harry the dirty dog: https://cospac.es/eDsJ

5. Meme Ban: https://cospac.es/IYH7

6. Ride and Death: https://cospac.es/oRND

7. Cupid and Psyche: https://cospac.es/4tBC, https://cospac.es/51JX

8. Titanic: https://cospac.es/Hr6O
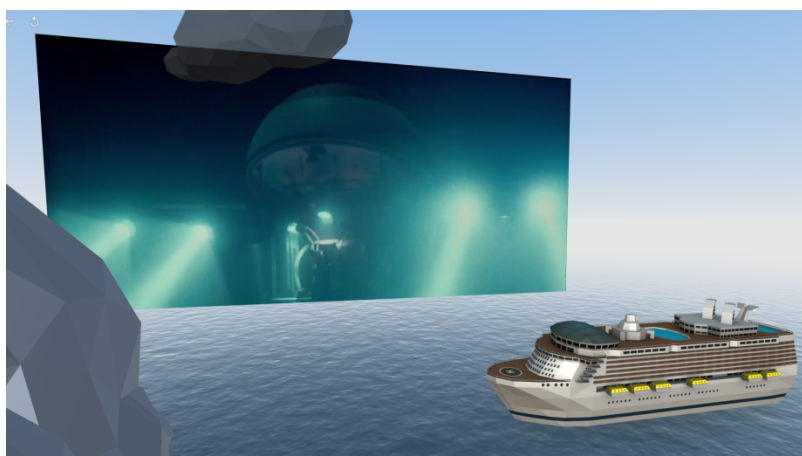
C. 魔方 AR 遊戲 Merge Cube

    1. A little Greedy rabbit: https://cospac.es/jAwu

    2. Animal farm: https://cospac.es/LNgp

    3. Hope and Desperate: https://cospac.es/4SO0

4. The little prince: https://cospac.es/mYi6, https://cospac.es/t7kI
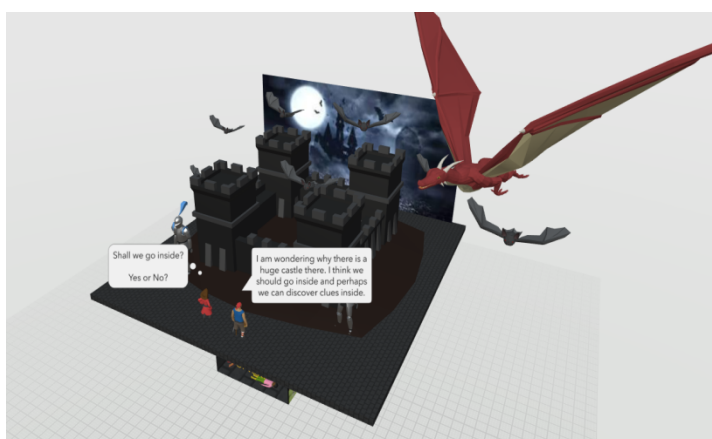
5. The adventure of Aeneas: https://cospac.es/ajAP

學生成果報告

學生程式編輯日誌:

Student ID: 405110313 李欣潔

5. Lesson(s) learned.
   a. From trial and error
      - A project always needs several times of trials to see which aspects can still be adjusted, for some details might not be easily discovered during the coding process.
      - Others' works can inspire you to make the game more detailed and more interactive. Even if your own coding doesn't work, others' coding examples can help you achieve the effects you want.
      - A story should not be too complicated, for the player might lose their attention easily. Interactive games are always an effective way to seize the player's attention.
   b. From team member(s)
      - Using the right background music can help build up the atmosphere of the story.
      - Think of the target audience when typing the narration texts.
   c. From other team(s)
      - The players can be more engaging by playing with the first point of view.
      - Different storylines and endings can enrich the game.

6. Most impressive conversation/ event.

The most impressive conversation occurred during the first demonstration section. Since our group were supposed to present at the final week, we still have some time to adjust our project. When I briefly introduced my responsible parts to other classmates, they complimented about the character animations, saying that all the characters moved naturally; I was quite surprised and encouraged by their comments. Since there were a lot of first point-of-view narrations in my parts, they also suggested me to adjust the game play and let the player explore the story setting; I found the suggestions quite useful. The classmates' feedback really encouraged and inspired me to improve my work.

