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發掘兒童的
資優潛質
Unearthing Gifted
Potential of Children



香港資優教育學苑
The Hong Kong Academy for Gifted Education



發掘兒童的 資優潛質

*Unearthing Gifted
Potential of Children*

目錄 Table of Contents

編者的話 Editor's Note 3

特稿 Special Feature 4

「新冠肺炎」後的教育：千里之行始於足下
Education after Covid-19 — Let's Start Thinking

主題文章 Feature Stories 8

資優學生的學習動機與成就：研究帶來的啟示
Motivation and Achievement of Gifted Learners: What does Research Tell Us?

道德及文化智能 Moral and Cultural Intelligence

兒童及青少年才能發展：資優特質、自我效能及生活滿足感扮演的角色
Talent Development in Children and Adolescents: Roles of Gifted Characteristics,
Self-efficacy and Life Satisfaction

培養子女愉快自主學習 Raising Children as Happy and Self-directed Learners

資優少年系列 Gifted Youth Series 18

資優學生的成長：數理小子 越級挑戰
The Growth of a Gifted Student: A Science and Mathematics Kid
Who Punches Above His Weight

資優學生的成長：創科小明星
The Growth of a Gifted Student: A Little Star in Innovative Technology

資優學生的成長：敢夢飛翔
The Growth of a Gifted Student: Dare to Fly High

資優學生的成長：熱愛競賽 無懼挫敗
The Growth of a Gifted Student: Passionate about Competitions without Fear of Failure

資優學生的成長：信守承諾、堅持到底
The Growth of a Gifted Student: Persevere to Keep Her Promise

活動花絮 Event Highlights 28

2020 何東資優教育演講暨雙年家長會：燃點學習動機
Annual Hotung Lecture cum and Biennial Parent Conference 2020:
Igniting the Passion for Learning

精彩項目 Signature Programmes 30

對基因組編輯一探究竟 Genome Editing Up Close

擁抱完美主義 Embrace Your Perfectionism

溝通 —— 生活中的必需品
Communication —— An Indispensable Part of Daily Life

學生主導 —— 計劃、行動及應變
Student Initiation —— Thoughtful Actions

2019 國際科學與創新夏令營
Science and Innovation International Summer Camp 2019

參加國際物理學錦標賽 製作難以破解的保險箱
Experience in Safe Cracking Competition

學苑資訊 Academy Information 41

提名計劃 Nomination Scheme

研究分享 Research Corner 42

成功須苦幹 Effort Counts Most for Success

即將舉辦的活動 Forthcoming Events 48



發掘兒童的資優潛質

Unearthing Gifted Potential of Children



2019 年下旬至 2020 年上旬，我們經歷前所未見的震撼，先是社會運動，然後是新冠肺炎。一整年的日子活像在漩渦中打滾，最近才比較喘定下來。回顧過去的一年，香港資優教育學苑步入了第十一個年頭，邁向另一個十年發展。

在原有的基礎上，學苑的工作漸漸得到認可，愈來愈為本港學界及公眾認識，在地球村上，亦被公認為全球資優教育的主要參與者之一。去年，學苑與香港青年科學院進行協作，開展了「新興科技講座系列——科學、機遇及挑戰」項目，以「大自然的紅鉛筆：重塑生命密碼」為主題的科學教育講座，向本港教師和學生介紹 STEM 教育對未來的社會帶來革命性的影響。

今年年初，我們的何東資優教育講座暨家長雙年會議以「資優學生的學習動機與人才發展」為主題，希望讓家長和教師認識到學習動機為資優不可或缺的一部分，此外，學苑與德國的雷根斯堡大學協作，向世界各地的傑出青少年，提供以研究為本的免費在線指導課程。是項活動競爭非常激烈，全球平均每 500 萬人才有一人能脫穎而出接受領先世界專家的在線指導，學苑已於今年五月提名在 STEMM 領域的尖子進行甄選，祝願學員能夠跳出香港，視野及知識得到拓展。

延續去年的《資優少年系列》五位資優學生的故事，今期另外五位資優學生接棒分享他們的成長經歷，完成《十個資優的少年》系列，記念學苑十年來的努力。這十位少年均擁有強烈的學習動機，在他們熱愛的領域，向夢想進發。我們希望他們的熱忱能夠延續下去，勇敢地迎向變幻莫測的未來，展現創意、同理心，成為應對未來挑戰的資優新人類！

From late 2019 to early 2020, we were experiencing unprecedented shocks, from social unrest to the outbreak of novel coronavirus pneumonia (COVID-19). For a whole year, we have felt like being enveloped in a swirling vortex and have only settled down recently. Looking back over the preceding year, the Hong Kong Academy for Gifted Education (HKAGE) has entered its eleventh year and is moving towards another decade for further development.

Riding on the foundation, the work of the HKAGE has gradually been recognised and increasingly known by the academic community and the public in Hong Kong. In the global village, we are also recognised as one of the significant players in the gifted education landscape. Last year, the Academy collaborated with The Hong Kong Young Academy of Sciences to launch the 'Emerging Technologies – Science, Opportunities and Challenges' project, under which the first talk with the theme of 'Nature's Red Pencil: Writing and Rewriting Genomes' introduced to both teachers and students in Hong Kong the revolutionary impact that STEM education will exert on the future society.

The Annual Hotung Gifted Education Lecture and Parents Biennial Conference organised earlier this year on the theme 'Motivation and Talent Development of Gifted Learners' told our parents and teachers that learning motivation is an indispensable part of giftedness. In addition, the Academy collaborates with the University of Regensburg in Germany to provide free research-based online mentoring to outstanding teenagers all over the world. This programme is under very keen competition. On average, one out of every 5 million population in the globe can stand out and enrol in this programme to receive online mentoring from the world's leading experts. The Academy has nominated the top students in the STEMM field for selection in May this year, hoping that they will be able to stretch themselves out from Hong Kong and broaden their horizons and knowledge.

Following the heartwarming features of the five gifted students in last year's publication, another five gifted students will continue sharing their growing experiences in this issue to complete the 'Ten Gifted Youth' series in celebration of the ten-year effort of the Academy. All these ten gifted youngsters have a deep motivation to learn and advance towards their dreams in the areas they love. We hope, their enthusiasm will flourish, they will bravely face the unpredictable future with creativity, empathy, and become a gifted new generation to embrace future challenges.



「新冠肺炎」 後的教育： 千里之行始於足下

作者：香港資優教育學苑院長 吳大琪教授

許多不同領域的專家指出，新冠肺炎大流行後，我們現在的生活方式將大不相同。在教育領域，疫情期間常規課堂被線上「Zoom 課堂」代替。學生不再像以往一起在學校學習，互相支援，他們現在需要單獨在家中遙距學習。儘管我們無法預見未來將會發生的一切，但可以借鑑過去數月的經驗，準備迎接後新冠肺炎的教育世界。

大部分醫學和健康科學專家都同意，新冠肺炎很可能跟人類長久共存，而「保持社交距離」和「口罩」等日常安排和裝備將長伴我們左右。即使新冠肺炎消失，為避免將來再度發生類似的全球大流行疫症，我們應該改變日常生活模式，盡可能避免不必要的人際接觸。舉例來說，（部分時間）家居辦公可能會成為未來生活的恆常安排。

教育界將首當其衝受到影響。香港現時的學校和大學，學生普遍安排在擁擠的教室內上課，將來應盡可能減少這種安排。在疫情下公開考試也受到波及，2020 年度香港中學文憑考試 (HKDSE) 需要延期，海外普通教育高級證書 (GCE A-Level) 和國際文憑 (IB) 考試被取消。

過去數月，學生的學習模式被迫突然改變。常規教室被線上課堂取代，意味著傳統課堂學習中的教師詳細指導和同學之間互相支援已消失於無形中，學生必須學會自行學習。

從以上觀察看到的後續問題包括：

1. 怎樣為我們的學生和教師作好準備，面對未來，為減低人類接觸帶來的風險，以線上或其他種類課堂 / 活動取代一部分傳統課堂學習（譬如說百分之三十）的嶄新教育模式？
2. 若是情況持續，是否應該考慮開發相應的資訊科技 (IT) 硬件 / 軟件協助教學？
3. 除了線上教學模式之外，還有其他有效的教學模式可以避免大量學生聚集嗎？
4. 我們可以開發另類的評核工具代替傳統的課堂考試嗎（例如，用電腦進行考試並由人工智能 (AI) 監考，或是以開放式試題考試）？

除了教育「硬件」的變化外，我們的學生和教師還需要在心理上調適改變。

學生需要學會自行學習，教師亦然

香港的教學習慣「學生學習」等於「課堂教學」。在這種學習模式之中，學生的學習（包括學習甚麼、如何學習）主要由教師課堂上的教學指令來驅動。大量減少課堂教學意味著學生必須（至少部分地）在缺乏教師一步一步的指導下進行自學。這對學生的自我調節學習能力（或對於尋找要學習甚麼，該如何學習的能

Education After Covid-19

— Let's Start Thinking

Author: Prof Ng Tai Kai, Executive Director, the HKAGE

As pointed out by many experts in different domains, the human world after the Covid-19 pandemic will be much different from before and we are all part of these changes. In the education sector, regular classes have been cancelled or replaced by on-line, 'Zoom-Type' classes. Students no longer learn in school where they can gain support from each other but are now learning alone and remotely at home. Although we are not able to foresee everything that will happen in the future, we could draw on the experiences in the past few months to prepare ourselves for the world of education after Covid-19.

Most experts in medicine and health science agree that a future world where Covid-19 coexists with human beings for a prolonged period is very likely to come, while social-distancing and face masks will accompany us for an extended period. Even after Covid-19 ceases to exist, to avoid a similar pandemic to attack again in the future we should change our daily practices to avoid unnecessary human-contact as much as possible. For example, the home-office arrangement will become a rather constant practice in the future.

The education sector will be hit strongly by this requirement as classes of students seated in a crowded classroom is the normal practice in Hong Kong schools (and universities) nowadays. This kind of arrangement should be minimised as much as possible in the future. Public examinations may also be affected as it can be observed in Hong Kong (re-arrangement of Hong Kong Diploma of Secondary Education Examination, (HKDSE) and worldwide (cancellation of examinations, such as General Certificate of Education Advanced Level, (GCE A-Level) and The International Baccalaureate, (IB)).

The learning practices of students were forced to change suddenly in the last few months. The replacement of regular

classrooms with online, web classes means that direct teacher supervision and peer support from classmates are missing and students must learn to learn alone by themselves. Some of the immediate questions following from these observations are:

- 1) How to prepare our students and teachers for a future education model where a considerable portion (approximately 30%) of classroom learning is replaced by on-line learning or other kinds of classes / activities with minimum human contact?
- 2) If this is the case, are there corresponding IT hardware / software that should be developed?
- 3) Apart from the on-line teaching / learning mode, are there other effective modes of teaching / learning that can avoid a mass gathering of students?
- 4) Can we develop alternative assessment tools to replace conventional large-group in-class examinations (for example, by Artificial Intelligence (AI) monitored examination in front of a computer or similarly by asking open-ended questions in the examinations)?

Besides changes in the education 'hardware', our students and teachers have to be mentally prepared for these changes.

Students Should be Motivated and Prepared to Learn by Themselves, so as Teachers

The Hong Kong education system is used to a teaching model where 'student learning' is equivalent to 'classroom teaching'. In this model, student learning (including what to learn, how to learn) is mainly driven by what teachers teach / say in the class. A sizable reduction of

力)要求將會提高。

前幾個月的線上教學經驗顯示，為數不少的學生未能真正參與學習，而教師亦無法像在以往課堂教學一樣直接監察學生的學習行為。為此我們需要考慮學生的學習動機問題——或者說，在沒有強大外在驅動力之下，學生是否有足夠動力願意自行學習。

學生的學習動機顯然是更根本的問題。如果學生沒有學習動力，就不會對如何自學產生興趣。事實上，許多學者已經討論過，如果學生有自我學習動機，他們就會學得更好(卡蘿·杜維克的著作《心態致勝》是其中一個例子。須要注意的是，學習得更好，並不等於在考試取得更高分數)。

在香港情況恰恰相反，教師經常驅策學生學習他們認為學生應該學習的知識(以提高考試成績為目標)，卻不鼓勵學生學習自己感興趣的內容，結果，學生經過中學階段便對學習失去興趣，進入大學後，由於學習動機低落，即使他們想開始自我學習，也不知道如何有效地部署學習進程。**學生缺乏學習動力和自學技巧是當今香港教育面臨的最嚴重問題之一，特別是考慮到終身學習的需要時。**

新冠肺炎為我們提供了撥亂反正的機會。學校宜開始為學生提供支援自發學習的環境，而且應該為學生提供自學的訓練，例如，如何建立和執行自我調整學習計劃，以及如何以明確的目標進行「刻意練習」等。

在課堂上，教師應該準備好面對自發學習環境下經常發生的情況——學生學習的速度和對課程內容的理解因人而異，即是說，教師需要照顧學習者更多樣化的需要。教師須學習如何適應和利用學習者的多樣性，例如，要求學生解釋並參詳其他同學學到的內容加以比較，取長補短。進入疫情後世界，我們需要創新並開發新的學習策略和做法。

未來數碼化策略？

讓我們將「Zoom」或線上課堂與 IT 將在教育方面帶來的眾多可行性，例如虛擬教室，由 AI 監控的擴增實境學習等作一對比。我們目前使用的線上教室，是否正標誌著一個由 AI 輔助教學的新時代已悄悄來臨？也許疫情不過令 IT 教育時代提早數年實踐。

要面對這個問題，也許是時候開始全面研究 IT 和 AI 可以對香港的教育帶來甚麼可能性，以及各種可能性的優點和缺點。研究應由教育局牽頭，加上 IT 界別，一同製訂香港教育的數碼策略。

研究計劃不僅應包括如何更有效地使用線上課堂或

線上資源，還應研究和預測 IT 的發展將如何在未來 10 至 20 年內影響教育，以及我們如何利用這些發展為香港建立更好的教育環境。該研究還應考慮卓越差距(excellence gap)問題——來自不同經濟背景家庭的學生之間的學習差距。可以預期，IT 的使用將進一步擴大貧富學習差距，這是政府在 IT 時代必將面對的問題。

平心而論，香港在這方面做得還不錯，現時香港貧富家庭之間的卓越差距較大多數國家來得窄。但是，鴻溝肯定是在香港存在的(可參閱學生能力國際評估計劃，PISA 2018)！

新的公開考試或大學錄取制度？

眾所周知，學生的學習行為在很大程度上受到公開考試的驅策(HKDSE、IB、GCE A-Level 等)。倘若考試制度不變，學生的學習行為就很難改變。疫情下今年文憑試被迫重新安排，GCE A-Level 和 IB 亦被取消。將來亦可能發生類似情況，整個公開試或部分考試會被取消。

學生可否選擇不參加文憑試或其他公開考試，而仍有機會被大學取錄？新冠肺炎迫使教育界不僅要重新考慮如何學習，還要重新考慮如何評核學生。我們尚不知道文憑試和大學將如何應對新冠肺炎帶來的挑戰。學生、教師和家長應該保持開放心態，密切注意事態的發展。

我們該如何回應——以學苑為例

自 2020 年 2 月以來，香港資優教育學苑(學苑)以線上課堂取代大部分常規面授課堂，其中包括情意教育課堂和進階學習體驗部的學生主導學習活動。面對新冠肺炎後的世界，學苑將

1. 成立專責小組製訂學苑長遠的數碼策略。同時，學苑將繼續嘗試創新，把一部分實體活動 / 課堂轉為 IT 輔助活動 / 課堂。
2. 開展一系列有關自學的活動 / 課堂，包括以「自我調節學習」為主題的 2021 年度何東資優教育演講。
3. 與大學緊密合作，支援學苑的學員循非文憑試或非公開試渠道入讀大學。

學苑的校友現已遍布全球各知名大學，我們將繼續與他們密切溝通，以提供最新的全球教育資訊予現有學員、家長和學校。

classroom teaching means that students have to learn (partly) by themselves without the detailed, step-by-step instruction from teachers. The need for students' self-regulated learning (or decisions on what to learn, how to learn) will increase.

The previous few months of online teaching experience showed that a not-too-small percentage of students did not really participate in web classes where teachers could not monitor students' learning behaviour directly as in regular classrooms. This brings us to the issue of students' motivation in learning – or whether students are willing to learn by themselves when there are no formidable external forces.

The students' motivation in learning is obviously the more fundamental issue. A student would not be interested in learning how to learn by themselves if he/she is not motivated to learn in the first place. Interestingly, it has been shown and discussed by many scholars that students can learn much better if they are motivated to learn by themselves (For example, Carol S. Dweck's book on *Mindset*. It should be cautioned that learning better is not the same as scoring better in examinations).

The situation is quite the opposite in Hong Kong where teachers often drive students to learn what the teachers believe they should learn (for better examination performance). Students are often discouraged from learning what they are interested in and as a result, students lose interest in learning after going through secondary schools. They entered university with low learning motivation, and they do not know how to plan their learning even if they want to start learning by themselves. **The lack of learning motivation and self-learning technique is one of the most serious problems Hong Kong education is facing nowadays – especially if you think about the need for lifelong learning.**

The Covid-19 is providing a chance for us to rectify this behaviour. Schools should begin to provide a supportive environment for self-motivated learning, and should provide some training for students about how to learn by themselves, for example, on how to build and carry out a self-regulated learning plan, how to practice with definite goals in mind (deliberate practices), etc.

Teachers should also prepare to face the situation which happens often in self-learning classes – the pace of learning and the understanding of the course materials are different for different students, i.e. increased learner diversity. Teachers should learn how to get used to and make use of learner diversity in classes, for example, by asking students to explain and compare with the rest of the class what they have learnt. We need to be innovative and develop new learning strategies and practices as we move into the world after Covid-19.

Digital Strategy and Beyond?

Let us compare 'Zoom', or online classes with what we have heard about the many possibilities Information Technology (IT) can bring to education, such as virtual classroom, augmented reality in learning monitored by AI, etc. Is the 'Zoom' classrooms we are witnessing the beginning of a new, AI-assisted education era? Covid-19 may have just advanced the coming of the IT education era for a few years.

To address this issue, maybe it is time to start a holistic study of what IT and AI can bring to education (in Hong Kong), and what the advantages and disadvantages of various possibilities are. The

study should be led by the Education Bureau with the IT sector involved to build a digital strategy for education in Hong Kong.

The study should go beyond how to use online classes or online resources more efficiently, but should study and project how the advance in IT may impact education in the next 10 to 20 years, and how we shall take advantage of these developments to build a better education environment in Hong Kong. The study should also address the problem of Excellence Gap – the disparity between students from families with different economic backgrounds. It is expected that the use of IT will further the disparity between rich and poor, and this is a problem the government must address in the IT era.

To be fair Hong Kong is doing quite well in this aspect in the sense that the Excellence Gap between rich and poor families in Hong Kong is weaker than most countries. However, the Gap definitely exists in Hong Kong (see Programme for International Student Assessment, PISA 2018)!

A Different Public Examination or University Admission System?

As is well known, the learning behaviour of students is driven most strongly by public examination (HKDSE, IB, GCE A-Level, etc.). Without changes in the examination system, the students' behaviour can hardly change. Covid-19 forced the re-arrangement of HKDSE (which is extremely close to being cancelled) and cancellation of GCE A-Level and IB in 2020. A similar situation may occur in the future, where a whole examination or part of the examination could be cancelled.

Do students have a choice of not taking HKDSE or other public examinations but still being considered for university admission? Covid-19 is forcing the education sector to rethink not only how to teach, but also how to assess students. We do not know yet how HKDSE and / or universities will respond to these challenges brought by Covid-19. Students, teachers, and parents should keep an open-mind and observe closely how the situation evolves.

What Can We Do? The HKAGE Case

Since February 2020, the HKAGE has replaced most of its regular face-to-face classes by 'Zoom' classes, including classes on affective education and ALED's student-organised activities. To prepare for the world after Covid-19, the HKAGE is going to

- 1) set up a special task force to develop our own long-term digital strategy. At the same time, we shall try to be innovative in turning many of our events / classes into IT-aided events / classes.
- 2) launch a series of activities / classes on self-learning, including the Annual Hotung Lecture 2021 with the theme set on 'Self-regulated Learning'.
- 3) work closely with universities to offer support to HKAGE student members entering university through non-HKDSE or non-public examination channels.

Many of our alumni have now spread over major universities in the world. We shall continue to communicate closely with them to offer up-to-date worldwide education information to our existing student members, parents and schools.

資優學生的學習 動機與成就：

研究帶來的啟示

Motivation and Achievement
of Gifted Learners:

What does Research Tell Us?



學習動機與資優學生成就的關係是個值得深思的議題。部分人士對資優存著錯誤的理解，以為資優就等於十項全能，樣樣皆精；殊不知資優其實只是一項優勢，要取得成功，還需要其他條件配合。究竟學習動機在資優學生的學習成效之中，扮演甚麼角色呢？來自德國的海德倫·斯托格教授 (Prof Heidrun Stoeger) 透過有關學習動機的研究，跟我們分享激發資優學生學習動機的洞見。

斯托格教授說，「傳統概念把資優定義為高智商，但我們清楚知道，要成就卓越，光靠高智商是不足夠的。資優學生需要有強烈的學習動機，合適的學習內容，合宜的學習策略，痛下苦功，經過長期的鍛鍊，才華始得以展現。在近年眾多資優概念中，個人內在的多個層面（例如動機），以至環境都是資優不可或缺的一部分。」學習動機，就像助燃劑，推動資優學生投進他嚮往的領域，潛心鑽研，向至高之處邁進。

研究一）外在動機 Vs 內在動機

繪畫圖案獲禮物

在資優學生選擇學習活動時，重要的是讓學生看到學

The relationship between motivation and achievement of gifted students is an issue worth pondering. Some people have a misunderstanding on giftedness, thinking that giftedness is equivalent to perfection in all performances and not realising that giftedness is only one of the various strengths. To be successful, other criteria are also needed. What role does motivation play in learning efficiency of a gifted student? Prof Heidrun Stoeger, from Germany, shared her insights, from research study, on how to motivate gifted students.

Prof Stoeger said, 'Traditional concepts define giftedness as high IQ, but we know that high IQ is not enough. To achieve excellence, gifted students need to have strong motivation, suitable learning content, appropriate learning strategies, as well as painstaking effort and substantial practice. In many current conceptions of giftedness, various aspects within the individual – e.g., motivation – as well as in the environment play an integral part in giftedness.' The motivation for learning is just like a fuel booster which helps gifted students to invest their energy in a desired field, with deliberate practice, and moving towards eminence.

Study 1) Extrinsic Motivation Vs Intrinsic Motivation

Drawing Patterns to Receive Presents

When it comes to choosing learning activities, it is important



來自德國的海德倫·斯托格教授
Prof Heidrun Stoeger, from Germany

習活動的價值。斯托格教授以繪畫圖案作為例子。有兩組小學生需要完成繪畫圖案的任務。第一組學生繪畫圖案後，會獲贈禮物；而第二組學生，則不會獲贈禮物，但會向他們解釋繪畫圖案，有助鍛鍊精細動作技能 (fine motor skills)；長遠來說，有助促進書寫。結果第一組學生繪畫圖案的比率接近百分之一百，而第二組只有百分之六十的學生參與活動。

六星期後，第一組學生不再獲發禮物，差不多沒有學生再繪畫圖案。但第二組仍有百分之四十的學生堅持下去，他們意識到繪畫圖案，對於閱讀和寫作均有幫助，其內在、外在動機均被啟動。對他們來說，繪畫圖案本身是一項具價值、有益處的活動。斯托格教授指出，成績評級、送贈禮物等刺激外在動機的方法，有可能會摧毀內在學習動機，貶低學習活動的價值。除非孩子的學習動機異常低，否則應儘量避免使用。

跟興趣有關的讚許

這個研究與繪畫有關，參加者在完成任務之後，獲得讚賞。現在讓我們看看稱讚內容。第一組學生：我對你的圖畫非常滿意。第二組學生：你是一位出色的畫家。第三組學生：這幅圖畫真的棒！第一組獲得的稱讚，以老師和家長為中心，他們的喜好決定畫作的價值。第二組獲得的稱讚，以參予者即孩子或學生為中心。第三組獲得的稱讚，以畫作為中心，稱讚付出的努力，學習內容受到肯定。這三組學生中，只有第三組學生看到繪畫是一項有價值的學習活動，他們的內在動機受到激發。

長遠來說，最有效激發學習動機的做法是啟動內在動機，指導孩子邁向成功的途徑，跟他們討論如何把學到的知識應用在日常生活之中，讓他們感到所學的事物具價值，他們的學習是有意義的，盡量避免採用只能提升外在動機的方法，除非學生異常缺乏學習動機。

for students to see the value of a learning activity. Prof Stoeger takes drawing patterns as an example. There were two groups of primary school students who were assigned to draw patterns. The first group received presents after completing the task; while the second group did not. Instead of giving out presents, the instructor explained to the second group that drawing patterns was good for promoting fine motor skills which are important for writing. In the first group, nearly 100% of the students were on task; while in the second group, only 60% of the students participated in the activity.

