THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 3: eLearning Pedagogy Research

Final Report (2015-16)

Report due 31 January 2017
Please return by email to The Ad hoc Committee on Planning of eLearning Infrastructure mmcd@cuhk.edu.hk

PART I

Project title: Flipping an Introductory Educational Research Methodology Course
Principal supervisor: Professor Hau, Kit Tai
Department / Unit: Educational Psychology
Project duration: From February 2016 to January 2017
Date report submitted: January 26, 2017

1. Project objectives

Is the project on track to meet its objectives?
Have the objectives been changed as a result of the experience of working on your MMCDG project?
Has the project created any impact as expected?

The objectives have not been changed and the project is on track, an e-book of the teaching note for the course PEDU6401 (Quantitative Methods in Educational Research) has been produced and was used in this flipped course. This teaching material greatly enhanced the quality of this flipped course. The responses from the students have been collected and will be analyzed to understand the relationships among students' background, motivation orientations, achievement (exam performance) and their flip experience (attitude towards flip). This will help our further understanding on the successful factors of flip. This set of materials and the whole course has been and will be further trimmed into micro-modules of independent topics and can be easily converted into modules for a MOOC.

2. Process, outcomes or deliverables

Please specify the number of micro modules produced, and the course(s) (with course codes and titles) that have used the micro modules in Part IV, and provide more detailed descriptions in here.
Have the research design, methodology and timeline been changed/adjusted?
Overall, was the project completed satisfactorily?

We have produced 7 micro modules /topics for the course PEDU6401 (Quantitative Methods in Educational Research) and PEDU7301 (Advanced methodology seminar), each consisted of 3 to 5 short videos and worksheets. The total amount of time for each topic is around 30 minutes. The research design, methodology and timeline have not been changed. The project was completed satisfactorily. The seven modules are:

I. Data – A. Scales of Measurement, B. Normal distribution, C. Expected Distribution, D. Collapsing Data
II. Correlation – A. Introduction, B. Precautions, C. Combining Groups, D. Standardized Scores, E. Causal Relationship, F. Ipsative Scores, G Ordinal Data
III. Validity and Reliability of an Instrument –A. Validity, B. Reliability, C. Reliability (Practical Measurement), D. Reliability (Dimension/total score)
IV. Variables, Hypotheses –A. Introduction, B. Identification of a Research Problem, C. Theories, Problems, Hypotheses, D. Hypotheses/Significance Testing
V. Control–A. Manipulation, B. Elimination or Inclusion, C. Statistical Control,D. Randomization
VI. Validity of Design–A. Internal Validity, B. External Validity
VII. Sampling Control–A.Introduction, B. Sampling Methods, C. Statistical Control,D. Randomization

3. Evaluation Plan

Have you altered your evaluation plans?
Does your evaluation indicate that you have achieved your objectives?

The evaluation plans remained the same; in order to monitor the quality of our e-reading materials, we have used the University wide standard CTE form and the additional questionnaire on students' perception of flip and students' motivational orientations before and after the adoption of the new additional e-reading materials to compare students' evaluation of the courses (itemized responses of the CTE was not available at this stage; our specially designed items are more relevant and can reflect our objectives more clearly).

Our own designed questionnaire items have shown the effectiveness of flipped classroom. In general, even with our very simplistic flip design using additional class exercise in each lesson, there were more students who favored the method than those not favoured. In general there are 40%-60% on the positive side with 10%-20% on the negative side on each items.

In Table 1, we showed the class responses for three sessions of the same course, once in 2014-15 (Term 1) when flip was first introduced, while 2016 Summer Term and 2016-17 (Term 1) were the latest two terms with our new e-textbook supported by the MMCD project being distributed. In general, the most recent two terms were at least as good as

the first session,

On whether flip provides more chance to discuss and interact with teachers and classmates, while 50%-70% were positive, 10%-20% were neutral and 10%-15% were on the negative side.

On whether flip helped better understanding of complicated concepts and greater interest, 50% -60% were in agreement, 20-40% were neutral, and 10%-15% were in disagreement.

On whether flip is worth promoting, 40%-60% were in agreement, 20% - 30% were neutral, 10% - 20% were in disagreement.

On whether students had to spend more time on flip, there seems to be views on both sides, without any majority view of whether flip requires more or less time.

On whether flip is a more effectively mode of learning, 50% - 70% students were on the positive, with 20% - 35% neutral, and 10% - 15% on the disagreement side.

Table 1

Distribution (percentage, %) of Students' Perception of Flipped Classroom across 3 terms ("In this course, 'Flipped Classroom' made me feel/allowed me…")

Scales/Items	Very untrue 1	Untrue 2	Somewhat True/untrue 3	True 4	Very true 5
Greater Interaction (reliability α = .613)					
More chance to discuss/interact with teachers					
2014-2015 Term 1	2.6	13.2	30.3	36.8	17.1
2016 Summer Term	2.0	25.5	25.5	41.2	5.9
2016-2017 Term 1	4.3	19.6	21.7	47.8	6.5
More chance to discuss/interact with classmates					
2014-2015 Term 1	1.3	9.2	19.7	44.7	25.0
2016 Summer Term	2.0	8.0	12.0	44.0	34.0
2016-2017 Term 1	4.3	13.0	17.4	43.5	21.7
Better Understanding/Interest (reliability α = .779)					
Understand better complicated concepts					
2014-2015 Term 1	2.6	11.8	22.4	39.5	23.7
2016 Summer Term	2.0	11.8	27.5	52.9	5.9
2016-2017 Term 1	2.2	8.7	19.6	34.8	34.8
Greater interest in the subjects					
2014-2015 Term 1	3.9	11.8	38.2	30.3	15.8

