THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Final Report (December 2015)

Report due 31 December 2015.
Please return by email to The Ad hoc Committee on Planning of eLearning Infrastructure
mmcd@cuhk.edu.hk

PART I

Project title: ***Foundation Courseware Package for Health Sciences Education***
Principal supervisor: *Dr Isabel Hwang*
Other members of the project:

- *Dr Yan Jin, Office of Educational Services, Faculty of Medicine*
- *Mr Ray Lee, ITSC e-learning design team, ITSC*
- *Miss Daisy Chen Minghui, ITSC*

Department / Unit: *Teaching and Learning Unit, School of Biomedical Sciences, Faculty of Medicine*
Project duration: From January 2015 to December 2015
Date report submitted: 23th December 2015

1. Project objectives

The project is completed and met its objectives. The Foundation Courseware Package is composed of ten micro-modules lasting 5-10 minutes each and covering some major concepts taught in Health Sciences I. Health Sciences I is a year 1 Faculty Courses offered by the Faculty of Medicine that began in September 2015. By adapting to the flip-classroom model, students are expected to gain some preliminary ideas about the topics and take a self-assessment quiz to guide them on what they should prepare for in the lectures. The use of the micro-module package facilitates more focused and in-depth discussion in lectures. Therefore, the objectives have not been changed after the completion of the entire project.

2. Process, outcomes or deliverables

As indicated in the proposal, we have completed ten micro-modules which are stored in a common html5 website:
http://facs.med.cuhk.edu.hk/site/2015/micromodule/cdg/index.html

However, the ten micro-modules can also be displayed on its own as each has its own http download link to enhance flexibility and convenience of use:

http://facs.med.cuhk.edu.hk/site/2015/micromodule/m1/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m2/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m3/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m4/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m5/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m6/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m7/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m8/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m9/story.html
http://facs.med.cuhk.edu.hk/site/2015/micromodule/m10/story.html

All these micro-modules were used in Health Sciences I (MEDF1010 and MEDF1011). Each micro-module was installed in Blackboard and was released for student viewing at least one week before the live lecture was conducted. The central website and individual link of each micro-module was released to the students of both courses after completion of all the course lectures to facilitate re-visit and topic revision before the course-end exam. The nature of the deliverables has not been changed. The timeline was the same as planned before. Overall, the project was completed satisfactorily and received with positive feedback from the majority of students in both courses.

3. Evaluation Plan

We did not alter our evaluation plans. As the two courses just ended in December, we were only able to collect feedback from the students via online surveys. Focused group interviews may be conducted after Jan 2016 to obtain more in-depth comments from the students of the two courses.

About the monitoring data we collected, SCORM reports that reflect student access are retrieved from Blackboard Learn system. From the SCORM reports, we know the completeness and micro-module access time for each student. In addition to the report, we designed a student survey for capturing the feedback from students about their preferences and helpfulness of studying the 10 micro-modules.

As we need more time to summarize the evaluation results of the ten micro-modules for the two courses, the followings are the preliminary data obtained from 4 of the micro-modules in MEDF1011 only and these data will be presented in the coming 13th Asia Pacific Medical Education Conference (APMEC) at the National University of Singapore in mid Jan 2016:

- *A total of 512 evaluations were received.*
- *The majority of students spent less than 15 minutes to complete each micro-module.*
- *More than 2/3 of students agreed that they enjoyed using the micro-modules.*

- *More than 50% of students agreed that they would use the micro-modules to prepare for the tests.*
- *Level of understanding is increased by 15% after using the micro-modules.*

The results we obtained so far certainly help to shed light on how to implement the latest teaching ideas in large classes and we will be able to provide a more conclusive comment of whether all of our learning objectives are achieved in this project.

4. Dissemination, diffusion and impact

Some of the evaluation results obtained from MEDF1011 will be presented in the 13th Asia Pacific Medical Education Conference (APMEC) in at the National University of Singapore from 13th to 17th Jan 2016.

Diffusion of micromodules in other courses

We were able to maximize the usage of the ten micro-modules in another course called Refresher Course for Students admitted with Exemptions. The target students were medical year 2 students who obtained exemptions from year 1 study. We also received request from course coordinator of other courses to adopt all of our micro-modules as additional learning materials in the second term and next year. The information of the courses is shown below:

Course name/course code	Target students	Term / year of offering	Approximate number of students
Human Anatomy and Physiology I / SBMS1431	Biomedical engineering (academic year 2015-2016)	1st term / Sep 2016	55-60
Human Anatomy and Physiology II / SBMS1432	Biomedical engineering (academic year 2016-2017)	2nd term / Jan 2016	55-60

PART II

Financial data

Funds available:

Funds awarded from MMCDG	$ 94,000
Funds secured from other sources (please specify_____)	$ 0
Total:	$ 94,000

Expenditure:

Item	Budget as per application	Expenditure	Balance
Graphic design, animation design and development, student helper fee, editing, reference materials, etc.	94,000	94,000	0
Total:			

PART III

Lessons learnt from the project

We found that pre-class assignments are well received by students and we are planning to create some post-class assignments with assessment components so that students will be able to consolidate additional concepts in the two courses. A new micro-module CDG proposal was written for this purpose.

We are also very keen to apply our experience obtained from this micro-module project to create more similar self-learning and pre-class package for medical teaching. We believe the similar structure and setting of these micro-modules can also be applied to year 2 and year 3 students in the medical curriculum. As a result, teachers from senior years of medical teaching who showed interest in enhancing e-learning in their courses have been recruited and a new CDG proposal was written for applying funds to create additional e-learning materials in these courses.

