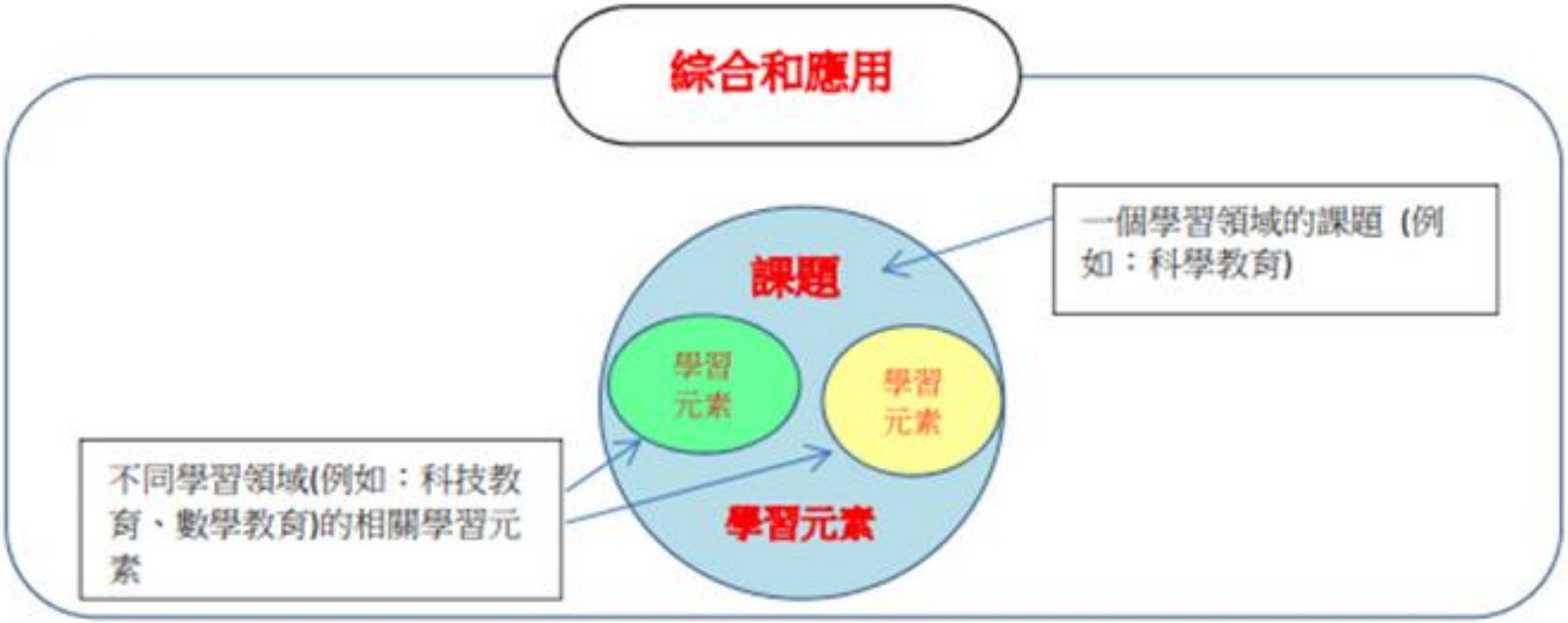
香港培正中學
校本STEAM教育

「專業分享・杏壇閃亮」

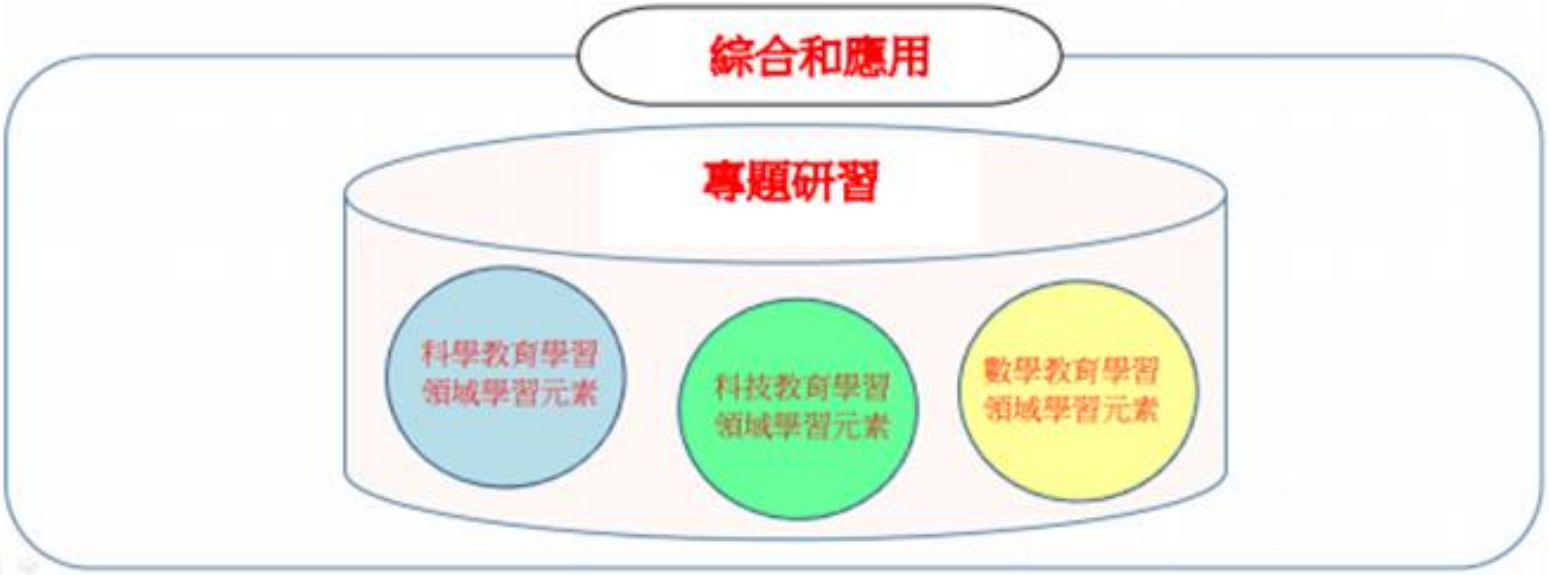
教育薈萃分享

黃子榮 副校長、化學科主任
楊偉樂 助理校長、科學科主任

香港的 STEAM 教育模式



香港的 STEAM 教育模式



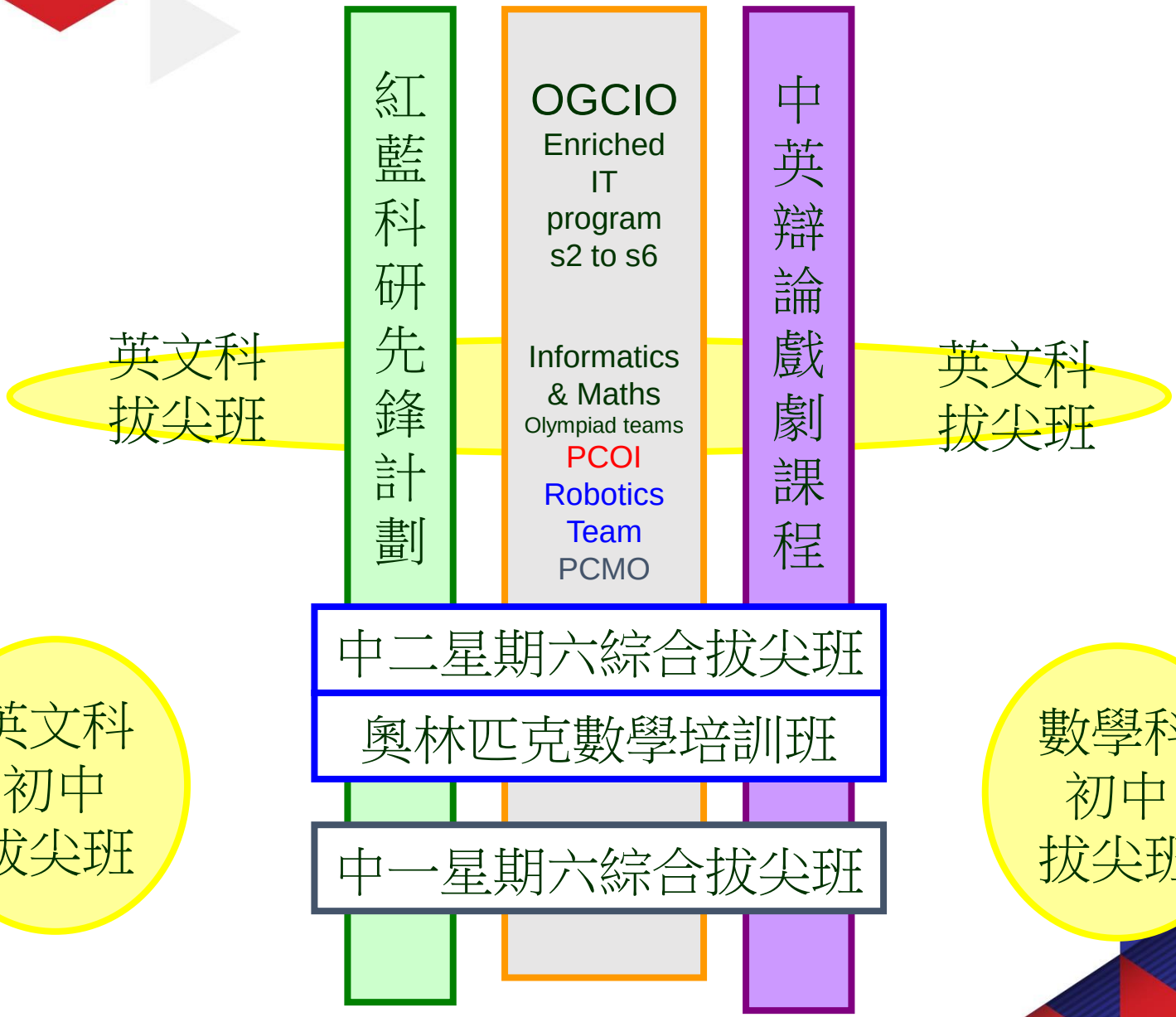
校本STEAM教育的前身

- 星期六拔尖課程 (2007年)

星期六
拔尖課程

目的：
溝通能力
協作能力
解難能力
創造力
資訊素養
批准性思考
自主學習
發掘潛能

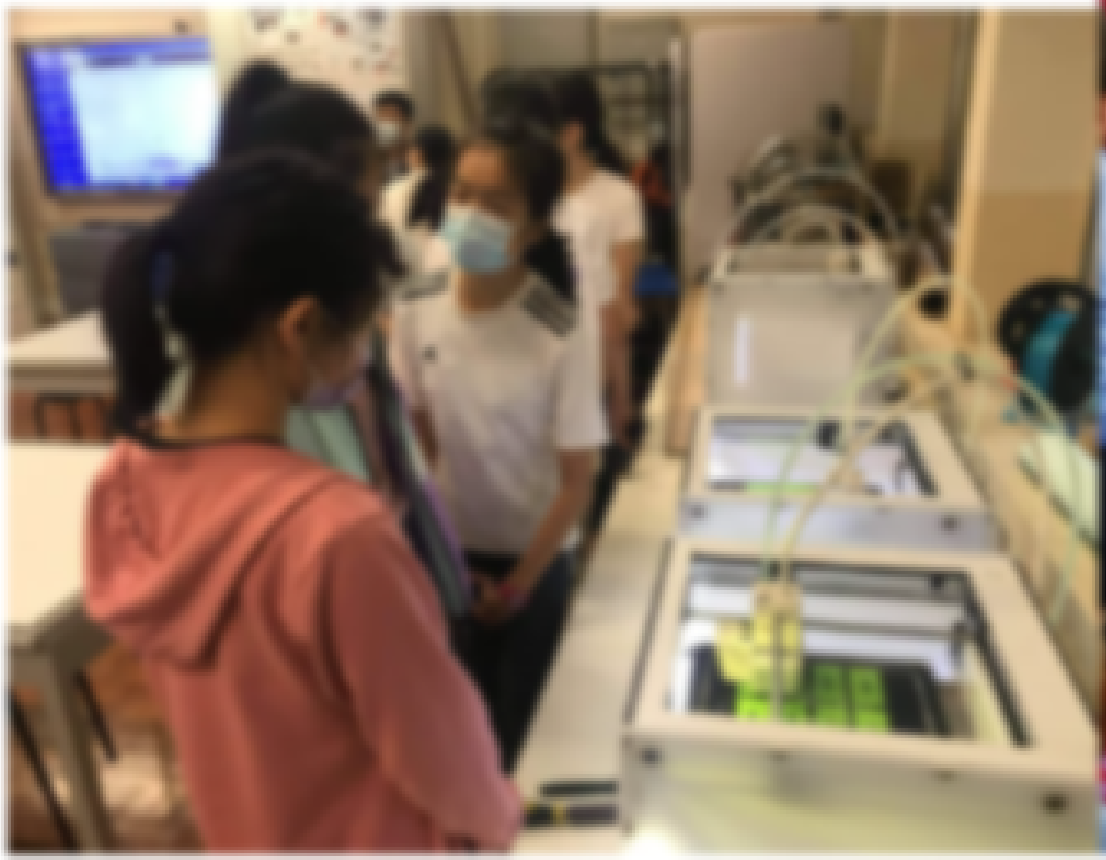
日期 (星期六上午)	中二拔尖班 **(08:45 – 10:45)**	中一拔尖班 **(11:00 – 13:00)**	備註
(1) 2020 Oct 3	Self-planning for elites 尹重儀老師 **F302**	Elite training overview 梁偉雄、李灝峰老師 **F701**	歡迎中一家長陪同子女出席第一課節
(2) 2020 Oct 10	科學工作坊 楊偉樂老師	科學工作坊 楊偉樂老師	中一、二上課地點：E405
(3) 2020 Oct 17	科學工作坊 楊偉樂老師	科學工作坊 楊偉樂老師	中一、二上課地點：E405
(4) 2020 Oct 24	歷史縱橫 張嘉亮老師	數學建模與研究 黃偉豪、王敏暘老師	中一上課地點：E310
(5) 2020 Oct 31	歷史縱橫 張嘉亮老師	數學建模與研究 黃偉豪、王敏暘老師	中一上課地點：E310