Six weeks later, the first group of students no longer received any presents for drawing, and nearly no one drew patterns anymore. But 40% of the students in the second group persisted. They believed that drawing patterns were helpful for reading and writing, and their intrinsic motivations were activated. To them, drawing patterns is a valuable and beneficial activity. Prof Stoeger stated that gradings, presents, and other methods to stimulate extrinsic motivation may destroy the intrinsic motivation for learning and devalue the learning activity. Therefore, these methods should be avoided unless your child has already exceptionally low motivation.

Interest-related Praise

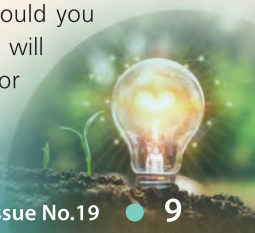
This research was related to painting, and participants were rewarded with praise after completing the task. Let us now look at what sort of compliments they received. The first group: I am very happy about this picture! The second group: You are a great painter! The third group: This picture is really great! The first group's praise was teacher / parent-centered, with teachers and parents determining the value of the paintings. The second group's was child-centered, and the praise went to the child. The third group's focused on the product, the learning outcome. Of these three groups of students, only the third group saw painting as a valuable learning activity, and their intrinsic motivation was inspired.

In the long run, the most effective way to boost learning motivation is to activate the children's intrinsic motivation by showing them ways to success and discussing with them on how to apply what they have learned in daily life. By doing so, they will see the value in what they are learning and feel that their learning is meaningful. Methods to stimulate extrinsic motivation should be avoided, except for very unmotivated students.

Study 2) Fixed Mindset Vs Growth Mindset

Two IQ Tests

Two groups of students were given two IQ tests. The first group was praised for their intelligence, 'Great, you are so intelligent!'. The second group was praised for their working behaviour, 'Great, you are working well!'. Between the two IQ tests, the students were given a choice, 'Would you rather learn a new problem-solving strategy that will help you score better in the second IQ test?' or





研究二) 定型心態 Vs 成長心態

兩次智能測驗

一群學生需要進行兩次智能測驗 (IQ Test)，第一組學生在智能上獲稱讚，「真棒！你真的很聰明！」、第二組學生的學習行為獲得稱讚，「真棒！你很用功！」。在兩個智能測驗之間，兩組學生面對同一抉擇，「你願意學習一項新的解難策略，助你在第二個智能測試取得更高分數嗎？」，還是「你情願知道自己的得分相較他人得分有多優勝？」。斯托格教授告訴我們，在智能上獲稱讚的學生，情願選擇知道自己的得分相較他人得分有多優勝；第二組學生被稱讚學習行為的，情願學習新的解難策略，期望在下一個智能測驗創出更佳成績。他們相信努力的重要性，他們的內在學習動機受到激發。

三次智能測驗

另一項研究同樣跟智能測驗有關，一群學生需要進行三次智能測驗，跟之前一項研究一樣，第一組學生在智能上獲稱讚，而第二組學生的學習行為獲得稱讚。所不同的是，第一次的智能測驗難度一般，但第二次的智能測驗就相當艱深，令所有學生措手不及，無形中為他們製造了一次虛擬失敗 (artificial failure) 經驗。在智能測驗二之後，曾在學習行為獲稱讚的學生，歸因於他們在第二次測驗，未夠盡力；曾在智能上獲稱讚的學生，歸因於自己不夠聰明。之後，他們又進行第三次智能測試，這一次測驗跟第一次測驗的難度相若，曾在學習行為獲得稱讚的學生，非常用心進行測驗，他們的得分提高了百分之三十；相反地在智能上曾獲稱讚的學生得分下調了百分之二十，他們歸因於個人智能不夠高，參加測驗時採取消極放棄態度。

這兩項研究，讓我們看到「定型心態」(fixed mindset) 與「成長心態」(growth mindset) 的分別。在智能上獲稱讚的學生認定自己的能力是固定的，他們逃避挑戰；而學習行為獲稱讚的學生則相信能力是可以改變、可以提升的，所以勇於接受挑戰。作為老師和家長可檢視個人心態，屬於「定型心態」還是「成長心態」，引導孩子建立「成長心態」，激發他們的學習動機，發揮內在潛能！

提升動機有妙法

斯托格教授跟我們分享多種提升學習動機的方法，其中包括以下技巧。

楷模技巧

以一位數學老師在課堂數式出錯為例，為了面子老師

‘Would you rather know how well you scored compared to others?’。Prof Stoecker told us that students whose intelligence was praised preferred to find out how they had performed compared to others. For students who were praised for their working behaviour, they preferred learning new problem-solving strategies, so that they could have better results in the following IQ test. They believed in the importance of hard work and their intrinsic motivation for learning was stimulated.

Three IQ Tests

Another study was also related to IQ tests. A group of students were given three IQ tests. As in the previous study, the first group was praised for their intelligence and the second group, for their working behaviour. In this study, the level of difficulty of the first IQ test was normal, while that of the second IQ test was exceptionally high. The intention was to catch all students by surprise and to give them an artificial failure experience. After the second IQ test, the students who were praised for their working behaviour attributed their failure to not working hard enough. For the students who were praised for their intelligence, the failure was attributed to themselves being not smart enough. After that, they conducted the third IQ test, which was at similar level of difficulty of the first IQ test. The students who were praised for their working behaviour attempted with their best effort, and their scores increased by 30%. However, the scores of the students who were praised for their intelligence dropped by 20%, as they thought they were not smart enough and their negative attitude led them to their failure.

These two studies demonstrate the difference between ‘fixed mindset’ and ‘growth mindset’. Students who were praised for their intelligence identified themselves as having fixed abilities and wanted to avoid challenges, while those who were praised for their working behaviour believed that abilities can be changed and improved. They wanted to embrace challenges. As teachers and parents, you may examine and see whether your mindset is a ‘fixed mindset’ or a ‘growth mindset’. Guiding your students / children to establish a ‘growth mindset’ will stimulate their learning motivation and unleash their potential!

Ways to Enhance Motivation

Prof Stoecker shares with us a variety of ways to increase motivation, some of which are included in the following tips.

Modeling Techniques

Take a maths teacher who has made a mistake in the class as an example. The teacher might find it too embarrassing to admit his mistake. In order to hide it, he fabricated an excuse, ‘I just want to check if you are really listening to my lecture’. Instead of doing so, the teacher may apologise to the students, ‘I didn’t concentrate, so I made the mistake’. Teachers and parents may share their personal failure experiences with their students / children, including reasons for the failure and ways to overcome the obstacles. This will enhance their confidence

或會說，自己犯錯，為的是看看學生有否留心聽課。而事實上，老師可以跟學生說，抱歉我剛才沒有集中精神，所以算錯了。老師和家長均可跟孩子分享個人失敗經驗，包括：失敗原因，如何克服困難，跨越障礙。此方法提升學生嘗試的信心和動機，讓他們知道失敗不是一件可怕的事；相反地，失敗是一個學習契機。

評價技巧

老師和家長給予正面的評語，對於學生 / 孩子起積極作用。不光從學生 / 孩子的成績判斷他們的成就，老師和家長可以透過說話或文字予以正面的評語，「我看到你在課業上的努力，預備得很好！」其他建設性的評語，包括「做得好，保持佳績！」正面的評語，讓學生 / 孩子得到鼓勵，釋放潛能。

總的來說，學習動機是相當複雜的，每個學生也是獨特的，在漫長的學習路上，遇上不同的挑戰，沒有人皆適用的神奇成功方程式！

「全球人才良師指導」計劃

若學生或孩子在科學、技術、工程、數學 和醫學領域 (STEMM) 具有卓越成就，同時亦有強烈的學習動機，或可考慮參加「全球人才良師指導」計劃的甄選，讓他的潛能得以發揮。

「全球人才良師指導」計劃由斯托格教授領導，是「世界天才中心」(World Giftedness Center, WGC) 的旗艦項目。該中心將於今年 (2020 年) 年底啟動，為年輕人進行一對一的師友配對計劃，導師和教練皆為具世界領導地位的 STEMM 專家，而學員將透過其個人和 STEMM 跨學科的研究項目，與世界各地的相關專才和科學家建立全球社區網絡。此培訓將從學員的高中階段展開，直至完成大學課程，或在 STEMM 領域達至專家級成就為止。

香港資優教育學苑 (學苑) 已於去年十月與雷根斯堡大學簽署合作備忘錄，成為該中心的合作夥伴，合力為世界各地的傑出青少年，提供以研究為本的免費在線指導課程。申請參加此計劃的競爭非常激烈，約為全球每 500 萬人才有一人能脫穎而出，學苑將於今年五月提名本港在 STEMM 領域的尖子進行甄選。

詳情請瀏覽：

<https://www.globaltalentmentoring.org/>

and motivation and teach them that failure is not terrible at all but a learning opportunity.

Commenting Techniques

Positive comments from teachers and parents have positive effects on students / children, whose accomplishment shouldn't be judged by grades only. To encourage them, parents and the teacher may offer positive comments in oral or written form. 'I can see you're really preparing well'. Other constructive comments include 'you are really adopting an appropriate learning strategy, and keep up with your good work!' Positive comments allow students / children to be encouraged and their potential to be unleashed.

To sum up, the motivation for learning is quite complicated and students are unique individuals. They may encounter different challenges on the endless path of learning and there is no magic formula for success that applies to each and every one of them!

Global Talent Mentoring™ Programme

Students / Children who have already shown outstanding achievements in science, technology, engineering, mathematics, and medicine (STEMM) and who at the same time have a strong motivation to learn may consider participating in the selection of the Global Talent Mentoring™ (GTM) programme to unleash their potential.

The GTM, directed by Prof Stoeger, is the flagship programme offered by the World Giftedness Centre (WGC) to be inaugurated at the end of this year (2020). The mentors and coaches will be the world's leading STEMM experts, and the mentees will build a network within a global community of STEMM talents and scientists through working on individual and interdisciplinary STEMM projects. Mentoring will start when the mentees are receiving senior- secondary education and continue through the completion of the mentees' advanced university studies or other expert achievements in STEMM.

The Hong Kong Academy for Gifted Education (HKAGE) has entered into a Memorandum of Understanding with the University of Regensburg in October last year on the partnership in the GTM, which aims to provide research-based online mentoring for a highly selective group of outstanding youths from around the world free of charge. The HKAGE will nominate exceptionally outstanding gifted students in STEMM to this highly competitive programme. The mentee-to-population ratio will be about 1 to 5 million. Nomination by the HKAGE will be submitted to the GTM by May 2020.

For details please visit:

<https://www.globaltalentmentoring.org/>



道德及 文化智能

Moral and Cultural
Intelligence

作者：優才（楊殷有娣）書院小學部校長陳家偉博士

1983年，美國哈佛大學心理學家迦納教授（Howard Gardner）提出多元智能理論（Multiple Intelligences），廣受教育界重視，打破了過往只重視智商分數（IQ Scores）去評估人類智能的做法。根據1983年的架構，迦納教授提出七大智能，這些智能的特質是單元的（Modular），而且是多元的（Multiple），是各自獨立，又可以同時呈現。

1983年以後，多元智能的理論仍不斷發展，終於在十六年後（即2009年），迦納教授再提出自然智能（Naturalistic Intelligence），把七項智能擴充至八項。及後迦納教授又嘗試提出存在智能（Existential Intelligence），可惜多年研究仍未取得進展。

其實，我認為多元智能理論的心理架構（Frame of Mind）仍然有其不足之處。因為有些非常重要的智能或智慧，不是必然可以用西方的研究方法作出普遍的研究和驗證（Empirical Studies），而是要因應地區和

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In 1983, the theory of Multiple Intelligences proposed by Prof Howard Gardner, a psychologist at Harvard University in the United States, attracted extensive attention from the education community and imposed a change on the practice of emphasising only the IQ Scores in human intelligence evaluation. Under Gardner's 1983 framework, seven multiple and modular intelligences were proposed.

The theory of Multiple Intelligences has been developing since 1983. Sixteen years later (i.e. in 2009), Prof Gardner proposed to include Naturalistic Intelligence as the eighth intelligence. Following that, Existential Intelligence has also been introduced by Prof Gardner but has yet to be included into his framework notwithstanding years of research carried out.

In fact, I think the Frames of Mind theory for Multiple Intelligences has its shortcomings as the existence of some crucial intelligences or wisdoms is not necessarily supported by western empirical studies and tests. Instead, the related studies should be carried out taking into account the uniqueness, universality and significance of geographical and cultural

文化的特殊性、普遍性和重要性去研究，所以我提出了一項新的智能——道德及文化智能 (Moral and Cultural Intelligence)。

雖然八項智能當中已包括內省智能 (Introspective Intelligence) 和人際智能 (Interpersonal Intelligence)，但都是停留在較為基本及表面的介紹，如一些自我反省的方法和與人相處溝通、控制情緒技巧等，忽略了更廣大深遠的「文化元素」。所謂「文化」就是一種人類長期累積下來的智慧，讓人與大自然可以和諧並生；人與人之間可以和睦相處的法則和智慧。

道德就是價值觀，讓人知道甚麼事應該做，甚麼事不應該做。簡單來說是人心目中的「一把尺」，讓自己評定自己的行為標準；但每一個地方、國家和民族都會因應自身的地理環境、氣候、歷史和宗教信仰而有所不同，例如古埃及文化、希臘文化、羅馬文化、希伯來文化、回教文化和中華文化等。各種文化都有其可取的地方，都是值得承傳的。

又因為文化和道德都有廣泛性和穩定性，所以會影響人們的思維和行為表現。雖然影響是不知不覺的，但卻深遠而穩定。世界之大，當然可以容許不同的文化並存。因此迦納教授的「存在智能」確實難以用科學的方法引證和確立成為一種全球普遍 (Empirical) 智能，但我們又確實不能忽略道德及文化智能的重要性。

最後我還想提出一項更高層次的智慧——「宗教及心靈智能」，原因是雖然宗教及神是難於用科學方法去驗證，但個人卻可以切切實實的體會和體悟。宗教和信仰都屬於形而上的學問，心理學家確難以探索和理解呢！



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factors. With these in mind, I suggest that Moral and Cultural Intelligence should be included as a new intelligence.

Although Introspective Intelligence and Interpersonal Intelligence are already among the eight intelligences under Gardner's framework, they are presented from a basic and general perspective. Only methods of self-reflection and skills for interpersonal communication and emotional control are mentioned, while the 'cultural elements' which have more widespread and profound implications are usually neglected. Here, 'culture' refers to the laws and wisdoms accumulated over time in the human society, guiding people to live in harmony with nature and with each other.

Morality is the value that people take for doing or not doing something. To put it simple, it is a 'scale' in people's mind for measuring their own behaviour. This 'scale' differs for different places, countries and nations due to their different geographical environment, climate, historical and religious background. Hence the Egyptian culture, Greek culture, Roman culture, Hebrew culture, Muslim culture and Chinese culture differ from each other. Each of them has its own advantages and they are all worth inheriting.

With their universality and consistency, culture and morality affect people's thought and behaviour in a profound and consistent way, without being noticed. Big as it is, the world can surely allow the coexistence of different cultures. Although there might not be sufficient scientific and empirical support for including Prof Gardner's 'Existence Intelligence' as a universal intelligence, the importance of Moral and Cultural Intelligence should not be overlooked.

Finally, I would like to mention a kind of wisdom at an even higher level — 'Religious and Spiritual Intelligence'. Despite the fact that religion and God are difficult to be verified scientifically, individuals can have real and concrete experience and understanding about them. As religion and belief are both related to the metaphysical realm, it is not surprising that they can hardly be studied and understood by psychologists!

兒童及青少年才能發展： 資優特質、自我效能及 生活滿足感扮演的角色

*Talent Development in Children
and Adolescents:
Roles of Gifted Characteristics,
Self-efficacy and Life Satisfaction*



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您了解子女的特質嗎？以電影《反轉腦朋友》中的主角雷麗為例，作為青少年，她經歷人生轉變、新的學習階段和居住環境，為了應付這些成長挑戰，雷麗努力作出調較和適應。

雷麗腦裡的五個支柱包括：家庭、友情、曲棍球、誠實和開心果（Goofball）。家庭為青少年良好發展提供重要環境，父母的愛護和信任，讓他們能建立自信，勇於探索個人潛能。朋友的情誼和陪伴，鼓勵他們成為獨特的自己。曲棍球是她成就感的起源，透過參賽，獲得成功，和隊友合作贏得讚賞。誠實則是她最看重的品格，追求率真和真誠，討厭和不能忍受虛偽，要求自己和他人都要真摯待人。當她失意和寂寞時，想像中的開心果朋友（Goofball）能安撫她的情緒，跟她一起傻笑，讓她心神放鬆。這裡建議家長可從以上五個支柱去了解子女。看看能否說出子女以甚麼成就自豪，了解他們的開心果朋友是誰。

本文簡介賽馬會「知優致優」計劃^{註一}有關資優特質、自我效能及生活滿足感的數據。為了讓教師和家長了解資優孩子的特徵和需要，研究團隊驗證了 11 個方

註一：「知優致優」計劃承蒙香港賽馬會慈善信託基金的慷慨捐助，計劃為期三年，由中大教育學院「大學與學校夥伴協作中心」主辦、「資優計劃」負責策劃和推行，聯同香港理工大學、香港城市大學和香港教育大學的學者組成跨院校研究團隊。

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Do you understand the individual characteristics of your children? Take Riley in the movie 'Inside Out' as an example. Being an adolescent, she is undergoing a transition, entering a new school and moving to a new town. To manage all these challenges, she has to be adaptive.

In the headquarters of Riley's brain, there are five pillars: family, friendship, hockey, honesty and 'goofball'. A family with parental love and trust provides an advantageous environment for her to build up self-confidence and unleash potentials. Friends and peer support act as a looking glass for her to explore the unique self. Participation and winning in hockey games foster a sense of competence and connection with teammates as well as recognition. Honesty is her most cherished character. She wants to be true to herself and others and hates hypocrisy. When she feels down and lonely, 'goofball' — her imaginary friend soothes her and has fun with her. With respect to the five pillars, parents can understand the personal characteristics of their children better. Do you know what makes your child feel proud of himself or herself? Who is his / her 'goofball'?

This article will briefly share findings of the relationships among gifted characteristics, self-efficacy and life satisfaction in participants of the Jockey Club 'Giftedness Into Flourishing Talents' (Project GIFT).¹ To enhance parents and teachers'

1. The Jockey Club "Giftedness Into Flourishing Talents" Project (Project GIFT) is launched by the Centre for University & School Partnership, Faculty of Education, the Chinese University of Hong Kong with funding from the Hong Kong Jockey Club Charities Trust to promote school-based talent development and gifted education in Hong Kong. It is a 3-year initiative organised by the Program for the Gifted and Talented of the Chinese University of Hong Kong, and a cross-institutional consortium with research investigators from the Chinese University of Hong Kong, the Hong Kong Polytechnic University, City University of Hong Kong, the Education University of Hong Kong.

面的資優特徵，包括：動機、溝通技巧、興趣、解難能力、想像力／創造力、記憶、探究、洞見、合理、幽默和領導才能等。結果發現最能辨別的資優特徵是動機、溝通技巧、興趣、解難能力、探究和洞見。資優學生在以上方面和一般學生有明顯分別。而且這些資優特徵和各範疇的多元智能都有中度的正相關，例如：語文、音樂、數理邏輯、空間、肢體動覺、內省、人際和自然觀察智能。這些資優特徵也和各範疇的心理健康都有中度的正相關，包括：自主性、環境掌控、個人成長、正向人際關係、生活目的和自我接受。換句話說，資優特徵越高的學生，他們的心理健康也越高。

根據 2,520 位參加第一層全班式資優教學的中小學生，資優特徵、兒童的自我效能和生活滿意感能有效預測數理邏輯智能、心理健康範疇的自主性和個人成長。而從 178 位參加第二層抽離式資優教學的中小學生，資優特徵、兒童的自我效能和生活滿意度能有效預測數理邏輯智能、內省智能、心理健康範疇的自主性、環境掌控和個人成長。這些結果說明，根據學生的資優特徵而設計全班式或抽離式教學課程，以及提升兒童的自我效能和生活滿意度為目的，能展現學生的多元潛能，促進他們的正向心理健康。

在學校之外，家長同樣可以幫助孩子提升自我效能，例如：一）建立「成功日誌」記錄他們的成功事項。二）建立實際可行的目標及完成該目標的策略。三）多獎勵孩子，鼓勵孩子嘗試不同的東西。四）引導孩子辨認自己的強項，辨認及挑戰負面想法。五）透過分享個人克服失敗的經驗，陪伴孩子經歷挫敗，建立抗逆力。至於如何提升資優兒童的生活滿意度？家長可以：一）多些欣賞孩子，與孩子建立互信關係，耐心聆聽孩子對學校和生活的感受。二）在孩子有能力作決定的範圍，放手讓他們建立自主性，以鼓勵個人成長作為家庭的任務。



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understanding of personal characteristics and needs, the research team investigated 11 dimensions of gifted characteristics, including motivation, communication skills, interest, problem solving abilities, imagination/creativity, memory, exploration, insight, reason, humour and leadership. The most distinctive characteristics differentiating gifted learners are motivation, communication skills, interest, problem solving abilities, exploration and insight. These gifted characteristics have moderately positive correlations with all the domains of multiple intelligences, namely linguistic, musical, logical and mathematic, spatial, bodily / kinesthetic, intrapersonal, interpersonal, and natural intelligence. These gifted characteristics also correlated moderately and positively with all the subscales of psychological wellbeing, namely autonomy, environmental mastery, personal development, positive relationship, meaning of life, and self-acceptance. In other words, student who have higher gifted characteristics also have higher scores in psychological wellbeing.

Results from 2,520 primary and secondary students taking part in level one whole class enrichment programmes have shown that gifted characteristics, self-efficacy and life satisfaction predicted logical and mathematic intelligence, autonomy and personal development in psychological wellbeing. Findings from 179 students in level two pullout enrichment programmes also showed that these three variables predicted logical and mathematic and intrapersonal intelligences, autonomy, environmental mastery and personal development in psychological wellbeing. These findings have illustrated that both level one and level two programmes tailoring to meet gifted characteristics with foci on enhancing self-efficacy and life satisfaction would also unleashing their potentials and promoting psychological wellbeing among children and adolescents.

In addition to school environment, parents can also promote children's self-efficacy by the following strategies: (a) keeping a 'success diary' to record successful events, (b) setting an achievable goal and strategy to attain it, (c) using rewards and encouraging children to give different trials, (d) guiding children to identify their own strengths and to challenge negative thoughts, and (e) sharing your own stories of overcoming failure, accompanying them in their downs and fostering resilience. To foster life satisfaction, parents can show appreciation to children and build a mutually trustworthy relationship by listening to their feelings about school and life. Another useful strategy is to support them to be autonomous by encouraging to make developmentally appropriate decisions, and to enhance personal development in all members in the family.



培養子女 愉快自主學習

Raising Children as
Happy and Self-directed Learners

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資優兒童一向予人懂得自主學習的印象。不過，若他們遇到不感興趣的功課或活動，便會提不起勁去完成，學習成效可能會大打折扣。此外，也有資優兒童原先對事物充滿興趣，可是隨著年紀增長，逐漸失去動力。這些情況往往令家長束手無策。很多家長曾嘗試運用賞懲方法鞭策子女，但效果可能亦不太理想。其實，答案就在於培養子女的內在動機。

根據自決理論 (Self-determination Theory; Ryan & Deci, 2000)，人與生俱來有三種基本心理需要：能力感、自主感和關係感。當子女在學習過程中，這三種心理需要能夠得到滿足，他們自然會感到愉快，能建立起自主的學習動機。

Gifted children are often thought to be self-directed learners. However, when it comes to learning assignments or activities they are not interested in, they will have very little motivation to complete them and the learning outcome will be impaired. There are also gifted children who were originally interested in many things but have gradually lost their learning motivation as they grow older. Parents often feel frustrated about these situations. Many parents have tried to motivate their children with rewards and punishments. However, the effect may not be satisfactory. In fact, the solution to these situations lies in the intrinsic motivation of the children.

