

# 翻轉「教」與「學」

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Flipped Teaching and Learning

Interview with Professor Hau Kit Tai, Choh-Ming Li Professor of Educational Psychology, CUHK

隨着電子學習愈趨普及，傳統教學模式也有所轉變。如何透過科技的輔助，使教與學能夠產生有效的連結，提升學習成效，乃現今教育界關注的課題之一，而電子化的趨勢也掀起了教學模式的革新和變化。本院教育心理學卓敏講座教授侯傑泰教授與大家探討近年興起的教學新思維——「翻轉教學」的理念及分享其經驗與心得。

## 人機分工，相輔相成

翻轉教學，為反向課堂，打破過去學生課堂上聽講、下課後自行練習之常規。「翻轉」提倡將授課環節變成教學影片或自學教材，讓學生於課堂前瀏覽，學習基礎知識；課堂時間則集中處理艱深的課題及進行深入的討論。傳統大班授課為顧及整體學生的需要，局限於陳述性的知識及簡單應用上，教師難以在課堂上針對學生的疑難提供幫助。侯教授解釋：「翻轉的概念就是人和機器相輔相成，借助電子網絡科技的便利，把授課的部分提前，正式課堂時間則強調師生、生生的互動，結合課前所學內容，安排分組討論、專題研究、問題解答、出外探訪、參觀體驗等活動，鼓勵學生進行獨立式探索學習或團體式合作學習。」

聽教師講課還是觀看教學視頻比較好？侯教授認為：「前者固然有其可取之處，但單向的授課模式減少師生互動。後者或會乏味，但卻可增加課堂互動的機會。對於學習能力較弱的學生，他們能夠重溫教學影片，根據自己的學習速度複習幾遍，逐步融會貫通，減少在課堂上追不及學習進度的延宕，並提升學習興趣，所以不少學生對翻轉教學的試驗反應正面。」

## 推動學習，照顧差異

作為「翻轉教學」的倡導者，侯教授率先在自己的課堂進行試驗。他將每週三個小時的講課錄製成教學視頻，要求學生在課前觀看，騰出課堂時間則用來評估學生進度，讓學生參與小組活動和報告，繼而深入討論。「翻轉」的成效可以從教學內容、學習興趣及學習表現幾方面來探討。

「翻轉教學」豐富教學內容以至教學活動，讓學習領域更為廣闊。舉例說，傳統教學只能教授ABC，用上「翻轉」便能騰出時間增教DEF；同時也提供空間實踐以往在課堂上較難兼顧的教學目標，如互動學習、同儕協作等。在學習動機方面，近九成學生認為「翻轉」教學模式能令他們增加對課堂的投入感，縱使此等課堂未有使用新穎的教學法或創新的課堂設計，也可提升其學習興趣。至於學習成效，雖然學生整體成績差別不大，但對於中等程度的學生來說，課堂上的互動給予他們更多提問機會，使其思考解難能力得以強化，學習表現有所提升。總的來說，大部分學生喜歡「翻轉」，認為這種教學模式值得推廣。

侯教授還指出，「翻轉」不只限於借助教學視頻改進課堂講解，還可按學生學習能力設計合適的自學教材，有助照顧學習差異。「透過電子教材，學習能力較弱的學生可以針對難點反覆自學，利用簡易試題及輔助資料由淺入深掌握知識。對於能力較強的學生，可以設計深化的課題讓其學習，通過翻轉照顧他們的需要。由此可見，

教師通過電子平台的支援，能更有效地因材施教。」

## 不論資歷，多作嘗試

要實行「翻轉」，其關鍵在於如何製作出「深入淺出」的自學教材，讓學生掌握基本知識，並善用課堂的空間提升教學至更深層次，專業的拍攝技術或高超的電腦操作並非必要，因此每位教師都可以參與。「翻轉」源自課前預習指定資料或參考文獻，近年則轉為自製教學視頻以供預覽，只是媒體不同而已。