(6) 2020 Nov 7	Problem Solving 蔣肇麟老師	Problem Solving 蔣肇麟老師	
(7) 2020 Nov 14	採訪工作坊 段麗珊老師	書法初探 梁柏鍵老師	
(8) 2020 Nov 28	採訪工作坊 段麗珊老師	書法初探 梁柏鍵老師	
(9) 2020 Dec 5	採訪工作坊：訪問武館學中文 段麗珊老師	機械人工作坊 陳永鏗老師	中一上課地點：E311
(10) 2020 Dec 12	經濟解釋 譚嘉銘老師	機械人工作坊 陳永鏗老師	中一上課地點：E311
(11) 2020 Dec 19	經濟考察 譚嘉銘老師	機械人工作坊 陳永鏗老師	中一上課地點：E311
(12) 2021 Jan 30	海洋公園之旅 楊偉樂老師	海洋公園之旅 楊偉樂老師	
(13) 2021 Feb 6	3D Printing工作坊 陳永鏗老師	海下灣海洋教育之旅 楊偉樂老師	中二上課地點：E311
(14) 2021 Mar 6	迪士尼科學之旅 楊偉樂老師	螢火蟲生態館之旅 黃子榮老師	
(15) 2021 Mar 13	Poetry Writing 蔣肇麟老師	Public speaking 蔣肇麟老師	
(16) 2021 Mar 20	Drama in Education 何力高老師	Public speaking 蔣肇麟老師	
(17) 2021 Apr 10	Drama in Education 何力高老師	採訪工作坊 段麗珊老師	
(18) 2021 Apr 17	香港地理考察 譚嘉銘老師	採訪工作坊 段麗珊老師	
(19) 2021 Apr 24	電腦奧林匹克競賽 鍾偉東老師	採訪工作坊：訪問武館學中文 段麗珊老師	中二上課地點：E310
(20) 2021 May 8	GTD的時間管理理論 李灝峰老師	香港地理考察 何卓蕓老師	中二上課地點：E310


