

# 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](mailto:mmcd@cuhk.edu.hk)

#### PART I

Project title: Flipped Classroom for Family Medicine Teaching

Principal supervisor: Prof. Carmen Wong

Co-supervisor(s): Prof. Samuel Wong

Department / Unit: Division of Family Medicine and Primary Health Care

Project duration: From January 2016 to December 2016

Date report submitted: 24<sup>th</sup> December 2016

#### **1. Project objectives**

The micromodules objectives were to include key concepts in family medicine education and training. Feedback from students of our module in previous years have shown that students struggle with the breadth and depth of learning required from such a broad based specialty, that lies outside the protocol driven context of hospital based patient presentation, investigations and management. In addition, the plethora of illness presentation in the community is also different from the hospital and the treatment may vary according to existing co-morbidity.

In particular, students have reduced exposure to such patients due to the nature of family medicine being clinic based and not ward based. There are reduced opportunities for clerking and for case review due to the workload of the clinics, the hurry of patients and the lack of privacy in the waiting rooms. Meanwhile, e-learning resources are rarely available in this specialty from other international medical schools but would also be difficult for students learning due to the differences in cultural, clinical management and health care system aspects.

The student learning outcomes include:

- a) Understand common presentations, diagnoses, investigations and treatment options in family medicine
- b) Application of knowledge and to enhance critical thinking about interacting factors to diagnosis formulation and care plan management.

Expert content would be provided by the members of the project team. The micromodules would have annotated powerpoints with embedded videos of relevant material e.g. examination techniques, elicit signs etc as necessary .

#### **2. Process, outcomes or deliverables**

There has been some challenges due to the timing of the grant which spans mid module for both academic year in 2015/2016 and 2016/2017. Since the medical year class of 230 are split into modular of class size of 40-50, material for the modules has be largely similar for the 4 modules. This has made our production, use and integration of the elearning material difficult. Meanwhile, whilst most tutors were agreeable to give content and to trial flipped classroom, there was much debate as to the nature of the flipped classroom for the subject area and which kind of flipped classroom would be most appropriate. The e learning modules were produced from April to September (during module I and II), in terms of content, however the format of the class took time to encompass teaching styles and comfort of using flipped classroom. It was decided that there are several formats in using the e-learning pre-class material in using in a blended format.

The blended learning modalities involved one or combination of the following:

- 1) Case and spot (photo) diagnosis & discussion – cases and photos discussed from diagnosis to management – whole class
- 2) Video discussion – with own student video or other professional video cases in class/ whole class
- 3) U-reply – Multiple choice assessments can anonymously answer the class
- 4) Roleplay workshop – 16 cases highlighting different cases in 4 roleplay workshops (using 4 tutors in small groups)

The micromodules content encompassed the latest evidence base from dynamed and essential evidence plus for students students self directed learning and relevant to current practice.

The interactive workshops/tutorials are case based which test student on the acquired skills applicable to a clinical scenario commonly presenting to family medicine clinic.

Due to the formats for use, the micromodules were constantly being revised and reconfigured as to be integrated with the various modalities of blending learning/ flipped classroom which we have listed above. In total 12 micromodules were produced that encompassed different skills or knowledge in family medicine. These include:

Domain	Micromodule	Blended learning
Approach	Approach to undifferentiated symptoms and diagnoses formulation	Case Scenarios & discussion Spot diagnosis & discussion U-reply Roleplay workshop
	Patient management in primary care	
Diagnosis & management	Common Self limiting conditions	
	Vague symptoms (Dizziness, headache)	
	Common Skin conditions	
	Common genitourinary conditions	
	Hypertension and hyperlipidaemia	
	Diabetes mellitus type 2	
	Hyperthyroidism and Hypothyroidism	
	Gastroenteritis symptoms and	

	disorders	
	TIA and stroke	
	Emergencies: unstable angina, MI and anaphylaxis	

These are part of the *MEDU4010* Community and Family medicine. The course ppts and videos were emailed to the students before the session to allow timely reading.