- *Key success factors*
  - *Our faculty has a unit (Office of Education Resources) that helps us to develop e-learning materials like the micro-modules. Some of the development facilities, skills and resources can be acquired from the unit so as to largely improve production time, reduce cost and quality of the micro-modules.*
  - *Members from ITSC have ample experience and good track record of producing high quality webpage design so as to align with the various themes of each micro-module contained in the courseware package*

- *Difficulties encountered and remedial actions taken*
  - *We did not have any major difficulty during the production phase of the micro-modules.*
  - *When applying micro-module in a teaching course, some class activities are*

needed to be modified.

- *For example, flipped classroom teaching model is applied for those micro-module related topics.*
- *However, not all students completed the pre-class engagement exercises.*

❖ *The role of other units in providing support*

- *CLEAR could have provided more support about conducting analysis of evaluation data as not many teachers in other faculty or units are able to recruit colleagues who have such experience.*

❖ *Suggestions to CUHK*

- *Our project team is very grateful to have the CDG applications that are open every year. We hope that this practice can continue in future because it is very difficult to obtain financial support from the School or Faculty when you are developing something regarded to be relatively novel or new. There is always budget implication when working on e-learning development.*
- *We also hope to see that we have an increasing number of online videos/courseware/micro-modules developed in CUHK and out-performed other local institutions in terms of e-learning development. It might be a good idea if we are having some publicly available data/statistics to show the overall progress of elearning in CUHK each year. This would certainly help to give a "wake-up" call to some passive departments or Faculty to act more actively in terms of aligning with the e-policy of CUHK.*
- *We hope to be able to update any publication/presentation/outcome as a result of the completion of this project in future. This process may take some time (certainly more than one year) and it would be better if there is a platform for us to do so easily.*

PART IV

Information for public access

The Foundation Courseware Package is composed of ten micro-modules lasting 5-10 minutes each and covering some major concepts taught in Health Sciences I. Health Sciences I is a year 1 Faculty Courses offered by the Faculty of Medicine that began in September 2015. About 500 students with various academic backgrounds, including Chinese medicine, medicine, nursing, pharmacy and public health, are required to take this course. The micro-modules cover some major concepts that include bioorganic molecules; electrical signals in neurons and the heart; major electrolytes in body fluids; how the eyes perceive light, etc. Each micro-module follows the same structure, comprising animated, narrated and annotated multi-media presentations and self-assessment exercises. By adapting to the flip-classroom model, students are expected to gain some preliminary ideas about the topics and take a self-assessment quiz to guide them on what they should prepare for in the lectures. The use of the micro-module package

facilitates more focused and in-depth discussion in lectures.

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: micromodules

Keyword 2: health science education

Keyword 3: faculty package

Keyword 4: bite-sized video

(Least relevant) Keyword 5: medical foundation course

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:** http://facs.med.cuhk.edu.hk/site/2015/micromodule/cdg/index.html
(b) **Webpage(s):** *NA*
(c) **Others (please specify):**

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

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

Course Code/ Target Students	**Term & Year of offering**	**Approximate No. of students**	**Platform**
MEDF1010/medical	*1st term 2015, year 1*	*170*	*Blackboard and http links*
MEDF1011/Chinese medical, nursing, public health, pharmacy	*1st term 2015, year 1*	*320*	*Blackboard and http links*

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 (eg. department, faculty)	*Please insert no*
(b) In workshop/retreat organized for CUHK teachers (eg. CLEAR workshop, workshop organized by other CUHK units)	*Please insert no*
(c) In CUHK ExPo jointly organized by CLEAR and ITSC	***Student Voice (presented by students from both MEDF1010 and MEDF1011, oral presentation)***
(d) In any other event held in HK (eg. UGC symposium, talks delivered to units of other institutions)	*Please insert no*
(e) In international conference	***One (e-poster)***
(f) Others (please specify)	*Please insert no*

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	*Please insert no*
(b) Project leaflet	*Please insert no*
(c) Project booklet	*Please insert no*
(d) A section/chapter in a booklet/ book distributed to a limited group of audience	*Please insert no*
(e) Conference proceeding	*Please insert no*
(f) A chapter in a book accessible internationally	*Please insert no*
(g) A paper in an referred journal	*Please insert no*
(h) Others (please specify)	*Please insert no*

3. A one-page brief write up

Please provide a one-page brief write-up of no more than 500 words or a short video (~2 minutes) (preferred).

The heterogeneous academic backgrounds of the year 1 students could pose a problem as their pre-course level of knowledge of some of the course materials is likely to differ. The flipped classroom intervention is planned for a Year 1 Faculty Package Foundation Course called Health Sciences I. The course has two sessions provided for students of different

disciplines. Texts, videos, audios and animations have been produced to create a self-learning, pre-class micro-module package. A total of ten micro-modules have been created, covering the major concepts taught in the course, including bioorganic molecules; electrical signals in neurons and the heart; major electrolytes in body fluids; how the eyes perceive light, etc. The course began in the first term of 2015. About 500 students with various academic backgrounds, including Chinese medicine, medicine, nursing, pharmacy and public health, are required to take the course. Each micro-module follows the same structure, comprising animated, narrated and annotated multi-media presentations and self-assessment exercises. The micro-modules were introduced to the students at least one week before the lecture via *Blackboard Learn* that recorded the students' usage. Online survey was also implemented for each micro-module to collect feedback from the student users. The preliminary data gathered in this study has helped us to shed light on how to implement the latest teaching ideas in large classes, which is becoming a problem for medical schools as class sizes increase every year, especially for the earlier years of the medical curriculum.