學生程式編輯日誌:

Student ID: 405110478 柯瀚凱

5. Lesson(s) learned.
   a. From trial and error
      I learned that when you want to attach a square on another square with a different color, you cannot attach the second one too close to the first one. Otherwise, the second one will overlap the first one. Moreover, I realized that when you are creating a scene to attach on a cube, the size of the scene should be about the same as the cube. If not, when you are looking at your project in the AR mode, you'll find it's difficult to see the whole scene through your 3c devices.

   b. From team member(s)
      (Detail)

   c. From other team(s)
      I learned that there are other ways of coding to create an attractive and interesting interaction. For instance, by adding physics on two objects and using the code collision, you can create a scene where an object is being driven away by another. Besides, the skills of attaching the main camera on a person also creates great effects which I can learn from. Moreover, I learned that by adding a 360 photo to a scene makes the background more vivid and realistic. Last, by creating choices for players to select, and make each choices lead to different endings will make players feel more engaged in your game.

6. Most impressive conversation/ event.
   I think the most impressive event I experienced in this programming course is the final project display. Every groups had a chance to show their final project to others and exchange ideas and comments. I think this is a great way of sharing one's work with other classmates, which is better than just going on stage and giving a presentation. I am thankful for Professor giving us such a precious opportunity to have a closer look at other works. Besides, the project that I am most impressive of is designed by Emily. In her project, she designed many amazing scenes and playful interactions. Players can imagine themselves being a detective, finding clues, and trying to solve problems. I think her project is the outstanding and I can learn a lot from her.

7. Final Project URL: https://cospac.es/ajAP (Abridge Prototype)

授課心得感想

基於前學期視覺化程式課程的實施，發現運用在非理工背景的大學生課程中，可以引起程式設計學習動機，減低認知負荷，更提高學生創造力與邏輯思考能力；因此在劉紀雯教授的指導之下，共同設計出結合程式設計與貼近英文系同學專業的故事文本改編的課程內容。

根據先前研究指出，對於程式學習初學者，使用視覺化程式語言，可以增加對於程式學習的自我效能，提高日後學習程式語言的機率。同時，有鑑於 AR/VR 的應用日益普及，與其當一位現有商品的消費者，我們更需要培養學生成為設計開發者。因此本課程使用結合 AR/VR 功能的視覺化 3D 程式語言平台- CoSpaces Edu.。課程設計為符合初學者需求，從基礎介紹開始，包含甚麼是運算思維，接著讓同學逐步體驗 Hour of code，Scratch，最後是 CoSpaces Edu. 課程中邀請了三位校外講師進行了一場演講與兩場程式設計工作坊，包含交大講師梁世佑教授講授動漫、遊戲與學習、花蓮縣網與創新教學 100 得獎人呂奎漢老師教授 Scratch；以及 Google 華人講師培訓中心的講師介紹該機構與 XR 的教學應用。

期中報告請同學提期末專題計畫書，可以選擇 2-4 人小組，也可以個人製作。計劃書必須包含要改編的文本，情節篩選，互動設計流程圖，以及分鏡腳本。這些練習幫助同學在計畫執行時提供很好的鷹架完成作品。

期末專題成果分享以海報展形式在課堂內進行，如此設計是希望讓同儕能有互動討論，不讓同儕互評流於形式。報告期間，每組同學在自己的座位上除了用簡報說明專題的主題與特色，更重要是展示成果，讓與會者體驗。有別於到台上的分享，以海報展示的方式進行的成果發表，同儕之間互動更多，報告人也能多次練習口語表達，面對不同問題也能一一回應，而觀察者更能進距離觀察與體驗到成品細節，真的達到互相觀摩與學習。這種方式也能夠為同學參與研討會海報展做最佳練習。另外，班上有四位同學選擇以本課程作為專題，依照系上規定，必須要上台報告與書面報告，因此期末的第二階段是邀請這四位同學分別上台發表作品，同樣請全班給予評分與回饋，以及開放討論。最後，也要求全班必須完成身為程式設計者必須要做的程式編輯日誌，這個步驟很重要，儘管職場上不見得會被要求，但是養成習慣後，有助於大型專案整合，也是幫助自己自我監控的後設認知策略。