紅藍科研先鋒計劃
OGCIO
Enriched
IT
program
s2 to s6
Informatics
& Maths
Olympiad teams
PCOI
Robotics
Team
PCMO
中英辯論戲劇課程
英文科
拔尖班
英文科
拔尖班
中二星期六綜合拔尖班
奧林匹克數學培訓班
中一星期六綜合拔尖班
英文科
初中
拔尖班
數學科
初中
拔尖班

星期六拔尖課程 (Science)

星期六拔尖課程 (Technology)

星期六拔尖課程 (Engineering)



星期六拔尖課程 (Arts)

- 個人成長

星期六拔尖課程 (Arts)

- 中國文化

星期六拔尖課程 (Arts)

- 書法

星期六拔尖課程 (Arts)

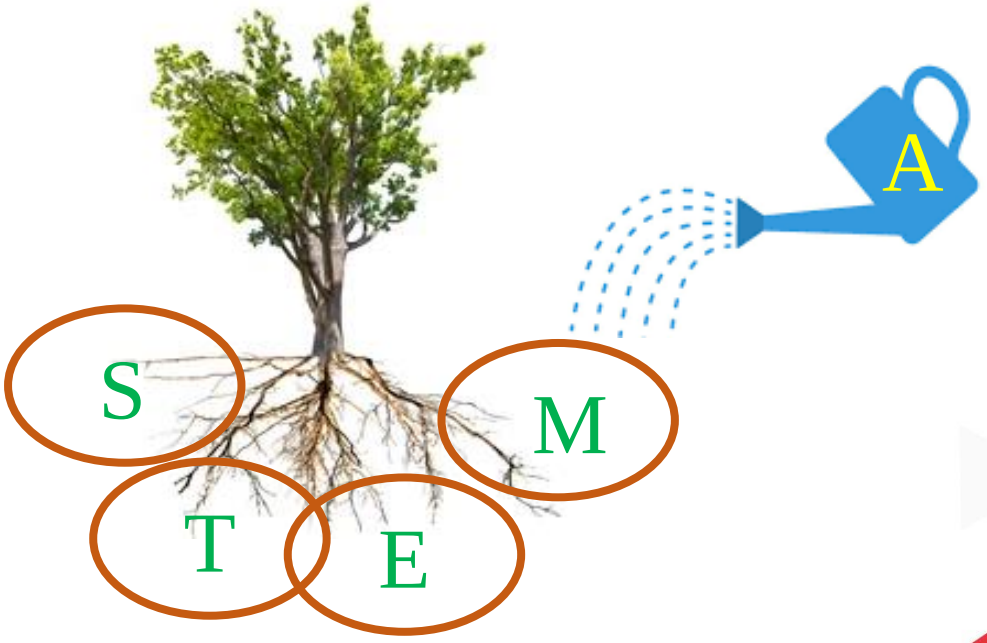
- 戲劇

星期六拔尖課程 (Mathematics)

校本STEAM教育的前身

- 星期六拔尖課程
- 中小學數學及科學培訓

校本STEAM教育



Science

- 橫向：

1. 教材套（STEAM for all）
2. 每學期一個 STEAM Project

- 縱向：

1. 中二科研增潤課程
   （project based learning、literature review）
2. 紅藍科研先鋒
   ① 科學課後研習活動
   ② 奧林匹克課程
   ③ 科研比賽
   ④ 科研考察活動
3. 學習成果展示

紅藍科研先鋒

中二科研增潤課程

一班兩組 → 三班四組 → 二班三組

Pui Ching Middle School

F2 Science Research Class

How to write scientific literature review?

Name: _____( )

What is scientific literature review?

A scientific literature review is a ***critical account of what has been published on a topic by accredited researchers***.

A literature review is a survey of scholarly sources on a specific topic. It provides ***an overview of current knowledge***, allowing you to identify relevant theories, methods, and gaps in the existing research.

It is an essential part of your research process ***to show what you know about a topic***.

The review may be:
- a stand-alone assignment;
- an introduction to an essay, report, thesis…..etc;
- a part of the proposal of research or grant.

Literature review should NOT be:
- a summary of articles;
- personal opinions;
- a chronological history of events;
- a report.

A scientific literature review should contain:
- clear statement of the topic you choose / interested / going to study;
- provide a numbers of search for relevant literatures / articles on the topic;
- critical analysis on the topic
- provide possible further research

Searching of literatures
1. Online resources (google scholar / books) [Note]
2. Library (universities / official scientific association websites e.g. chemistry review, royal society of chemistry…..

Note: Literature Searches
Using Google Scholar on searching previous reviews on specific topics can provide information on any new findings. The following points should be considered when doing the searches:
(i) The author and any possible conflicting interests
(ii) The purpose of the article
(iii) The hypothesis of author and whether it is supported
(iv) How the literature will contribute to your topic
(v) Whether opinions expressed by the author(s) are correct

Searching Techniques

References

DOI (digital object identifier)

http://www.doi.org/

Name of journal

Volume, year of publication

Cho N, et al., J Altern Complement Integr Med 2019: S1003
DOI: 10.24966/ACIM-7562/S1003

HERALD

HSOA Journal of
Alternative, Complementary & Integrative Medicine

Research Article | Special Issue

Title

Panax notoginseng Enhances Wound Healing Efficiency and Quality on Diabetic Rats

Authors' name

Natelie Cho, Cheuk Yan Lee, Kwan Ming Lee, Wai Yin Li, Hiu Yee Kwan and Kevin Kin Man Yue*

Authors' affiliations

School of Chinese Medicine, Hong Kong Baptist University, Hong Kong, China

Summary

Diabetic patients are known to have impaired wound healing and a higher risk of diabetic foot ulcer, which may result in amputation. However, drug dressing for promoting wound healing is rarely found. Most commercial dressings can only address the basic needs for diabetes and usually requires a much longer healing time than for non-diabetes. Sanqi, *Notoginseng Radix et Rhizoma*, is traditional Chinese medicine that shown the effect on treating hemorrhage can be a solution for diabetic wound.

Aims/hypothesis: Sanqi, Latin Pharmaceutical Name is *Notoginseng Radix et Rhizoma*, a traditional Chinese medicine that shown the effect on treating hemorrhage, may play a role in efficient wound healing in diabetic subjects. We tested whether Sanqi contribute to the healing effect of diabetic wound healing.

Methods: In this study, the effects of Sanqi on wound healing in both diabetic and non-diabetic animals were investigated. In the animal model, SD rats (male: 200g, 2-3 months old) were induced diabetes by intraperitoneal injection, Streptozotocin (STZ) (50mg/kg/day) or sham control (0.1M sodium citrate, pH 4.5) for 2 continuous days. By excising the dorsal skin portion (2cmx2cm), full thickness wounds were created in rats. In each rat, the wound was treated with (a) alginate dressing, and (b) Sanqi alginate dressing. Following the treatment, digital images of the wound site were made twice a week for 3 weeks. HPLC was conducted to indicate the majority active components present in Sanqi, which may participate in the wound-healing event. And the antimicrobial ability of Sanqi in alginate dressing was evaluated.

Results: In both diabetic and non-diabetic animals, higher wound healing rate was found under the treatment of *Panax notoginseng* when comparing with both positive and negative controls.

Conclusion/interpretation: Our results, therefore, suggested *Panax notoginseng* might contribute in promoting diabetic wound healing efficiency.

Keywords: Diabetes; Herbal therapy; *Notoginseng Radix et Rhizoma*; Sanqi; Wound Healing

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Citation: Cho N, Lee CY, Lee KM, Li WY, Kwan HY, et al., (2019) *Panax notoginseng* Enhances Wound Healing Efficiency and Quality on Diabetic Rats. J Altern Complement Integr Med: S1003.

