

今年的高中畢業文憑試（DSC）即將公佈、而學生關心的只是數學、英語和中文的考試成績。除了成績之外，他們學以致用的學科知識實際上很少會用到，例如微積分，學生用了過去幾年的學習時間，皆已忘記得一乾二淨。這令我想到現在正是回顧我們核心課程的時候了——課程內所教授大部分的內容，均與我們日後的生活沒甚關連。

在討論教育政策之下，我們經常談到「批判思考」，而且時常感嘆許多學生缺乏這種技巧。而遺憾的是，學校裏並沒設這門專科，連在高中最後一年作選修科的機會都沒有。但我卻認為，思考方法是須教授的，而且一旦學會，遠較現時學校所教授的其他科目更為實用。

讓我們看看一個日常例子。事物之間互相關聯，卻並不代表彼此就存在因果關係，這是一個未廣為教授的概念。舉例說，我感冒時往往有學生建議我多吸取維他命 C，但這卻是個普遍的誤解，醫學研究已指出維他命 C 與治愈感冒毫無關係，但仍有許多人如此相信。這裏我們看到事物彼此關聯與因果關係相混淆的情況：一個簡單的事實是，他們不論有否服用維他命 C，感冒也會痊癒。但由於服用維他命 C 跟感冒徵狀消失同時發生，他們便將兩者扯上關係。

讓批判思考獨立成科，便能教授許多這類概念，而且部分概念顯得艱深，例如回歸平均值、錨定效應、基率忽略謬誤、數據代表性、常態分佈及框架效應等等，還有更多，但這些概念對現代生活都非常重要。與此同時，我們亦可在課程中教授常見的各種思維謬誤，一個常見的例子是「賭徒謬誤」，跟上述維他命 C 的例子同樣普遍。以擲硬幣為例，大多數人相信硬幣被連續六次拋擲均出現人頭，故第七次出現字的機會較高。事實不然，謬誤卻廣為人所相信……這也許是人們常到澳門博彩的原因。

部分這類批判思考的概念須要深入思考，但許多本地學校核心課程教授的其他概念何嘗不須深入思考，我則認為這些批判思考方法在真實生活中，遠較其他概念實用，因此應被納入學校課程內。若是如此，只消一代以後，澳門的賭場便會走向衰微。

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### **English version**

Examination results will soon be released for this year's group of high school graduates and students will certainly look most closely at their grades for Mathematics, English and Chinese. However, beyond their grades, they are unlikely to actually use much of the subject knowledge, such as calculus, they spent learning for the past several years. And this suggests to me that now is as good a time as any to revisit our core curriculum where much that is taught has only weak links to what will ever be used again in life.

The term, "critical thinking," often pops up in discussions about education policy and today's youth. Frequently, the term is used to lament the lack of it among the school-aged populous. Yet, defining the term is not so easy. And regrettably, there is no subject taught at schools with this name, not even an elective in the final year of high school. But an argument can be made that thinking skills need to be taught, and once

acquired, they can be put to much more practical use than virtually any subject now taught in schools.

Let's take an every day example. One concept that appears to be in short supply is the notion that correlation does not necessarily imply causation. When I have a cold, I have had some students suggest to me that I should take Vitamin C. There is a broad misconception backed by medical research that Vitamin C does nothing to cure the common cold, yet the belief that it does remains pervasive. Students have told me that this vitamin helped to cure their cold. Here we see a basic confusion of correlation with causation. The simple fact of the matter is that their colds would have disappeared whether they had taken the Vitamin C or not. However, because the consumption of Vitamin C has coincided with the decline of their cold symptoms, they associate the two. We witness the same thinking error time and again among the population.

A course dedicated to critical thinking would provide the opportunity for many such concepts to be taught. Some of these are not easy. To name a few: regression to the mean; the anchoring effect; base rate neglect; representativeness; normal distribution; and framing effects. The list could be a very long one, but all of these concepts are very important in modern life. In parallel, common informal fallacies, or thinking errors could be introduced. A common one, called the gambler's fallacy, is as pervasive as the vitamin C one above. Here's an example: many believe that flipping a coin and getting heads half a dozen times in a row increases the likelihood of getting tails on the seventh time. It doesn't. But a large sector of the population believes it does...and they make frequent trips to Macau.

Indeed, some of these critical thinking concepts require deep thinking, but so does calculus, and many of the other concepts taught in the core curriculum in local schools. But I would argue that these critical thinking concepts are considerably more useful in real life and should be integrated into the school curriculum. If they were, a generation from now, among other things, Macau's casinos could fall on hard times. That's something to think about next time you see a flower that's gone to seed.