學期最後，發放線上問卷(認知負荷、動機，與態度)與質性繪圖問卷(就我而言，甚麼是程式設計?)，給同學約計 25-30 分鐘時間完成填寫。全班 26 位同學，線上問卷填答人數 10 人，有效 10 份；繪圖問卷填答人數 22 人，有效 22 份。

從線上問卷統計結果顯示，在**認知負荷**方面，同學普遍認為視覺化程式設計困難度適中(M = 3.6/ 5; 3.8/5)，壓力適中但相對於困難度較少一些(M = 2.8/ 5; 2.7/5)。證明課程設計不會過於簡單，也不會造成學生太多認知負荷壓力。在**學習動機**方面，平均 3.7 以上，得分最高題項分別是 "我相信視覺化程式設計工具可以幫助人如果撰寫程式"(M = 4.4/ 5)，以及 "我喜歡這些視覺化程式設計活動"(M = 4.4/ 5)，另外，從題項"視覺化程式設計活動引起我的注意"(M = 4.0/ 5)、"我對視覺化程式設計產生好奇(M = 4.3/ 5)"、"我在使用視覺化程式設計時覺得很開心(M = 4.0/ 5)"，顯示同學對教材的選擇上給予相當正面的評價。在**學習態度**方面，平均 3.5 以上，得分最高題項為 "整體而言我對這門課的活動設計'"(M = 4.6/ 5)。值得注意

的是，同學在 "我認為 CoSpaces Edu. 平台很簡單學習"平均得分為 3.9，"我可以在短時間內學會 CoSpaces Edu." 平均得分為 3.3，但是在 "我覺得 CoSpaces Edu. 太困難"平均得分 2.8，"我需要有高手在旁協助"平均得分 3.5，反向題"CoSpaces Edu. 並**沒有**引起我在程式編輯的興趣"平均得分 2.1、"儘管我做了這些活動,程式編輯還是不吸引我"平均得分 2.2、"未來我拒絕再接觸程式設計"平均得分 2.7，顯示同學們認為 CoSpaces Edu. 平台並不簡單，不是短時間可以學起來，但是相對而言，難度適中，而且活動後並不會因此減低興趣，相反地，滿意度相當高。

另外，從質性繪圖問卷來看，多數同學描繪出自己在程式設計的歷程，從一開始雜亂頭緒，當中歷經問題挫折，到最後完成。部分同學闡釋了程式設計邏輯推演的歷程，如同跟電腦溝通，指導電腦為自己執行任務，像精準安排火車軌道動線，或是如同上帝般在背後操控一切。部分同學描繪出成果完成的喜悅，以及分享時的成就感，認為透過邏輯思考完成程式編輯很有趣。

整體而言，這不是一門輕鬆的課程，作業要求多，課堂實作也多，加上這門課開設給大三到碩士級學生，多數大四生有英語舞台劇期末公演，所以時程緊湊。然而，大多數同學在每一項作業都呈現得相當完整。期中跟期末都相當投入，期中的專題計畫書很多組別的設計很龐大，企圖心很強；但是因為這學期周四課程碰到兩次放假，又有兩次演講，開始正式練習 CoSpaces Edu 已經是期中報告之後，同學們一度感到困惑，我也擔心是否能夠完成。但是在幾次的介面設計與程式編輯練習，以及大量範例觀摩後，同學慢慢找到方向，大多數都可以依照期中計畫書如期且完整地完成作品。同學們期末作品在完整度、複雜度、互動性、教育性，與創意上都很令人驚艷，從同學的反思日誌也可以看到，每位同學都從其他同學的作品得到正面的影響，也能夠互相學習。因此，儘管辛苦，相信收穫很大。如同學者所言，高階遊戲玩家所享受到的是"hard fun"。