Details of when the manuscript was submitted and accepted

Received: March 20, 2019; **Accepted:** April 09, 2019; **Published:** April 16, 2019

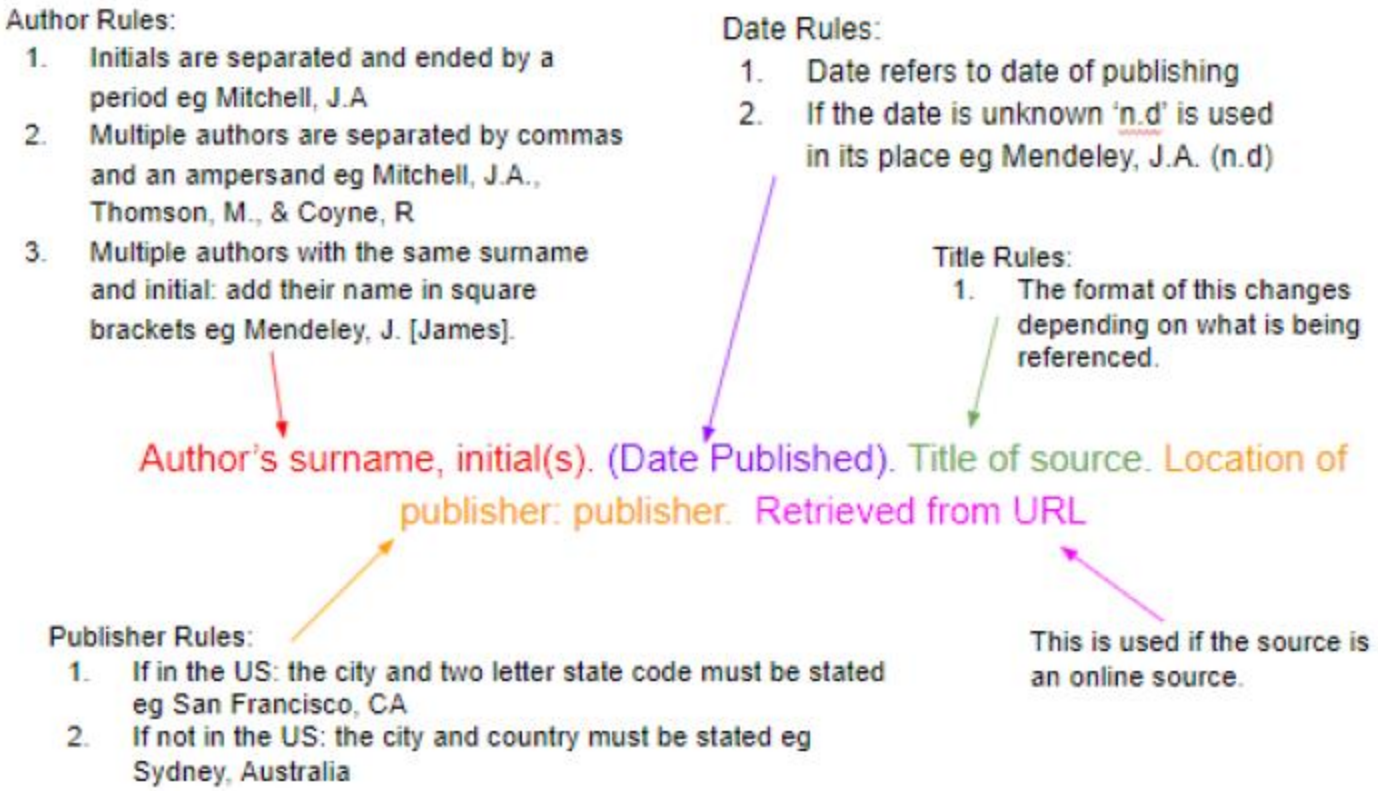
Clinically, the aim of the diabetic ulcers management is to provide a moist and clean environment that favors the wound healing [3,4]. It requires offloading the wound by using daily saline or similar dressings to provide a moist wound environment. However, most clinical dressings can only address the basic needs for wound healing while diabetic wounds usually require a longer healing time than for non-diabetes. The healing of wounds in diabetic subject is generally delayed due to peripheral arterial insufficiency, high blood glucose and continuous inflammatory response [5]. Prolonged wound healing causes higher risk of presenting osteomyelitis or cellulitis that may result in amputation.

Sanqi, *Notoginseng Radix et Rhizoma*, is traditional Chinese medicine that shown the effect on treating hemorrhage. It officially joined the Chinese materia medica during the 16th century [6,7]. Due to its ability to treat all blood disorders, it is the main ingredient of the well-known patent medicine Yunnan Baiyao, which was first marketed in 1902 and remains a favorite emergency remedy for acute bleeding

APA Format Citation Guide

This is a complete guide to APA (American Psychological Association) in-text and reference list citations. This easy-to-use, comprehensive guide makes citing any source easy. Check out our other citation guides on MLA 8 and Harvard referencing.

Core Components of an APA Reference:



The Effect of Augmented Fork

2A 李道生

Abstract

An augmented fork is a fork which contains sensors and actuators that provide real-time vibrotactile feedback on eating rate, when the user eats too fast, users will feel a gentle vibration in the handle of the fork. (Roel C.J. Hermans, PhD 2016, a). Studies show people who used the augmented forks (test group) tended to eat slower than the people from the controlled group. Also, people from the test group lost their weight during the experiment period (Roel C.J. Hermans 2019). This proves that augmented fork is a viable tool to reduce eating rate in naturalistic settings and it could support long-term weight loss strategies, despite one of the studies showing that lowering the rate of eating did not lead to a significant reduction in the amount of food consumed (Roel C.J. Hermans 2016, b).

Introduction

Can people lose their weight by using the augmented fork? Can
just a rumor? The worldwide prevalence of overweight and obesity ar
studies had shown that people who eat quickly tend to consume mor
body mass index (Hideaki Toyoshima 2006), whereas people who ea
Rolls 2007). Because of these studies, augmented forks was inventec
can eat less and keep fit. The reason I choose this topic is because I a
this 'method' (lower the rate of eating to lose weight) really shows a si
discussing the effect of the augmented fork can directly answer my dou

Video Games and Health Care

2F 黃柏諭

Introduction

Most people think of video games as a entertainment. There is a growing interest, however, of using video games to educate and train people (Durkin, 2010). "Serious games" is a term that has been used to describe video games that have been designed for training and education (Annetta, 2010). The field of medicine has a history of embracing games to engage patients behaviorally to improve their health outcomes. There are reports of case studies using video games with patients who are experiencing diseases or physical disabilities (Krichevets, Sirotkina, Yevsevecheva, & Zeldin, 1994; Szer, 1983). Some of the treatment which video games are used will be discussed in this review.

Treatment for Anxiety

Relax to Win, which is a biofeedbackbased 2D game for the treatment of children with general anxiety problems, was proposed by Sharry et al., (2003). This game contains two on-screen dragons, the faster they race, the more players relax, as measured by their galvanic skin response. This incentive to learn relaxation techniques can be integrated into a wider treatment format. Video games also be realistic enough to generate successful graded exposure trials against phobias of spiders (Bouchard et al., 2006) and heights or enclosed spaces (Robillard et al., 2003). Virtual reality driving games, or their 2D equivalents can reduce fear of driving after an accident (Walshe et al., 2003). Graded exposure by virtual reality has been used to reduce fear of flying (Rothbaum et al., 2000) and fear of heights (Emmelkamp et al., 2002). However, certain studies indicate that virtual reality treatments may not be as effective as traditional approaches. For example, Dewis et al. (2001) demonstrates that while computer-aided replaces exposure is superior to the control, live graded exposure remains superior to both. Choi et al. (2005) compared a traditional 12-session panic control program to a shortened experimental treatment using virtual exposure, then found that the results of the experimental treatment have fallen signifi cantly behind at six months.

The Effect of Music on Studying Performance

2A Lin Yee Sum Rachel
Pui Ching Middle School

Introduction

Previous studies had shown that there is an effect of music on studying pe
(1975) found that college students performed better on reading comprehensio
rather than listening to preferred music. On the other hand, Schreiber (1988) s
students who listened to background music obtained higher grades than the one
will be discussed in this review.