侯教授指出現時電子學習所採用的概念，與我們過去認識的有所不同：「以前的教學影片，時間較長，質素較高；現今錄製的視頻片段較短，十多分鐘已是足夠，在現代攝錄器材的配合下，不必精細的拍攝技術，已可製作出不錯的畫面效果，讓每位教師都可以做到。新任教師一般比資深教師更能掌握中文輸入法、影片剪輯等電子技能，在推行「翻轉」較有優勢。至於要將教授重點提綱挈領地表達出來，讓學生易於明白，則在於教師的專業知識——以科為本設計開拓學生視野的教學活動，令學習歷程更具體及深刻，這方面資深教師則較為擅長。」

侯教授強調，「翻轉」最重要就是走出第一步。他建議教師可先嘗試拍攝一段數分鐘的視頻，雖然初期不易熟習，但當素材逐步累積，日後便可因應所需再作調整。「翻轉」不一定需要自行錄製教學影片，教師也可從網絡平台搜尋與學科相關的合適材料。侯教授鼓勵教師將「翻轉」的概念融入教學中，初期利用一兩節課「小試牛刀」，如效果理想可再多作嘗試。

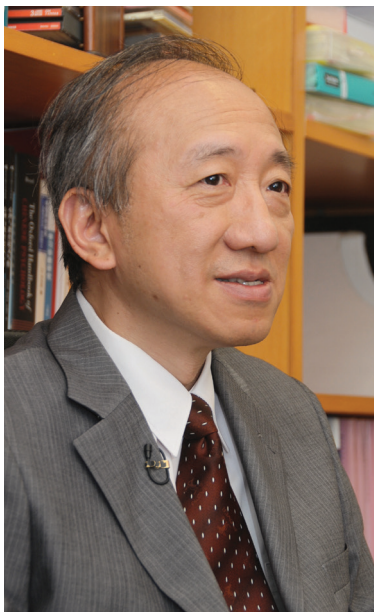
## 善用課堂，互動學習

「翻轉教學」在日本、新加坡、台灣等地已領先實踐，對處於起步階段的香港有何啟示呢？侯教授指出，每個地方、每家學校使用電子平台的方法和實際操作也有差異。從他的觀察，「現今不少學校使用平板電腦教學，無疑相對傳統課堂有趣，但我反而希望學生放下平板電



腦，把握課堂上師生之間的交流。教師應採用不同的活動增加師生互動分享，這樣才能促進學生互助合作及與人相處的技巧。」這就是侯教授提出的「人機分工」理念：在課堂外利用電子平台幫助學生自習，課堂內則善用互動交流提升學習深度及廣度。

「翻轉教學」對教學模式帶來嶄新的方向：聽講不再是課堂上的重點，學生參與



及互動合作才最為關鍵。「翻轉教學」對師生角色帶來逆轉的改變：學生不再是知識的接收者，而是學習的主體；教師從知識的傳遞者變為引導者，帶領學生探索，啟發內在學習動機，促進自主學習。透過設計有效益的教學活動，刺激學生思考和討論，有助學生發展更深層次的知識及能力。

**E**-learning has changed the traditional approach to teaching. How to enhance the effectiveness of teaching and learning through the use of technology is a major topic of discussion among educators. The rise of electronic technology has revolutionized the way we teach. Professor Hau Kit Tai, with extensive knowledge and practice of the “flipped classroom”, discussed this emerging trend in education and mobile learning.

### Man and Machine, Division of Labour

Delivering instruction outside of class by means of teaching videos and self-learning materials allows students to learn basic knowledge before class. Class time can then be spent on illustrating difficult concepts and having in-depth discussions. The traditional one-size-fits-all approach is often limited to teaching basic concepts and applications, which prevents teachers from giving individual students the support they need. Professor Hau explained, “The idea of flipping is the division of labour between man and machine. The availability of internet access enables traditional lecture to take place prior to class so that teachers can open up the classroom for more interactive and meaningful activities, such as group discussion, visits, field trips, etc.”