將程式設計結合文本改編是很好的組合，一方面暨結合專業，又透過不同媒體，用作中學的(learn by doing)與從設計中學 (learn by designing)達到設計思考 (design thinking)等教學法的方式學習專業，具備五感學習，與不斷地自我監控、反思的後設認知(meta cognition)學習環境，相信同學在實作後對文本知識內容應該已經內化。而且是在類似遊戲化學習的環境當中，將知識內化吸收之下，同時建構邏輯思考等跨領域知識與能力。

下學期課程可以針對需要大量背誦的閱讀課程，進行與程式設計課程結合，讓學習可以輕鬆有趣，並得到正面成效，真正達到有意義的學習 (meaningful learning)。

問卷資料蒐集與分析: 量化回饋

一 認知負荷		Mean
1.	When I am working the visual programming project using CoSpaces Edu., I have to investing more mental effort to understand the overall editing environment (without coding).	3.8
2	When I working the visual programming project using CoSpaces Edu., I have to invest much mental effort to figure out the coding exercise.	3.6
3	When I working the visual programming project using CoSpaces Edu., overall, the editing exercise gives me a lot of pressure.	2.8
4	When I working the visual programming project using CoSpaces Edu., the coding exercises gives me a lot of pressure.	2.7
二 學習動機		Mean
1.	The visual programming assignments draw my attention.	4.0
2.	I am curious about the visual programming activities.	4.3
3.	The visual programming activities are novel to me.	3.7
4.	I pay my attention to work on the visual programming activities continuously.	4.0
5.	I believe that the visual programming activities can help users to learn how to code.	4.4
6.	I believe that coding blocks is helpful for understanding how to code more.	4.2
7.	I am confident in the benefits of visual programming activities on coding.	4.0
8.	I like these visual programming activities.	4.4
9.	I am dissatisfied with the experiences of the visual programming activities*	2.7
10.	I feel happy when I am working on the visual programming activities.	4.0
三 態度		Mean
1.	I think the CoSpaces Edu. platfrom is easy to use.	3.9
2.	I can learn to use the CoSpaces Edu. platform in a short time.	3.3
3.	The CoSpaces Edu. platfrom is difficult to use for me. *	2.8
4.	I need an experienced person nearby when I am using the CoSpaces Edu. platform.*	3.5
5.	I think visual programming activities are helpful for my coding skills.	3.9
6.	The visual programming activities can help me to computational (logical) thinking more clearly.	4.1
7.	The visual programming activities are helpful for generating more ideas.	4.3
8.	The visual programming activities is an innovative learning method.	4.3
9.	After the visual programming activities, I want to understand coding in more depth.	4.1
10.	After the visual programming activities, I am more interested in coding.	4.2
11.	I hope to read more information regarding coding.	4.2
12.	The visual programming activities did not foster my interests in coding.*	2.1
13.	The issues regarding coding were not attractive for me even I have done	2.2

|	the visual programming assignments. *	
14.	I hope to have more opportunities to learn how to code.	4.2
15.	I am inclined to seek coding in the future.*	2.7
16.	I expect that there are more applications of coding.	4.2
17.	I have more intention to code.	4.1
18.	Overall, how happy are you with your coding experience in this class so far?	4.6

N = 10

＊ 反向題

Drawing feedback 質性回饋

Date: June 20th Dept. English Department Grade level: 4 Gender: ☐ Male ☑ Female ☐ Neutral_____ Age: 22