The Effect of Music and Post-study Relaxa

Etaugh and Ptasnik (1982) conducted a test on 20 female and 20 male unc
of them were asked to study a passage for 10 minutes. Half of them studied the
while the other half of them studied with a preferred music brought by the stud
in each condition were asked to relax in the 10-minute post-study interval, ar
unrelated article to read. After that, students were asked to answer 5 multiple
passage they read at the beginning. At last, students were asked how frequent th

The results showed that, firstly, students who did the task in a quiet envi
those who listened to preferred music. Secondly, students who relaxed in the
better than those who read the unrelated article after studying. Thirdly, student
with music performed significantly better in silent environment than with mus
frequently studied with music performed better with music than in silent enviro
performance was insignificant.

Comparison of Single-Gender and Co-Educational Schooling: A brief Literature Review

2F Kwok Sze Yin
Pui Ching Middle School

Introduction

Most of the historic and elite schools in Hong Kong are single-gender schools. However, co-educational schools have gradually become the mainstream nowadays. The number of co-educational schools has been increasing in recent years. Whether single-gender or co-educational schooling benefits students has been a long-standing debate. Performance in Hong Kong Diploma of Secondary Education Examination (HKDSE) in the past showed that the top-scoring students were mostly from single-gender schools. However, Gumede (2011) suggested that co-educational classes benefit social learning. This review will examine the views of supporters of both schooling methods and discuss whether single-gender schooling or co-educational schooling is better for students.

Advantages of Single-Gender Schooling

Most of the studies by the scholars who supported single-gender education focused on the confidence of students and the differences between boys and girls. Single-gender education improves student's self-esteem and encourages them to assume leadership roles. Sather (2006) stated that it built confidence and helped students concentrate on their work by removing the distractions of dating and other social pursuits in a single-gender school. Therefore, she proposed that girls could feel free to join any activities and take on the leadership roles, while boys were allowed to speak up in class, without the fear of embarrassing themselves in front of girls.

Students tend to have higher achievements in academics when they have lessons that accommodate their different learning needs. According to Dee (2006), boys generally outperformed girls in math and science in the National Assessment of Educational Progress (NAEP) in the US since 3rd grade, while the girls scored higher than the boys in reading. Thus, Viet (2009) suggested that same-gender classrooms could eliminate the gender gap between boys and girls. Warrington and Younger (2005), as cited in Diop (2010), mentioned "the researchers found that the single-sex classroom format was remarkably effective at boosting boys' performance particularly in English and Foreign Languages, as well as improving girls' performance in math and science". Rowe (2000) approved that single-gender education accommodated the specific developmental needs of students, and same-gender classrooms appeared to be a program that raised test scores for both boys and girls.

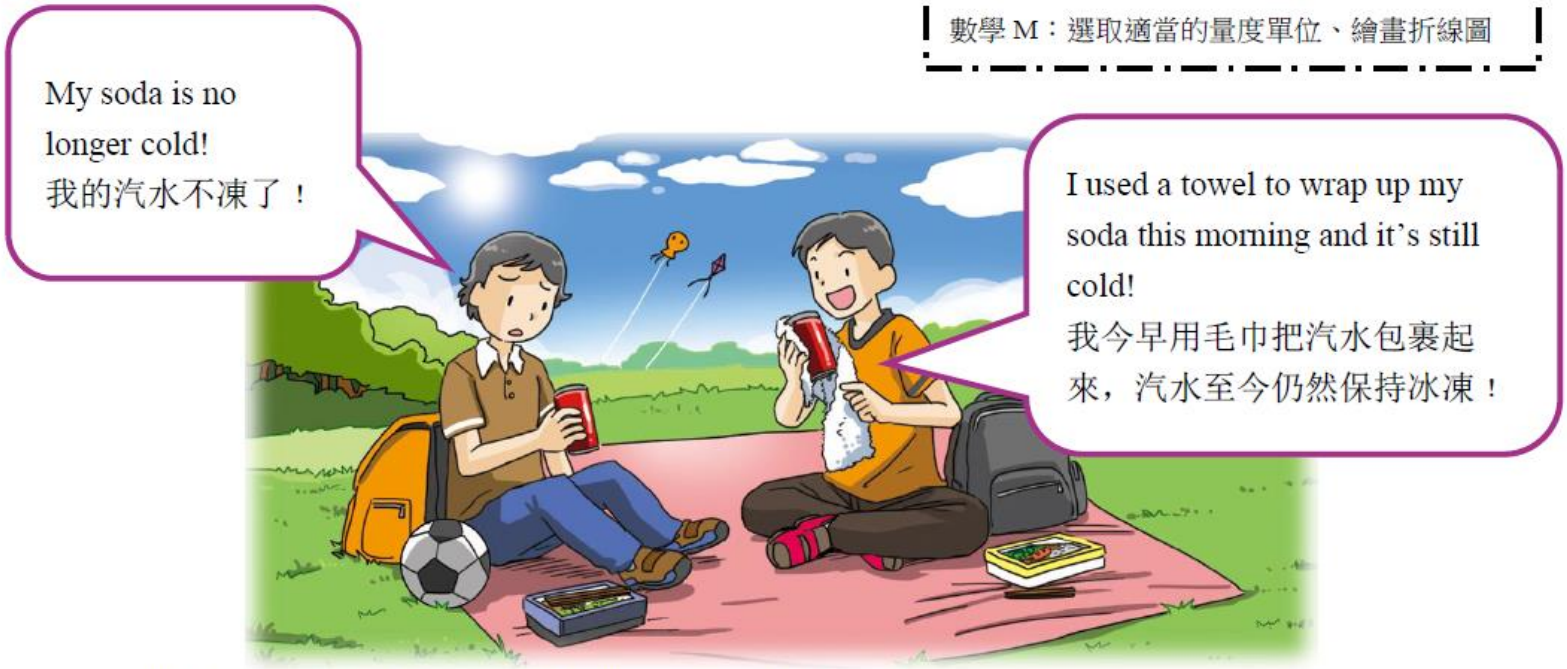
教材套（STEAM for all）

STEAM 科學探究：把飲品保持冰凍

情境：

今天是學校的旅行日，中一級同學一起到郊外野餐，到中午的時候，你的組員有以下對話：

科學 S：公平測試、實驗設計
科技 T：圖像處理
工程 E：物料選取、設計實驗
藝術 A：用家友好概念
數學 M：選取適當的量度單位、繪畫折線圖



充滿好奇心的你決定探究一下汽水保持冰凍的情況。

Observation 觀察 *(What phenomenon can you observe from the above situation?)*

科學S：　公平測試、實驗設計
科技T：　圖像處理
工程E：　物料選取、設計實驗
藝術A：　用家友好概念
數學M：　選取適當的量度單位、繪畫折線圖

Experiment Design 設計實驗

You decide to perform your experiment in the school laboratory，so you select these apparatus and materials for the experiment：
你決定在學校實驗室中進行是次實驗，於是揀選了以下的儀器及材料進行實驗：

Apparatus 儀器：.....

Material 材料：.....

Design an experiment to prove whether your hypothesis is correct. Briefly describe your steps.

設計一個實驗去驗證你的假說是否正確，簡述你的實驗步驟。

.....

.....

Variable table 變數表：

Independent variable 獨立變數 *(What will you change?)* *(你會改變甚麼因素？)*	Dependent variable 因變數 *(What will you compare?)* *(你會比較甚麼？)*	Controlled variables 對照變數 *(What will you keep unchanged?)* *(你會保持甚麼條件不變？)*
		1.
		2.
		3.

