THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 1: Basic Scheme

Final Report (2015-16)

Report due 31 December 2016
Please return by email to The Ad hoc Committee on Planning of eLearning Infrastructure
mmcd@cuhk.edu.hk

PART I

Project title:	Flipped Teaching for Application of ICT in Education
Principal supervisor:	Dr. CHAN To
Co-supervisor(s):	Prof. JONG Siu-yung, Morris; Prof. BAI Rui, Barry
Department / Unit:	Dept. of Curriculum and Instruction
Project duration:	From January 2016 to December 2016

Date report submitted: 30 Dec 2016

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?

The project progressed according to the planned schedule. The original objectives have not been changed.

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 here.
Has the nature of the deliverables been changed?
Have you adjusted your timeline?
Overall, was the project completed satisfactorily?

The 6 micro modules will be used in the following courses from 2016-2017:

- *PGDP5207 Fulltime: Teaching and Learning with Information and Communication Technology (1)*
- *PGDP5207 Part-time: Teaching and Learning with Information and Communication Technology (2)*
- *EDUC4130: I.T. in Education (3)*

A total of 6 micro modules were produced according to the original plan.

Figure 1. Six Micro Modules

The first 2 draft modules were tried out on PGDP5207 Fulltime in the 2nd semester 2016. The timeline has not been adjusted. Overall, the project was completed satisfactorily.

3. Evaluation Plan

- *Have you altered your evaluation plans?*
- *What monitoring data did you collect?*
- *Does your evaluation indicate that you have achieved your objectives?*

The 6 micro modules are implemented in full swing in 2016-2017. And the first 2 draft modules were tried out on PGDP5207 Fulltime. Evaluation and monitoring plans and data consisted of the following:

For each of the 2 draft modules, students were required to view a pre-class video, after which they would log in to schoology.com and answer a post-viewing quiz. This took place before the follow-up class session.

Data from schoology.com showed that (1) more than 85% of the students accessed the pre-class videos; and (2) they generally scoring an average of 60% and above of the quiz items correct. (Figure 2 &3)
During the class session, questions were asked from time to time that related to the content of the pre-class videos. Students responded actively and were able to give correct and sometimes insightful answers to the in-class questions.

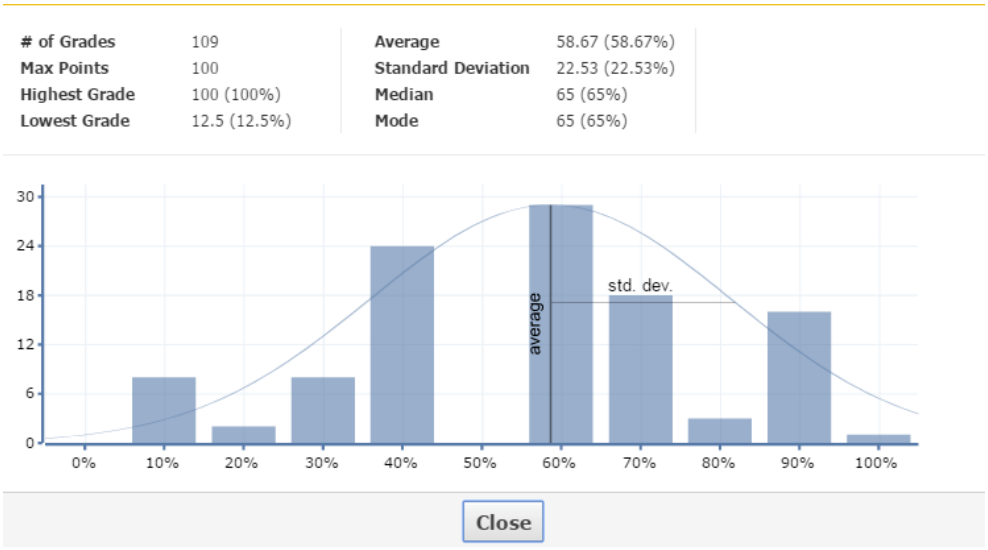

Figure 2. Students' performance in the topic of "Flipped Classroom"