Any programming background ☑ none ☐ basic of _____ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.
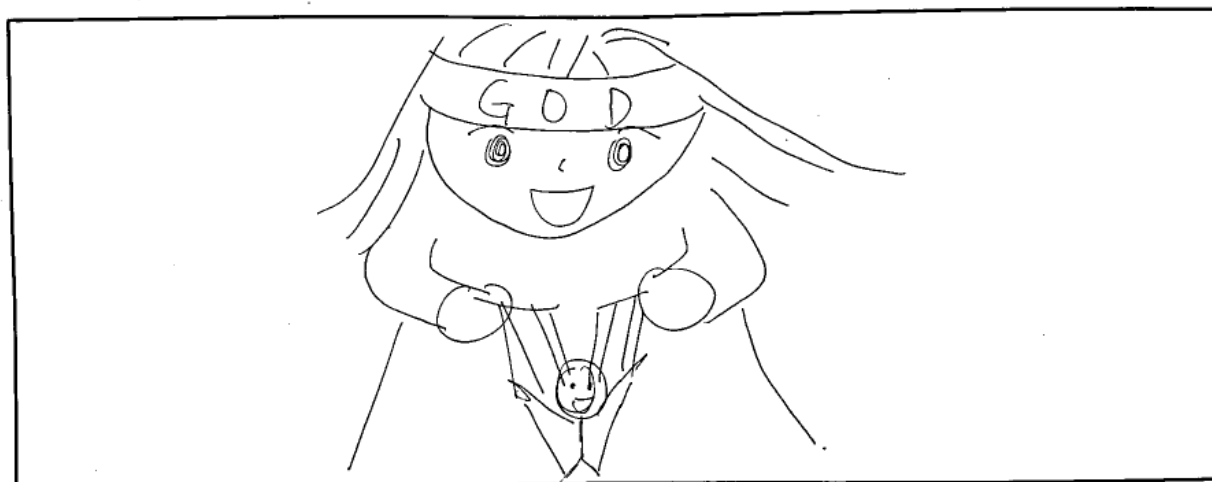
Please provide a short description about your drawing:

Coding ~~is like~~ make me feel like a God who manipulates everything in the world!

Thank you for participating in this study

Would you be willing to further talk about your drawing in person? ☐ Yes ☑ No

Date: 6/20　Dept. English　Grade level: 3　Gender: ☐ Male ☑ Female ☐ Neutral_____　Age: 21

Any programming background ☑ none ☑ basic of _cospaces_____ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.
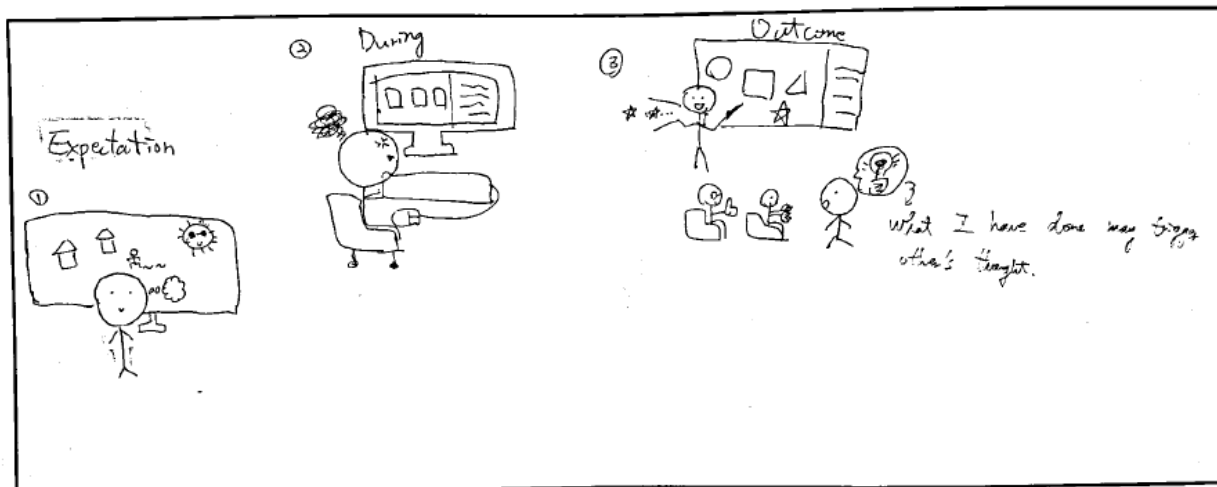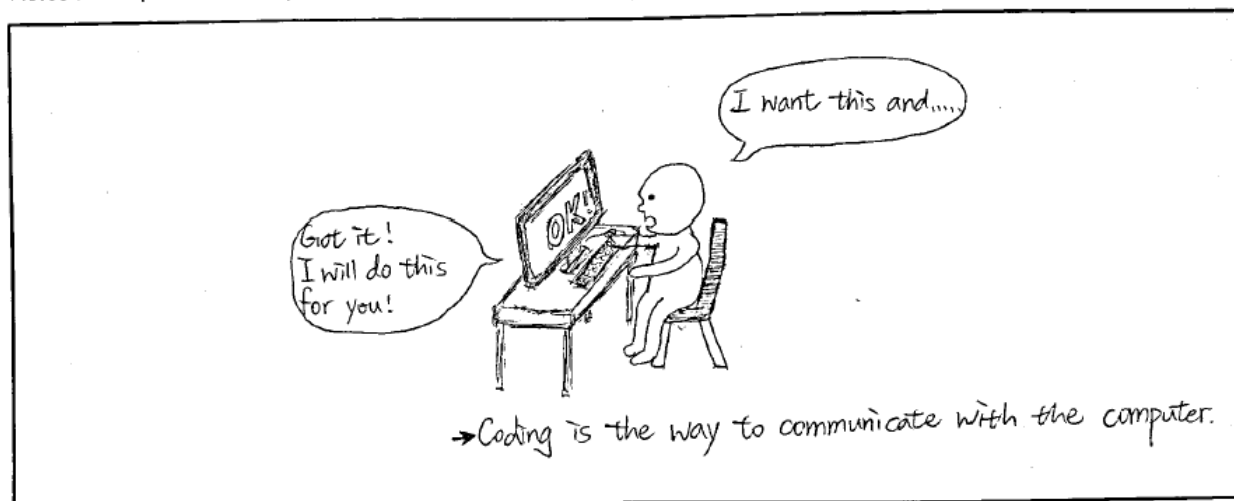