According to the Self-determination Theory (Ryan & Deci, 2000), people are born with three basic psychological needs: competence, autonomy and relatedness. When these three psychological needs are met in the process of learning, the children will feel happy and be motivated for self-directed learning.

「能力感」是指感受到自己有能力掌控環境和事物。例如，當子女對所學的東西有把握時，他便會更自發地嘗試，接受挑戰。有研究指出，能力感較高的兒童會踴躍參與學校活動，更加堅持和努力去學習。故此，家長可選擇程度與子女能力相若的任務，先讓他們建立能力感，內在動機便隨之而提升。

「自主感」是指感受到自己的行為是有選擇的，是由心而發的，而不是被迫去做。這包括了解事情的背後意義，自願地完成該事情。研究指出一個人若可自主地處理任務，有助提升其學習興趣。例如，家長可透過開放式提問，邀請子女計劃自己的學習進程。「你希望先做哪一科目的功課？在甚麼時間完成？用甚麼方法完成？」，從而讓子女感受到父母尊重他們的個人意願，而不是被父母操控去完成課業。

「關係感」是指渴望與他人建立情感連繫的需求。子女在追求學問和生活中難免會遇到困難和疑惑，若過程中得到父母無條件的關愛，不但可建立良好的親子關係，也可增強克服困難的動力。一項外國研究結果顯示資優孩子的動機建基於他們對自己能力的評估和父母的支持。因此，家長多聆聽、了解和欣賞子女有助推動他們學習，提升學習動機。

總括而言，家長在培養資優兒童自主學習時扮演著重要角色。只要掌握以上三大法寶，不但可提升子女的內在學習動機，而更重要的是令子女能愉快地盡展所長。



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The sense of 'competence' refers to the feeling of being able to take control of the environment and the situation. For example, when a child has mastery over what he is learning, he will be more spontaneous in trying new things and ready to accept challenges. Studies show that children with higher sense of competence will initiatively take part in school activities, be more persistent and more diligent in learning. Hence, parents may assign their children with tasks that match with their ability to build up their sense of competence first. Their intrinsic motivation will subsequently be enhanced.

The sense of 'autonomy' refers to the feeling of being able to make one's own choice, rather than being pressured to do something. This includes knowing the underlying meaning of a task and doing it volitionally. Studies show that allowing more autonomy helps enhance one's interest in learning. Parents may, for example, suggest their children to plan their own learning progress by asking them open questions, such as 'which assignment do you want to do first?', 'when will it be completed?' and 'how will it be done?'. In this way, the children will feel that their thoughts are respected by their parents and they are not controlled by the latter to do the homework.

The sense of 'relatedness' refers to the need to establish emotional connections with others. It is inevitable that children will encounter difficulties and doubts during the process of learning and in their daily life. The unconditional love from parents not only help establish a good parent-child relationship, but also enhance children's motivation to overcome difficulties. An overseas study reveals that self-assessment of their own competence and support from parents form the base for the motivation of gifted children. Therefore, more listening, more understanding and more appreciation by parents will facilitate the learning of gifted children and increase their learning motivation.

In summary, parents play a significant role in raising gifted children as self-directed learners. Once you master the above three magic tools, you will be able not only to increase your children's intrinsic motivation for learning, but also help them fully unleash their potential happily, which is even more important for them.

資優學生的成長： 數理小子 越級挑戰

鄒駿宏（右一）
Tommy Chau
(1st Right)

一位中五學生越級挑戰，尚未完成中學階段，已獲英國牛津大學取錄，修讀為期四年的碩士課程。他是誰？他就是鄒駿宏。

現時十八歲的駿宏來自基層家庭，在內地出生，未念過幼稚園，就入讀小學，未完成小學，就升讀中一。過往當補習老師的爸爸，經常帶他一起補習。駿宏往往安坐一隅，默默看著爸爸補習，漸漸地對數學產生興趣。一次，駿宏更主動地問那補習學生的媽媽：「姨姨，我可以一起學嗎？」姨姨答應。從此唸小學的他開始接觸中學數理科，強烈的求知慾，驅策他進入學習里程的「快線」。

及至中一，經校方考核，配合他超前的學習進度，安排跳級，彈性修讀中四的物理、化學、生物，中五的數學核心及延伸課程，至於中文、英文及通識則維持在中一程度。中三時，十三歲的駿宏參加初中科學奧林匹克比賽勇奪銀牌，獲邀成為香港資優教育學苑學員。自此以後，喜歡探索未知領域和接受挑戰的駿宏，透過參加國際科學及國際物理奧林匹克比賽，提升能力。過去數年，他多次代表香港出戰，創出三金、三銀及兩銅的卓越成績。去年五月，駿宏已經第九度代表香港參賽。

熱愛思考科學難題的駿宏，在家中藏有兩疊各高一點八米的科學難題工作紙，當中不少更達大學程度。毅力驚人的他全情投入學苑的課程和訓練，大部分出席率達到百分之一百。此外，他參加科大的「中學／大學雙修課程」，中學大學雙軌並行，兼讀了應用數學、力學、電學、光學、量子力學、統計力學等。目前，唸中五的他已完成科大的十二個課程，尚需修畢餘下的兩個課程，便可以用十四個課程並且成績平均積點 (Grade Point Average, GPA) 達 3.7 或以上的成績直接入讀牛津物理系的四年制碩士課程。故此，駿宏以大學生的身份，而不是以中學生身份報讀牛津。

前年，駿宏嘗試報考美國研究生入學考試物理試 Graduate Record Examinations (GRE) Physics Test 考獲 (990/990) 最高級別成績。他希望將來可以成為科學家。去年三月，駿宏申請獎學金，他自知家庭資源有限，小伙子以平常心面對人生的各種際遇，倘獎學金未能獲批，他會就讀本地大學。

後記：駿宏已於去年六月獲全費獎學金讓他可一圓赴英國牛津大學修讀為期四年的碩士課程的夢想。

文章部分內容轉載自《星島日報》

The Growth of a Gifted Student: A Science and Mathematics Kid Who Punches Above His Weight

Who is this S5 student who successfully punches above his weight to secure a place in the University of Oxford for a 4-year master's degree programme, despite not yet having completed his secondary school study? He is Tommy Chau.

Tommy, 18 years old, comes from a grassroots family and was born in the Mainland. He started his primary school study without attending kindergarten, and his secondary school study without completing the primary school study. Tommy's father, who used to be a private tutor, often brought along Tommy when he was giving home tuition. Having sat quietly watching the tuition for some time, Tommy became interested in mathematics. Once he even asked the parent of the tuition student, 'Auntie, may I join the tuition?' The auntie agreed and Tommy, who was still in primary school, started learning secondary school mathematics and science. His strong curiosity has driven him onto the 'fast track' on the path of learning.

When Tommy was in S1, flexible arrangement was made by his school for him to study physics, chemistry and biology at S4 level; mathematics compulsory and extended parts at S5 level; and Chinese, English and Liberal Studies at S1 level after assessment had been conducted on Tommy's learning progress. In S3, 13-year-old Tommy won a silver medal at the International Junior Science Olympiad and was invited to join the Hong Kong Academy for Gifted Education (HKAGE) as student member. Since then, Tommy, who is keen on exploring unknown areas and accepting challenges, has participated in various international science olympiads and his competence was much enhanced. During the past few years, Tommy has altogether won three gold, three silver and two bronze medals on behalf of Hong Kong in various international competitions of this kind. In May last year, he had represented Hong Kong to join an international science olympiad for the ninth time.

Tommy loves working on science problems. There are two stacks of science worksheets in his home, each about 1.8m high with college-

level science problems printed on some of them. With his amazing perseverance, Tommy devotes himself fully to the HKAGE's programmes and his attendance for most of the programmes he joined reaches 100%. Tommy has also participated in the Dual Program offered by The Hong Kong University of Science and Technology (HKUST), which allows him take up credit-bearing university level courses while pursuing his secondary school study. So far, Tommy has completed 12 courses on mathematics, mechanics, electricity, optics, quantum mechanics, statistical mechanics, etc. offered by HKUST, although he is still in S5 on the other hand. Upon completion of the remaining two courses under the Dual Program, he would have finished 14 courses with a GPA above 3.7. and would be admitted by the Department of Physics, University of Oxford for a four-year master's programme. Tommy was admitted by the Oxford at college student level, instead of secondary student level.

The year before, Tommy attempted the Graduate Record Exam (GRE) Physics Test and obtained the highest possible score of 990. He wants to become a scientist in future and is now applying for scholarships to support his overseas study. Knowing that it will be difficult for his family to support him to study abroad, Tommy looks at the situation ahead with a calm and peaceful mind. If the scholarship is not approved, he will apply for a local university instead.

Afterword: Tommy's dream come true, he was successful in obtaining a full scholarship to support his four year's master study in University of Oxford by June last year.



資優學生的成長： 創科小明星

十四歲的吳沛熹 (Duncan)，現為中二學生，年紀小小，腦裡充滿各種奇思妙想；他精力旺盛，是個「周身郁，無時停」的資優小男生。小四時，沛熹通過學校提名，成為香港資優教育學苑（學苑）學員，在短短數年間參加過接近 60 項活動和課程。沛熹表示在學苑最大的得著就是學習到情緒管理及人際技巧，結交到頻道接近的學員，一起參加比賽，接受挑戰。去年四月，他與一位學員兼同學參加了「2019 年香港資訊及通訊科技獎」並獲得優異獎。及至七月，沛熹又與五位學員合作參加由學苑主辦的「共建智慧城市 - 研究服務學習計劃 2018/19」以 Smart Traveller 智遊者應用程式 (App) 奪得冠軍。

事實上，早前沛熹曾夥拍兩位學員參加「賽馬會運算思維教育全港小學生運算思維比賽 2017」(CoolThink@JC)，以「長者走失警報器」手機 (App)，力壓一百隊勁旅，勇奪冠軍。沛熹和隊友，年紀雖輕，對身邊發生的事情卻是相當敏銳，他們觀察到區內人口老化日趨嚴重，有些長者更因腦退化而走失。過往沛熹的姨婆亦試過忘記住址，不懂回家，令家人擔心不已。他們研發的 App，操作簡單，只要按下 SOS 鍵，便會

播出求助語音，機主一旦離開預設範圍，手機就會長響，發送信息至預設的緊急聯絡人。

活力十足的沛熹，經常動過不停，有時難免令身邊的人躁動不安。但當他全神貫注思考如何寫 App 達到他想要的效果時，就有如入定，動輒一、兩個小時也可以不動，令媽媽感到驚訝。為了完善 App 的功能，吳媽媽身體力行，在暑假時陪伴沛熹走遍港九新界進行測試。外遊時，亦不忘進行測試，甚至邀請在海外工作的親友協助測試。媽媽的支持，對沛熹起著鼓勵作用，推動他進行探索，改善他的發明。

沛熹現正積極推動身邊的長者進行測試，同時思考如何教懂他們使用此 App，並進一步研究如何把中文版的 App 翻譯成外語，讓更多人可以受惠。除了在安卓 (Android) 手機上使用，他希望在不久將來也可在蘋果手機 (iPhone) 上進行測試。沛熹不但具有創意，而且樂於分享，他希望讓公眾可以免費使用此 App，減低基層家庭的經濟壓力。他不時邀請其他學員組隊參加類似的比賽，希望為房屋不足、環保等提供創意解決方案。

文章部分內容轉載自《星島日報》

The Growth of a Gifted Student: A Little Star in Innovative Technology

Fourteen-year-old Duncan Ng, now an S2 student, is full of whimsy ideas despite his young age. He is an energetic gifted boy who can hardly stay still. Duncan was nominated by his school to join the Hong Kong Academy for Gifted Education (HKAGE) when he was in primary 4. Over the past few years, Duncan has participated in nearly 60 activities / programmes of the Academy. To him, the most precious things he got from the HKAGE are the emotional management and interpersonal skills. In the HKAGE, Duncan has made friend with like-minded buddies, with whom he can communicate smoothly and join hands to take up challenges in various competitions. Last April, Duncan participated in the Hong Kong ICT Award 2019 with a classmate who was also a student member of the HKAGE. Together they won an Award of Merit. Last July, Duncan and five HKAGE student members took part in Co-creating Smart City – Research / Service Learning Project 2018/19, with their innovative Smart Traveller APP, they awarded the champion of this project.

Duncan, in partnership with two other student members of the HKAGE, had also won the champion in 'CoolThink@JC Competition 2017' earlier among 100 competitors with a mobile app 'Alarm Tracker for the Elderly'. Despite their young age, Duncan and his teammates were very sensitive to the things happening around them. They had observed that the population in their neighbourhood was aging and some old people had lost their way due to dementia. Duncan's grandaunt had once forgotten her residential address and lost her way, making her family extremely worried. The app developed by Duncan's team was very easy to operate. An audio message for help would be played when the 'SOS' button was pressed, and the alarm would be activated with a text message sent out to the emergency contact person when the mobile phone was brought beyond the pre-set area.

Duncan is full of energy and is restless all the time, which might sometimes be a bit disturbing to those around him. However, when he focused on designing the mobile app, he would stay still for at least an hour or two. Even his mother was surprised by that. To help Duncan improve the app, Duncan's mother accompanied him to test the app throughout Hong Kong during the summer vacation. They kept testing the app even when they were travelling abroad. They also asked their friends and relatives who worked overseas to help test the app. Duncan got much encouragement from his mother's support, which has driven him to explore more and further improve his invention.

Duncan is now actively inviting elders around him to test his app, and at the same time trying to figure out an effective way to teach them how to use the app. He is also thinking of translating the Chinese app into foreign languages so that more people can be benefited. In addition to being used on android phones, he hopes to have his app tested also on iPhones in the near future. Duncan is not only creative but also willing to share. He wishes that his app can be used by the public for free so that no additional financial burden would be imposed on grassroots families in need. Duncan is happy to invite peers in the HKAGE to form a team to participate in another similar competition which aims to explore creative solutions for issues such as undersupply of housing, environmental protection, etc.





資優學生的成長： **敢夢飛翔**

哪一個童年的美夢，不是飛上天空？謝振康 (Tom) 是香港資優教育學苑的學員、校友和實習生，一直以來積極參與學苑的活動和工作。二十一歲的他是香港城市大學媒體與傳播系三年級生，同時亦是電台節目主持。小時候的他，夢想成為飛機師，在空中馳騁，可惜色弱問題，把他從雲端摔下。然而敢於創夢的他，沒有因此而放棄，在不斷尋索之下，終於找到下一個夢想。

中四那年，Tom 通過學校提名成為學苑科學範的嚮學員，在科學課程以外，他亦參加傳播學、心理學、個人與社交成長等課程。他表示學苑的學習，拓闊了他的視野，讓他了解到世界真的很大。在學苑舉辦的二〇一五／一六「資優天使——服務學習比賽」他和隊友以原創性意念奪得銅獎，通過積極參與青少年服務，同年獲選青苗基金的香港傑出學生選舉決選生。

Tom 懂得從興趣出發，主動爭取機會，發展個人潛能。自從初中被老師發掘當司儀後，他曾多次為學校及學苑擔任司儀，認識到自己的口才頗佳，喜歡說話又喜歡收聽電台節目，發現聲音的世界為他帶來無限可能、無限想像。中四時，他反思以學生為對象的電台節目，為何不可以由學生來「開咪」？於是他主動與電台聯絡，沒想到對方真的讓他接觸廣播工作，為他的夢想打開了一道門。



機緣巧合下，當年結識的廣播人邀請他參與「香港電台社區參與廣播服務」，實現他的廣播夢，用聲音載著聽眾翱翔於大氣電波。Tom 成為《吾里鄉情》、《最後的香港製造》、《維城食志》、《樓梯底的風光》等節目主持，負責編導和製作。為了這份熱愛，在上學以外，他每星期花接近一半時間，投入廣播工作，縱然辛苦亦不覺疲倦。對他來說廣播是一種文化承傳，「我最鍾意係《最後的香港製造》，呢個節目好有新聞價值，部分受訪老闆年事已高，但對於自己嘅職業，啲啲行將失傳嘅手藝，例如手造繡花鞋、手雕麻將都依然好有熱情，好值得後輩欣賞。」

文章部分內容轉載自《星島日報》

The Growth of a Gifted Student: **Dare** to Fly High

Every one of us has dreamt of flying high in the sky. So has Tom Tse, our ex-student member / intern and current alumnus who has been actively participating in the Academy's programmes and work. Twenty-one-year-old Tom is a Year-3 student of the Department of Media and Communication, City University of Hong Kong and a radio programme presenter. Since he was a little kid, Tom has been dreaming of becoming a pilot and soaring freely in the sky. However, he was later diagnosed with colour vision deficiency. His flying dream was broken, and he was thrown down onto the ground. As a dream catcher, Tom does not give up and keeps seeking for another dream. He finally finds one.

Tom joined the Hong Kong Academy for Gifted Education (HKAGE) via school nomination as a student member under the Science domain when he was studying in S4. Apart from the HKAGE's science programmes, he also joined programmes on communication, psychology and personal / social development. Tom said the learning with the HKAGE has broadened his horizons and made him realised that the world is really big. In the Gifted Angels – Service Learning Competition 2015/16 organised by the Academy, Tom and his teammates won the Bronze Award for their original ideas. In the same year, with his active participation in youth services, Tom was selected as one of the finalists in the Hong Kong Outstanding Students Award organised by the Youth Arch Foundation.

Tom knows well how to actively seek opportunities to develop and unleash his potential according to his personal interest. Since his talent as master of ceremonies was discovered by a teacher during his junior secondary school study, Tom has taken up this role several times in his school and in the Academy and has realised his potential as an eloquent speaker. Being a radio programme lover who is also very talkative, Tom finds that there are infinite possibilities and unlimited imaginations

in the world of sound. In S4, Tom questioned why radio programmes with students as the target audience were not hosted by students. He then took the initiative to contact the radio station to express his opinion. To his surprise, he was offered the chance to get in touch with the broadcasting industry, which has opened a door for his dream to come true.

By chance later, a broadcaster Tom got to know when he was in S4 invited him to join the RTHK's Community Involvement Broadcasting Service (CIBS) project. Tom's broadcasting dream started to come true. With his voice, Tom was able to carry his audience to fly high in the air. He became the producer, director and host of various radio programmes under the CIBS, such as 'Village Stories', 'Finale: Made in Hong Kong', 'Eating in Victoria City' and 'Scenery Below the Stairs'. Because of his love for radio broadcasting, Tom spends nearly half of his time outside school to prepare for the programmes. Nevertheless, he never feels tired. To Tom, radio broadcasting is a channel for cultural inheritance. 'My favourite radio programme is "Finale: Made in Hong Kong", in which some local craftsmen are interviewed. Despite their age and the fact that their career and craftsmanship, such as hand-made embroidered shoes and hand-carved mah-jong, are phasing out, they are still full of passion and enthusiasm towards what they are doing. This is indeed something the younger generation should admire.'





蓋思倫（左一）
Isaac Gai (1st Left)

資優學生的成長： 熱愛競賽 無懼挫敗

追求卓越，喜歡接受挑戰是資優學生的特質之一。現年十五歲的蓋思倫 (Isaac) 為中四學生，熱衷競賽，透過嚴格訓練，晉級挑戰，不斷提升個人多方面的能力。從小一至今，Isaac 在十年內，參加過逾二百五十場賽事。當中包括：數學、物理、科學、柔道、游泳、籃球、書法、朗誦、鋼琴等項目，涵蓋學術、運動和藝術範疇。過程中，有勝有負，在跌跌碰碰之中，認識自己的強項，明白到個人的限制，磨練出多方面的持久力和抗逆力。

到底他為何喜歡參賽？媽媽 Kitty 憶述，自幼稚園起，Isaac 已經喜歡表現自己，其學習能力特強，很快掌握新事物；在學業之外，他需要更多刺激來啟發個人潛能。在成長路上，Kitty 尊重 Isaac 的決定。小一時，他主動要求學柔道，學了三個月，教練就發現他的潛質，鼓勵他參賽，雖然首次出賽，鎩羽而歸，小 Isaac 為此哭了一場，但媽媽安慰他輸了不要緊，若興趣仍在，就繼續下去。隨後他加倍努力，再添一點鬥心，愈戰愈勇，終於在 30 次的柔道比賽，創出每五次贏四次的佳績。

及至小四因溜冰受傷改為習泳，學了三個月，教練又

著他參賽，結果奪得團體冠軍。往後，他在游泳方面有不俗的表現，贏輸各佔一半。小六時，Isaac 學習奧數，學了一堂，導師就邀他出賽一展所長。他在校內的數學成績經常名列前茅，曾多次獲得本地及海外的數學獎。去年，他與兩位學員組隊參加由科學園主辦的「SciTech 挑戰賽 2019」，這次比賽不獨考驗個人能力，更需要團隊合作精神。Isaac 和隊友，最終勇奪冠軍。

年紀輕輕的 Isaac 鍛鍊出豁達的心境，能以平常心面對得失，他表示，「贏了有獎，輸了又不會『蝕底』。」如此率性，全因媽媽認為在全球化的社會，涉獵更廣泛的事物，對他更有好處。有否擔心比賽會影響 Isaac 的學業？Kitty 直言，「成績不是不重要，但我更加鼓勵 Isaac 在能力範圍之內發揮最佳表現，達至全人發展，成為未來社會棟樑。作為家長的不要只把孩子的優點放大，把缺點縮小，家長更需要花心思幫助子女成長，像 Isaac 的語文能力較弱，我就透過圖像記憶法幫他背中英文。社交方面較弱，我就鼓勵欣賞別人的長處，學習與人協作互補不足。」

文章部分內容轉載自《星島日報》

The Growth of a Gifted Student: Passionate about Competitions without Fear of Failure

The pursuit of excellence and willingness to take up challenges are two of the qualities of gifted students. Fifteen-year-old Isaac Gai, an S4 student, demonstrates well these qualities. Isaac is very keen on participating in various competitions and continuously improving his competence in different aspects through rigorous training to prepare himself for greater challenges ahead. During the past 10 years since he was in primary 1, Isaac has participated in more than 250 academic, sport and arts competitions, including those on mathematics, physics, science, judo, swimming, basketball, calligraphy, recital, piano performance, etc. In some competitions he won, and in others he didn't. Amidst the ups and downs, Isaac has discovered his personal strengths and restrictions. His persistence and resilience have also been enhanced.

Why is Isaac so keen about joining competitions? Isaac's mother, Kitty, recalled that her son has been a very expressive person with exceptional learning ability since he was in the kindergarten. He needs much stimulation to unearth his potentials apart from his academic development. Kitty respects Isaac's decisions on his growth journey. When Isaac was in primary 1, he asked to join a judo class. After learning for three months, Isaac's talent was discovered by the coach, who encouraged him to take part in related competitions. However, Isaac lost his first ever competition and was extremely upset. At that moment Kitty told him that losing a competition was no big deal and encouraged him to continue learning judo if he still liked the sport. Isaac then tidied up his mood and doubled his effort and determination for later challenges. For the succeeding 30 judo events, Isaac attained remarkable results and won 4 events in every 5 ones he joined.

Isaac started learning swimming after he got hurt while playing ice-skating in primary 4. Once again, he was encouraged by the coach to take part in related competitions after 3 months' training. But this time he won the championship. Isaac's

overall performance in swimming was not bad. He won about half of the swimming competitions

he joined. When he was in primary 6, Isaac attended his first Olympiad Maths class. After attending for only one class, he was invited to join a competition by the instructor due to his talent. Back in his school, Isaac is always the top scorer in maths and has won various local and overseas maths awards. Last year, Isaac prepared for the SciTech Challenge 2019 hosted by the Hong Kong Science and Technology Parks Corporation with two other HKAGE student members. This competition not only tests one's personal abilities, but also requires good teamwork. Finally, Isaac and his teammates were awarded for the championship.