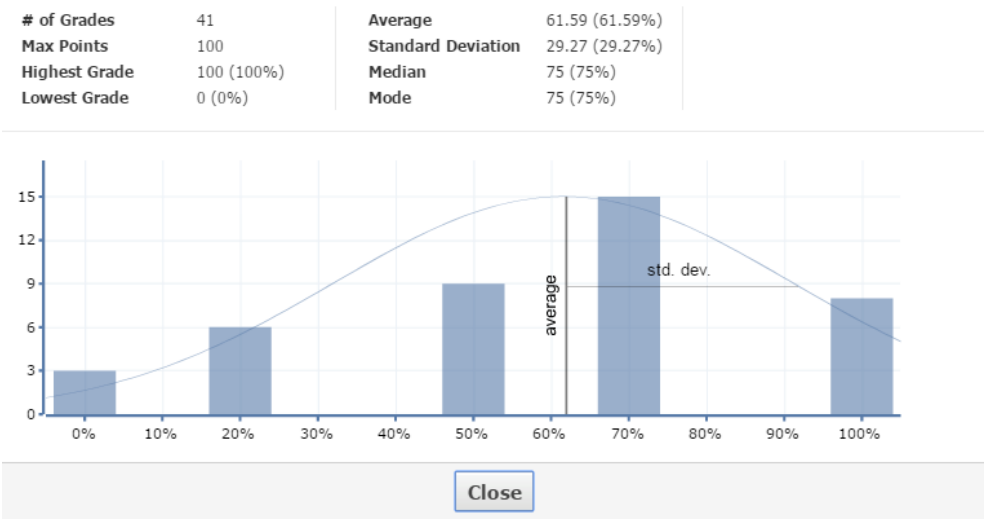

Figure 3. Students' performance in the topic of "eLearning Design and Implementation"

As a result, little time needed to be spent on PPT presentations by the course instructor during class. There was much more time for in-class activities, which progressed efficiently as students already had the requisite subject matter knowledge. The in-class activities focused on deeper understanding and practical application.

After the 3 draft modules, a question survey and interview were conducted with the pilot group to tap their thoughts on the Flipped Classroom model of learning. The feedbacks are summarized as below

1) Perception of micro modules/flipped classroom

Most interviewers expressed positive attitude and enjoyed the new learning experience from this new approach.

"I really enjoy this learning approach and I am certain that the flipped classroom

model can enrich the learning experience of students."

"I think it was a good way to help myself prepare for the lesson. It also made the lesson smoother and more efficient. When we went to the lessons, we had known about the basic concepts and we were clear about what to learn."

"I have experienced the advantages of flipped classroom. We watched the lecturing videos before class and understood the concepts. We then had some discussion activities during lesson. This consolidated my conceptual understanding because I first had a glimpse of it and then recalled it in the class. It was like I had learnt the concept for 2 times. Since the comprehension of the concept is done before class, the class activities can be designed to stimulate our high-order thinking sills, such as application and analyzing. Therefore, this is good to train student's thinking and bring the lessons to a more advanced setting. And teachers can also train students' independent learning ability because they are expected to learn the concept on their own after school. "

2) Importance of pre-class quiz

"Before the lesson, we are required to watch the teaching video or finish online activity and quiz assigned at home. We will receive feedbacks and comments after finishing the tasks, so that we can realize whether we have acquired the knowledge or not. More importantly, these activities are usually carried out via eLearning platform. And those learning management systems can collect and analyze the learning outcome, so teachers can learn about the common mistakes students made efficiently and further work on these parts in the lesson."

"After watching a short video clip, we have to complete an online quiz. Conceptual questions are often included to check our understanding of the concept. This is an important part in the learning process because the immediate quiz feedback can help clarify points of confusion and ascertain learning effectiveness. Also, using assignment can help ensure that students come to class prepared as the class activities are built on the key concepts presented in the video."

3) Greater variety of in-class activity:

"The flipped classroom model definitely livens up the learning process both in and out of the class. Instead of just sitting still and listening to the teacher passively during class, we spend most of the in-class time on group discussion and interactive activities as long as we have watched the pre-class video online the evening before. All these foster our critical thinking, collaboration, as well as problem solving skills."

4. Dissemination, diffusion and impact

Please provide examples of dissemination: website, presentations in workshops or conferences, or publications.

Please provide examples of diffusion: how the project results/process/outcomes/deliverables have been used in your unit and other parts of CUHK or other institutions?

Please provide examples of impact: how the project results (micro modules) can be adapted to other disciplines.

Dissemination	Presentations: • Participated in CUHK Teaching and Learning Innovation Expo 2016 (Dec 2016), exhibiting a project poster. • Will organize a seminar/workshop at Faculty of Education, CUHK in Feb 2017 to share our design and implementation experience.
	Publications: • A journal paper (to be confirmed).
Diffusion	All dissemination events mentioned above will be open for all faculty staff at CUHK, as well as teachers from other local and overseas institutions. All project results / process / outcomes / deliverables disseminated will be useful references for tertiary teachers who plan to adopt the flipped classroom approach in practice.
Impact	Parts of each module can also be used in other related courses. For each micro module, a pre-class video was produced. The pre-class video aims to prepare students for the upcoming class session. It provides them with the requisite subject matter knowledge, so that students come to class prepared. For each module, a set of in-class activities were designed. These in-classroom activities relate to the content of the pre-class video. Occasionally, the instructor may still have additional subject matter to convey in class, but most of the time, the students can quickly embark on the in-class activities. The in-class activities were designed with two features in mind: (a) they would stimulate deeper, or higher-order thinking; and/or (b) they enable to apply the subject matter learnt from the pre-class video in designing their own teaching. The pedagogical paradigm adopted in this project will be a useful reference for tertiary teachers in other disciplines when they are designing and implementing their flipped teaching strategies for teaching their courses.