2016 Summer Term	2.0	27.5	29.4	37.3	3.9
2016-2017 Term 1	2.2	10.9	39.1	37.0	10.9

Worth to Promote (reliability α = .884)

Flip is worth to promote

2014-2015 Term 1	1.3	9.2	25.0	42.1	22.4
2016 Summer Term	2.0	19.6	39.2	33.3	5.9
2016-2017 Term 1	4.3	10.9	26.1	34.8	23.9

I will adopt Flip in my teaching

2014-2015 Term 1	1.3	14.5	19.7	39.5	25.0
2016 Summer Term	5.9	23.5	29.4	33.3	7.8
2016-2017 Term 1	2.2	15.2	30.4	34.8	17.4

Time Saving

As a whole, I used less time to study

2014-2015 Term 1	11.8	30.3	22.4	23.7	11.8
2016 Summer Term	13.7	49.0	11.8	21.6	3.9
2016-2017 Term 1	19.6	17.4	26.1	26.1	10.9

Learning Effectiveness

Make me learn this course more effectively

2016 Summer Term	0.0	13.7	37.3	41.2	7.8
2016-2017 Term 1	2.2	6.5	19.6	47.8	23.9

4. Dissemination, diffusion and impact

Please provide examples of dissemination: website, presentations in workshops or conferences, or publications.
Please provide examples of impact: how the research results/outcomes/findings can be extended to other disciplines.
Please describe how the research results/outcomes/findings may support the University's strategic aims in promoting eLearning.

Dissemination Activities done:

a) QEF Application: I have applied and secured a QEF fund (HK$600,000) to promote flip learning (starting June 2016), which subsequently was approved and support part of the webpage building work (see below).
b) Constructed a Web: I have constructed a web to disseminate Flip and other related activities -- EdDataX.FED.CUHK.EDU.HK (also partly supported by a QEF project) (see Appendix A).
c) Public lecture in conference: Given a public keynote lecture on "醉翁之意：翻轉不是終極"in the conference「反轉再玩轉」 by the IFEA (ifuture Education Association 香港電子學習教育協會) on 24 June, 2016; sharing with 250 principals and teachers.
d) Seminar on flip:「我的新學制學習旅程」研討會暨中學生短片創作獎勵計劃頒獎禮座談會: flip and other educational advancements in teaching pedagogies at Shatin Government School, Hong Kong, 2 July, 2016; sharing with 600 principals, teachers and students
e) International Conference presentation: Students' Perception of Flipped Classroom and Distant Mode Teaching Effects of Motivational and Self-Determination Orientations. Paper presentation at International Congress of Psychology Conference, Yokohama, Japan, July 24-29, 2016.
f) Lecture on Flip: Flip teaching to Queen's College, Hong Kong, 9 September, 2016
g) Invited Keynote in Taiwan: to give an invited keynote at the e-learning conference in Taiwan (at Taichung Normal University) on "面授、翻轉教室、慕課、遠程教學: 共同新趨勢及分工", 7 October, 2016.
h) Sharing on flip: 數位學習 (organized by 遠見天下文化事業) sharing in the session 國際論壇 (sharing of Hong Kong experience in digital learning and flip) in Taiwan; sharing with 1500 principals and teachers from Taiwan, 7 October, 2016
i) Seminar on flip: Apple Company HK, seminar on "Flipped and e-Classroom for Enterprise Staff Development" at City University of Hong Kong, invited keynote speaker, sharing with 250 Personnel Managers of Major companies in Hong Kong (including 5-star hotels, McDonald, Cathay, etc.), 25 October, 2016

j) Teaching and Learning Innovation Expo 2016: Talk on "Flip and Ultimate Goal of Flip", 16 December, 2016
k) Seminar on Flip (ultimate goal), UGC shared symposium held at VTC, 13 January, 2017
l) Article: Flipped teaching and Learning (interview). Faculty of Education, Teaching Practice Newsletter, No. 29, 2016. (see attached)
m) Article :E-learning opens up experiential learning (interview). In Chinese University Bulletin, No.2, 2016. (see attached)

The present project served to demonstrate the usefulness of e-technology in facilitating teaching and learning in the faculty. With the textbook quality e-reading materials so produced, the present course can also be easily turned into a MOOC to be put in some regional or international platform for graduate students. As I have already prepared both the Cantonese and Putonghua versions, it will not be expensive to convert the course into a MOOC. This kind of educational research topic is much needed for mainland students.

Flip teaching could be extended to a management level, as our research results have shown that flip teaching could promote interactive learning and teaching; it could be used on coaching and guidance which helped to enhance interaction for staff development within a company. Our research findings have also shown that 75% to 79% of students perceived moderate to high competence in learning during this flipped course, These figure suggested that flip teaching might also be able to promote learning competence, hence increasing their intrinsic motivation to learn.

PART II

Financial data

Funds available:

Funds awarded from MMCDG	$	132,600
Funds secured from other sources (please specify: QEF)	$	
Total:	$	132,600

Expenditure:

Item	Budget as per application	Expenditure	Balance
Staff Cost	0	134,149	(134,149)
Fixed Asset	0	2,550	(2,550)
Insurance& R	0	1,466.64	(1,466.64)
Printing, Stationary & Supplies	0	780	(780)

Teaching & Research Expenses	132,600	(132,600)	132,600
Vehicle & Travelling Expenses	0	37.20	(37.20)
Other Expenses	0	522.50	(522.50)
Total:			(7,105.94)

*note. The overexpense of 7,105.94 will be paid back to the university from another research account.