Though young in age, Isaac has developed a mindset which helps him face gains and losses peacefully. 'If I win, I'll be rewarded; if I don't, there'll be nothing to lose,' he said. The development of this mindset was attributable to Kitty's belief that exposing Isaac to a wide range of things will benefit him in a globalised society. When asked whether she's worried that Isaac's academic performance might be affected by those competitions, Kitty said boldly, 'Academic results are important, but I emphasis more on encouraging Isaac to do his best and unleash his potentials in various aspects. Through this, holistic development could be achieved for him to become a contributing member in the society in future. We parents should not focus only on their children's strengths and ignore their weaknesses. We need to be thoughtful in supporting our children's growth. For example, Isaac is comparatively weak in language skills. I make use of visual memory method to help him remember the Chinese and English texts. To develop his social skills, I encourage him to appreciate the strengths of others and learn to collaborate with them, so that his weaknesses could be complemented.'





資優學生的成長： 信守承諾、堅持到底

香港資優教育學苑（學苑）七位學員於科學園舉辦的「SciTech 挑戰賽 2019」包辦學生組別的冠亞季軍。其中十四歲的莫天恩在夥伴宋亦丁離港後，獨挑大樑，奮戰到底，不負眾望，發揮超水準表現，勇奪季軍。

跑步感應鞋墊 (Sportalyze) 原是天恩與亦丁共同構思，原理是把具備感應器裝置的鞋墊放於跑鞋內，當用家跑步時，前掌、後腳掌著地的壓力，收集成為數據，再以電腦進行分析，可以協助用家改善跑步姿勢，減低受傷的機會。兩人將分工協議定好，亦丁負責人工智能 (AI) 程式和製作簡報 (PowerPoint)，天恩則負責製作鞋墊，詎料亦丁須於八月赴英國升學，而當時距離要完成作品參賽只尚餘大約兩個月。天恩頓失共同努力的夥伴。究竟是甚麼驅策她面對困難時仍堅持下去？

小妮子回憶道，「放棄不得，是因為承諾，既然應承了代表學苑出賽，就要守信用。我知道，一人作賽，沒可能做到兩個人的質素，但我相信縱使剩下自己一人，仍可以做得到。」亦丁同樣是個守信的夥伴，儘管重洋遠隔，亦堅持要完成 AI 程式。港英兩地，二人經歷時差、極有限的溝通時間等重重障礙，最終 AI

程式被敲定。惟收到程式後，天恩始發現程式仍有錯誤漏洞 (bug)，而比賽日子卻漸漸迫近，她惟有向導師求助嘗試作出修訂，一邊修正，另一邊她亦要趕製簡報介紹跑步感應鞋墊的設計。

回想是次比賽過程，天恩表示感謝學苑兩位學生課程發展主任的協助，對簡報予以建議，又為她物識科技方面的義務導師，設立 WhatsApp 群組隨時回應解決她的疑難。在知識層面方面，學苑課程予她多方面的裝備，例如：人工智能、機器學習 (Machine Learning)、物聯網 (Internet of Things, IoT)、大數據 (Big Data)，讓她發現科學的應用可以相當廣泛。同儕方面，份屬同門的冠軍隊，在比賽當天跟天恩有更深入交流，學員蔡青琳鼓勵天恩留下來聽公開組得獎者的分享及向評判取經，了解怎樣改良跑步感應鞋墊，作出更「貼地」的設計。

是次比賽，天恩的自信提升了，她對科學的興趣拓闊了，視野也深化了，讓她有機會認識更多「猛人」。其後，她與另外數位學員，參加了學苑主辦的「共建智慧城市計劃」，她和隊友構思了急症室分流有關的應用程式，旨在縮短病人輪候睇症的時間。

文章部分內容轉載自《星島日報》



The Growth of a Gifted Student: Persevere to Keep Her Promise

Seven student members of the Hong Kong Academy for Gifted Education (HKAGE) became the champion, the first and the second runners-up of the Student Group in the SciTech Challenge 2019 hosted by the Hong Kong Science and Technology Parks Corporation last year. Among them, 14-year-old Yannis Mok persevered to finish her project 'Sportalyze' to fulfil her promise despite her teammate Vincent Song's withdrawal due to his departure from Hong Kong. Yannis' outstanding performance has won her the third place in the SciTech Challenge.

'Sportalyze' is a smart shoe insole co-designed by Yannis and Vincent. It analyses pressure data from a runner and gives users instant feedbacks to help them run with attention to certain stressed areas of their legs and feet, so that injuries could be avoided. According to the team's original plan, Vincent would be responsible for the artificial intelligence (AI) programming and the PowerPoint presentation, while Yannis would focus on the production of the insole. Just about two months before the project submission deadline, it was found out that Vincent needed to leave Hong Kong in August for his study in the UK. After the unexpected loss of her working partner, what has motivated Yannis to hold on and finish 'Sportalyze' in spite of the difficulties she was faced up with?

'I can't give up because I have promised to join the competition on behalf of the HKAGE. I need to keep my promise.' recalled Yannis. 'I know it would be impossible for me alone to achieve what the original team could have achieved, but I believe I can still finish the project by myself.' Vincent was also a faithful partner. Although being far away from Hong Kong, he persisted to complete the AI programme. Finally, having overcome obstacles such as the very limited time for communication due to time difference between Hong Kong and the UK, the AI programme was completed. After receiving the programme, however, Yannis found that some bugs had yet to be fixed but the submission deadline was right around the corner. She

resorted to seek help from her instructors for rectification advice and started to rush for the PowerPoint presentation.

Recalling what she had gone through during the competition, Yannis expressed her gratitude for two Student Programme Developing Officers of the HKAGE for their advice on her PowerPoint presentation and support for finding volunteer instructors for her and setting up a whatsapp advisory group to facilitate her communication with the instructors. Besides, the student programmes of the HKAGE have equipped her with essential knowledge in various areas, such as AI, Machine Learning, Internet of Things (IoT), Big Data, and have inspired her on the applications of science knowledge in various aspects. Yannis also got encouragement from her HKAGE peers, whose team won the champion award in the Challenge, when they were having some in-depth sharing on the presentation day. With the suggestion of Choi Ching Lam, another HKAGE student member in the champion-winning team, Yannis stayed behind after her own presentation to learn from other teams and seek advice from the adjudicators to modify the design of her smart insole.

After the SciTech Challenge, Yannis's self-confidence and interest in science have been enhanced. Her horizons have been broadened after meeting other 'talents' in science during the competition. After that, she also had participated in the Smart City Competition organised by the HKAGE, her team initiated an idea of creating an apps, to shorten the queuing time of using the accident and emergency services in the hospital.



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Igniting the Passion for Learning



2020 何東資優教育演講暨雙年家長會議為學苑的旗艦活動之一，是次活動經已圓滿舉行。今年的主題是「資優學生的學習動機與人才發展」，我們很榮幸邀得德國雷根斯堡大學海德倫·斯托格教授擔任專題演講嘉賓，分享資優生的動機和成就之研究成果。此外，著名學者和嘉賓就資優學生的學習動機、多元智能和人才發展提供洞見，與會者獲益良多，了解到如何激發資優學生的學習熱情。

The Annual Hotung Lecture cum Biennial Parent Conference 2020, one of our flagship programmes, had successfully concluded. The topic for this year is 'Motivation and Talent Development of Gifted Learners'. We were honoured to have Professor Heidrun Stoeger of the University of Regensburg in Germany as the keynote speaker to share her research findings on the motivation and achievement of gifted students. Besides, prominent academics and guests provided their insights about learning motivation, multiple intelligences, and talent development of gifted learners. The audiences benefited from various views on how to rekindle the talented students' passion for learning.



學苑院長吳大琪教授指出，「不少資優兒童的潛能未有得到全面發揮，而缺乏『學習動機』肯定是其中一項原因。」

Prof Ng Tai Kai, Executive Director of the HKAGE, delivered the opening address, saying that it is quite common that gifted children are not able to fully realise their potentials, and lack of motivation is surely one of the reasons.

學苑主席林曉鋒博士·工程師歡迎各位來賓參加這次具啟發性的活動。

Ir Dr Alan Lam, Chairman of the HKAGE, welcomed all to this enlightening event.





來自德國雷根斯堡大學的海德倫·斯托格教授分享她的研究結果，表示學生動機是資優不可或缺的一部分。

Prof Stoecker, the keynote speaker from Germany, shared her research findings on student motivation as an integral part of giftedness.

優才（楊殷有娣）書院小學部校長陳家偉博士講述文化及道德智能對培育年青一代的重要性。

Dr Chan Ka Wai, Principal, G.T. (Ellen Yeung) College (Primary Section) talked about the importance of Cultural and Moral Intelligence for nurturing our youngsters.



陳麗君博士帶出多元智能及心理健康的重要性。

Dr Chan Lai Kwan brought out the significance of multi-intelligences and psychological well-being.



香港教育大學羅偉柏博士的講題為「如何培育學習動機及子女的精神健康：給父母的重要訊息」。

Dr Wilbert Law of The Education University of Hong Kong delivered his lecture on 'Nurturing Achievement Motivation and Well-being: Key Messages to Parents'.



莊明波先生分享自己教養及提升資優兒子學習動機的寶貴經驗。

Mr Chong Ming Po shared his valuable experience in raising and motivating his gifted son.



香港城市大學許娜娜博士分享的題目為「兒童及青少年人才開發：資優特質、自我效能及生活滿足感所扮演的角色」。

Dr Anna Hui Na Na of City University of Hong Kong shared on the topic 'Talent Development in Children and Adolescents: The Role of Gifted Characteristics, Self-efficacy, and Satisfaction with Life'.





對基因組編輯 一探究竟

Genome Editing Up Close

如果 DNA 是每個生命與生俱來的說明書，那麼，基因編輯技術就是修改說明書內容的文字處理器。

香港科技大學生命科學部的吳若昊教授 (Prof Angela Wu) 是一位生物學家和教育工作者，她向非相關領域的人們解釋基因編輯的概念時，嚴肅又不失詼諧的說，「我們常常需要使用一些比喻，更好地解釋它吧。」

這是一個充滿另類事實、後真相現像的時代，許多社會輿論拒絕科學共識，例如拒絕相信疫苗和氣候變化這些已經被科學證明的事實。在當今這樣一個科學得不到應有重視的社會環境下，科學家助公眾明辨真相之路，道阻且長。「我覺得作為科學家，積極參與科普活動與公眾進行互動，並掌握通俗易懂的方式去傳播科學知識是一項很重要的任務。這樣，我們就可以進行討論並消除誤解以及無端的恐慌。」

對未知的恐懼

基因編輯是一個充滿著誤解的領域。對於很多人來說，它背後的科學聽起來很險惡，像科幻小說中的內容；讓人聯想到赫胥黎式反烏托邦的圖像，在這臆想的社會裡的精英階層是在實驗室中被基因工程設計出來擁有「優越基因」的「設計嬰兒」，並且是由豬胚胎孕育生長的。更糟的是，媒體不僅沒有關注宣傳基因編輯科學上的進步，反而大篇幅報導任何其中可能會出現的錯誤，這些行為對於科學發展和公眾對於科學的認識沒有任何幫助。吳教授說，這些行為正在影響科學研究、開發和科技投資的進程。

「現在大家對基因編輯領域頗有興趣。然而，我感覺到公眾和科學家之間還存在信息不對等——相對於公眾，從事基因組編輯的科學家對這項技術及其潛力了解更多。」作為科學學者和教育工作者的吳教授堅信自己有責任去普及科學真相。

顯微鏡下

從概念來說，基因編輯並不難掌握，也不是什麼新奇事物。

脫氧核糖核酸（或 DNA）是存在於所有活生物體細胞中的遺傳物質，為生物體提供發展、生長和繁殖的指令。這些雙鏈分子對於人類非常重要，它是決定每個人特質的遺傳密碼，辨識每個人的獨特之處。因此，它是生命的藍圖。

一些 DNA 序列組合能夠提供某種生理優勢，例如更強壯的肌群；其他的 DNA 序列組合則可能是導致殘疾或癌症等疾病的錯

If DNA is the instruction manual for life that every human gets at birth, gene-editing technology is the word processor that allows sections to be deleted or rewritten.

Dr Angela Wu, a biologist, and educator, frequently uses this example to illustrate the concept of genome editing to those outsiders of science. 'We have to use analogies a lot,' says the assistant professor at the Hong Kong University of Science and Technology Division of Life Sciences, half-jokingly, but with serious intent.

In an age where alternative facts, post-truth phenomenon, and rejections of scientific consensus are in vogue -- think vaccine and climate change denial -- scientists play a more crucial role than ever in helping societies sort fact from fiction. 'I think it's important for scientists to engage with the public and learn how to communicate science in a way that is easy to understand. This is so we can have discussions and clear up misconceptions or even irrational fears.'

Fear of the Unknown

Gene editing is a field in which misapprehensions abound. For many, the science behind it can sound sinister, almost science fiction. It conjures images of a Huxleyan Dystopia where an elite class of 'designer humans' is engineered in labs and grown in pig embryos. Extensive media coverage on anything that could or has gone wrong in gene editing, rather than the progressive scientific advances already made, does not help. This is affecting research, development, and investment, Wu says.

'There's definitely a lot more interest in the field now. However, I feel like there is still an imbalance in how much we are learning as scientists about genome editing every day compared to what the public knows about this technology and its potential.' As an academic and educator, Wu believes she has a duty to help science change these perceptions.

Under the Microscope

Conceptually, gene editing is not hard to grasp. Nor is it something new.

Deoxyribonucleic acid, or DNA, is the hereditary material present in the cells of all living organisms. They provide the instructions an organism needs to develop, live and reproduce. These double-stranded molecules are essentially the genetic code that determines the traits of every individual, making everyone different from another. Hence, a blueprint for life.

Some DNA sequence combinations could provide one with biological advantages, such as greater muscle mass; others could contain mistakes that introduce disability or diseases like cancer. Gene editing technologies give scientists (and sufferers) the opportunity to correct these genetic faults.

誤序列。基因編輯技術成為科學家和患者能夠修改這些遺傳缺陷提供一線希望。

「此前，已經有一些基因編輯工具可以允許我們修改基因，但那些方法特异性較低。對於更改哪部分的基因，我們也無法準確控制。」吳教授闡述道，「而現在科學家們正在研發的新工具，可以準確有效的編輯指定的 DNA 區域。在治療遺傳疾病方面這些科技突破有巨大造福人類的潛力。」

基因編輯覆水難收

可供科學家使用的新儀器包括「成簇規則間隔的短回文重複序列」或 CRISPR —— 是一種高效基因組編輯工具，可以精確地瞄準並切除基因組雙螺旋中錯誤的片段。被稱為「分子剪刀」的基因編輯，其中最廣泛被應用的一種名叫 Cas9。隨著科技的新突破，編輯的範圍進一步被擴大；從原本只能針對單個基因進行編輯的 CRISPR 技術發展到現在，瑞士的科學家最近研發了一項能夠同時編輯至少 25 個目標基因的技術，這項技術理論上甚至可以編輯上百個目標基因。

「舉例來說，我們知道有些疾病是由一個基因突變引起的。一旦我們知曉那個基因中具體的錯誤是甚麼、在甚麼位置，我們便可以使用這種新工具對其進行編輯和修改，展望未來，這些疾病都能如此被治癒。」

CAR-T 治療法是另一種新興技術。它使用被修改的免疫 T 細胞來對抗血液癌症（如白血病或淋巴瘤等）。應用基因編輯技術修改患者的血液中的 T 細胞，在 T 細胞表面產生嵌合抗原受體（CARs）。這些經過改造的 CAR-T 細胞，在重新被注入患者體內後，就可以發現並積極地攻擊腫瘤細胞 —— 這是病人原有的 T 細胞做不到的。

負面報道

多年來，科學家一直在反覆修整基因改造技術。基因治療是一項與基因改造關係密切的技術，可追本溯源至三十年前。基因修飾技術（現在亦包括 CRISPR）被廣泛應用於提高農作物產量或提升食物的適應性、營養和保質期。它與許多科學技術一樣，在應用和考慮到潛在的後果時觸及到一些倫理問題，尤其是在人類和動物身上使用時。

2018 年 11 月，深圳南方科技大學的一位中國科學家賀建奎在一次會議上宣布：他在人類胚胎上使用 CRISPR 技術修改了一個在某些人群中能夠抵禦愛滋病毒基因的 CCR5，由此創造了世界上第一例由 CRISPR 編輯的嬰兒。至此全球對基因編輯的關注達到白熱化。

儘管他聲稱取得成功，但由於對人類胚胎進行如此高風險的實驗，他受到科學界的廣泛譴責，後來被免職。中國科學技術部對他展開調查。他被冠以不負責任和輕率之名。

在科大教授生物倫理學課程的吳教授，主張對此事持周全理性的觀點。她表示說，不應因為一事件而否定或漠視已經取得的成就。任何類型的醫學治療都會存在風險。但是視乎情況而定，對於身患絕症的患者或患兒的父母來說，一定的風險也許值得承擔。

‘Previously, there were already some gene editing tools available to help us alter our DNA, but the results of those were less specific. We had less control over which parts become changed,’ Wu explains. ‘New tools that we have discovered now allow us to target and edit very specific parts of our DNA. The potential is huge in terms of applications, especially in treating genetic diseases.’

Gene Editing Out of the Bottle

New instruments at scientists’ disposal include ‘clustered regularly interspaced short palindromic repeats’, or CRISPR, a highly-efficient genome-editing tool that can be used to target precise sections of DNA and cut out faulty strands of the double helix. One of the ‘molecular scissors’ that can be used to do this is an enzyme called Cas9. While older CRISPR technologies could only target a single gene for editing, new breakthroughs are widening the scope. Scientists in Switzerland for example, recently developed a technique capable of targeting at least 25 and theoretically, hundreds more.

‘We know for example that certain diseases are caused by mutations in a single gene. Once we know where the mistake is in that gene, we can use such tools to edit or correct what is wrong and hopefully, treat the disease.’

CAR-T therapy is another emerging technology. It involves using modified immune cells, specifically a type of cells called ‘T-cells’ to fight blood cancers such as leukaemia or lymphoma. T-cells are collected from a patient’s blood and engineered using gene editing technologies to produce antibody proteins called chimeric antigen receptors (CARs) on their surface. Once reinfused into a patient, these engineered CAR-T cells can find and aggressively attack tumour cells – more so than unmodified T-cells.

Bad Press

Scientists have been tinkering with genetic modification for years. Gene therapy, a closely related technology, has roots spanning as far back as three decades. Genetic modification techniques, now also including CRISPR, have been widely used to improve crop yields or make food more resilient, nutritious, and longer-lasting. As with many scientific technologies, there are ethical questions being asked about their applications and consequences, particularly when used in humans and animals.

The global chorus of concerns reached a fever pitch in November 2018 when He Jiankui, then a Chinese scientist at the Southern University of Science and Technology in Shenzhen, announced to his peers at a conference that he had used CRISPR on human embryos to modify the CCR5 gene – a gene that confers HIV-resistance in some individuals – to create the world’s first CRISPR-edited babies.

Although He claimed success, he received widespread condemnation from the scientific community for conducting such a risky experiment on human embryos and was later fired from his post. China’s Ministry of Science and Technology initiated an investigation to find out whether He had broken the law. He was branded as irresponsible and brash.

Wu, who teaches a course on bioethics at HKUST, champions a balanced outlook. One should not let a single event disregard the many achievements already made, she says. As with any type of medical treatment, there are risks involved. But for a patient or the parent of a child stricken with a terminal illness, the risks could be well worth taking, depending on the context.

‘For those suffering from diseases like cancer, the prognosis may be that they will die within the year. The alternative risks



「對於那些患有癌症等疾病的人，預後差的患者也許會在一年之內死亡。進行基因組編輯療法的其他風險是可能在五年內患上另一類的癌症。對於患者來說，相較於在一年內死亡，這療法仍予他們一線生機。」吳教授補充道，「在考慮是否要使用某項技術時，應該於潛在風險下權衡利弊，而不是僅僅考慮一個方面。」

對於基因編輯，公眾普遍存在一些對於不同類別的基因編輯的誤解。比如，人類和非人類編輯，以及在種系和體細胞編輯，這不同種類的細胞編輯所帶來的風險和後果有非常大的差異。生殖細胞基因的任何編輯（例如精子或卵子或胚胎）將來都會由這些細胞遺傳給未來的世世代代。而編輯體細胞（例如肝細胞或血細胞）則不會影響被繼承的DNA。「實際上，我們在成年人身體裡可以進行多種體細胞的基因編輯，也並不會影響未來的後代或傳遞到人類的基因庫。關於『賀建奎』事件的許多負面消息確實暴露了潛在的風險。但請不要忘記，基因編輯仍然在非種系和非人類編輯中多有益處。」

但是，所謂的「種系」是否應該真正的被劃入官方禁止進行基因編輯的區域呢？

紅色警戒線

當前，在大多數管轄範圍內，準則是允許編輯人類胚胎，條件是不將其植入並且在受精後的兩週之內進行。賀建奎事件發生後，一些著名科學家遊說全球暫停遺傳性（即種系）基因編輯。

美國科學、工程和醫學國家科學院（NAEM）等其他組織則呼籲對種系編輯採取更為謹慎的態度，但強調「審慎並不意味著禁止」。例如，種系編輯應僅限於導致嚴重疾病的基因。吳博士對此沒有定論，但她強調種系編輯有待科學家、倫理學家、政府和廣大公眾的進一步討論。

道德難題

從大學哲學系和法學院到國會會議廳和矽谷董事會，整個社會充斥著有關基因組編輯倫理學的爭論。

無可避免地，有關設計嬰兒的議題一次又一次的出現。究竟一個人在負擔得起的情況下，付費去令自己的後代變得更強壯、更聰明或更美麗，或者用這種技術去滿足個人美容的願望、虛榮心，是對還是錯呢？

公平和不平等的問題不可避免地會長期存在著。英國的智庫——納菲爾德生物倫理委員會，最近概述了基因編輯的倫理準則，警告說基因編輯帶來的任何變化都不應擴大「社會劣勢、歧視或分裂」。

吳教授承認這些擔憂，但呼籲保持冷靜。她強調說，基因編輯還沒有達到如此精密先進的水平。科學仍然無法創造出「超級人類」。

「假如你今天想向一位科學家請教，編輯哪些基因可以使孩子變得更聰明，或者編輯哪些基因可以使一個人跑得更快，他們應該無法告訴你。實際上，科學家仍然不能準確知道哪些基因會促成出這些非常模糊的特徵。」吳教授補充說。

of undergoing genome editing therapy are that they may get a different type of cancer in five years. For the patient, that, versus dying in a year could still amount to a ray of hope.' Wu adds: 'When you think about whether a technology should be used in a certain way, you should think about the benefits in the context of the potential risks, not just one or the other.'

A common misunderstanding of the public toward gene editing is the lack of differentiation between human and non-human editing, as well as between so-called germline editing and somatic cell editing. Any modifications in the DNA of germ cells, such as editing of the sperm or egg or the embryo, will be inherited by all future generations that arise from these cells; whereas editing somatic cells, such as liver cells or blood cells, does not affect the DNA that will be inherited. 'There's actually a lot of editing we can do on adults that will not affect future offspring or pass onto the gene pool. There was a lot of negative news surrounding the [He Jiankui] incident that really highlighted what the potential risks could be. But let's not forget that gene editing can still bring a lot of benefits from non-germline and non-human editing.'

But should the so-called 'germline' really demarcate the official no-go zone for gene editing?

The Red Line

Currently, in most jurisdictions, guidelines allow editing in human embryos, provided that they are not implanted and not conducted two weeks past fertilisation. In the aftermath of the He Jiankui incident, some prominent scientists have lobbied for a global moratorium on heritable (i.e. germline) gene editing.

Other groups such as the United States' National Academies of Sciences, Engineering and Medicine have called for a more cautious approach to germline editing but stressed that 'caution does not mean prohibition'. Germline editing should be limited to genes that lead to serious diseases, for example. Wu does not have an answer but emphasises that germline editing is something in need of further discussion among scientists, ethicists, governments and the wider public.

An Ethical Conundrum

From university philosophy departments and law schools to parliament chambers and Silicon Valley boardrooms, society is awash with debates about the ethics of genome editing.

Unavoidably, the topic of designer babies tends to pop up time and time again. Is it right for one to be able to pay to make their offspring stronger, cleverer or more beautiful or to use such technology to fulfill their own cosmetic desires and flatter their own vanity, just because they can afford it?

Issues of equity and the perpetuation of inequality are inevitably raised. The Nuffield Council on Bioethics, a think-tank in Britain, recently outlined ethical guidelines on gene editing, warning that any changes brought about by gene-editing should not increase 'disadvantage, discrimination or division in society'.

Wu acknowledges these concerns but calls for calm. Gene-editing, Wu stresses, has not reached such levels of sophistication -- yet. Science still hasn't produced the winning formula for editing so-called 'superhumans'.