PART II

Financial data

Funds available:

Funds awarded from MMCDG $ 54,477

Funds secured from other sources $ nil
(please specify_____)

Total: $ 54,477

Expenditure:

Item	Budget as per application	Expenditure	Balance

Student helper *		3740	
Purchase: Microsoft Surface Book & Apple iPad		20,802.00	
Printing		2136	
Total:**		26678	

**Remark: Some claimed forms have not been settled by the end of Nov 2016.*
***The total expenditure figure in this report is based on the record on 30 Nov (the latest report available from Bursary)*

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?*

- Class size: Smaller class size is definitely desirable for the quality of flipped classroom pedagogy. It is hard for teacher to take good care of every individual need of students in a face-to-face large class at the same time, which might miss the real value of flipped classroom model.
- Balanced between the traditional and flipped classroom approach: Simply watching a lecture video will not get some learners excited about the learning process. Not everyone can learn from videos effectively. Without enough interaction between teacher and students during the delivery stage, teacher can hardly get hold of the response from the students and modify teaching. Thus it is hardly assure that everyone learn effectively in front of the screen.
- Workload and burden: Teachers have to tailor-make videos for each class; the videos should be suitable to their level, their ability and learning styles. It is always hard to find a completely suitable video online. The planning, filming and editing of the video all need time. For students, even though the 10-15 minutes video clips are supposed to be manageable, it does required time and effort for students to digest and absorb the knowledge. Thus, it can be another burden on the students.

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: IT in Education

Keyword 2: Flipped Classroom

Keyword 3: eLearning

Keyword 4: Micro Module

(Least relevant) Keyword 5: Technology Education

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.*
(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.*
(c) **Tools / Services:** *Camtasia,* *Adobe Captivate,* *Explain Everything (iPad version)*
(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.*
(c) **Others (please specify):**

Table 2: Resources 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**

PGDP5207	*2nd term 2015-16*	*42*	*Blackboard / schoology.com*
EDUC4130	*2nd term 2016-2017*	*40*	*Blackboard / schoology.com*

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 (in February 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(in Dec -2016)*
(d) In any other event held in HK (e.g. UGC symposium, talks delivered to units of other institutions)	/
(e) In international conference	Will be 1 (2017)
(f) Others (please specify)	

Table 4: Publication (if any)	
Please classify each piece of publication into one and only one of the following categories	**Number**
(a) Project CD/DVD	/
(b) Project leaflet	Will be 1 (2017)
(c) Project booklet	/
(d) A section/chapter in a booklet/ book distributed to a limited group of audience	/
(e) Conference proceeding	/
(f) A chapter in a book accessible internationally	/
(g) A paper in a referred journal	May be 1
(h) Others (please specify) Poster	1 (2016-17)

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.

This project is mainly to design six micro-modules with flipped classroom approach for the target course “Teaching and Learning with ICT” offered by the Faculty of Education. 6 Micro

modules were produced for training preservice and inservice teacher. The topics of these 6 modules are 1) Ubiquitous Learning; 2) eLearning Design and Implementation 3) Flipped Classroom Approach; 4) Digital Storytelling; 5) eTextbook in Education; and 6) WebQuest Design. Each module corresponds with one major topic in IT in education, and parts of each module can also be used in other related courses. With the flipped classroom design, students will gain prior exposure to the learning materials from the specific topic before they come to the class. The pre-class learning materials include instructional videos with online assessment to gauge students' performance in the pre-class learning process. The online assessment result provides instant feedback to the lecturer for adjusting and fine-tuning teaching strategies to meet students' learning needs and difficulties.

The first 2 draft modules were tried out with one group of students. Overall, the results were encouraging, in terms of the design of the modules itself, and also in terms of learning effectiveness. The feedback comments suggested the students' perception toward flipped classroom were positive and appreciated the greater variety of classroom activities under this new pedagogical approach. And pre-class quiz/assessment serves as an important role to ensure the effectiveness of flipped classroom teaching and informs the lecturer important message about students' level of preparation to conduct Just-In-Time-Teaching (JITT). Useful lessons have been learnt by the project in terms of the following aspects: 1) the class size; 2) the balanced between the traditional and flipped classroom approach; 3) workload and burden for teacher and students.

All in all, this project has achieved its objective and the project team explored the feasibility in implementing flipped classroom approach in teacher training programe. We truly believe this pedagogical model will become an important changing agent in our future education.