PART III

Lessons learnt from the project

Please describe your way forward.

Please describe any of the following item(s) accordingly:

- *Key success factors, if any*
- *Difficulties encountered and remedial actions taken, if any*
- *The role of other units in providing support, if any*
- *Suggestions to CUHK, if any*
    - *Example: what should be done differently?*

As I have done in the last few years, I will continue to share my experience in flip teaching using the e-reading materials in local, regional, and international conferences. The motivation questionnaires adopted in my research will also enable me to publish academic papers based on students' examination performance and questionnaire responses (e.g., whether the better performers in examination like the flip teaching more).

PART IV

Information for public access

Summary information and brief write-ups of individual projects will be uploaded to a publicly accessible CUHK MMCDG website. Please extract from Part I the relevant information to facilitate the compilation of the publicly accessible website and reports.

1. Keywords

Please provide five keywords (in the order of most relevant to your project to least relevant) to describe your micro-modules/pedagogies adopted.

(Most relevant) Keyword 1: eLearning

Keyword 2: Flipped Classroom

Keyword 3: Flip teaching

Keyword 4: MOOC (Massive Open Online Course)

(Least relevant) Keyword 5: Interactive Teaching

2. Summary

Please provide information, if any, in the following tables, and provide the details in Part I.

Table 1: Publicly accessible online resources (if any)
(a) **Project website:** *If a publicly accessible project website has been constructed, please provide the URL.* *EdDataX.fed.cuhk.edu.hk*
(b) **Webpage(s):** *If information of your project is summarized in a webpage (say a page in the department's or faculty's website), please provide the URL(s) in here.* **EdDataX.fed.cuhk.edu.hk**
(c) **Tools / Services:** *If you have used any tools or services for the project, please provide names of the tools or services in here.*
(d) **Pedagogical Uses:** *If any flipped classroom activities have been conducted, please provide information in here. If relevant, please indicate how your project output can be used to support flipped classroom activities.* *See summary of activities reported above*

Table 2: Resource accessible to a target group of students (if any)

If resources (e.g. software) have been developed for a target group of students (e.g. in a course, in a department) to gain access through specific platforms (e.g. Blackboard, facebook), please specify.

Course Code/ Target Students	**Term & Year of offering**	**Approximate No. of students**	**Platform**
PEDU6401	*2016-2017*	*over 150-200*	

Table 3: Presentation (if any)	
Please classify each of the (oral/poster) presentations into one and only one of the following categories	**Number**
(a) In workshop/retreat within your unit (e.g. department, faculty)	*1 (coming in Feb, 2017)*
(b) In workshop/retreat organized for CUHK teachers (e.g. CLEAR workshop, workshop organized by other CUHK units)	
(c) In CUHK ExPo jointly organized by CLEAR and ITSC	*1 (Teaching & Learning Expo)*
(d) In any other event held in HK (e.g. UGC symposium, talks delivered to units of other institutions)	*1 (at VTC for UGC seminar)*
(e) In international conference	*1 (in Japan)*
(f) Others (please specify)	*6 others (see above)*

Table 4: Publication (if any)	
Please classify each piece of publications into one and only one of the following categories	**Number**
(a) Project CD/DVD	*0*
(b) Project leaflet	*0*
(c) Project booklet	*0*
(d) A section/chapter in a booklet/ book distributed to a limited group of audience	*2 (university, faculty newsletter)*
(e) Conference proceeding	*1*
(f) A chapter in a book accessible internationally	*0*

(g) A paper in an referred journal	*0*
(h) Others (please specify)	*0*

3. A one-page brief write up

Please provide a one-page brief write-up of no more than 500 words and a short video.

Flipped teaching was used in PEDU6401 Quantitative Methods in Educational Research, a course taken by Master of Education students with a student population size from several tens to close to a hundred in each session, with a total of over 150-200 students or more each year. With the support of the fund, a set of teaching note for this flipped course has been much expanded into an e-textbook. This teaching material would enhance students' understanding of the video and the course materials. The set of materials and the whole course was trimmed into seven micro-modules of independent topics and with the textbook quality e-reading materials so produced, the present course can also be easily turned into a MOOC to be put in some regional or international platform for graduate students.

Appendix A Web pages of flipped teaching related contents

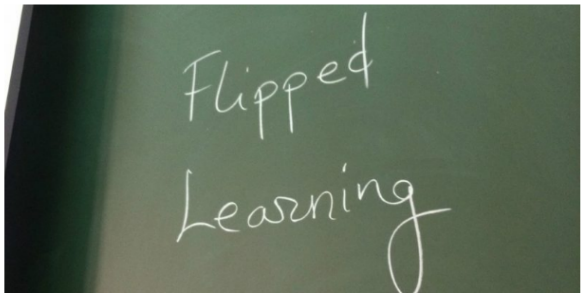
I. The Entrance Page to Flip

II. Chapter 0: A Crash Course on Flip

Ch.0 Crash Course

Nuts and bolts of flipped classroom.

Self-paced short courses to help you master a mindset of paradigm shift from teachers to students.