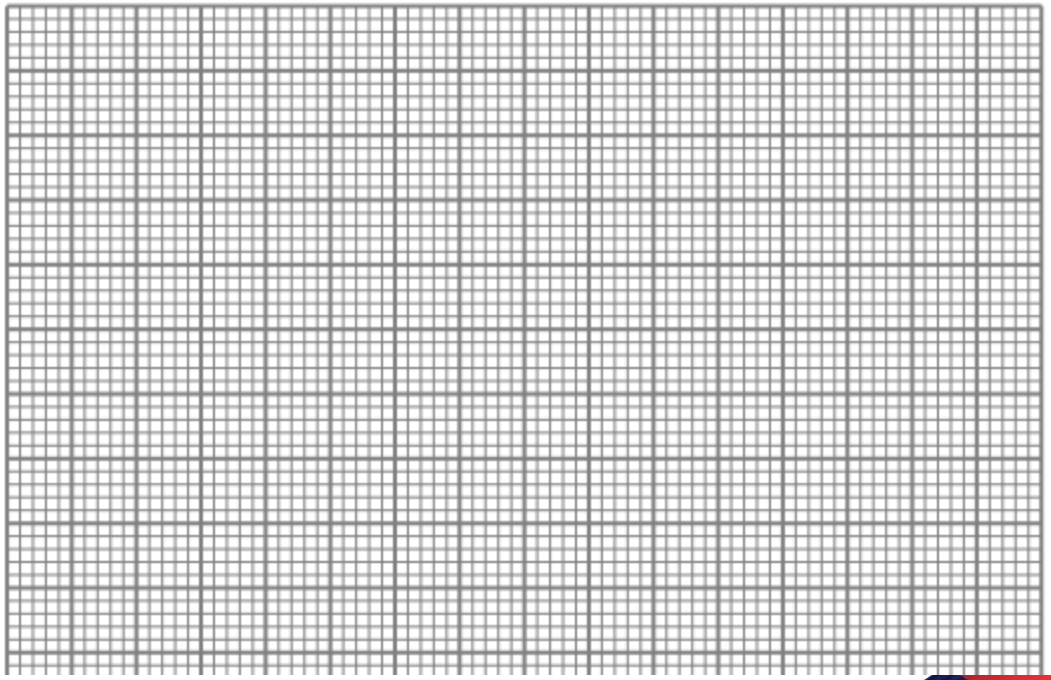
Photo of the experimental setup 實驗裝置的照片：

Vertical section diagram of experimental setup 實驗裝置縱切面圖：

Title 標題：_____

Use a line graph to present your experimental results:
用折線圖(broken line graph)表示你的實驗結果：

Title 標題：_____



根據你的實驗結果，設計一個簡易的保冷裝置。

According to the experimental results, design a user-friendly isothermal device.

找一位同學，來評價你的設計。

Find a peers to comment on your design.

Exothermic and endothermic reactions
放熱(exothermic)及吸熱(endothermic)反應

科學 S：公平測試
科技 T： 吸熱和放熱反應的應用
工程 E： 設計應用裝置
藝術 A： 用家友好概念
數學 M： 記錄及比較數據

情境：

天氣開始轉冷，你班的一位同學 A 正在使用暖包取暖，同學 B 和他有一段對話。

同學 A：天氣真冷，幸好我有帶暖包回校。

同學 B：你有沒有留意，我們生活中很多的反應都是放熱反應，卻很少吸熱反應的例子。

同學 A：好像也是的，但我記得當我將維多 C 時放進水中時，水會變得更冷。

同學 B：是嗎？我沒有留意，會不會是所有物質溶於水都是吸熱反應呢？

同學 A：讓我們一起做實驗研究吧！

Observation 觀察 *(What phenomenon can be observed from student A?)*

(根據 A 同學的描述，他觀察到甚麼現象？)

Hypothesis 假說 *(Propose a hypothesis to explain the observed phenomenon)*

(提出假說來解釋觀察到的現象)

Which fruit battery produces the highest current?

哪一種蔬果電池(fruit battery)產生的電流(current)最大？

科學 S： 公平測試、實驗設計
科技 T： 量度電流
工程 E： 接駁電路
藝術 A： -
數學 M： 記錄及比較數據

Date 日期：_____

情境：

同學 A 和同學 B 正在為更換課室冷氣搖控掣的電池而煩惱。

同學 A：沒有電池，我們便不能開啟冷氣了。

同學 B：我聽聞可利用不同的金屬片和水果便可產生電能，有沒有興趣試試？

同學 A：可以一試呀，但我們要先做實驗找找如何才能產生最多的電能。

同學 B：讓我們一起做實驗研究吧！

Observation 觀察 *(What phenomenon can be observed from the student B?)*

(根據同學 B 的描述，他觀察到甚麼現象？)

Hypothesis 假說 *(Propose a hypothesis to explain the observed phenomenon)*

(提出假說來解釋觀察到的現象)

初中科學知識課程

- 校內科學講座
- 中一、二科學增益課程
- 暑期科學增益課程
- 奧林匹克課程

初中科學實驗課程

- 中一、二科學增益課程

科研比賽

- 丘成桐科學獎
- 國際遺傳工程機器設計競賽（iGEM）
- 香港科學青苗獎
- 香港青少年科技創新大賽
- 香港學生科學比賽
- 香港化學奧林匹克
- 科普快遞 科學演示比賽
- 趣味科學比賽


GEM
2010
iGEM

科學知識比賽

- 初中科學奧林匹克 (IJSO)
- 物理奧林匹克
- 生物奧林匹克
- 國際聯校學科評估
- 科學評核測驗
- 澳洲科學比賽
- 英國生物奧林匹克
- 加拿大化學競賽


Cheung Sha Wan Catholic Secondary School
2017
ICAS

本地參觀

- 創科博覽
- 創新科技嘉年華
- 香港科學館
- 大學實驗室 / 工作坊
- 海下初探活動
- 米埔自然保護區
- 海洋公園教育學院
- 迪士尼物理世界
- 香港學生科學比賽展覽
- 香港青少年科技創新大賽展覽

外地交流/考察

- 聯校創科營
- 高校科學營
- 青島、泰安及濟南環保建設及氣候變化學習團
- 北極科研考察
- 昆明麗江科學考察團
- 東莞中子散裂源及大亞灣中微子實驗參觀


FREYA

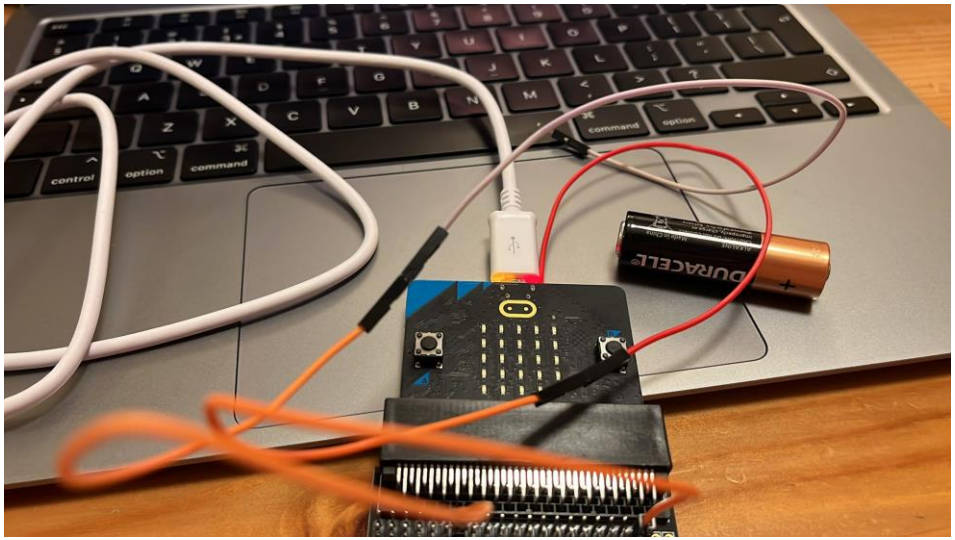
Technology

- 橫向：

1. VR
2. Microbit

- 縱向：

1. 香港電腦奧林匹克競賽
2. 中學生創新創意科技節 創科馬拉松比賽
3. 丘成桐科學獎



DSE放榜｜首屆丘成桐中學科學獎得主楊汶璁　到新加坡讀電腦科學

撰文：冼茗琦
出版：2022-07-20 13:44　更新：2022-08-17 13:41

第一屆丘成桐中學科學獎（亞洲）數學科銀獎得主楊汶璁於今屆文憑試報讀八科，取得30分以上佳績，他在放榜前已於新加坡國立大學註冊入學，即將於8月入讀電腦科學學科，盼將來成為軟件工程師，但他表示暫時不會考慮移民。