Are live lectures better than video lectures? Professor Hau shared his thoughts, “It might seem better to attend a lecture than watching a video, however, if in the lecture the teacher keeps talking the opportunities for teacher-student interaction would be hampered. Watching teaching videos before-hand may seem bland but it can prepare students for discussion activities in class. Less able students are given the option of reviewing the lecture as many times as they like and at their own pace, complementing the limitations of traditional classroom setting. In this way, it not only enhances student engagement and interest in learning but also accelerates their learning progress. Research has shown that students reacted positively to flipped learning.”

### Promoting Active Learning, Catering for Difference

As an advocate of the flipped classroom, Professor Hau has adopted the flipped model in his course. The three-hour lecture that took place every week was turned into a pre-recorded video for students to watch ahead of the class, while the class time was used for assessing students’

learning and exploring topics with greater depth through discussions and presentations. The effectiveness of the flipped classroom was evaluated in terms of teaching content, learning motivation as well as students’ performance.

The benefits of flipped classroom have been shown in the amount of content that can be delivered in each lesson. For example, in the traditional classroom, students are taught ABC only. By using the flipped model, the class time freed up enables the teacher to teach DEF and with the adoption of interactive learning and collaborative learning, the learning objectives which were unattainable in the past can now be achieved. It provided students with a holistic learning environment where activities went beyond ABC learning and were more substantial, diverse and flexible than before. Regarding motivation in learning, nearly 90% of students expressed that the flipped model had motivated them to become more engaged in class, even though no innovative pedagogy was employed and no new learning activities were designed.

In addition to teaching content and motivation, the results of the flipped classroom experiment were quite rewarding as students are now more engaged and some of them have shown significant improvement in learning. In terms of students’ performance, there was no big difference before and after using the flipped model. Medium ability students, however, showed noticeable improvement since increased interaction in class allowed them to come up with questions that stimulated their critical thinking and foster their intellectual development. The results revealed that most students liked “flipped learning” and agreed that this model could be promoted.

Professor Hau also pointed out that teaching and learning can benefit from flipping in other ways. With the support of e-learning tools teachers’ instructional practice can be enhanced. Moreover, the design of appropriate self-learning activities based on students’ ability can cater for learner diversity. “For weaker students, it is difficult for the teacher to explain the concept to them again and again in class. If replaced by teaching videos, students are able to watch them repeatedly. They can check the answers and look for explanations provided after they have finished the exercise on the e-learning platform. Through the use of technology, these weaker students can review their learning anytime and build up knowledge by starting with simple exercises and moving to more complex ones. Stronger students can benefit from the flipped classroom model as well. In the past, in teaching students of mixed ability, the teacher would avoid difficult topics. The flipped model allows teachers to develop learning materials suitable for gifted students or to make use of the learning materials designed for senior grades. Students with different learning abilities are supported with customized learning materials through the online learning platform.”

### Willingness to Try, Regardless of Experience

Every teacher can use the flipped learning approach to teach, with no professional video recording skills or advanced computer skills needed. The key to “flip” is how to develop self-learning materials which make difficult concepts easier to understand so that class time can be used for engaging students in high-level learning.

Professor Hau explained that the concept of e-learning



nowadays was very much different from our understanding of it in the past. “In the old days, teaching videos were usually longer and of high-quality. Today the videos are shorter. They last about ten minutes. One does not necessarily need to be a professional to shoot high quality videos. New teachers are at an advantage in terms of computer literacy, such as Chinese word processing, video-editing, etc. Making a teaching video challenges teachers to present the main ideas of the subject in a clear and well-structured manner within a short period of time. This would facilitate students’ understanding of the subject. For the challenge that put teachers’ professional knowledge in the test - whether they can design activities that can broaden students’ horizon and create meaningful learning experiences that can leave a deep imprint in their heart. Teachers with considerable teaching experience have the edge over new teachers in this area.”