Flipped Classroom Infographics >

Pioneers Walk you Through Steps into Flipped Classroom >

How to Flip your Classroom>

Which Tech Tools Are Right for You? >

Flipped Teaching and Learning in HK >

Teacher's Guide To Flipped Classrooms >

7-lesson for Flipped Classrooms 101

This course covers the nuts and bolts of flipped learning from theory to practice:

7 Myths about the Flipped Classroom Interactive Question Series, Flip Your Class with Proven Methods,

Two magical tools to get your students to do and learn form pre-class work in a flipped classroom

What is a flipped classroom? (60s)

Flipped Classroom | Crash Course · Flipped Classrooms 101 – A self-paced, short course
>> https://blog.peerinstruction.net/2013/06/27/flipped-classrooms-101

5 Excellent Flipped Instruction Videos – Learn From the Experts

Flipped Classroom | Crash Course · 5 Excellent Flipped Instruction Videos – Learn From the Experts
>> http://www.flippedclassroomworkshop.com/5-excellent-flipped-instruction-videos-learn-from-the-experts/

Flipping Class at Khan Academy

Have you ever thought of using MOOCs to flip?

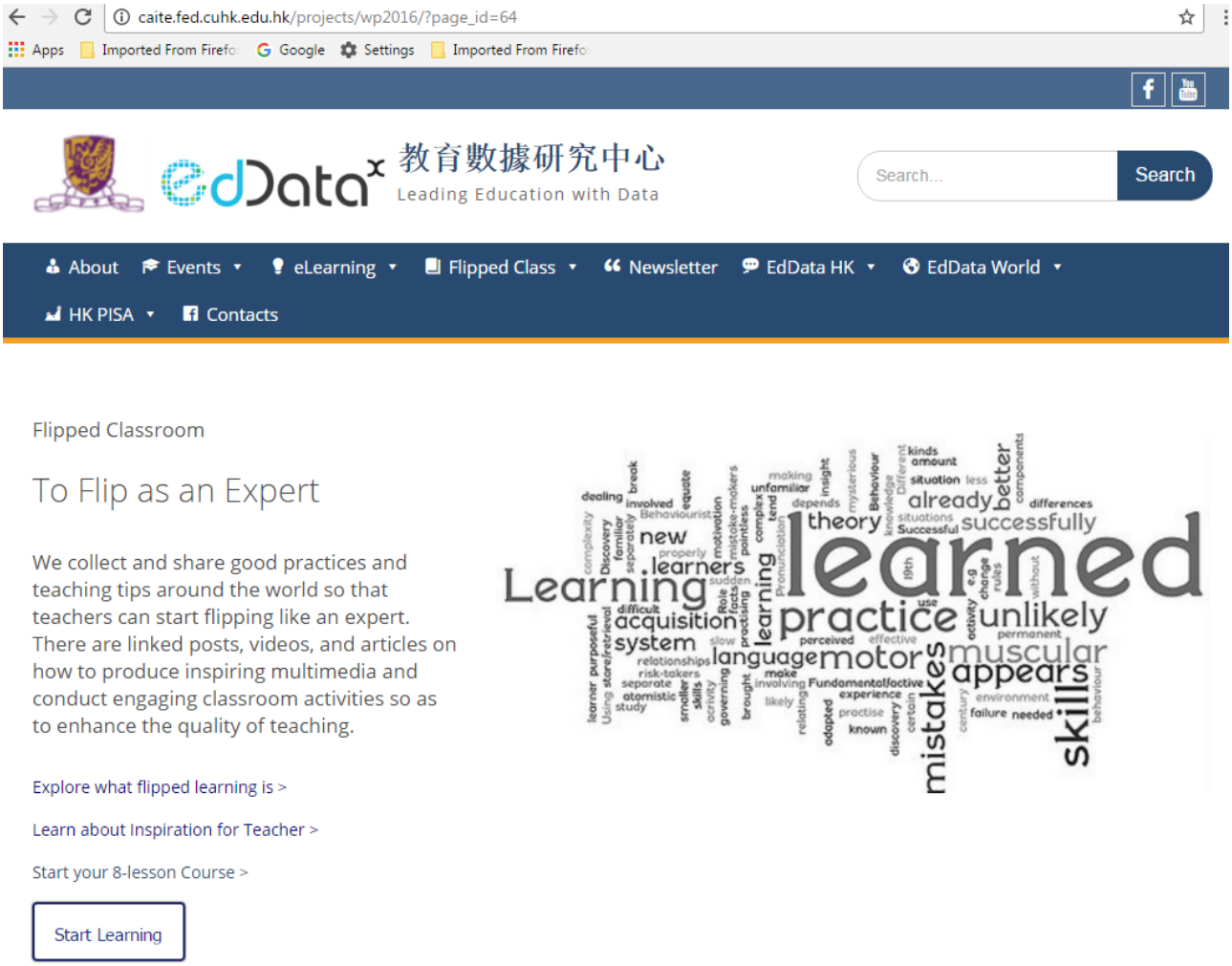
Khan Academy – Flip the Classroom

Flipped Class Learnt from Pioneer

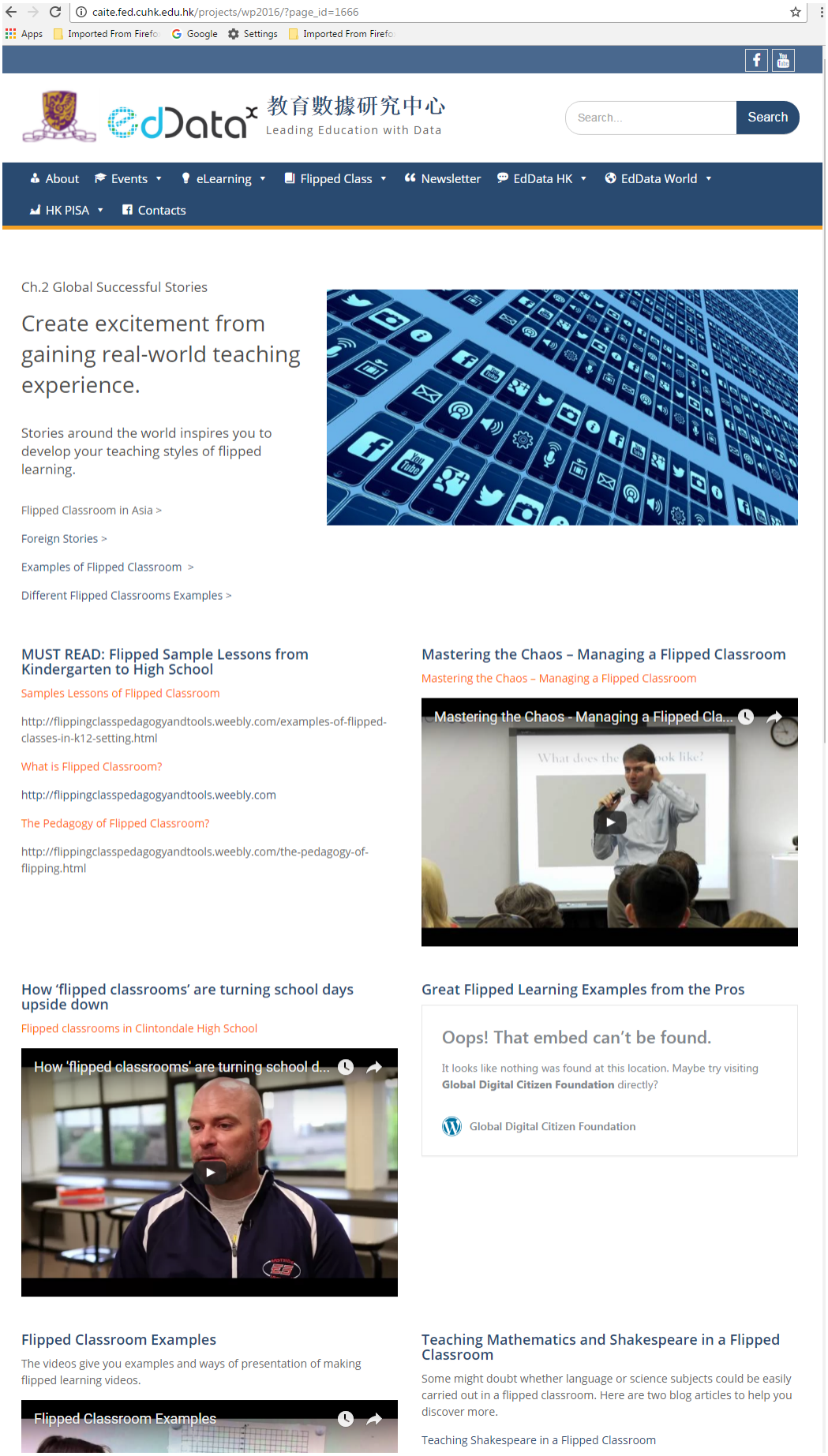
The link brings you ideas by Jon Bergmann, the Pioneer of Flipped Learning.

Flipped Class by Jon Bergmann

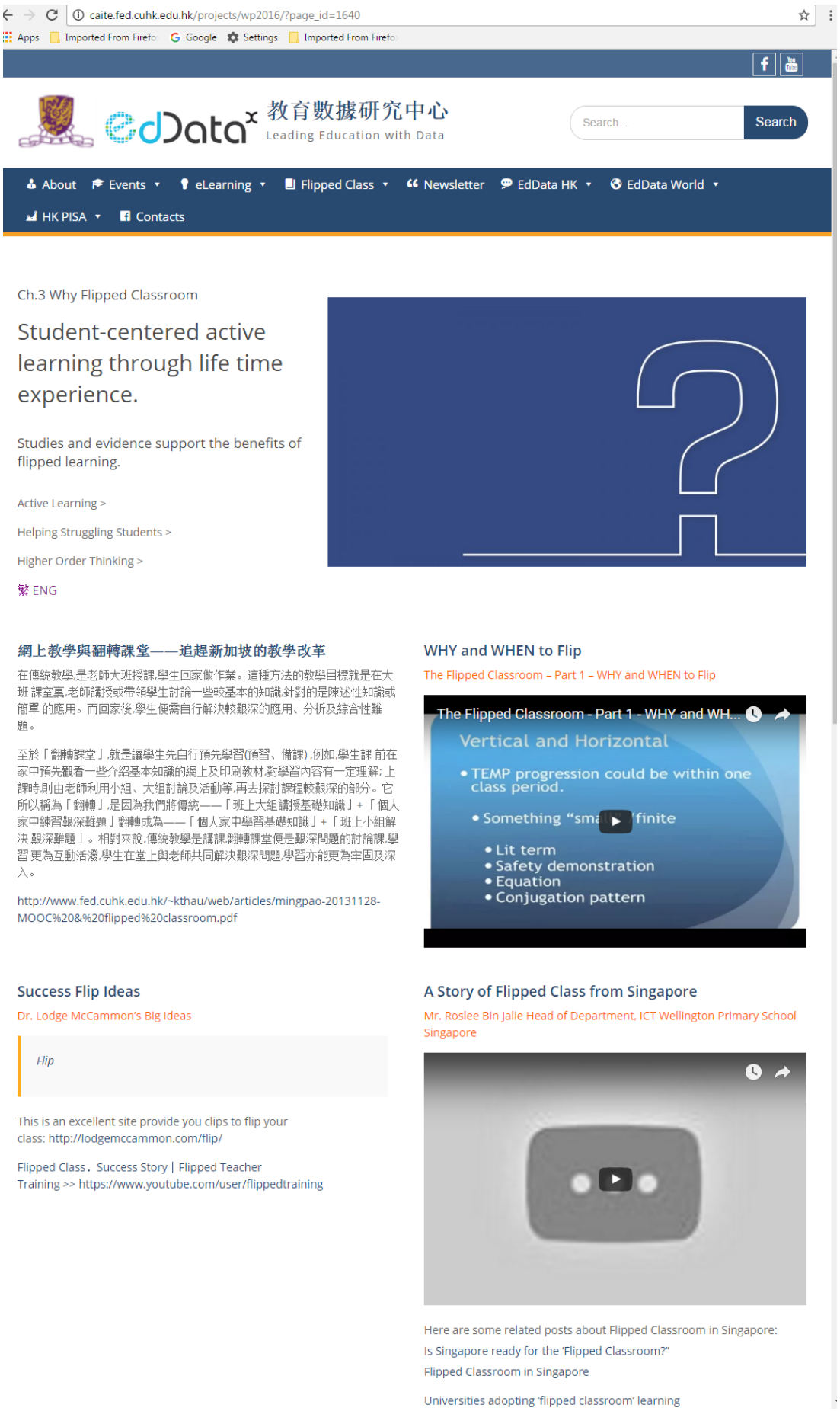
III. Chapter 1: What is Flipped Classroom?