'If you were to ask a scientist today which genes would they would edit to make a child smarter, or which genes they would need to edit to make a person run faster, they probably wouldn't be able to tell you. Scientists actually still don't know exactly what genes are responsible for these very nebulous traits,' Wu adds.

「人類的某些特徵，也許不是由遺傳因素決定，是由表觀遺傳因素決定的。我們實際上並不知道。」沒有人知道是否會發現它，以及何時發現。數百年來，科學家一直在研究諸如人類智力之類的特徵，仍然想知道適切的答案。

他們即使找到這特定的基因，問題仍然存在，難道編輯出使人類更強大、更聰明的基因，就可以確保身體健康和精神愉快嗎？例如，數年前科學家發現，刪除某些基因可令到動物肌肉變得更加發達，但其後發現牠們可能會因這個缺陷而更早死亡。

安全是一個需要關注的問題。有些人擔心，做得不好的編輯可能會在錯誤的位置改變基因，產生「脫靶」效應，無法預防癌症反而導致癌症。在適當的人手中，這項技術的脫靶效應可以被削減從而減少錯誤出現；但是如果落在罪犯或生物恐怖分子手上的話，將是滅頂之災。

對於不平等這個問題，吳教授說，這種擔憂並非基因編輯或科學倫理獨有的。「富人可以把孩子送到更好的學校，為他們提供更多的課業輔導，這與科學無關，而關乎如何解決社會中的特權和平等的普遍問題。」

新前沿

到目前為止，吳教授相信大多數基因科學家不是想扮演上帝的角色，而是對於利用該技術減少人類的痛苦和疾病更感興趣。

對於無畏的臨床研究人員和生物醫學企業家來說，基因編輯的未來充滿著機會和應用的可能。診斷是基因編輯發展最快的領域之一。該領域使用 CRISPR 等基因編輯工具儘早發現疾病，從而阻止進一步的感染。

科學家已經在登革熱、埃博拉（伊波拉）病毒，寨卡病毒和人乳頭瘤病毒（HPV）等病毒的 CRISPR 診斷中進行實驗。將來，患者甚至可以在家中進行自我診斷測試。

應對挑戰

儘管吳教授鼓勵年輕人發展對基因編輯領域的興趣，並做好準備迎接一個基因編輯普遍存在的時代。但她堅信，對於年輕人來說更重要的是保持對所有科學的好奇心，而非把研究限制在單一領域。

「誰知道下一個重大新技術將會是甚麼？試想一下，在互聯網時代之前長大的人，他們如何提前準備面對一個被互聯網完全改變的世界？在某段時期，每個人都想學習如何使用 Flash 編寫網站，但是現在沒有人使用 Flash。過早的通過掌握某一項特定的工具，來為一份工作做好充分的準備是沒有意義的。」

即使尚未尋索到通往自然科學的路徑，也永遠有路可以通。「學生們大可不必被已有的經驗，學位，或者工作經歷限制自己未來的潛能。人生不設限，才會在千萬條路中走出無限可能。」

‘Maybe it's not genetically determined, maybe it's epigenetic-determined. We don't actually know.’ Nobody knows if and when it will ever be discovered. Scientists have been studying traits such as human intelligence for centuries and are still in want of proper answers.

And even if they find the genes, there is the question of whether editing it to make a human stronger or smarter would ensure good health and well-being. For example, scientists discovered years ago that deleting a certain gene that would cause animals to become more muscular. Conversely, due to this defect, it was also discovered that they could die earlier.

Safety is a concern. Shoddy editing, some fear, could alter DNA in the wrong places producing ‘off-target’ effects that could lead to cancers instead of preventing them. In the right hands, mistakes can be mitigated. But placed in the wrong ones, say criminals or bioterrorists, disaster could entail.

As for the issue of inequality, Wu says this concern is not unique to the ethics of gene-editing or science. ‘The rich can send their children to better schools, provide them with more tutoring – this is not about science but the general question of how to address privilege and equality in society.’

New Frontiers

For now, Wu believes most genetic scientists seem to be more interested in harnessing the technology to reduce human suffering and disease, rather than in playing god.

The future of gene editing is filled with opportunities and applications for intrepid clinical researchers and biomedical entrepreneurs. Diagnostics is already one of the fastest-growing fields for gene editing. This field involves using gene-editing tools like CRISPR to detect disease early so that further infections can be thwarted.

Scientists are already trialing CRISPR diagnostics on viruses such as dengue, Ebola, Zika, and human papillomavirus (HPV). In the future, patients could even do their own diagnostic tests at home.

Prepare for the Challenges

Although Wu encourages young people to take an interest in the field and prepare for an era where gene editing exists, she believes it is more important for youths to remain curious about science in general and to not limit their scope to a single field.

‘Who knows what the next big new technology will be. Think about all the people that grew up before the dot com era, how could they prepare in advance for how much the internet would change the world? At some point, everyone wanted to learn how to use flash to write websites but now no one uses flash. There’s no point in overly preparing yourself for a job by learning one specific tool for that job.’

And even for those who have not found their way to the hard sciences, there is always a road available. ‘Students shouldn’t restrict their career potential based on what they’ve already done. There’s always a way to get there.’





擁抱完美主義

Embrace Your Perfectionism



完美主義是資優學生常見的情緒特徵，有研究指出差不多每四名香港資優學生便有三名完美主義者（陳維鄂，2011），而完美主義可分為健康和不健康的。

健康的完美主義者以追求卓越為目標，對自己有一切實的高要求，凡事勤奮有動力，勇往直前，做事精益求精，完成目標後會感到輕鬆愉快。不健康的完美主義者同樣以追求完美為目標，所不同的是他們對自己要求過高和不切實際，凡事覺得做得不夠好，害怕面對失敗，即使達成目標後也難感到自在。不健康的完美主義的思想和行為，或會對資優學生的成長造成負面影響，窒礙才能發展，例如他們會因對自己有過高的要求而承受不必要的壓力，因害怕失敗而不敢接受新挑戰，因要凡事做到最完美而導致遲交功課，因律己過嚴對自己及他人要求極高，影響人際關係等。

學員課程

去年暑假，香港資優教育學苑情意教育部為小學學員舉辦了「突破完美主義」課程，為期四堂的課程介紹健康與不健康完美主義的分別、不健康完美主義對成長造成的影響、以及成長心態的重要性等。導師透過遊戲、名人成功故事、觀賞電影、小組討論等活動，讓學員認識完美主義的特質，克服對失敗的恐懼，擺脫不健康的完美主義思想的枷鎖，使學員擁抱成長心態盡展潛能。情意教育部將於本年暑假繼續舉辦此課程，有興趣的學員可留意學苑網頁。

家長課程

不健康完美主義者的價值感通常建基在他們的成就上，他們需要凡事做到十全十美，證明個人的價值及極需要得到別人的認同。面對抱有不健康完美主義特質的資優兒，家長可跟他們多溝通，讓他們明白無論他們取得甚麼成就，父母都是關心和愛他們的。另外，家長也可與子女分享個人失敗經歷，讓他們了解父母如何克服困難，從中學習面對逆境的態度和方法，並多鼓勵他們跳出自己的舒適圈，勇於接受新挑戰。學苑情意教育部會不時舉辦有關資優兒完美主義的家長教育課程，歡迎家長參加，掌握培育具完美主義特質資優兒的策略。

參考資料：

Chan, D. (2011). Perfectionism among Chinese Gifted and Nongifted Students in Hong Kong: The Use of the Revised Almost Perfect Scale. *Journal for the Education of the Gifted*, 34(1), 68-98.

Perfectionism is a common emotional characteristic of gifted students. Studies have shown that there are almost three perfectionists out of every four gifted students in Hong Kong (Chan, 2011). Perfectionism can be divided into healthy and unhealthy types.

Healthy perfectionists aim for the pursuit of excellence. They have realistically high requirements for themselves. They are diligent and motivated. They strive for excellence while moving forward and feel relaxed and happy after achieving their goals. While unhealthy perfectionists also aim for perfection, they are excessively demanding and unrealistic about themselves. They feel that they are not doing well enough in everything and are afraid of failure. Unhealthy perfectionists' thoughts and behaviours may adversely affect the growth of gifted students and hinder their development. For example, they may suffer from unnecessary psychological pressure due to excessive demands on themselves and may escape from new challenges to avoid failure. They may fail to meet deadlines for homework due to the need of having everything done perfectly and may have bad interpersonal relationships due to their strict demands on themselves and others.

Student Programme

Last summer (2019), the Affective Education Division (AED) of the Hong Kong Academy for Gifted Education organised a 'Breaking Through Perfectionism' programme for primary school students. Comprising four lessons, the programme introduced the differences between healthy and unhealthy perfectionism and the impact of unhealthy perfectionism on the growth of gifted students, as well as the importance of a growth mindset. Through games, success stories of celebrities, movies appreciation, group discussions and other activities, participating students were helped to recognise the characteristics of perfectionism, overcome the fear of failure, get rid of the shackles of unhealthy perfectionist ideas, and embrace the growth mindset for unleashing their full potential. AED will organise the same programme again this summer. Interested students may follow the Academy's website for further details.

Parent Programme

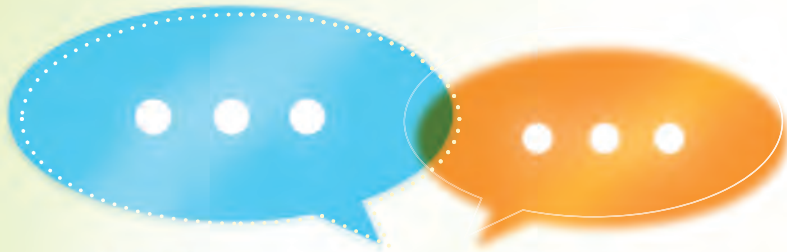
Unhealthy perfectionists' self-worth is usually based on their achievements. They need to be perfect in every aspect to get recognition from others. Parents of gifted children with unhealthy perfectionism may communicate with their children more and reassure them that no matter what they have achieved, their parents will still care about them and love them. Parents may also share their personal failure experiences to let their gifted children understand how they have overcome difficulties and their attitudes and methods to face adversity. Besides, parents may encourage their children to step out of their comfort zone and accept new challenges. From time to time AED will hold parent education programmes on gifted children's perfectionism. Parents are welcome to participate and get familiar with the skills for nurturing gifted children with perfectionist qualities.

Reference:

Chan, D. (2011). Perfectionism among Chinese Gifted and Nongifted Students in Hong Kong: The Use of the Revised Almost Perfect Scale. *Journal for the Education of the Gifted*, 34(1), 68-98.



情意教育部課程發展主任吳啟賢先生在「突破完美主義」課程中向學員講述名人成功故事
Mr Nelson Ng, Programme Development Officer, shares with participants the success stories of celebrities in the 'Breaking Through Perfectionism' programme

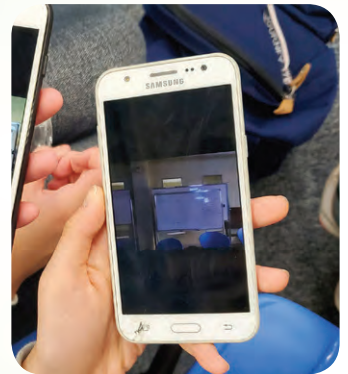


溝通——生活中的必需品

Communication — an Indispensable Part of Daily Life

你嚐過溝通的滋味嗎？有些說話帶甜，有些說話帶酸，有些說話帶苦，更有些說話帶辣。事實上，每天我們都跟他人交談，與各界人士緊密接觸，「溝通」成了日常生活的必需品。根據溝通權威沙維雅 (Satir) 的理論，溝通有三大要素，包括自我、他人和情境，三者之間相互影響，形成不同的溝通姿態。舉個例子，當我們處於突發且高壓的情況下，加上自身經歷，為了保護自己，說出的話可能會是又辣又苦，以「指責」的溝通姿態呈現出來。

Have you ever savoured the taste of a 'dialogue'? Some taste sweet, some taste sour, some taste bitter, and some taste spicy. Every day we communicate and closely contact with people from all walks of life. 'Communication' has become an indispensable part of our daily life. According to the theory of renowned scholar Virginia Satir, communication consisted of three major components: the self, the other and the context. These three components interact with each other and make up different communication styles. For example, when we are going through a sudden and stressful situation, depending on our personal experience, our words might be spicy and bitter in order to defend ourselves, and we might adopt the 'blamer' stance in the communication.



賽馬會「知情達意育優才」計劃——「儕講」溝通技巧工作坊
'Peersay' Communication Skills Workshop, Jockey Club "Gifted in Bloom – Harmony in Heart & Mind" Programme

溝通技巧對每個人也重要，對資優學生亦如是。我們需要關注資優生的情意需要，因為，社交及情緒管理會直接影響他們的學習表現。在「儕講」溝通工作坊，學員了解到個人的溝通模式，透過不同的小組活動練習實際技巧，達致自我探索及個人成長的目標。活動中的導師透過不同教學方法，例如聲畫，觀察學員在沒有共同語言的情況下，怎樣接收表達者的訊息：有的透過表情和肢體動作，以身體語言猜想故事的來龍去脈；有的透過影像，學員能體會同一件事在不同人的腦海裏有著奇妙的變化，每個人的理解及選取角度都不一樣。當學員對溝通過程有了基礎的認識後，再輔以情境，先從個人角度思考，再互相討論「你說話，我感受」，了解說話背後的真正意義。

總結：無論你採用哪一種姿態進行溝通，這種姿態也可能成為習慣。由於個人成長影響，說話時的措辭會變得根深蒂固，成為個人喜好；所以，我們需要多練習如何表達個人的情感和想法，包括用字、語調和肢體動作，達到「你好，我也好」，以正面的方法表達所思所想，進行有效的溝通。

Communication skills are important to everyone, with no exception for our gifted students. As instructors, we need to pay attention to students' affective needs because social and emotional management skills have a direct impact on their learning performance. In the 'Peersay' communication skills workshop, student members understood their communication modes and practised communication skills through various group activities for self-exploration and personal growth. The instructor used different teaching methods, such as audio-visual, to observe how student members received the presenters' messages without any common languages. Some of them made use of facial expressions and body movements to communicate the ins and outs of a story, and some used images. Participants came to realise that the same message was received differently by different people, as the interpretation depended on the receivers' understanding and the perspective they took. After the students had acquired a basic understanding of the communication process, they were provided with different scenarios and were guided to look at things from their own point of views first. They then discussed with each other their views by adopting the 'You talk, I feel' tactics, and understand the actual meaning behind their speech.

In summary, no matter which stance you choose for your communication, it may become a communication habit. The communication mode one adopted due to his/her personal growth experience may become ingrained and be taken as a personal preference. Therefore, we need to practise more on the techniques used for expressing our emotions and ideas, including the choice of words, the intonation and body postures to achieve the 'I am good, and you are fine'. situation by expressing our thoughts positively and communicate effectively.



學生主導

— 計劃、行動及應變



在這高速發展，全球化和數碼科技緊密連繫的世界中，從在學到就業，學生需要透過終身學習發展新技能及獲取知識，以保持競爭力。而二十一世紀技能和創業能力成為預備學生在學校、職場和生活中取得成就的重要基石。

學生籌委會

學生籌委會（籌委會）是學苑進階學習體驗部（ALED）的其中一項主要課程，提供獨特的體驗式學習經歷，透過活動及項目管理，提升學員的自發性、創造力及才能。學生委員會共同協作，並在 ALED 同工直接指導下，為學苑學員和 / 或他們的家長構思、設計和籌辦不同的活動及 / 或項目。

寓學習於甄選過程

籌委會甄選具備相關特質或展現潛能的學生，參與團隊訓練和個別指導。在甄選過程中，學生需要 (i) 回答網上甄選問題，以及 (ii) 於四個工作站完成小型面試，測試他們的自發性、創意、構思意念、反思和溝通方面的能力及態度。由多個評分者以統一評分指標作準，選出 19 名申請者參加 2020 年 1 月至 2020 年 8 月的籌委會。

集體及個別的指導

ALED 同工每月與學生委員舉行一次會議，建構及推動同伴學習小組，並開展相關活動管理和人際交往能力的訓練。就學生意願及能力，學生委員負責設計及籌劃 ALED 恆常的學生主導活動（SIE），並提出新活動。在此期間，ALED 同工提供實踐、密集和針對特定任務的指導。

學生主導活動 — 講學堂

「講學堂」是由學生委員集體執行的首項任務，設有四次學生分享環節，涉獵多個主題，包括社交媒體影響力、澳洲叢林大火、道德決定中的個人信念及價值觀，以及無人駕駛等。學生委員分成四個小隊設計、宣傳和推行分享環節，各小隊其中一位學生為核心成員負責協調、與 ALED 同工溝通，並制定活動的方向。

受到冠狀病毒大流行的影響，學生委員確實遇到挑戰，但他們的意志未被消磨，他們反而積極運用解難技巧，彈性地調整計劃和活動設計。在徵得獲取錄的學生意見之下，改以 Zoom 網上會議形式進行分享環節，並進行測試以了解 Zoom 的功能。「講學堂」旨在鼓勵學生在同伴小組中表達自己的觀點和感受，肯定多元觀點的好處；學生委員設計的活動多樣，包括互動遊戲、視頻播放，讓不同年齡層的參與者（從小學到高中）暢所欲言地討論，分享選定主題方面的多元知識和經驗。

其他學生主導活動：

學生論壇

- 在論壇中，論壇主講者可與參與者交流意見，就選定主題進行深入和理性的討論。

資優種子萌芽時

- 以一系列活動，包括兒時作品展，獲獎者和評審經驗分享，展示資優生的原創性和創造力，並提高公眾對培養學生創造力重要性的意識

資優生的心聲

- 透過互動活動和討論，鼓勵資優生與家長、老師和公眾進行對話。



Student Initiation — *Thoughtful Actions*

In this thriving world of global and digital interconnectedness, all students, from school to career, need to develop new skills and acquire knowledge through lifelong learning, to stay competitive. Moreover, 21st century skills and entrepreneurship attributes are essential building blocks for preparing our students for success in school, work and life.

Student Organising Team

Student Organising Team (SO Team) is one of the major programmes of the Advanced Learning Experiences Division (ALED) of the HKAGE. It provides a unique hands-on learning experience to enhance students' self-initiation, creativity and competence through the event and programme management. Student Organisers (SOs) will initiate, design and organise different events and/or programmes for HKAGE student members and/ or their parents, in collaboration with their peers and under the direct guidance from ALED staff.

Learning During Selection

SO Team identifies students possessing the relevant attributes or potential to develop through group training and individual coaching. The selection involved students (i) responding to questions in an online form and (ii) completing mini-interviews set at four workstations. Applicants were challenged to demonstrate their competence and attitude in self-initiation, creativity, the ability of ideation, reflection and communication. Scoring on performances was rubrics-driven and rated by multi-scorers. This year, nineteen applicants were selected to join the SO Team from January to August 2020.

Generic and Task-specific Coaching

With monthly meetings, a peer learning group formed and facilitated by ALED for developing related event management and people skills. With students' indicated interest and capabilities considered, they designed and organised ALED's recurring student-initiated events (SIEs) and initiated new events with on the job, intensive and task-specific coaching by ALED.

Student-initiated Events – Chat Club

Chat Club events were the first task to be undertaken by all SOs on a group basis. Four student sharing sessions of multiple themes featuring *Influence of Social Media*, *Australia Bushfire*, *Personal*



Beliefs and Values in Ethical Decisions, and *Unmanned Driving* were designed, publicised and delivered by four different sub teams, each co-ordinated by a core member taking a more substantial leading role to communicate with ALED staff and steer the direction in event planning.

Under the coronavirus pandemic, SOs were challenged but not beaten to continue and adapt their planning and activity designs with problem-solving skills employed. They switched the sessions to online Zoom meetings after soliciting enrolled students' views and arranged test runs to experiment with the functions of Zoom. With the objectives of Chat Club events to encourage students to express their opinions and feelings and celebrate multiple perspectives in a peer group setting, SOs devised multiple activities like interactive games, playing of videos, free discussion to engage their fellow participants of wide age gap (from primary to senior secondary), and diverse knowledge and experiences in sharing on the selected topics.

Other Student-initiated Events (SIEs):

Student Forum

- In a forum setting, to exchange views and facilitate in-depth and rational discussion on selected topic(s) among student panellists and other participants.

How a Gifted Mind Starts

- A series of events including childhood works exhibition, experience sharing by awardees and adjudicators aiming at demonstrating the traits of originality and creativity of gifted students and promoting public awareness of the importance of nurturing creativity in students.

The Voice of Gifted Learners

- To encourage the dialogue between gifted students with parents, teachers and the public in interactive activities and engaging discussions.

2019 國際科學與 創新夏令營

Science and Innovation
International Summer
Camp 2019

作者 Author: 楊子美 Yeung Tsz Mei, Cindy
相片由葉子愛、姚榮新及程溢謙提供
Photos provided by Ip Tsz Oi, Yiu Wing San
and Ching Yat Him



我們參加「國際科學與創新夏令營」期間，首先前往以色列，然後返回香港，接著再到中國浙江。而是次行程最精彩的部分是融合學術和文化的以色列之旅。

以色列 (7月21日至7月28日)

在這 21 天的朝夕相處下，所有人由陌生變得熟悉。一個地方的精神往往反映在當地人民身上。例如：不論是想更了解課堂內容，還是想提出疑問，所有以色列學生都積極舉手發問。他們從不擔心犯錯或感到尷尬，輕鬆自如地表達自己的想法。我認為所有學校均應該培養學生這種堅持大膽追求真理的精神。

科學講座

我們參加了多個跨學科領域的科學講座，例如：機器人技術、神經生物學、創業能力和物理學。整體而言，這些講課都非常好，內容很吸引，而且講課的教授積極回應我們的提問。

During the Science and Innovation International Summer Camp, we've visited Israel, going back to Hong Kong and then to Zhejiang, China. The Israeli part of the study trip has the best combination of both academics and culture

Israel (21/7-28/7)

We got to know more or less everyone pretty well throughout these 21 days. The spirit of a place is reflected upon its people. All the Israeli students put up their hands whenever they wanted to know more or had a particular problem during lectures. Everyone felt comfortable to 'debate' without the fear of being wrong or embarrassed in such an atmosphere. This attitude to persist in search of the truth is what we should do in every school.

Science Lectures

We had different science lectures across multiple disciplines – Robotics, Neurobiology, Entrepreneurship and Physics. Overall, the lectures were very well delivered in the sense that professors actively responded to our inquiries on the topics and conveyed their ideas in a captivating manner.



1. 子美 (左上中間位置) 認識了許多朋友
Cindy (the middle of the upper left) made friends with a lot of peers
2. 以色列學生積極的學習態度值得欣賞
The positive learning attitude of the Israeli students is worthy of admiration

難忘的活動

我們在卡法漢諾克蒂姆 (Kfar Hanokdim) 沙漠受到當地人的熱情款待，讓我們進一步感受到以色列的風俗和文化。最令人印象深刻的是沙漠的夜空。漆黑的穹蒼點綴著無數耀眼的星星。振攝人心的七星閃耀地連繫著，形成了北斗七星。星星是如此貼近，閃爍在眼前，教人迷醉！

香港 (7月29日至8月1日)

遊艇講座

許多以色列人從未到過中國，所以對於前往香港和浙江感到非常興奮。在香港，我們乘遊艇往西貢的鹽田梓、糧船灣和破邊洲。以色列和內地的學員學習這些島嶼的歷史。

其他講座

我很喜歡馮志雄教授關於氣候變化的講學。他介紹了他的團隊如何利用大數據和人工智能創建一個應用程式，提供香港實時空氣污染的情況。

Memorable Activities

I certainly developed a deeper understanding of Israeli culture after our stay at Kfar Hanokdim where we experienced warm desert hospitality. What struck me the most was the night sky. It was like a giant pastry covered with millions of sprinkles made up of dazzling stars. Seven stars shone and connected impressively, forming the Big Dipper. I was mesmerised by how close they felt and the way they exposed right in front of eyes in a carefree manner.

Hong Kong (29/7-1/8)

Lectures on Yacht

Many Israelis have never been to China, they were very excited about travelling to Hong Kong and Zhejiang. In Hong Kong, we had a yacht trip to Yimtinisai, High Island and Po Pin Chau in Sai Kung. The Israeli and students from the Mainland learnt about the different traditions and history of the islands.