熱門文章

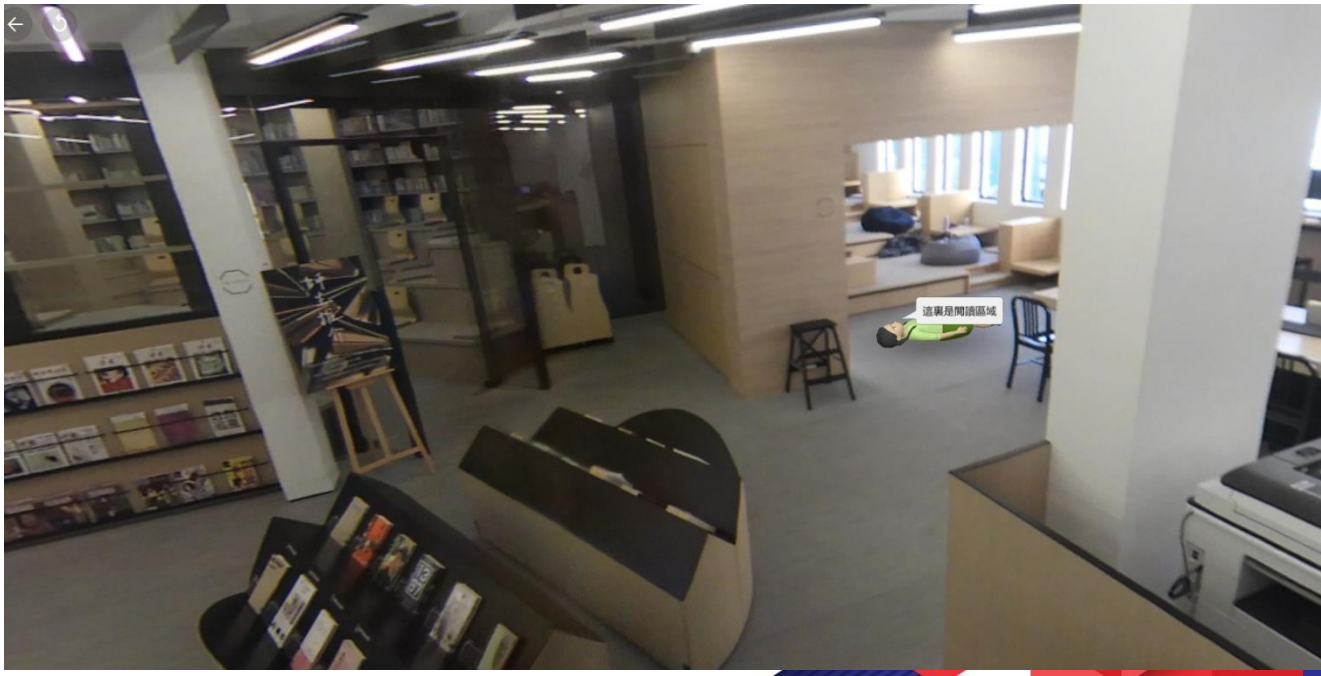
DSE｜考評局要求考生須戴指定試場　恢復英文口試

DSE 2023報名來首回升　逾4.

高級文憑HD課程學出路？即睇入

中二 – 360 VR


CO SPACES EDU
Key features
Pricing
Resources
Support
Ambassadors
Gallery
Log in
Register
Make AR & VR
in the classroom
Rocket is clicked
Learning = CoSpaces
release AWESOMENESS
move Rocket Up
in 1 sec.
set color to


這裏是閱讀區域

Engineering

- 橫向：

1. 設技與科技科課程
2. Laser cutting
3. 3D printing

- 縱向：

1. FIRST ® Tech Challenge (FTC)
2. 創意編程設計大賽
3. 世界機械人挑戰賽

Mathematics

- 橫向：

1. 校本課程的規劃（統計、圖表）

- 縱向：

1. 中三加速班
2. 星期六數學增益課程
3. 數學建模比賽（數學建模小論文評選比賽）
4. 丘成桐科學獎（數學、環境、經濟）
5. 恒隆數學獎
6. 香港初中數學奧林匹克
7. 香港華羅庚金杯少年數學邀請賽
8. 加拿大數學比賽
9. 美國數學比賽

中三加速班

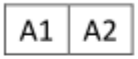
1. 數學閱讀報告
2. 應用數學專題習作
   ① 創意信息圖設計習作
   ② 運輸物流研究習作
3. 數學專題習作
4. 其他: 應用數學/數理科技創意研究 / 發明創造

木塊游戲

3D18 倪子桉 3D22 鄧弘睿

1.我們手上一塊 1x2 的和三塊 1x1 的木塊，用盡以上的材料究竟可以有多少個組合去填滿一行 5 格的木網?

1x5

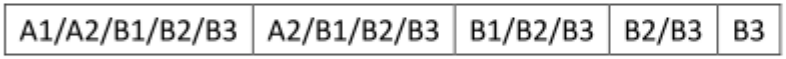


1x2

1x1(B1/B2/B3)

我們可以嘗試用排列或組合(Permutation or Combinatorics)的數學公式尋找答案。

首先使用公式，排列(Pnr)。找出每一個格木網可以放入木塊的可能性。



5 x 4 x 3 x 2 x 1

所以排列將會是=5!* =5x4x3x2x1=120 個排列

!=階乘(factorial)

a. 由於 A1,A2 將等於同一個木網，所以 A1,A2 兩格必須相連，格數將當作 4 格。而排列將會有=4!=4x3x2x1=24 個排列

b. 接著使用公式，組合(nCr)。找出究竟有多少個組合符合題目。

c. 排列/組合起來的(B)=24/3!*=**4 個組合**

3!=(3x2x1)

所以一行木網放上一塊 1x2 和 3 塊 1x1 的木塊可以有 4 個組合。

題目:數學不只是數字？說謊與說實話的典型邏輯問題

學校名稱: 香港培正中學
班級:中學三年級
作者姓名:陳迪晞, 石祐勤, 蔡儆翹
指導教師姓名:梁偉雄老師

摘要:本文希望通過研究「說謊與說實話」的典型邏輯問題，循序漸進地發掘其重要解題方式及邏輯概念, 並發掘其有關應用。

關鍵字:說謊與說實話、解題方式、邏輯

引言:只要提起數學, 普遍人都會想起數字、運算符號、方程等等, 而忽略了邏輯思考在數學中發揮的重要性。遇到邏輯問題時, 我們便須切換思考方式, 不單以數字和四則運算解決問題。我們採用「說謊與說實話」的典型邏輯問題，因為該題目的特色在於「非黑即白」，只有「說謊」與「說實話」的兩種可能，方便釐清複雜的邏輯順序。我們將從解決較淺白的題目入手, 逐步拓展至較複雜的題目, 發掘當中的規律、解題技巧及邏輯概念。

例子1:有兩個人(A與B), 其中一個人拿着玩具車, 各人都有一句陳述, 而至少有一人說謊。

A說：「我拿着玩具車。」
B說：「我沒有拿着玩具車。」

問哪個人拿着玩具車？

解)列出所有組合與可能
我們可把上述陳述按照排列組合分為四種情況:

TT	LT
TL	LL

當中的T代表說實話，L代表說謊話；而每格首個英文字母代表A的陳述，第二個英文字母代表B的陳述。

【STEM教育】培正女生奪丘成桐獎讀麻省理工　學者籲港府設法挽留人才

社會 00:01 2022/06/08

▲ 左起：國際知名數學家丘成桐、2020年數學科金獎得主羅安琪、香港科學院榮譽秘書黃乃正。（陳靜儀攝）

【STEM教育】培正中學囊括恒隆數學獎金銀獎　男拔奪3個優異獎

社會 17:37 2021/12/16

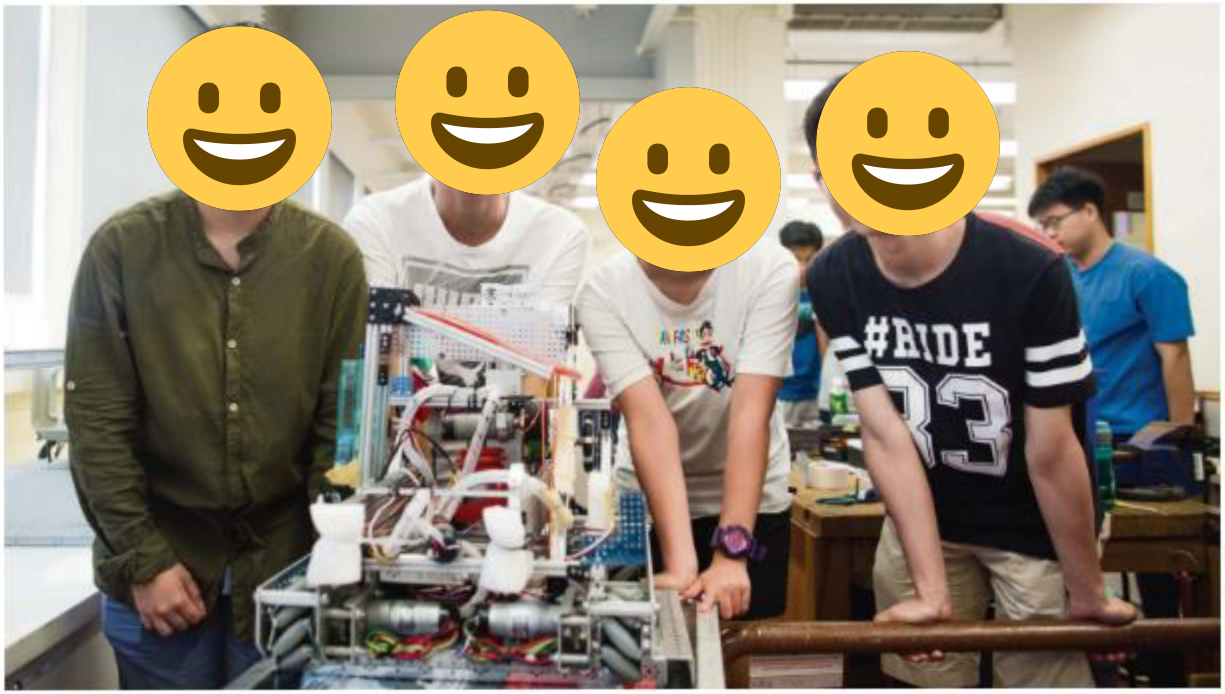
▲ 兩名培正中學學生獲得金獎及銀獎。（培正中學Facebook圖片）

Arts

- 人本為目標的設計
- 整合資訊和溝通能力

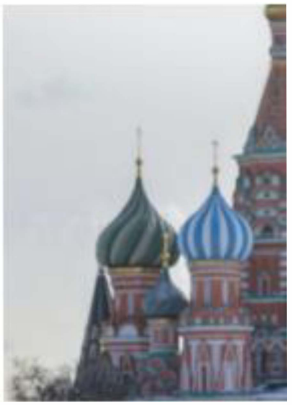
【人文學．二】教學不應重理輕文　與培正師生談實踐教育

撰文：羅倬聰
出版：2019-08-06 21:00　更新：2019-08-08 17:32



近年不少中小學都大力推動STEM—Science（科學）、Technology（科技）、Engineering（工程）和Mathematics（數學）教學，並舉辦大量多元化的STEM課程。教育局希望學校為學生提供更多體驗活動，讓他們有效結合相關知識，從而學會探究、協作和解難能力，培養科技創新精神。不過，有教育界人士質疑STEM教學的成效，認為應推行STEAM（加入藝

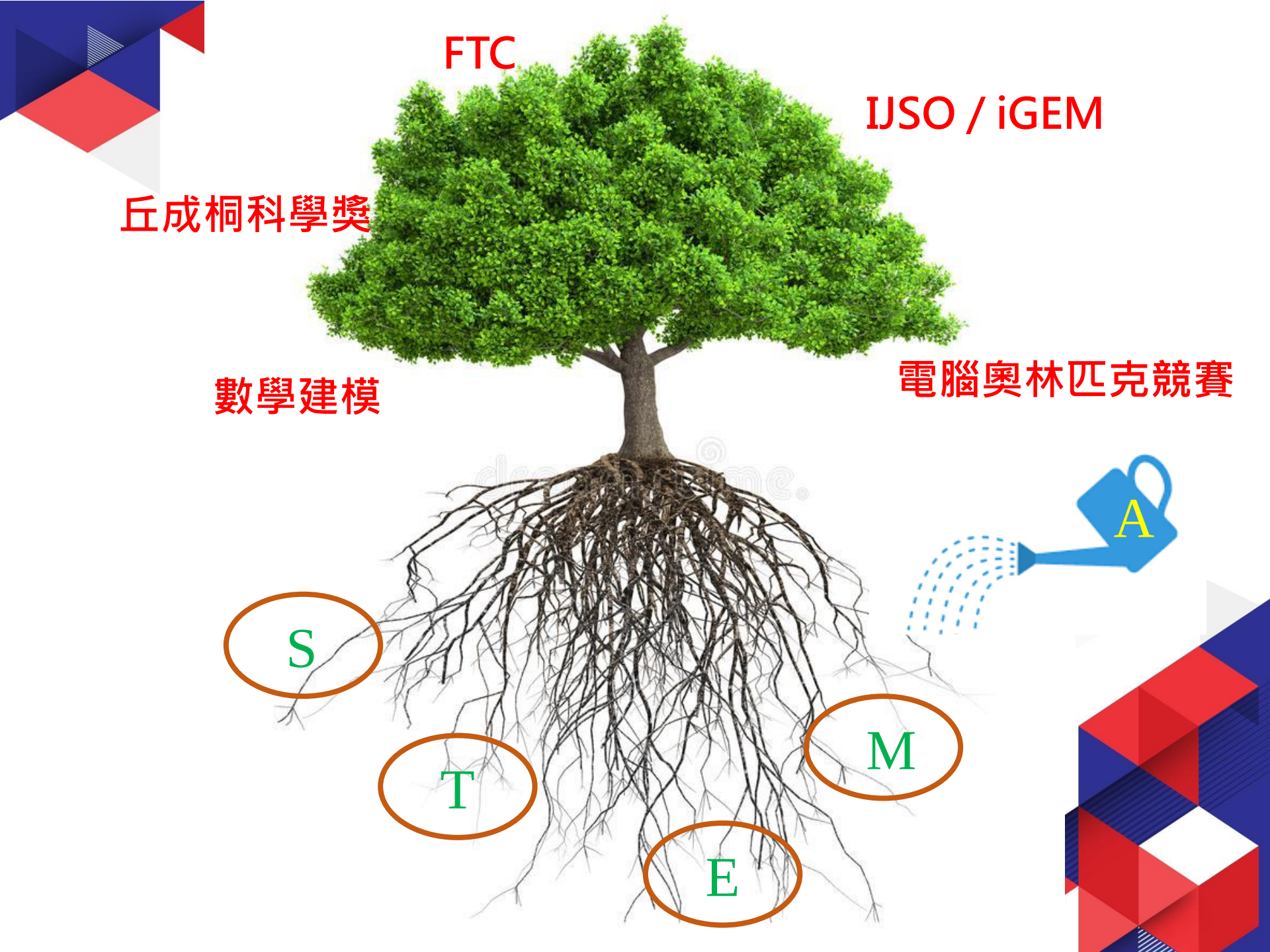
熱門文章



習近平訪俄｜西方對等的經濟聯姻

校本STEAM教育 - 總結

1. 擴闊學生在各領域中的識見（橫向）
2. 按學生個人興趣，發展潛能（縱向）
3. 提供平台讓學生應用所學知識（action research）
4. 強化學生在跨學習領域的綜合和應用知識與技能的能力（hands-on experience）
5. 建立正面價值觀


FTC
IJSO / iGEM
丘成桐科學獎
數學建模
電腦奧林匹克競賽
A
S
T
E
M

謝謝!

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楊偉樂 助理校長、科學科主任 pc-ywlw@puiching.edu.hk