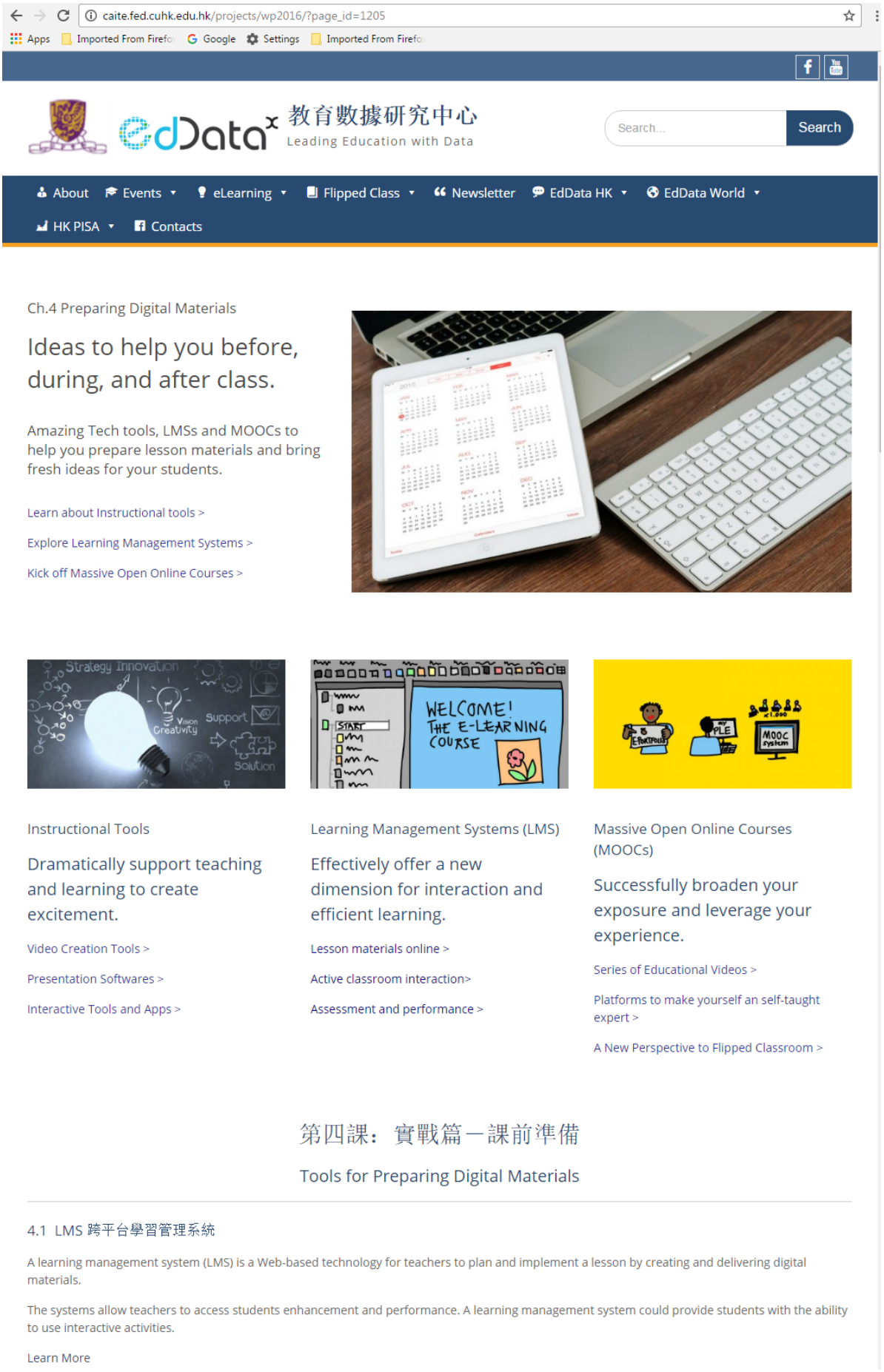
IV. Chapter 2: Global Successful Stories



V. Chapter 3: Why Flipped Classroom



VI. Chapter 4: Preparing Digital Materials



VII. Chapter 5: How to conduct classroom Learning

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教育數據研究中心
Leading Education with Data

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About Events eLearning Flipped Class Newsletter EdData HK EdData World
HK PISA Contacts

Ch.5 How to Conduct Classroom Learning

Flip is not only flip, but ...