Other Lectures

I really liked the lecture on Climate Change by Professor Jimmy Fung Chi Hung. He talked about how he and his team had developed an app that incorporates the use of big data techniques and AI to provide realtime update of the situation of air pollution in Hong Kong.



3. 在香港乘遊艇聽課
Lectures on Yacht in Hong Kong
4. 在浙江參觀藝術館
Visiting the Art Museum in Zhejiang

中國內地 (8月1日至8月10日)

蕭山

我們前往內地學生居住的蕭山。當地的行程包括在蕭山中學學習文化課，參觀博物館和出席社交活動。我們還學習了兩種傳統中國武術——太極和詠春。

在訪問浙江大學期間，教授向我們講授了多個學科，例如：經濟學、中醫學和文學。我們還遊覽了浙江的不同景點，包括現代部分，例如：阿里巴巴、錢江中央商務區，以及具有歷史文化價值的景區西湖。其後，我們到上海參觀上海猶太難民博物館，了解到有關以色列人為逃避納粹大屠殺而逃到中國的故事，讓我們認識到以色列和中國的外交歷史。

整體而言，我非常喜歡以色列——一個集文化與創新於一身的國家。當地人的創造力和謙遜的態度給我留下深刻的印象。我遇到了可以討論學術和日常生活的好朋友。我希望很快能夠再訪以色列，因為那裏仍有很多事物等著我去探索。

China (1/8-10/8)

Xiaoshan

We headed to Xiaoshan where the students from the Mainland reside. Our days there involved culture lessons at Xiaoshan high school, museum visits and social activity. Two different Chinese traditional martial arts, Tai Chi and Wing Chun were introduced to us.

Lectures on multiple disciplines, e.g. economics, Chinese medicine and literature were taught by professors from Zhejiang University. We visited both the modern part (Alibaba, Qianjiang CBD) and the historical part (West Lake) of the city. I learnt more about the diplomacy between China and Israel during our visit to the Shanghai Jewish Refugees Museum by reading about stories of the lives of Israeli who escaped to China after the Holocaust.

Overall speaking, I've grown to become very fond of Israel — a metropolitan nation of cultures and innovation. But behind all the spectaculars, there is a different sight to it — one which is brought by creativity and humility of its people. I have met genuine good friends who I can discuss everything from academic in everyday life with and I hope to return soon — there are so many in Israel that I haven't seen.



作者：香港浸會大學物理系講師陳茂興博士

在學習物理時，理論和實驗物理學對學生都是不可或缺的內容。兩者關聯密切，密不可分。前者運用數學模型，來解釋和預測真實存在的世界，甚至乎不存在的幻想世界中種種現象。由於兩者關聯緊密，故此在物理科的課程大綱或國際競賽中，理論和實驗物理學的元素俱備，顯而易見。國際物理奧林匹克（IPhO）和亞洲物理奧林匹克（APhO）兩項著名的國際物理學競賽，為高中學生提供了理論和實驗物理學方面極佳且具挑戰的體驗。優秀出眾的資優學生或許躍躍欲試，想接受物理學方面的挑戰。但是，若你想透過應用物理學的知識證明自己具有創意和創新思維，那麼參加國際物理學錦標賽（IPT），製作「難以破解的保險箱」就最適合你不過。

國際物理學錦標賽是一項在以色列舉行的國際物理學競賽。每個參賽隊伍由最多五名高中學生組成，各隊伍須根據不同的物理學原理和概念，為自己的「保險箱」設計精密的鎖定機制，令其他參賽隊伍無法破解。國際物理學錦標賽跟國際物理奧林匹克和亞洲物理奧林匹克有所不同。後兩項比賽均要求參賽者遵照既定指引或程序，完成相同的考卷；而參加國際物理學錦標賽的學生則剛剛相反，參加者活用物理學設計和製作心中最理想的保險箱鎖，挑戰其他參賽隊伍；也就是說，競賽的難題和答案都由學生自行設定，考驗其他隊伍的解難能力。

去年一隊由 5 名香港資優教育學苑學員：梁宇軒、孔文琦、關鎰體、何晴希、鄧易生組成的隊伍，於 4 月 7 日飛往以色列參加 2019 年國際物理學錦標賽。該次競賽共有，分別來自 9 個國家 / 地區共 19 隊參賽隊伍，包括安哥拉（1 隊）、阿根廷（1 隊）、加拿大（2 隊）、香港（1 隊）、以色列（5 隊）、羅馬尼亞（1 隊）、斯洛文尼亞（2 隊）、英國（3 隊）和美國（3 隊）。

甫抵達以色列魏茨曼科學研究所的「競賽村」（學生和隨隊導師住宿的地方）後，我們首先要重組裝保險箱，讓它以最佳的操作模式參賽。當中的體驗跟參加亞洲物理奧林匹克和國際物理奧林匹克等其他國際競賽迥然不同。參加一般物理競賽的隊員在比賽前往往會加緊操練，但參加國際物理學錦標賽的學員在賽前卻較為輕鬆。身為競賽培訓導師，鼓勵學生投入參與物理教學活動跟贏取獎項同樣重要。除此以外，跟其他國家參賽隊伍溝通的技巧也是相當重要。若果各位也想在日常生活中應用物理學知識，一嚐當中那份滿足感，可考慮參加國際物理學錦標賽，一起接受挑戰！

參加國際物理學錦標賽 製作難以破解的保險箱 Experience in Safe Cracking Competition

Author: Dr CHAN Mau Hing, Lecturer, The Department of Physics, Hong Kong Baptist University

In learning physics, theoretical and experimental physics are essential components for students. They are correlated and closely linked together. The former uses mathematical models to explain and predict the phenomena in our existing real-world nature or even non-existing imaginary world. Because of the correlated significance, it is not difficult to find that both theoretical and experimental physics components exist in physics syllabuses, or in international competitions. The well-known international physics championship competitions, the International Physics Olympiad (IPhO) and the Asian Physics Olympiad (APhO), offer excellent challenging experiences in both theoretical and experimental physics for high school students. As a top gifted student like you, you may want to take this challenge offered by physics competition, and at the same time you may also want to prove yourself with creativity and innovative mind in applications of physics knowledge, the answer is the 'Safe Cracking' International Physics Tournament (IPT).

IPT is an international physics tournament held in Israel. Based on different principles and concepts of physics, participating teams of up to five high school student members build locking mechanisms for Safes. Teams of students have to build and operate their locking mechanisms for their Safes, and the Safes need to be sophisticated enough so that other teams cannot break into the Safes by chance. IPT is unique from IPhO and APhO. In IPhO and APhO, all contestants need to follow the predefined instructions or procedures to complete the same exam papers. In contrast, students in IPT can design and develop their own dream physics Safes to challenge other contestant teams; that is, competition questions and answers are both initiated by students themselves.

A team of five HKAGE students, namely Leung Yu Hin, Hung Man Kay, Kwan Yardley, Ho Ching Hei, and Tang Yik Seng Tungsten, flew to Israel on April 7 for the IPT 2019. There were totally 19 teams from 9 countries / regions, including Angola (1 team), Argentina (1 team), Canada (2 teams), Hong Kong (1 team), Israel (5 teams), Romania (1 team), Slovenia (2 teams), UK (3 teams), and US (3 teams).

After arrival in the 'village' (at which students and chaperone stayed) of the Weizmann Institute of Science in Israel, the top priority job was to reconstruct and bring our Safe back to a good operating condition for IPT tournament. This experience is totally different from other international competitions such as APhO and IPhO where contestants tend to study hard before physics competitions. On the contrary, contestants tend to be relaxed before IPT. As an IPT trainer, engaging students into physics teaching and learning activities is as important as championships. Networking skills with other international contestant teams are no less significant. To achieve your sense of satisfaction in applications of physics knowledge to real-life situation, please consider IPT.

1. 與其他國家的參賽隊伍合照，活用聯絡溝通技巧。
Photo taken with other international contestant team, which reflects on networking and communication skills.
2. 到達魏茨曼科學研究所「競賽村」後重組保險箱。
Safe reconstruction after arrival in the village of the Weizmann Institute of Science.



提名計劃 Nomination Scheme

適用於 中小學「學校提名」及「自身提名」

Applicable to 'School Nomination' and 'Self Nomination' for Secondary and Primary Students

香港資優教育學苑（下稱學苑）致力確保本港 10 至 18 歲的資優學生獲得合適的學習和發展機會。

學苑每學年主要透過「學校提名」及「自身提名」計劃取錄適齡學員。有意成為學苑學員的資優學生必須先以合格成績完成「第一階段：香港資優教育學苑網上甄選學習課程」，方可於「第二階段：遞交提名資料」接受進一步甄選。

每年學苑將安排一次可於該學年內完成的提名程序。有關詳情，請參閱以下網頁：<https://www.hkage.org.hk/b5/students/student-membership>

The Hong Kong Academy for Gifted Education (HKAGE) endeavours to secure appropriate learning and development opportunities for gifted students aged 10 to 18 in Hong Kong.

The HKAGE admits student members of appropriate ages mainly through the 'School Nomination' and 'Self Nomination' schemes every school year. Gifted students interested in being members of the HKAGE are required to pass 'Stage 1: HKAGE Online Learning Programmes for Screening' before they can submit their nomination profiles in 'Stage 2: Submit Nomination Profiles' for further screening.

One nomination will be arranged to be completed within a school year annually. For details please visit the following website: <https://www.hkage.org.hk/en/students/student-membership>

2020/21 提名計劃時間表（暫定）

Nomination Scheme Timeline 2020/21 (Tentative)

第一階段：香港資優教育學苑網上甄選學習課程

Stage 1: HKAGE Online Learning Programmes for Screening

步驟一 簡介會：整體提名計劃安排

Step 1 Briefing Sessions: Overall Arrangements for the Nomination Scheme

2020年9月 • Sept 2020

步驟二 報讀香港資優教育學苑網上甄選學習課程

Step 2 Apply for the HKAGE Online Learning Programmes for Screening

2020年9月至10月 • Sept to Oct 2020

步驟三 以合格成績完成香港資優教育學苑網上甄選學習課程，方可獲取提名資格

Step 3 Complete the HKAGE Online Learning Programmes for Screening with a Pass to be Entitled for Nomination

2020年11月至2021年1月 • Nov 2020 to Jan 2021



第二階段：遞交提名資料

Stage 2: Submit Nomination Profiles

步驟四 簡介會：遞交提名資料安排及網上提名平台操作

Step 4 Briefing Sessions: Arrangements for Submission of Nomination Profiles and Operation of the Online Nomination Platform

2021年2月 • Feb 2021

步驟五 透過網上提名平台遞交提名資料作進一步甄選

Step 5 Submit Nomination Profiles for Further Screening through the Online Nomination Platform

2021年2月至3月 • Feb to Mar 2021

步驟六 透過網上提名平台查閱提名結果並註冊成為學員

Step 6 Check Nomination Results and Register as Student Members through the Online Nomination Platform

2021年6月 • June 2021



成功須苦幹



背景

傳統上一向強調認知技能（例如明辯性思維和解難技能）對學業表現的重要性。近年，人們開始關注學生的情意特徵（例如承諾）會否對其學業成績構成影響。有人猜測，學生的學習態度是導致他們成功的重要因素。為此，研究部展開了一項研究，探討學員在香港資優教育學苑（學苑）的表現與他們的情意特徵和學習技能之間的關係。

收集數據

本研究調查目標群體 (target population) 是加入學苑最少半年並已完成最少一項課程的正式學員。研究部於 2018 年年底檢索相關學員之記錄後，進行了一次網上調查，以自填問卷形式收集該等學員的基本個人資料（例如性別、學習領域及就讀年級）、一些情意特徵和學習技能的評估（有關詳情見下一節），最終收集了 183 名學員的回應（見表一）。

表一：各類調查對象的回應率

| | 小學 | 初中 | 高中 | 合計 |
|--------|-------|-------|-------|-------|
| 發出問卷數目 | 552 | 1467 | 1226 | 3245 |
| 完成問卷數目 | 49 | 91 | 43 | 183 |
| 回應率 | 8.88% | 6.20% | 3.51% | 5.64% |

值得注意的是，與初中（6.20%）及高中（3.51%）學員對照，小學學員的回應率最高（8.88%）。表二載列按性別、就讀年級和學習領域劃分樣本 (sample) 的概況及與目標群體所作的比較。

表二：目標調查群體及調查回應者的性別、年級和學習領域分布圖

| | | 目標群體 | | 調查回應者 | | 卡方檢定 |
|------|---------|------|-------|-------|-------|-----------------------|
| | | 人數 | % | 人數 | % | |
| 性別 | 男 | 1987 | 61.2% | 98 | 53.6% | 4.511 $p = 0.034$ |
| | 女 | 1258 | 38.8% | 85 | 46.4% | |
| 年級 | 小學 | 552 | 17.0% | 49 | 26.8% | 21.021 $p < 0.001$ |
| | 初中 | 1467 | 45.2% | 91 | 49.7% | |
| | 高中 | 1226 | 37.8% | 43 | 23.5% | |
| 學習領域 | 語文及人文學科 | 1087 | 33.5% | 63 | 34.4% | 4.056 $p = 0.132$ |
| | 數學及科學 | 1859 | 57.3% | 111 | 60.7% | |
| | 多個領域 | 299 | 9.2% | 9 | 4.9% | |

根據相應的卡方獨立性檢定所得的 p 值，目標群體和調查回應者在性別和學習領域方面在統計上無顯著差異。然而調查回應者中，小學生所佔比例（26.8%）較目標調查群體（17.0%）高，而高中生的比例（23.5%）則明顯低於目標群體（37.8%）。

情意特徵和學習技能

調查採用自陳式 (self-report) 問卷來評估學員的情意特徵和學習技能。有關問題包括：

情意特徵：

- 親子關係
- 師生關係
- 努力
- 稱讚（的重要性）
- 承諾
- 毅力

學習技能：

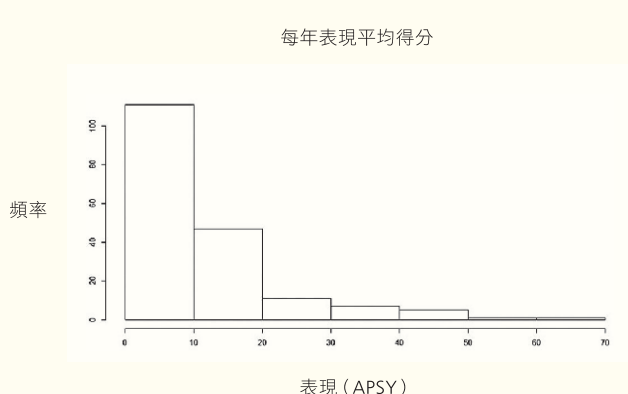
- 創意思維
- 明辨性思維
- 解難能力
- 學術自發能力
- 設定目標

每道題目均採用李克特四點量表（由 1 分「完全不同意」至 4 分「完全同意」）作答。個別調查對象回答某方面題目所有分數的平均值，即為在該方面的得分。

學員在學苑表現得分

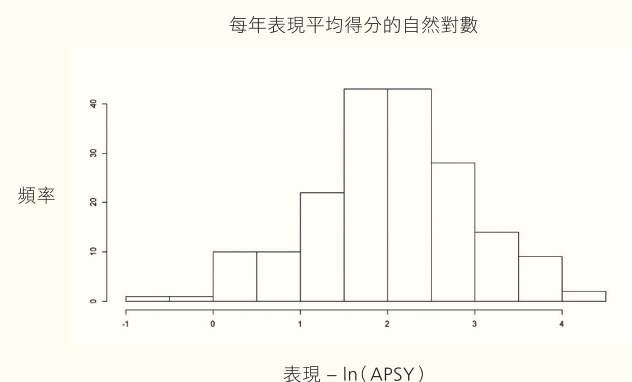
根據學員報讀課程的情況及按其學習成果評定的分數（例如未完成課程得 0 分、完成課程得 1 分、以優良成績完成課程得 5 分、以優異成績完成課程得 10 分……等等），可以計算出學員在學苑表現的總得分。由於學員在不同時間加入學苑，故累積總得分的年期各有不同。為方便比較，學員的總得分會除以其加入學苑的年數，計算出每年表現平均得分 (average performance score per year, APSY)。調查對象的 APSY 分布見圖一。

圖一：183 名調查對象的每年表現平均得分 (APSY) 直方圖

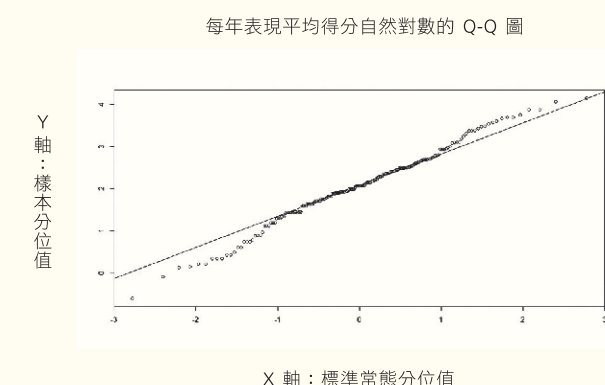


建構統計模型時，計算學員每年表現平均得分 (APSY) 的自然對數 (natural logarithm)，讓結果值 (見下圖二 a) 接近常態分佈。圖二 b 是用以檢定 $\ln(\text{APSY})$ 是否屬常態分佈的 Q-Q 圖，該圖近乎直線。

圖二 a：183 名調查對象的每年表現平均得分對數 ($\ln(\text{APSY})$) 直方圖



圖二 b：每年表現平均得分自然對數 $\ln(\text{APSY})$ 的 Q-Q 圖



分析方法：貝葉斯套索 (LASSO) 迴歸

套索 (LASSO) 是「最小絕對值收縮與選擇算子」(Least Absolute Shrinkage and Selection Operator) 的簡稱 (見參考書目 [1])，是一種原先用在線性迴歸問題中選擇變項將係數收縮的方法，把迴歸係數縮小到近乎零，而其中一些係數則為零。

套索 (LASSO) 迴歸可以採用貝葉斯觀點去理解，因為它們跟使用雙指數 (double exponential) 作為迴歸係數的先驗分佈 (prior distribution) 後從貝葉斯線性迴歸模型獲得的後驗眾數 (posterior mode) 一致。相應的模型可用下列公式描述：

$$\begin{aligned} Y_i | \beta, \tau &\sim \text{Normal}(\mu_i, \tau^{-1}), \text{ for } i = 1, \dots, n \\ \mu &= X\beta \text{ with } \mu = (\mu_1, \mu_2, \dots, \mu_n)^T \\ \beta_j &\sim \text{DE}\left(0, \frac{1}{\tau\lambda}\right), \text{ for } j = 1, \dots, p, \\ \tau &\sim \text{Gamma}(a, d), \end{aligned}$$

其中 $\tau = 1/\sigma^2$ 為常態迴歸模型的精確度 (precision)。假設係數 β_j 的先驗分佈為雙指數分佈，在零的位置會出現明顯較高的尖峰，而接近零的值均具有較高的概率。 λ 為收縮參數，用於控制先驗方差 (prior variance)，其值為 $2/(\tau\lambda)^2$ 。不同的 λ 值對應不同收縮程度。較小的 λ 值對應較大方差，即在貝葉斯模型中 β_j 的先驗信息較弱，基本上不會令模型參數出現任何收縮。另一方面，較大的 λ 值對應強先驗信息 (prior information)，其 β_j 將接近零，故會導致較大程度的收縮。在這項研究中， λ 值按照參考書目 [1] 所述論點，設定為 0.067。為確保 λ 對所有協變量 (covariates) 均具有相同影響，在無損一般性的情況下，運算時假設所有變項均經過標準化，使其平均值等如零，方差等如 1。

儘管貝葉斯模型的後驗眾數 (posterior mode) 跟一般套索算法的估計相同 (具有其所有屬性)，但許多用作貝葉斯推斷的運算軟件往往只提供後驗均值 (posterior mean)，它卻不具備把不重要係數設定為零這項具吸引力的特性。此項研究採用一項簡單的方法，檢查零是否包含在 β_j 的後驗可信區間 (posterior credible interval)，從而識別出不重要的協變量。(見參考書目 [2])。

分析結果

研究收集了每名調查對象就情意特徵和學習技能問題所作的回應，並根據學苑的記錄計算其表現得分。相應的統計摘要和結果如下。

描述統計

表三所載為各個變項的統計摘要 (25% 百分位數、中位數、均值、75% 百分位數、標準差和變異係數 (coefficient of variation))：

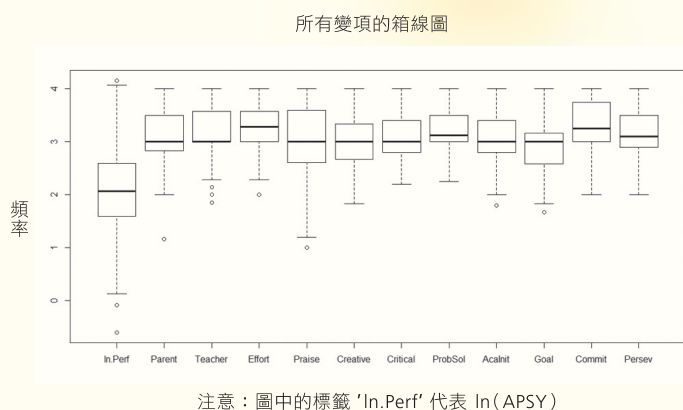
表三：各個變項的統計摘要

| 變項 / 統計數字 | 25% | | | 75% | | |
|------------|------|------|------|------|------|------|
| | 百分位數 | 中位數 | 均值 | 百分位數 | 標準差 | 變異係數 |
| 每年表現平均得分對數 | 1.59 | 2.07 | 2.07 | 2.59 | 0.88 | 0.43 |
| 親子關係 | 2.83 | 3.00 | 3.15 | 3.50 | 0.51 | 0.16 |
| 師生關係 | 3.00 | 3.00 | 3.20 | 3.57 | 0.49 | 0.15 |
| 努力 | 3.00 | 3.29 | 3.29 | 3.57 | 0.44 | 0.13 |
| 稱讚 | 2.60 | 3.00 | 3.00 | 3.60 | 0.69 | 0.23 |
| 創意 | 2.67 | 3.00 | 2.99 | 3.33 | 0.47 | 0.16 |
| 稱讚 | 3.00 | 3.00 | 3.20 | 3.57 | 0.49 | 0.15 |
| 明辯性思維 | 2.80 | 3.00 | 3.16 | 3.40 | 0.43 | 0.14 |
| 解難能力 | 3.00 | 3.13 | 3.20 | 3.50 | 0.42 | 0.13 |
| 學術自發能力 | 2.80 | 3.00 | 3.13 | 3.40 | 0.51 | 0.16 |
| 設定目標 | 2.58 | 3.00 | 2.92 | 3.17 | 0.50 | 0.17 |
| 承諾 | 3.00 | 3.25 | 3.27 | 3.75 | 0.42 | 0.13 |
| 毅力 | 2.90 | 3.10 | 3.16 | 3.50 | 0.45 | 0.14 |

可以見到，以自陳式問卷所得變項的變異係數 (其定義為標準差除以均值)，較每年表現平均得分對數的變異係數小得多。這現象在變項分佈的箱線圖 (boxplot) 中呈現出來 (見圖三)，意味著自陳式問卷所得答案的差異相對較小。



圖三：變項分布的箱線圖



接著檢視所有變項之間的相關性。總括來說，情意特徵和學習技能的變項之間存在中度 (moderate) 相關性，而學員表現與其他相關變項之間則只存在非常輕度 (very mild) 的相關性。

再細看學員表現與其他變項之間的相關係數值 (見表四)。可以見到，學員表現這個變項與其他相關變項之間只存在非常輕度的相關性。這點也許不足為奇，因為從自陳式問卷所得關於情意特徵和學習技能的答案差異甚小，故此以這些變項來解釋學員表現會有限制。其中，只有「努力」、「明辯性思維」、「解難能力」和「學術自發能力」的 p 值 ≤ 0.05 ，在統計學上有顯著的相關。

表四：學員表現與其他相關變項之間的相關係數值

| 變項 | 親子關係 | 師生關係 | 努力 | 稱讚 | 創意 |
|--------------------|-------|--------|-------|------|------|
| $\ln(\text{APSY})$ | 0.03 | 0.14 | 0.19* | 0.02 | 0.12 |
| 明辯性思維 | 解難能力 | 學術自發能力 | 設定目標 | 投入程度 | 毅力 |
| 0.16* | 0.16* | 0.19* | 0.08 | 0.09 | 0.13 |

注*：相關係數的 p 值 ≤ 0.05 ，即在統計學上有顯著的相關

推論統計

如前述，此項研究採用貝葉斯套索迴歸來決定有哪些變項可能影響學員表現。當中會把學員表現和協變量標準化。為此，常量參數 (constant parameter) 並不包括在把變項標準化的模型中，因為常量參數將會是自然設定為零的。非標準化原始變項的迴歸參數，可從標準化變項的迴歸參數計算出來。

研究採用了貝葉斯建模的常用軟件 WinBUGS 進行，並在軟件中運行馬爾可夫鏈蒙特卡羅算法 (MCMC)，以獲得所有未知參數後驗分佈 (posterior distribution) 的摘要。

研究發現，只有「努力」和「學術自發能力」兩個變項的係數，其 80% 可信區間未有覆蓋零值 (「努力」的 80% 可信區間 = $[0.04, 0.57]$ ，後驗均值 = 0.30；「學術自發能力」的 80% 可信區間 = $[0.02, 0.47]$ ，後驗均值 = 0.24)。根據這項準則 (即其 80% 可信區間有否覆蓋零值)，只有「努力」和「學術自發能力」是決定學員表現的重要因素。須要注意的是，由於學員表現與其他變項之間只存在非常輕度的相關性，因此估計應變項 (dependent variable) 的所有變化中，只有約 12% 能以這個模型解釋。

調查結果和摘要

根據以上分析，在貝葉斯套索迴歸模型中，學員的學習能力 (創意、明辯性思維和解難技巧) 並非決定學員表現的重要變項，這點也許令人感到意外。當中重要的變項只有「努力」和「學術自發能力」，而「努力」又是兩者中較為重要的。以下摘錄調查中部份關於「努力」的題目，以供參考。

關於「努力」的題目：

- 我不介意在感興趣的課業上多花時間。
- 課業有進步時，我會更加努力。
- 問題越難解決，我就越努力。

調查結果也許說明，在高能力的學生中，要表現出色，其情意發展可能比學習技能更為重要。

參考書目：

- [1] Lykou A, Ntzoufras I. 'On Bayesian Lasso Variable Selection and the specification of the shrinkage parameter', Technical Report, Athens University of Economics and Business, 2011.
- [2] Fahrmeir, L., Kneib, T., Konrath, S.: 'Bayesian regularisation in structured additive regression: a unifying perspective on shrinkage, smoothing and predictor selection', Stat. Comput. 20, 203–219, 2010.