Taking the first step is of utmost importance to flipped learning, Professor Hau stressed. He suggested that teachers may begin with a video as short as a few minutes or search for existing resources related to the subject matter on-line. Teachers do not necessarily have to record their own teaching videos. Anything that can help students learn is considered good materials. The beginning stage of developing materials is the hardest but once sufficient resources are accumulated only minor adjustment is needed in the future, Professor Hau added. He encouraged teachers to adopt the flipped classroom approach to teaching by flipping one lesson or two in the beginning and continue to try if the feedback is good.

### Utilizing the Class, Enhancing Interactive Learning

The flipped classroom has been getting popular in Japan, Singapore and Taiwan. It has recently made its way to Hong Kong. What can we learn from their experience? There is a certain degree of variation in the use of e-learning from one school to another. “Today many schools use tablet computers for teaching and learning. Undoubtedly using tablets is more interesting than the traditional form of learning, but I really hope to see students put aside their tablets and have more student-teacher interaction in class. Teachers should explore activities that allow more interaction and sharing between students and with teachers so as to foster students’ collaborative learning and interpersonal skills”, Professor Hau reflected from his observation. It echoed with the idea of “division of labour between man and machine” mentioned at the beginning of the article. That is, e-learning supports students’ self-directed learning outside the classroom while quality interaction in class increases the breadth and depth of learning.

The flipped classroom overturns the lesson delivery and traditional activity design, shifting the focus from one-way lecturing to student participation and collaborative learning. The flipped classroom, in fact, is reversing the roles of students and teachers. Students are no longer passive recipients but active constructors of knowledge. Teachers have shifted from being the transmitter of knowledge to being the facilitator of learning. The role of a teacher is to encourage students to explore, motivate them to learn and promote autonomous learning. Designing effective learning activities can stimulate students’ thinking and generate deeper discussions contributing to their development of higher level of knowledge and skills.

### 侯傑泰教授檔案

#### 現任

- 香港中文大學教育心理學卓敏講座教授
- 香港中文大學香港教育研究所聯席所長
- 香港學術及職業資歷評審局成員
- 教師及校長專業發展委員會成員

#### 曾任

- 香港中文大學副校長 (2011 – 2015)
- 香港中文大學逸夫書院輔導長 (2004 – 2006)
- 香港中文大學教育學院教育心理學系系主任 (1995 – 2008)
- 國際應用心理協會教育心理學部主席 (2010 – 2014)
- 課程發展議會委員 (2009 – 2014)
- 優質教育基金推廣及監察專責委員會成員 (1998 – 2002)
- 香港考試及評核局會考委員會成員 (1995 – 2004)

#### 榮譽及獎項

- 2014 美國教育研究協會院士

### Profile of Professor Hau Kit Tai

#### Present Positions

- Choh-Ming Li Professor of Educational Psychology, CUHK
- Co-Director, Hong Kong Institute of Educational Research, CUHK
- Member, Hong Kong Council for Accreditation of Academic and Vocational Qualifications
- Member, Committee on Professional Development of Teachers and Principals

#### Former Positions

- Pro-Vice-Chancellor, CUHK (2011 – 2015)
- Dean of Students, Shaw College, CUHK (2004 – 2006)
- Chairperson, Department of Educational Psychology, Faculty of Education, CUHK (1995 – 2008)
- President of the Educational Psychology Division, International Association of Applied Psychology (2010 – 2014)
- Member, Curriculum Development Council (2009 – 2014)
- Member, Promotion and Monitoring Sub-Committee, Quality Education Fund (1998 – 2002)
- Member, School Examinations Board, Hong Kong Examinations and Assessment Authority (1995 – 2004)

#### Honours and Awards

- 2014 American Educational Research Association (AERA) Fellow