Variety interactive activities help you design an active learning journey.

Experimental Learning >

Problem Based Learning >

Team Based Learning >

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Experiential Learning

Problem Based Learning

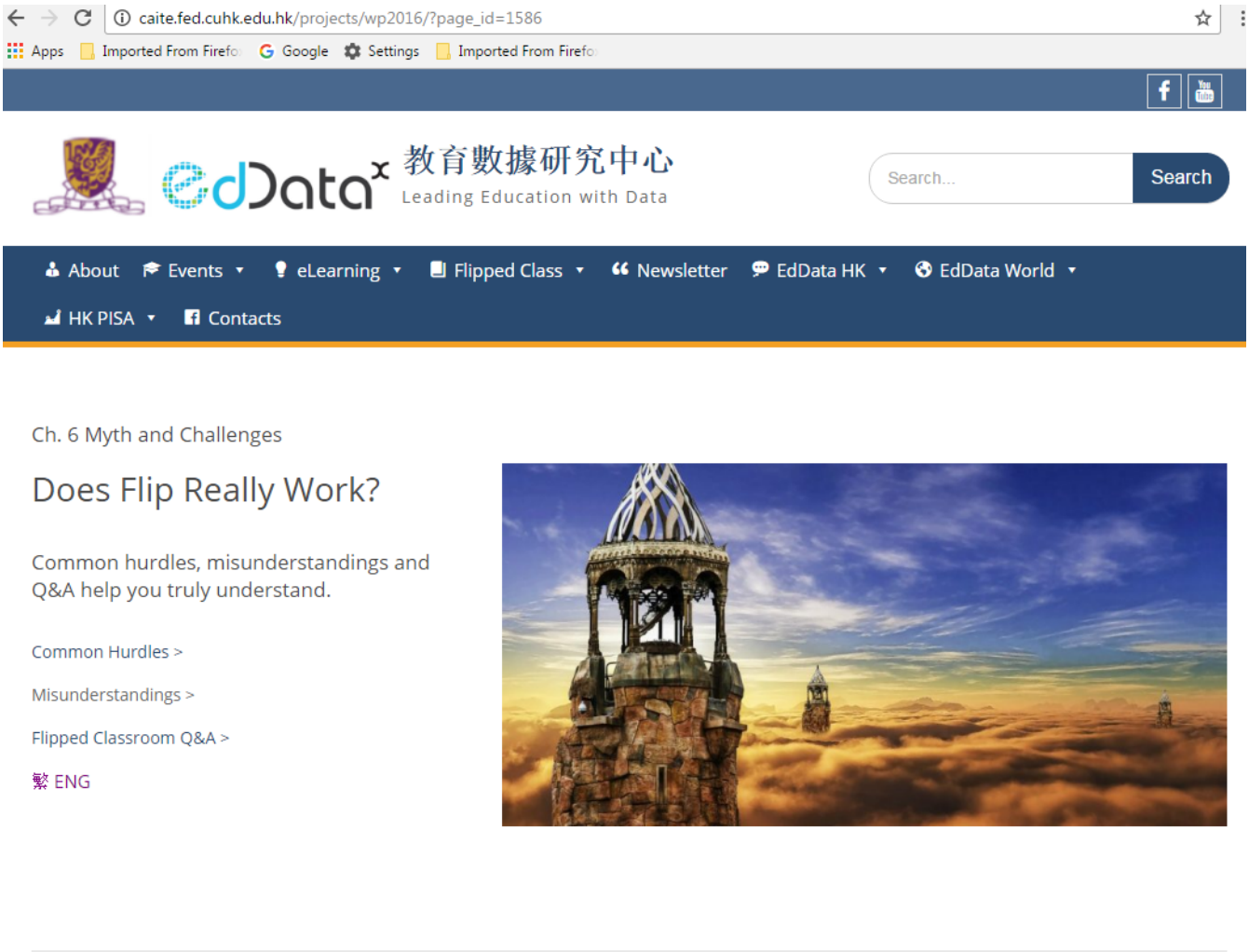
Team Based Learning

Interactive Teaching Approach

Group Discussion Techniques

Interactive Technology

VIII. Chapter 6: Myths and Challenges



XI. Chapter 7: Visting Hong Kong Flipped Classroom

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Ch.7 Visiting HK Flipped Classroom

Has Hong Kong started to flip?

Local practices from universities and schools help you gain insights into flip learning.

Flip Learning at Universities >

Flip Classrooms in Local Schools >

一個也不能少

香港真光中學 夏志雄老師的翻轉課室

翻轉課室 | 教育 3.1 研討會 – 一個也不能少的翻轉課室
>> https://www.youtube.com/watch?v=b3-P_ASGdcs

Law Flipped Class

Law professor Lutz-Christian Wolff lets students become more active and interesting in courses at Chinese University of Hong Kong.