Effort Counts Most for Success

Background

Traditionally, the importance of cognitive skills (such as critical thinking and problem-solving skills) to academic performance is emphasised. In recent years, the question of whether there is any impact of affective characteristics (such as commitment) of a student to his/her academic performance is concerned. It is speculated that students' attitudes towards learning and study are essential for their successes. In this regard, a study is initiated to explore the association of student members' performance in the Hong Kong Academy for Gifted Education (HKAGE) with their affective characteristics and study skills.

Data Collection

For the study, the target population were students with full membership of the HKAGE who have joined the Academy for at least half a year and completed at least one programme. Relevant student records were retrieved at the end of 2018. An e-survey was then conducted to collect their basic demographic information (e.g., Gender, Study Domain and Grade Level), some affective characteristics and study skills (refer to the next section for further details) using self-report question items. At the end, 183 student responses were collected (see Table 1).

Table 1: Response rate by type of respondents

| | Primary | Junior Sec | Senior Sec | Overall |
|----------------------|---------|------------|------------|---------|
| Sent | 552 | 1467 | 1226 | 3245 |
| Completed | 49 | 91 | 43 | 183 |
| Response Rate | 8.88% | 6.20% | 3.51% | 5.64% |

It should be noted that primary students had the highest response rate (8.88%), as compared with that of junior secondary (6.20%) and senior secondary students (3.51%). The sample profile, in terms of Gender, Grade Level and Study Domain, and its comparison with that of the target population are shown in Table 2.

Table 2: Distribution of gender, grade and domain for the target population and survey respondents

| | | Target Population | | Respondents | | Chi-Square |
|---------------|-----------------------|-------------------|-------|-------------|-------|---------------------|
| | | N | % | N | % | |
| Gender | Male | 1987 | 61.2% | 98 | 53.6% | 4.511 p = 0.034 |
| | Female | 1258 | 38.8% | 85 | 46.4% | |
| Grade | Primary | 552 | 17.0% | 49 | 26.8% | 21.021 p < 0.001 |
| | Junior Sec | 1467 | 45.2% | 91 | 49.7% | |
| | Senior Sec | 1226 | 37.8% | 43 | 23.5% | |
| Domain | LANG & HUM | 1087 | 33.5% | 63 | 34.4% | 4.056 p = 0.132 |
| | MATH & SCI | 1859 | 57.3% | 111 | 60.7% | |
| | Multi-Domain | 299 | 9.2% | 9 | 4.9% | |

From the p-values of the corresponding chi-square tests of independence, it can be concluded that there was no statistically significant difference, in terms of Gender and Study Domain,

between the target population and survey respondents. However, amongst survey respondents there were relatively more primary student members (26.8%), as compared with that of the target population (17.0%). On the other hand, the proportion of senior secondary members amongst survey respondents (23.5%) was prominently less than that of the target population (37.8%).

Affective Characteristics and Study Skills

To gauge affective characteristics and study skills of student members, the self-report question items on the following aspects were deployed, namely:

Affective Characteristics:

- Parent Relationships
- Teacher-Student Relationship
- Effort
- (Importance of) Praise
- Commitment
- Perseverance

Study Skills:

- Creative Thinking
- Critical Thinking
- Problem Solving
- Academic Initiation
- Goal Setting

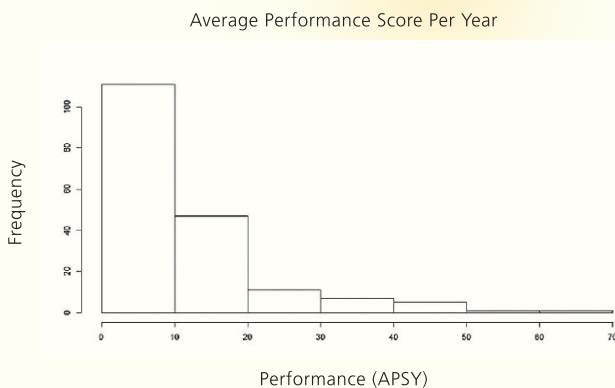
Each of these question items adopts a 4-point Likert scale (1 – 'Strongly disagree' and 4 – 'Strongly agree'). For each participant, the score of each aspect would be derived by averaging the scores of relevant question items.

Performance Scores

Concerning student performance in the HKAGE, total scores, which are based on programme enrolments and marks assigned according to the outcomes (e.g. incomplete – 0 mark, completed – 1 mark, completed with merit – 5 marks, and completed with distinction – 10 marks etc.), could be derived. As students join the Academy at different times, the duration of the period for accumulating the total scores would be different. For the sake of comparison, total scores of each student would be divided by the number of years that he/ she has joined the Academy; i.e. average performance score per year (APSY). The distribution of APSY of the survey respondents is shown in Figure 1 below.



Figure 1: Histogram of average performance scores per year (APSY) for 183 survey respondents



For the purpose of statistical modelling, natural logarithm would be applied to average performance scores per year (APSY) so that the resultant values (see Figure 2a below) could be close to a normal distribution. The corresponding Q-Q Plot for checking the normality assumption of $\ln(\text{APSY})$ is shown in Figure 2b, which is more or less close to a straight line.

Figure 2a: Histogram of logarithm of average performance scores per year ($\ln(\text{APSY})$) for 183 survey respondents

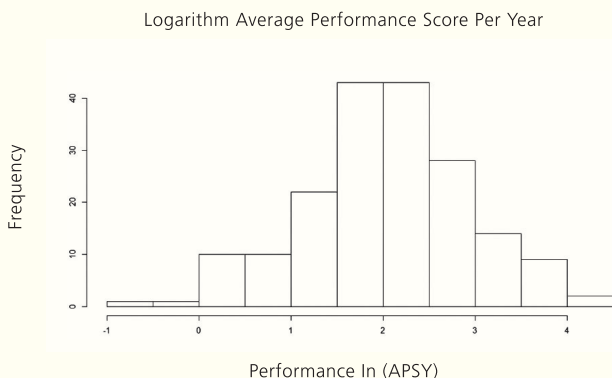
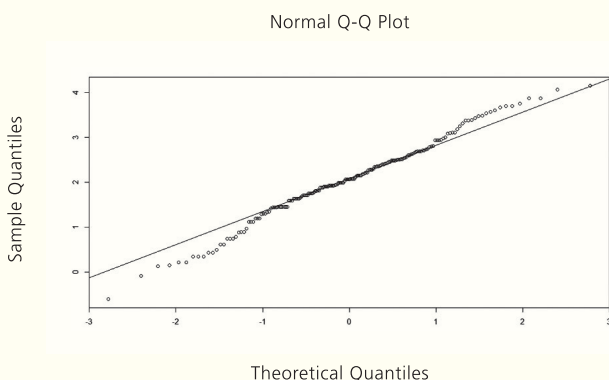


Figure 2b: Q-Q Plot for logarithm of average performance scores per year ($\ln(\text{APSY})$)



Methodology of Analysis: Bayesian LASSO Regression

Least Absolute Shrinkage and Selection Operator, or LASSO for short (see [1]), is a shrinkage method that was originally used for the selection of variables in the linear regression problem. The regression coefficients are shrunk toward zero and some of them are set exactly equal to zero.

The LASSO estimates have an apparent Bayesian perspective as they correspond to the posterior mode of a Bayesian normal linear regression model using a double-exponential prior distribution for the regression coefficients. The corresponding model is described by the following formulation:

$$Y_i | \beta, \tau \sim \text{Normal}(\mu_i, \tau^{-1}), \text{ for } i = 1, \dots, n$$

$$\mu = X\beta \text{ with } \mu = (\mu_1, \mu_2, \dots, \mu_n)^T$$

$$\beta_j \sim \text{DE}\left(0, \frac{1}{\tau\lambda}\right), \text{ for } j = 1, \dots, p,$$

$$\tau \sim \text{Gamma}(a, d),$$

where $\tau = 1/\sigma^2$ is the precision of the normal regression model. The coefficients β_j are assumed to follow the double exponential as a prior distribution, which has a considerably higher spike at zero giving the higher probability to values in neighbourhoods close to zero. λ is the shrinkage parameter which controls the prior variance given by $2/(\tau\lambda)^2$. Different values of λ correspond to different levels of shrinkage. Small values of λ correspond to large variance introducing low information in the Bayesian model and essentially not imposing any shrinkage on the model parameters. On the other hand, large values of λ correspond to strong prior that β is close to zero resulting in high levels of shrinkage. For the current study, the value of λ was set to 0.067, following the arguments stated in [1]. To ensure that λ has the same meaning for all covariate effects, we assume, without loss of generality, that all the variables are standardised with mean equal to zero and variance equal to one.

Although the posterior mode of this Bayesian model is the same as in ordinary LASSO (inheriting all its properties), the posterior means, which are usually at the centre of a number of software for Bayesian inference, do not have the attractive property of setting unimportant coefficients equal to zero. A simple approach adopted in the current study would be based on posterior credible intervals identifying unimportant covariates when zero lies within these intervals (see [2]).

Analysis Results

For each survey participant, we collected his/her responses to the question items related to his/her affective characteristics and study skills concerned. Afterwards, the performance scores of each participant were compiled based on the corresponding enrolment records in the HKAGE. The corresponding summary statistics and results are discussed below.

Descriptive Statistics

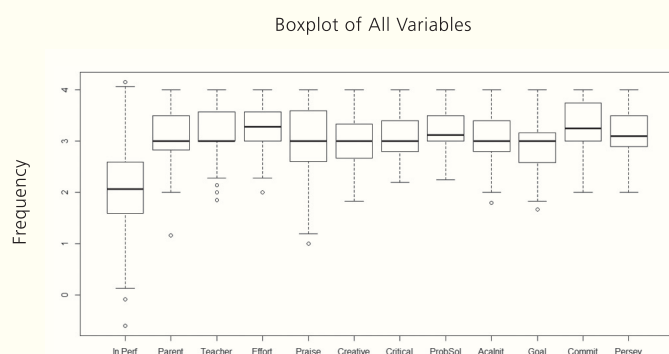
Some summary statistics (25% percentile, median, mean, 75% percentile, standard deviation, and coefficient of variation) of each variable are shown in Table 3 below.

Table 3: Summary statistics of all variables

| Variable/Statistics | 25% Percentile | Median | Mean | 75% Percentile | Standard Deviation | Coefficient of Variation |
|--------------------------|----------------|--------|------|----------------|--------------------|--------------------------|
| In (APSY) | 1.59 | 2.07 | 2.07 | 2.59 | 0.88 | 0.43 |
| Parent Relation | 2.83 | 3.00 | 3.15 | 3.50 | 0.51 | 0.16 |
| Teacher-Student Relation | 3.00 | 3.00 | 3.20 | 3.57 | 0.49 | 0.15 |
| Effort | 3.00 | 3.29 | 3.29 | 3.57 | 0.44 | 0.13 |
| Praise | 2.60 | 3.00 | 3.00 | 3.60 | 0.69 | 0.23 |
| Creativity | 2.67 | 3.00 | 2.99 | 3.33 | 0.47 | 0.16 |
| Critical Thinking | 2.80 | 3.00 | 3.16 | 3.40 | 0.43 | 0.14 |
| Problem Solving | 3.00 | 3.13 | 3.20 | 3.50 | 0.42 | 0.13 |
| Academic Initiation | 2.80 | 3.00 | 3.13 | 3.40 | 0.51 | 0.16 |
| Goal Setting | 2.58 | 3.00 | 2.92 | 3.17 | 0.50 | 0.17 |
| Commitment | 3.00 | 3.25 | 3.27 | 3.75 | 0.42 | 0.13 |
| Perseverance | 2.90 | 3.10 | 3.16 | 3.50 | 0.45 | 0.14 |

It can be observed that for variables obtained from self-report question items, the corresponding coefficients of variation (defined as standard deviation/mean) were much smaller, as compared with that of the logarithm of the average performance score. Such a situation could be visually displayed using boxplots of all variables (see Figure 3). This implies that the variations of responses of self-report question items were relatively narrow.

Figure 3: Boxplot of all variables showing their distributions



Notes: The label 'In.Perf' in the diagram stands for In(APSY)

Next, we examine the correlations amongst all variables. In general, moderate correlations existed amongst the variables of affective characteristics and study skills. On the other hand, only very mild correlations existed between student performance and other variables concerned.

We look at the values of the correlation coefficient between performance and other variables in detail (see Table 4). It can be observed that performance variable had only very mild correlation with other variables concerned. It might not be a surprise, since the variation of self-report data on affective characteristics and study skills were quite narrow. Thus, the explanatory power of these variables for student performance would be limited. Amongst them, only the ones for Effort, Critical Thinking, Problem Solving and Academic Initiation were statistically significant with $p\text{-value} \leq 0.05$.

Table 4: Values of correlation coefficient between student performance and other variables concerned

| Other Vars | Parent Relation | Teach-Student | Effort | Praise | Creativity |
|-------------------|-----------------|---------------------|--------------|--------|--------------|
| In(APSY) | 0.03 | 0.14 | 0.19* | 0.02 | 0.12 |
| Critical Thinking | Problem Solving | Academic Initiation | Goal Setting | Commit | Perseverance |
| 0.16* | 0.16* | 0.19* | 0.08 | 0.09 | 0.13 |

Note*: The correlation coefficient is statistically significant with $p\text{-value} \leq 0.05$

Inferential Statistics

As discussed above, Bayesian LASSO regression would be adopted to determine those variables which might have an impact on student performance. In the Bayesian implementation, we standardise both the response and the covariates. For this reason, the constant parameter is not included in the model for the standardised variables as it is natural to set it equal to zero. The regression parameters for unstandardised original variables could be derived from the ones for standardised variables.

The common software for Bayesian modelling, called WinBUGS, was used. Markov Chain Monte Carlo Method (MCMC) was run in the software so as to obtain summaries for the posterior distributions of all unknown parameters.

It is found that only for the coefficients of the variables Effort and Academic Initiation, their 80% credible intervals did not cover the value zero (80% credible interval for Effort = [0.04, 0.57], posterior mean=0.30; 80% credible interval for Academic Initiation = [0.02, 0.47], posterior mean=0.24). Under this criterion (i.e. whether 80% credible interval covering the value zero or not), only Effort and Academic Initiation were important for determining student performance. It should be noted that as the correlations of student performance with other variables were very mild, it was estimated that only around 12% of the total variation of the dependent variable could be explained by the model.

Findings and Summary

From the above analysis, it may be a surprise that the learning competency of a student (i.e. Creativity, Critical Thinking, and Problem-solving Skills) was not selected as important variables for determining student performance under Bayesian LASSO regression modelling. Only Effort and Academic Initiation were supposed to be important. Amongst these two variables, Effort was relatively more important. Some question items for Effort are presented below for reference.

Question items for Effort:

- I do not mind working a long time at schoolwork that I find interesting.
- When I am improving in my schoolwork, I try even harder.
- The harder the problem, the harder I try.

The findings may hint the possibility that the affective development of a student may be more important for the success of a student amongst those with high-level abilities, relative to training in study skills.

References:

- [1] Lykou A, Ntzoufras I. 'On Bayesian Lasso Variable Selection and the specification of the shrinkage parameter', Technical Report, Athens University of Economics and Business, 2011.
- [2] Fahrmeir, L., Kneib, T., Konrath, S.: 'Bayesian regularisation in structured additive regression: a unifying perspective on shrinkage, smoothing and predictor selection', Stat. Comput. 20, 203–219, 2010.



即將舉辦的活動 Forthcoming Events

今期內容包括 2020/21 學年的「每季學生課程的報名時間表」及 2020 年 9 月至 11 月學生課程及活動動向。我們希望此期刊能讓學員充分了解資優學苑的活動，從而選報合適的課程。

This issue covers the Seasonal Schedule for Student Programme Application (2020/21), and the Forthcoming Student Programmes and Events in September to November 2020. We hope this publication can facilitate student members' applications for our programmes.

| 季度 Season | 開始接受報名日期 Programme Application Commencement Date | 公布申請結果 Programme Application Result Announcement | 課程舉辦期間 Programme Period |
|-----------------|---|---|---|
| 第一季 Season 1 | 2020 年 7 月 16 日 16 July 2020 | 2020 年 8 月 August 2020 | 2020 年 9 月至 11 月 September to November 2020 |
| 第二季 Season 2 | 2020 年 10 月 15 日 15 October 2020 | 2020 年 11 月 November 2020 | 2020 年 12 月至 2021 年 2 月 December 2020 to February 2021 |
| 第三季 Season 3 | 2021 年 1 月 14 日 14 January 2021 | 2021 年 2 月 February 2021 | 2021 年 3 月至 5 月 March to May 2021 |
| 第四季 Season 4 | 2021 年 4 月 15 日 15 April 2021 | 2021 年 5 月 May 2021 | 2021 年 6 月至 8 月 June to August 2021 |

註：每季課程的報名時間表適用於大部分課程，但若干特別課程及在比賽後的增潤課程，未必適用於此項安排。

Remark: The seasonal schedule will apply to most programmes whilst some special programmes and competition follow-on enhancement programmes may not be applicable.

2020 年 9 月至 11 月學生課程及活動動向 設有甄選課程或先到先得課程

Forthcoming Student Programmes and Events in September to November 2020 Programmes with Screening or First-come-first-served Programmes

設有甄選的課程：

課程設有不同的甄選方式，例如網上甄選問題、筆試或其他甄選方式。

- 根據學員在甄選中的表現來取錄學員，詳情請參閱各課程的資料。
- 如學員報名的課程與其他已取錄課程時間重疊，學苑將會考慮是否仍然取錄該學員。
- 學員應避免同時報讀時間重疊的課程。
- 學苑對課程取錄結果有最終決定權。

先到先得課程：

- 此類課程報名採取先到先得，額滿即止的方式取錄學員。

Programmes with Screening:

There are different screening methods for these programmes, for example, online screening questions, written tests or other screening methods.

- Student members are selected based on the performance in the screening. For more information, please refer to the programmes' information.
- If there is a time clash between the applied programmes and other programmes to offer, we will consider if the student will still be accepted.
- Students should avoid applying programmes with time clash.
- The decision of the HKAGE on the result of selection should be final.

First-come-first-served Programmes:

- The capacity of this type of programmes is limited and is on a first-come-first-served basis.

人文學科 (小學) Humanities (Primary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|---|---|--|--|---|
| (暫定) 2020 年 11 月至 2021 年 2 月 (Tentative) November 2020 – February 2021 | 2020/21 香港傑出 學生詩人 (英文) 獎 (語言: 英文) 2020/21 Hong Kong Budding Poets (English) Award (Language: English) | 所有採用本地 / 非本地 課程的香港全日制中 小學生 Full-time students from any primary / secondary schools adopting the local / non-local curriculum | 2020 年 11 月 (只限學校報名) November 2020 (School application only) | 2020 年 12 月 December 2020 | 待定 To Be Decided |

人文學科 (中學) Humanities (Secondary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|---|---|---|--|---|
| (暫定) 2020 年 10 月至 11 月 (Tentative) October to November 2020 | 傳理學課程 (程度 三): 讓 STEM 說出來 (E2CAV002C) (授課語言: 粵語) Communication Course (Level 3): Make STEM Genius Presentable (E2CAV002C) (Language: Cantonese) | 只限 2020 至 2021 學 年中一至中三 S1 to S3 only in 2020/21 school year | 2020 年 7 月 16 日 16 July 2020 | 2020 年 8 月 3 日 正午 12 時 3 August 2020 12:00 noon | 2020 年 8 月 14 日 14 August 2020 |



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|--|---|---|---|---------------------------|---------------------|
| (暫定) 2020年11月至 2021年2月 (Tentative) November 2020 to February 2021 | 2020/21 香港傑出 學生詩人 (英文) 獎 (語言: 英語) 2020/21 Hong Kong Budding Poets (English) Award (Language: English) | 所有採用本地 / 非本地 課程的香港全日制 中小學生 Full-time students from any primary / secondary schools adopting the local / non-local curriculum | 2020年11月 (只限學校報名) November 2020 (School application only) | 2020年12月 December 2020 | 待定 To Be Decided |
|--|---|---|---|---------------------------|---------------------|

數學科 (小學) Mathematics (Primary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|--|--|---|---|---|--|
| (暫定) 2020年9月5、12、 19及26日 上午9時30分 – 下午12時30分 (Tentative) 5, 12, 19 & 26 September 2020 9:30 a.m. - 12:30 p.m. | 跨範疇及跨學科課程 (程度一): 遊戲 X 數學 (E1MAT012C) (授課語言: 粵語) Across Domains and Interdisciplinary Course (Level 1): Games X Maths (E1MAT012C) (Language: Cantonese) | 小四至小六 P4 to P6 | 2020年7月16日 16 July 2020 | 2020年8月3日 正午12時 3 August 2020 12:00 noon | 2020年 8月14日 14 August 2020 |
| (暫定) 2020年10月10、 17、24及31日 下午2時 – 下午5時 (Tentative) 10, 17, 24 & 31 October 2020 2:00 p.m. - 5:00 p.m. | 離散數學、概率、統計課程 (程度一): 概率——用數學 來計算運氣 (E1MAT007C) (授課語言: 粵語) Discrete Math, Probability, Statistics Course (Level 1): Probability – When Luck Meet with Mathematics (E1MAT007C) (Language: Cantonese) | 小四至小六 P4 to P6 | 2020年7月16日 16 July 2020 | 2020年8月3日 正午12時 3 August 2020 12:00 noon | 2020年 8月14日 14 August 2020 |
| (暫定) 2020年9月至11月 (Tentative) September 2020 to November 2020 | Fibonacci Numbers and the Golden Ratio (by Coursera) (E1MAT0010) (只備英文版本) (English version only) (授課語言: 英語) (Language: English) | 小四至小六 P4 to P6 | 2020年7月16日 16 July 2020 | 2020年8月17日 正午12時 17 August 2020 12:00 noon | 先到先得, 額滿即止 First-come- first-served |
| (暫定) 2020年11月至 2021年1月 (Tentative) November 2020 to January 2021 | An Intuitive Introduction to Probability (by Coursera) (E1MAT0020) (只備英文版本) (English version only) (授課語言: 英語) (Language: English) | 小四至小六 P4 to P6 | 2020年7月16日 16 July 2020 | 2020年8月3日 正午12時 3 August 2020 12:00 noon | 先到先得, 額滿即止 First-come- first-served |