Please provide a short description about your drawing:

Three stages of programming: At first I have vivid imagination of the final product, then I encounter a lot of

Thank you for participating in this study difficulties, finally I successfully produce an project and everybody loves it.

Would you be willing to further talk about your drawing in person? ☑ Yes ☐ No

Date: 2019, 6, 20　Dept. English Dept.　Grade level: Junior　Gender: ☐ Male ☒ Female ☐ Neutral_____　Age: 21

Any programming background ☒ none ☐ basic of _____ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.

Please provide a short description about your drawing:

Coding is the way to communicate with the computer and have it carry out your order.
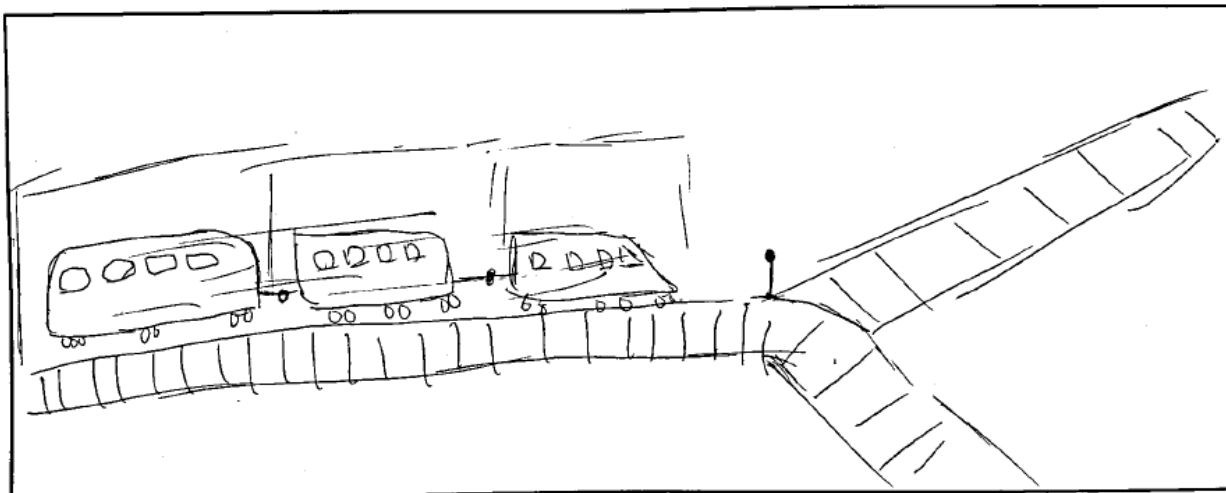
Thank you for participating in this study

Would you be willing to further talk about your drawing in person? ☐ Yes ☒ No

Date: 2019/6/20　Dept. 英文四　Grade level:　Gender: ☑ Male ☐ Female ☐ Neutral_____　Age: 22

Any programming background ☐ none ☑ basic of _Scratch._ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.