Flipped Classroom in Law School at HKU

Flipped Class Hong Kong | 'Flipped classroom' concept makes learning more interesting for students at Chinese University of Hong Kong
>> http://www.scmp.com/news/hong-kong/education-community/article/1904410/flipped-classroom-concept-makes-learning-more

Let's Flip! 如何引導教師齊翻轉

喇沙小學 鄧文瀚老師的翻轉課室

翻轉課堂之後

翻轉課堂最難的不是拍片或者硬件上的操作，而是人的問題，一起看看香港真光中學的翻轉課堂經驗。

香港真光中學 夏志雄老師的翻轉課堂

Appendices B & C *Interviews on Flipped Teaching (see attached digital files) as published in Faculty of Education Newsletter and Chinese University Bulletin*

(see attached)

翻轉「教」與「學」
專訪香港中文大學教育心理學卓敏講座教授侯傑泰教授

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。後者也或會乏味，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」的提倡者，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啓示呢？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，啓發內在學習動機，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.

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- 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）

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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)

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- 2014 American Educational Research Association (AERA) Fellow

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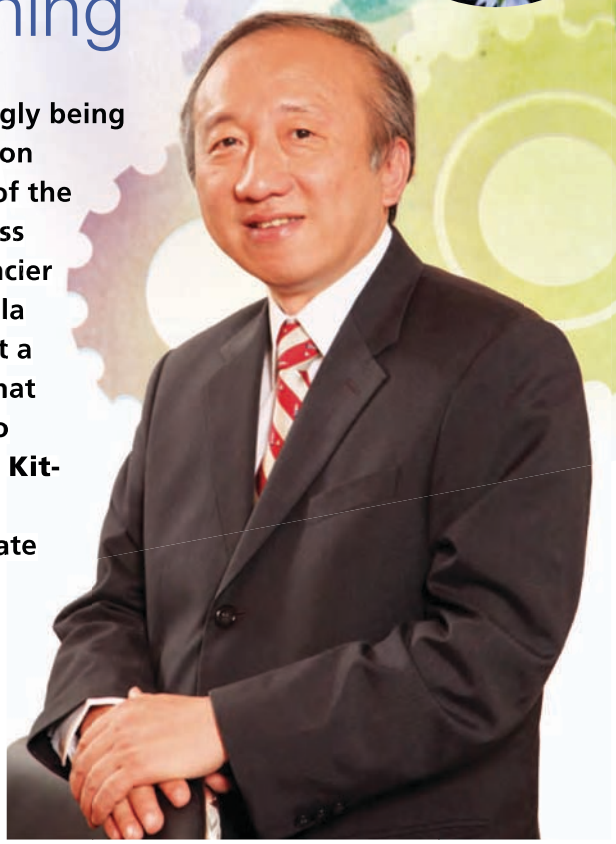
From Cyber to Hyper
How learners learn their lessons now and in future

The 81st and 82nd Congregations

Dr. Norman Leung: Education is Always on My Mind

E-learning Opens Up Experiential Learning



With computers and the Internet increasingly being part of our daily lives, schools and education systems can do nothing but keep abreast of the technological megatrend. Classrooms across the world are equipped with more and fancier computer resources, and university curricula offer various forms of online support, be it a forum or an online bulletin board. But is that the best we can make out of technology to facilitate teaching and learning? Prof. Hau Kit-tai, Choh-Ming Li Professor of Educational Psychology, invites us to rethink the ultimate purpose of flipping a classroom.

E-learning is Useless?

Quoting a PISA 2015 report on Students, Computers and Learning which involved some 80 countries, Professor Hau shed light on an inconvenient truth: the impact of greater computer use on student performance is mixed at best. In countries where it is less common for students to use the Internet at school, students' performance in reading improved more rapidly than in countries where such use is more common. Students who use computers moderately at school tend to have similar outcomes to students who do not use them at all. But those who use computers very frequently at school do a lot worse in most learning outcomes.

'The conventional approach to e-learning—an entire class of students reading online material or browsing the Internet together—proves not as effective as we had envisioned. It is not that technology hampers learning, but that most of us have not yet become good enough at harnessing the true, liberating power of e-learning,' said Professor Hau.

Schools are Not for Lessons

To illustrate how technology can be used to liberate learners, Professor Hau gave the example

of an online university called Minerva. There are no lectures at the US-based college startup. Professors hold their seminar-style classes online, allowing Minerva students to rotate through seven cities during four years of study, from Berlin to Buenos Aires, Seoul to San Francisco.

'Without being bound by physical class sessions, Minerva students are freed to explore the real world and be immersed in each of those cultures as residents. The ultimate purpose of e-learning is to make room for the kind of experiential learning and liberal arts education that students always dream of having,' remarked Professor Hau.

New Function of Schools

Professor Hau pointed out that flipped learning, when used wisely, realizes an optimal division of labour between humans and the computer. 'Most in-class lectures are a repetitive act in which the teacher imparts the same thing every year, whether to an audience of 10 or 10,000. Such lectures should be given once and for all by those who are the best in the field and get recorded and developed into open resources, so that students can watch and learn them anytime, anywhere.'

For example, when students in Sichuan Province set out to study the classic Chinese prose 'Moonlight over the Lotus Pond', they stay home and watch videos of an eminent Beijing scholar interpreting the text with a theatrical approach. When the students go to school, they are led by their teachers to a real pond to feel what the author was trying to convey.

'With the repetitive, robotic teaching removed from the classroom, a school can focus on the interactive and experiential part. When students get into a real school, we should offer them something virtual reality can never deliver,' said Professor Hau.

To deliver on the promises technology holds, Professor Hau stressed that teachers will need to become active agents for change, not just in implementing technological innovations, but in devising experiential learning that fosters skill-building and a love of life. 'E-learning has allowed anyone to learn anything from the best teachers in the world for free. Then what is the place of a physical school? Any visionary educator should start to think about putting 10% of his/her effort on the production of digital material, and the other 90% in designing interactive, life-changing experiential activities.'