數學科 (中學) Mathematics (Secondary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|--|---|---|--|--|
| (暫定) 能力傾向測試: 2020年8月22日 下午1時30分 – 下午3時30分 或 下午4時 – 下午6時 2020年9月5、12、19 及26日 下午2時 – 下午5時 | 數學奧林匹克基礎課程: 數學燃動課程——「數論」 (E1IMO003C) (授課語言: 粵語) | 中一至中三 | 2020年7月16日 | 2020年 8月17日 正午12時 | 2020年 8月28日 |



| 數學科 (中學) Mathematics (Secondary) | | | | | |
|--|--|--|---|---|---|
| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
| (Tentative) Aptitude Test: 22 August 2020 1:30 p.m. - 3:30 p.m. or 4:00 p.m. - 6:00 p.m. 5, 12, 19 & 26 September 2020 2:00 p.m. - 5:00 p.m. | Introductory Course in Mathematical Olympiad: Maths Ignition – Number Theory (E1IMO003C) (Language: Cantonese) | S1 to S3 | 16 July 2020 | 17 August 2020 12:00 noon | 28 August 2020 |
| (暫定) 能力傾向測試: 2020年8月22日 下午1時30分 – 下午3時30分 或 下午4時 – 下午6時 2020年11月28日, 12月5、12及19日 下午2時 – 下午5時 (Tentative) Aptitude Test: 22 August 2020 1:30 p.m. - 3:30 p.m. or 4:00 p.m. - 6:00 p.m. 28 November, 5, 12 & 19 December 2020 2:00 p.m. - 5:00 p.m. | 數學奧林匹克基礎課程: 數學燃動課程 – 「代數」 (E1IMO004C) (授課語言: 粵語) Introductory Course in Mathematical Olympiad: Maths Ignition – Algebra (E1IMO004C) (Language: Cantonese) | 中一至中三 S1 to S3 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 2020年 8月28日 28 August 2020 |
| (暫定) 能力傾向測試: 2020年8月22日 下午1時30分 – 下午3時30分 或 下午4時 – 下午6時 2020年11月7、14、21及28日 上午9時30分 – 下午12時30分 (Tentative) Aptitude Test: 22 August 2020 1:30 p.m. - 3:30 p.m. or 4:00 p.m. - 6:00 p.m. 7, 14, 21 & 28 November 2020 9:30 a.m. - 12:30 p.m. | 跨範疇及跨學科課程 (程度二): 金融數學初探 (E2MAT005C) (授課語言: 英語) Across Domains and Interdisciplinary Course (Level 2): Introduction to Financial Mathematics (E2MAT005C) (Language: English) | 中一至中三 S1 to S3 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 2020年 8月28日 28 August 2020 |
| (暫定) 2020年9月至11月 (Tentative) September to November 2020 | Introduction to Calculus (by Coursera) (E3MAT0010) (只備英文版本) (English version only) (授課語言: 英語) (Language: English) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得, 額滿即止 First-come-first-served |
| (暫定) 2020年10月至12月 (Tentative) October to December 2020 | Number Theory and Cryptography (by Coursera) (E2MAT0010) (只備英文版本) (English version only) (授課語言: 英語) (Language: English) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得, 額滿即止 First-come-first-served |
| (暫定) 2020年10月至12月 (Tentative) October to December 2020 | Calculus: Single Variable Part 1 – Functions (by Coursera) (E3MAT0020) (只備英文版本) (English version only) (授課語言: 英語) (Language: English) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得, 額滿即止 First-come-first-served |



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| (暫定) 2020年11月至2021年1月 (Tentative) November 2020 to January 2021 | Calculus: Single Variable Part 2 – Differentiation (by Coursera) (E3MAT003O) (只備英文版本) (English version only) (授課語言：英語) (Language: English) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得， 額滿即止 First-come- first-served |
| (暫定) 2020年11月至2021年1月 (Tentative) November 2020 to January 2021 | Combinatorics and Probability (by Coursera) (E3MAT007O) (只備英文版本) (English version only) (授課語言：英語) (Language: English) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得， 額滿即止 First-come- first-served |

科學科 (中學) Sciences (Secondary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|---|--|---|---|--|
| (暫定) 2020年10月 (Tentative) October 2020 | 國際生物奧林匹克 — 香港區 比賽 2020 (COM/IBOHKC) (授課語言：中文及英文) International Biology Olympiad – Hong Kong Contest 2020 (COM/IBOHKC) (Language: Chinese and English) | 於2001年7月1日 或之後出生的中六或 以下中學生，並於 2020/21 學年仍就讀 於香港中學 S1 to S6 students who were born on or after 1 July 2001 and will still be studying in secondary schools in Hong Kong in the school year 2020/21 | 2020年9月上旬 Early September 2020 | 2020年9月下旬 Late September 2020 | 待定 To Be Decided |
| (暫定) 2020年10月 (Tentative) October 2020 | 新興科技講座系列 — 科學、 機遇及挑戰：(6) 電腦輔助研 發新藥物 (TECT1907) (授課語言：英語) Talk Series on Emerging Technologies — Science, Opportunities and Challenges: (6) Revolutionising Drug Discovery through In-Silico Design (TECT1907) (Language: English) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得， 額滿即止 First-come- first-served |
| (暫定) 2020年10月24及31日 下午2時 – 下午5時 下午6時 – 下午9時 (Tentative) 24 & 31 October 2020 2:00 p.m. – 5:00 p.m. 6:00 p.m. – 9:00 p.m. | 天文學 II 課程 (程度四) : 登陸火星 2025 (E3AST001C) (授課語言：英語) Astronomy II Course (Level 4): Journey to Mars 2025 (E3AST001C) (Language: English) | 中三至中六 S3 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 2020年 8月28日 28 August 2020 |
| (暫定) 2020年11月 (Tentative) November 2020 | 基礎科技講座：能說會道的 電腦 — 智能語音技術初探 (E3AIG001T) (授課語言：粵語) Introductory Talk in Technology: Machines Are Listening — Technologies Inside and Beyond Siri (E3AIG001T) (Language: Cantonese) | 中一至中六 S1 to S6 | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午12時 17 August 2020 12:00 noon | 先到先得， 額滿即止 First-come- first-served |



| 個人成長及社交發展 (小學) Personal Growth and Social Development (Primary) | | | | | |
|---|---|--|---|--|--|
| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
| 2020年9月5、12、19及26日， 10月3、10、17、24及31日， 11月7、14、21及28日 上午9時 – 下午1時 (學員只可選擇參與一節) 5, 12, 19 & 26 September, 3, 10, 17, 24 & 31 October, 7, 14, 21 & 28 November 2020 9:00 a.m. – 1:00 p.m. (Students can only choose one session to join) | Let Us Shine! (F1LUS001W-013W) (授課語言：粵語 / 英語) 詳情請參閱學苑網站 Let Us Shine! (F1LUS001W-013W) (Language: Cantonese / English) For details, please refer to the HKAGE website. | 小四至小六 P4 to P6 | 2020年7月16日 16 July 2020 | 詳情請參閱學苑網站 For details, please refer to the HKAGE website. | 詳情請參閱學苑網站 For details, please refer to the HKAGE website. |
| 2020年10月6日 (家長簡介會，只需家長出席。) 晚上6時30分 – 晚上8時 2020年10月10、17、24及31日 下午2時30分 – 下午5時 2020年11月7及14日 下午2時30分 – 下午4時30分 6 October 2020 (Briefing session for parents, parents attend ONLY) 6:30 p.m. – 8:00 p.m. 10, 17, 24 & 31 October 2020 2:30 p.m. – 5:00 p.m. 7 & 14 November 2020 2:30 p.m. – 4:30 p.m. | 親子「1+1」小組 (F1PCG001J) (授課語言：粵語) Parent-child "1+1" Group (F1PCG001J) (Language: Cantonese) | 只限 2020 至 2021 學年 小四至小六 P4 to P6 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年9月22日 22 September 2020 | 先到先得，額滿即止 First-come-first-served |
| 2020年10月24及31， 11月7及14日 上午10時30分 – 下午1時 24 & 31 October, 7 & 14 November 2020 10:30 a.m. – 1:00 p.m. | 創意工作坊 (F1PCG002J) (授課語言：粵語) Creativity Workshop (F1PCG002J) (Language: Cantonese) | 只限 2020 至 2021 學年 小四至小六 P4 to P6 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年10月9日 9 October 2020 | 先到先得，額滿即止 First-come-first-served |
| 2020年9月28、29及30日 下午3時 – 下午5時 28, 29 & 30 September 2020 3:00 p.m. – 5:00 p.m. | 時間管理工作坊 — 小學版 (JC3W-S211) (授課語言：粵語) Time Management Workshop – Primary Edition (JC3W-S211) (Language: Cantonese) | 小四至小六 (已完成 Let Us Shine! 學員) P4 to P6 HKAGE student members who have completed the common core programme "Let Us Shine!" | 2020年7月16日 16 July 2020 | 2020年8月17日 正午12時 17 August 2020 12:00 noon | 先到先得，額滿即止 First-come-first-served |
| 2020年10月10、17及24日 下午3時 – 下午5時 10, 17 & 24 October 2020 3:00 p.m. – 5:00 p.m. | 社交技巧工作坊 — 做個合群資優生 (JC3W-S221) (授課語言：粵語) Social Skills Workshop – Be a Sociable Gifted Student (JC3W-S221) (Language: Cantonese) | 小四至小六 (已完成 Let Us Shine! 學員) P4 to P6 HKAGE student members who have completed the common core programme "Let Us Shine!" | 2020年7月16日 16 July 2020 | 2020年8月17日 正午12時 17 August 2020 12:00 noon | 先到先得，額滿即止 First-come-first-served |



個人成長及社交發展 (中學) Personal Growth and Social Development (Secondary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|--|--|---|---|---|---|
| (暫定) 2020年9月 (Tentative) September 2020 | 「始動 — 我們的未來藍圖」系列：寫字 — 溫柔地說堅強的話 (E2GSG021W) (授課語言：粵語) “Get-set-goal (GSG)-Blueprint of Our Life” Series: Writing – Speaking the Strength in Soft (E2GSG021W) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中六學苑學員。於 2018 至 2019 及 2019 至 2020 學年獲取錄的中一至中六學苑學員將獲優先取錄。 (學員編號首 3 個字為 181、182、184、191、192 或 194) S1 to S6 HKAGE student members in 2020-21 school year. Priority will be given to S1 – S6 student members admitted in the 2018/19 & 2019/20 school year. (HKAGE student number begins with 181, 182, 184, 191, 192 or 194). | 2020年7月16日 16 July 2020 | 2020年8月3日 正午 12 時 3 August 2020 12:00 noon | 先到先得， 額滿即止 First-come-first-served |
| (暫定) 2020年11月 (Tentative) November 2020 | 「始動 — 我們的未來藍圖」系列：化學與人生 (E2GSG022W) (授課語言：英語) “Get-set-goal (GSG): Blueprint of Our Life” Workshop Series: Chemistry and Life (E2GSG022W) (Language: English) | 只限 2020 至 2021 學年中一至中六學苑學員。於 2018 至 2019 及 2019 至 2020 學年獲取錄的中一至中六學苑學員將獲優先取錄。 (學員編號首 3 個字為 181、182、184、191、192 或 194) S1 to S6 HKAGE student members in 2020-21 school year. Priority will be given to S1 – S6 student members admitted in the 2018/19 & 2019/20 school year. (HKAGE student number begins with 181, 182, 184, 191, 192 or 194). | 2020年7月16日 16 July 2020 | 2020年8月3日 正午 12 時 3 August 2020 12:00 noon | 先到先得， 額滿即止 First-come-first-served |
| (暫定) 2020年10月9日 下午5時 – 晚上7時 (Tentative) 9 October 2020 5:00 p.m. – 7:00 p.m. | 生命教育系列：自我概念 (F2LES001T) (授課語言：粵語) Life Education Series: Self Concept (F2LES001T) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中三 S1 to S3 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 9月25日 25 September 2020 | 先到先得， 額滿即止 First-come-first-served |
| (暫定) 2020年10月30日 下午5時 – 晚上7時 (Tentative) 30 October 2020 5:00 p.m. – 7:00 p.m. | 生命教育系列：自我管理 (F2LES002T) (授課語言：粵語) Life Education Series: Self Management (F2LES002T) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中三 S1 to S3 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 10月16日 16 October 2020 | 先到先得， 額滿即止 First-come-first-served |
| (暫定) 2020年11月20日 下午5時 – 晚上7時 (Tentative) 20 November 2020 5:00 p.m. – 7:00 p.m. | 生命教育系列：個人態度、信念與價值觀 (F2LES003T) (授課語言：粵語) Life Education Series: Personal Attitudes, Beliefs & Values (F2LES003T) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中三 S1 to S3 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 11月6日 6 November 2020 | 先到先得， 額滿即止 First-come-first-served |
| 2020年9月 21、22及23日 下午3時 – 下午5時 21, 22 & 23 September 2020 3:00 p.m. – 5:00 p.m. | 「儕講」溝通技巧工作坊 (JC3W-S231) (授課語言：粵語) “Peersay” Communication Skills Workshop (JC3W-S231) (Language: Cantonese) | 只限中一至中三 (完成情意教育工作坊的學員獲優先考慮) S1 to S3 only (Priority will be given to student members who have completed Affective Education Workshop) | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午 12 時 17 August 2020 12:00 noon | 先到先得， 額滿即止 First-come-first-served |
| 2020年 9月1、2、3及4日 下午2時30分 – 下午5時 1, 2, 3 & 4 September 2020 2:30 p.m. – 5:00 p.m. | 時間管理工作坊 — 中學版 (JC3W-S241) (授課語言：粵語) Time Management Workshop – Secondary Edition (JC3W-S241) (Language: Cantonese) | 只限中一至中三 (完成情意教育工作坊的學員獲優先考慮) S1 to S3 only (Priority will be given to student members who have completed Affective Education Workshop) | 2020年7月16日 16 July 2020 | 2020年 8月17日 正午 12 時 17 August 2020 12:00 noon | 先到先得， 額滿即止 First-come-first-served |



進階學習體驗 Advanced Learning Experiences

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象 (學苑學員) Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|---|---|---|---|---|
| (暫定) 2020年9月 (Tentative) September 2020 | 弘志：從城市農耕到初創企業 (A1ASP001T) (授課語言：粵語) ASPIRATIONS: From Urban Farming to Becoming a Start-up (A1ASP001T) (Language: Cantonese) | 2020 至 2021 學年中一至中六 S1 to S6 in 2020/21 school year | (暫定) 2020年8月6日 (Tentative) 6 August 2020 | (暫定) 2020年9月17日 正午 12 時 (Tentative) 17 September 2020 12:00 noon | 先到先得，額滿即止 First-come-first-served |
| 2020年9月24日 下午6時 – 下午7時30分 24 September 2020 6:00 p.m. – 7:30 p.m. | 弘志：科技事業的三門必修課 (A2ASP001T) (授課語言：粵語) ASPIRATIONS: The ABC You Should Know for a Career in Technology (A2ASP001T) (Language: Cantonese) | 2020 至 2021 學年中一至中六 S1 to S6 in 2020/21 school year | 2020年7月16日 16 July 2020 | (暫定) 2020年9月17日 正午 12 時 (Tentative) 17 September 2020 12:00 noon | 先到先得，額滿即止 First-come-first-served |
| (暫定) 2020年10月 – 11月 (Tentative) October – November 2020 | 弘志：履歷挑戰者 (C3ASP001W) (授課語言：粵語) ASPIRATIONS: CV Challengers (C3ASP001W) (Language: Cantonese) | 只限 2020 至 2021 學年中四至中六 S1 to S6 in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年8月27日 正午 12 時 27 September 2020 12:00 noon | 2020年9月10日 10 September 2020 |
| (暫定) 2020年11月 (Tentative) November 2020 | 我思·我感·我學：自發主導、慎行及混齡協作活動 (A1OTH001E) (授課語言：粵語) I Think · I Feel · I Learn: Self-initiation, Thoughtful Actions and Cross-Age Collaboration (A1OTH001E) (Language: Cantonese) | 2020 至 2021 學年中一至中六香港資優教育學苑學員 2020 至 2021 學年中一至中六香港資優教育學苑學員家長 S1 to S6 HKAGE student members in 2020/21 school year Parents of S1 to S6 HKAGE student members in 2020/21 school year | (暫定) 2020年8月6日 (Tentative) 6 August 2020 | 2020年10月8日 正午 12 時 8 October 2020 12:00 noon (Tentative) | 先到先得，額滿即止 First-come-first-served |
| (暫定) 2020年10月 – 2021年8月 (Tentative) October 2020 - August 2021 | 「媒體及傳意」學生團隊 (A2CMC001H) (授課語言：粵語) Student Media & Communication Team (A2CMC001H) (Language: Cantonese) | 2020 至 2021 學年中一至中六 S1 to S6 in 2020/21 school year | (暫定) 2020年7月30日 (Tentative) 30 July 2020 | (暫定) 2020年9月10日 正午 12 時 (Tentative) 10 September 2020 12:00 noon | 2020年10月8日 8 October 2020 |
| (暫定) 2020年10月 – 2021年8月 (Tentative) October 2020 – November 2022 | 香港資優師徒計劃 2020-22 (S3GAP003M) (授課語言：粵語 / 英語) Hong Kong Gifted Apprentice Programme (HKGAP) 2020-22 (S3GAP003M) (Language: Cantonese/ English) | 只限 2020 至 2021 學年中一至中五 S1 to S5 only in 2020/21 school year | (暫定) 2020年7月30日 (Tentative) 30 July 2020 | (暫定) 2020年9月10日 正午 12 時 (Tentative) 10 September 2020 12:00 noon | 2020年10月15日 15 October 2020 |

- 有關學生課程及比賽的最新消息，請瀏覽：<http://www.hkage.org.hk/b5/student-programme/face-to-face/> (課程) 或 <https://www.hkage.org.hk/b5/competitions/> (比賽)
- 有關網上學習課程的詳情，請瀏覽：<http://www.hkage.org.hk/b5/student-programme/online>
- 有關學生講座的詳情，請瀏覽：<https://www.hkage.org.hk/b5/talk>
- 有關資助課程計劃，請瀏覽：<https://www.hkage.org.hk/b5/students/student/programmes/subsidy-scheme>
- 所有課程資料僅供參考之用，如有更改，恕不另函通知。所有資料以網頁的最後公布為準。

- For updated information of student programmes and competitions, please visit: <http://www.hkage.org.hk/en/student-programme/face-to-face/> (programmes) or <https://www.hkage.org.hk/en/competitions/> (competition)
- For details of online programmes, please visit: <http://www.hkage.org.hk/en/student-programme/online>
- For details of student talks, please visit: <https://www.hkage.org.hk/en/talk>
- For programme subsidy scheme, please visit: <https://www.hkage.org.hk/en/students/student/programmes/subsidy-scheme>
- All the programme information is for reference only and is subject to change without prior notice. All information is subject to the latest announcement on the website.



2020年9月至11月學生課程及活動動向 不設甄選課程

Forthcoming Student Programmes and Events in September to November 2020 Programmes with No Screening

此類課程不設任何甄選問題、選拔試或其他甄選方式。

- 學員可於下列課程中報讀最多五個課程。報名時，學員必須列明志願（第一志願、第二志願、第三志願如此類推）。
- 學員只可遞交報名申請一次。報名遞交後，不得更改志願及課程。
- 報名遞交，學員如報名截止前退出課程，志願將維持不變。（例如：學員選了三個課程後，申請退出第一志願課程。學苑只會維持學員的第二志願及第三志願，而不會提升學員志願的優先次序）。
- 學苑會先根據學員志願，再以電腦系統隨機取錄學員。如學員獲取錄的課程與其他課程時間重疊，學苑將會因應情況考慮是否接受該學員的申請。
- 未曾完成所申請的課程的學員，其申請會獲得優先考慮。
- 學員應避免同時報讀時間重疊的課程。
- 學苑對課程取錄結果有最終決定權。

There are no screening questions, written tests or other screening methods for this type of programmes.

- Student members can select up to 5 programmes from a list of selections. Student members have to state the priority when submitting the application. (1st priority, 2nd priority, 3rd priority, etc.)
- Application can only be submitted once. Once it is submitted, the priority and the programme selection cannot be changed.
- If a student member withdraws from a programme before the application deadline, the choice priority will remain unchanged. (For example: A student selected three programmes and withdrew from the 1st priority programme. The choice of 2nd and 3rd priority will remain unchanged with no promotion in priority).
- We will select the students based on the student's choice of priorities and a randomly generated selection by the computer system. If there is a time clash between the applied programme and other programmes with offer, we will consider if the student will still be accepted.
- Priority will be given to student members who have not completed the applied programmes.
- Students should avoid applying programmes with time clash.
- The decision of the HKAGE on the result of selection should be final.

科學科（小學）Sciences (Primary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象（學苑學員） Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|--|--|---|---|---|
| 2020年11月21及28日 上午9時 – 正午12時 下午1時 – 下午4時 21 & 28 November 2020 9:00 a.m. – 12:00 noon 1:00 p.m. – 4:00 p.m. | 生活中的科學 — 鑑證科學課程（程度一）：破解案發現場 (E1STM002C) (授課語言：中文及英文) Daily Science - Forensic Science Course (Level 1): Crime Scene Investigation (E1STM002C) (Language: Chinese and English) | 只限 2020 至 2021 學年小四至小六 P4 to P6 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 7月23日 正午12時 23 July 2020 12:00 noon | 2020年 7月31日 31 July 2020 |

個人成長及社交發展（中學）Personal Growth and Social Development (Secondary)

| 課程日期 Programme Date | 課程 / 活動 Programme / Event | 對象（學苑學員） Target Participant (HKAGE Student Members) | 開始報名日期 Programme Application Commencement Date | 截止報名日期 Programme Application Closing Date | 報名結果 / 發布日期 Programme Application Result Announcement Date |
|---|---|--|---|---|---|
| 2020年9月19日 上午9時30分 – 下午12時30分 19 September 2020 9:30 a.m. – 12:30 p.m. | Inside Out 系列：自我概念 (I) (F2IOS001W) (授課語言：粵語) Inside Out Series: Self Concept (I) (F2IOS001W) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中三 S1 to S3 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 7月23日 正午12時 23 July 2020 12:00 noon | 2020年 7月31日 31 July 2020 |
| 2020年10月17日 上午9時30分 – 下午12時30分 17 October 2020 9:30 a.m. – 12:30 p.m. | Inside Out 系列：自我概念 (II) (F2IOS002W) (授課語言：粵語) Inside Out Series: Self Concept (II) (F2IOS002W) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中三 S1 to S3 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 7月23日 正午12時 23 July 2020 12:00 noon | 2020年 7月31日 31 July 2020 |
| 2020年11月14日 下午2時 – 下午5時 14 November 2020 2:00 a.m. – 5:00 p.m. | Inside Out 系列：自我概念 (III) (F2IOS003W) (授課語言：粵語) Inside Out Series: Self Concept (III) (F2IOS003W) (Language: Cantonese) | 只限 2020 至 2021 學年中一至中三 S1 to S3 only in 2020/21 school year | 2020年7月16日 16 July 2020 | 2020年 7月23日 正午12時 23 July 2020 12:00 noon | 2020年 7月31日 31 July 2020 |

- 有關學生課程及比賽的最新消息，請瀏覽：<http://www.hkage.org.hk/b5/student-programme/face-to-face>（課程）或 <https://www.hkage.org.hk/b5/competitions>（比賽）
- 有關網上學習課程的詳情，請瀏覽：<http://www.hkage.org.hk/b5/student-programme/online>
- 有關學生講座的詳情，請瀏覽：<https://www.hkage.org.hk/b5/talk>
- 有關資助課程計劃，請瀏覽：<https://www.hkage.org.hk/b5/students/student-programmes/subsidy-scheme>
- 所有課程資料僅供參考之用，如有更改，恕不另函通知。所有資料以網頁的最後公布為準。

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- For details of online programmes, please visit: <http://www.hkage.org.hk/en/student-programme/online>
- For details of student talks, please visit: <https://www.hkage.org.hk/en/talk>
- For programme subsidy scheme, please visit: <https://www.hkage.org.hk/en/students/student-programmes/subsidy-scheme>
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We always welcome feedback and enquiries on this issue of *Gifted Gateway*. Please do not hesitate to contact us.

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