Please provide a short description about your drawing:

It's like a sophisticated designed train rack, it needs to be perfectly designed to make this wonderful things works.
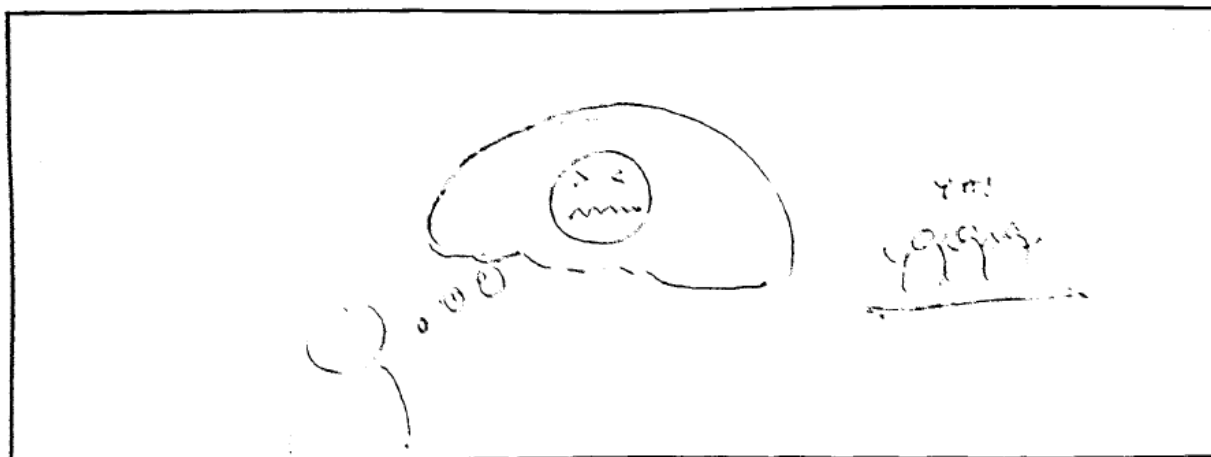
Thank you for participating in this study

Would you be willing to further talk about your drawing in person? ☑ Yes ☐ No

Date: 6/20　Dept. English　Grade level: 4　Gender: ☐ Male ☑ Female ☐ Neutral_____　Age: 21

Any programming background ☑ none ☐ basic of _____ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.

Please provide a short description about your drawing:

confusing & annoying but my classmate will have an amazing time.
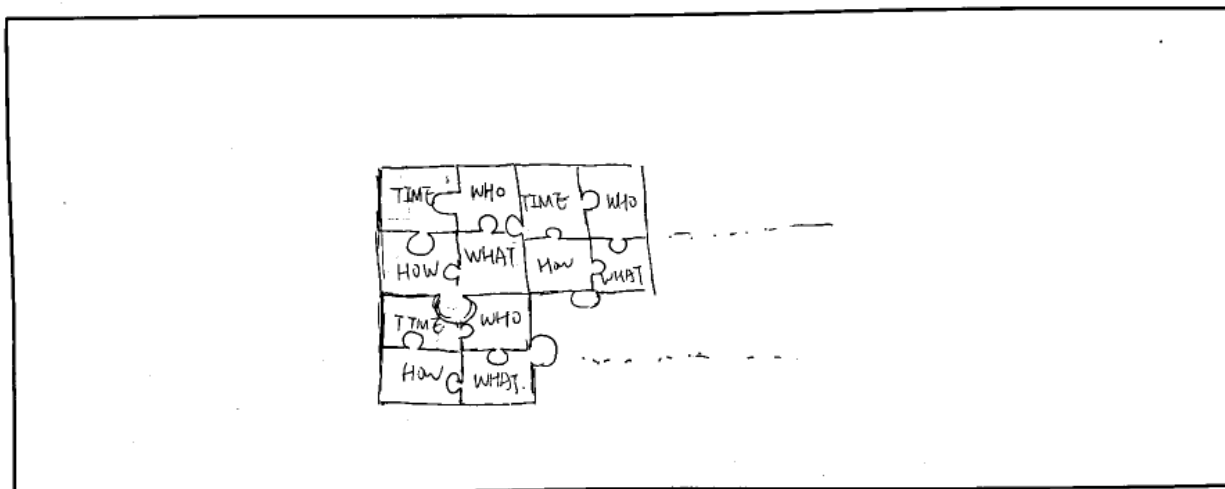
Thank you for participating in this study

Would you be willing to further talk about your drawing in person? ☐ Yes ☑ No

Date: 6/20   Dept. Eng   Grade level: Senior   Gender: ☑ Male ☐ Female ☐ Neutral_____   Age: _____

Any programming background ☑ none ☐ basic of _____ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.

Please provide a short description about your drawing:

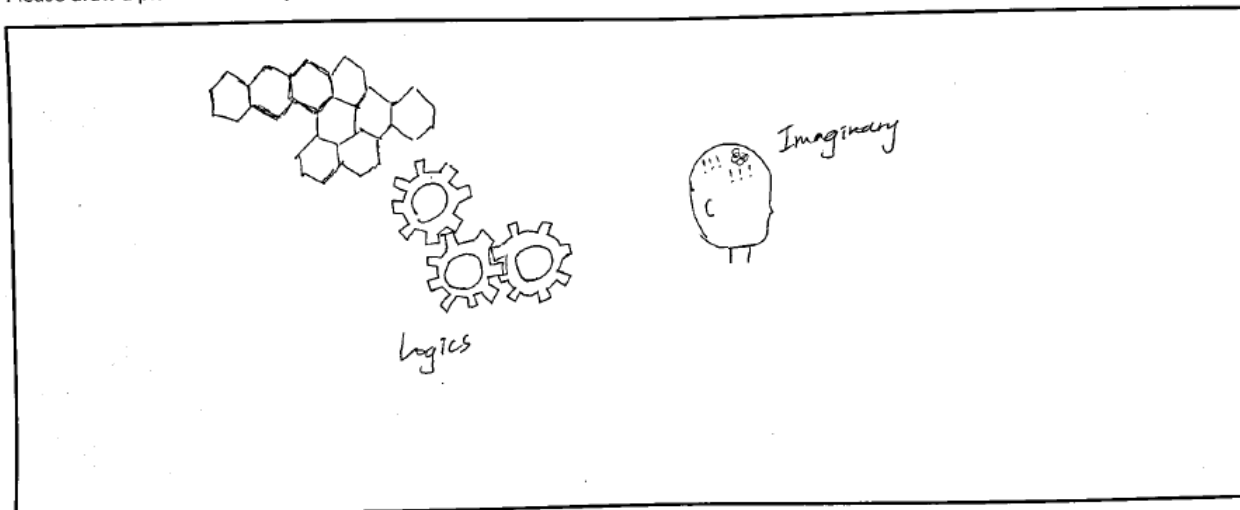Coding is a huge puzzle that every piece ITS so important and will Influence each other.

Thank you for participating in this study

Would you be willing to further talk about your drawing in person? ☐ Yes ☑ No

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Date: 6/20   Dept. Eng   Grade level: Gender: ☐ Male ☑ Female ☐ Neutral_____   Age: 22

Any programming background ☐ none ☑ basic of Html _____ ☐ mastery in _____

Please draw a picture of what you think coding is, or what is it like when you are coding.

Logics

Imaginary

Please provide a short description about your drawing:

Coding requires good logics and organization skills. Everything is related to the others.

Thank you for participating in this study

Would you be willing to further talk about your drawing in person? ☐ Yes ☑ No