From the evaluation, the students liked reference material and tables to be in the material given, thus we are currently updating all micromodules to ensure that these are within the material and to be posted at high resolution. We piloted the use of putting our micromodules on You tube for accessibility. The students like this so we are currently configuring all micromodules with more resource content and higher resolution. All micromodules will be released at the end of May 2017 for other faculty staff once all course material for the in class seminars and workshops are finalised for the academic year 2017/2018 to maintain consistency

Overall we are satisfied with the progress. It does take multiple feedback loops for students and teachers to feel comfortable with the material and also format of flipped classroom but this has been a valuable process in order to enhance in class participation and in enhancing student learning.

### 3. Evaluation Plan

Evaluation strategies has been changed as illustrated below due to the dynamic nature of progress from the flipped classroom

- 1) Student surveys—the overall survey results are detailed below for the current cohort (Module III November 2016 – January 2017)
- 2) Facilitator and student feedback interviews and focus groups at the end of the module – Summary: In Mod II student feedback session, we had reviewed informal feedback on our course and the students liked the roleplay workshops format the best. This module they liked U-reply and also you tube format for dissemination.
- 3) Teacher’s reflections – from facilitators and clinic tutors during the course – Discussion of the progress of the project highlighted concerns on their own lack of knowledge, skills and practice and therefore apprehensive in the use of flipped classroom. Anxieties eased as the project developed
- 4) Use of micromodule by students and videos using tracking – we used email format to disseminate the material with some information available on MCU platform (timetable for medical students) as the micromodules improvements between modules, we were therefore unable to track their use. Some students did express that the material was not given ahead enough. For the upcoming 2017/2018, we will put all materials (finalised) at the beginning of the course so the students have plenty of time. Medical students do not use blackboard and have used various platforms in various specialties e.g. MCU, SLO

platform and moodle.

- 5) Direct assessment of the application of knowledge using formative assessment through the e-learning module and by summative assessment using a written examination of clinical scenarios (in short answer and multiple choice questions) – This has been done and requires further analysis at the end of the 2017/2018 academic year.

#### 4. Dissemination, diffusion and impact

Please see below for the proposed. We hope to submit abstract to medical education conference both at Asia Pacific level (APMEC Jan 2018) and internationally (AMEE August 2017). We will be submitting a poster abstract for CLEAR EXPO in December 2016. We hope to also disseminate these materials for use to other medical schools in Asia Pacific regions. We would also offer these modules for Chinese medicine who can then understand the general approach and common conditions that the western medicine practitioner encounters

#### PART II

##### Financial data

Funds available:

Funds awarded from MMCDG	\$	84,001
Funds secured from other sources (please specify _____)	\$	_____
Total:	\$	84,001

Expenditure:

Item	Budget as per application	Expenditure	Balance
Staff cost + insurance (Project assistant)		82,882.80 +1075.54	84,001
Total:			84,001

Project code 3210737

#### PART III

## Lessons learnt from the project

For flipped classroom to be successful, the work may not be the micromodule material itself, some students expressed that they preferred powerpoints so they can find the information quicker, although some found the video material and audio useful for their learning. We found that the design of the class alongside the material given is the most important and it was this that required the greatest amount of time in adjustment. It had also been difficult as the grant is only one year from January to December 2016. It is great to be able to enhance the teaching and curriculum in exploring flipped classroom, however it may be preferable to have the grant start in January 2016 and end at end of next academic year (i.e. June 2017). This would give ample time for the preparation needed precourse and to plan revision and finalization along the academic year. This may be more specific to our course due to the time and the number of doctors involved in teaching.

Key success was the cooperation of all the staff and the open and positive approach in adapting to change. Meanwhile, this grant has been instrumental in making our tutors think differently about teaching and learning outcomes and comfort in using flipped classrooms in their teaching.

## PART IV

### Information for public access

The micromodules objectives were to include key concepts in family medicine education and training. Feedback from students of our module in previous years have shown that students struggle with the breadth and depth of learning required from such a broad based specialty, that lies outside the protocol driven context of hospital based patient presentation, investigations and management. In addition, the plethora of illness presentation in the community is also different from the hospital and the treatment may vary according to existing co-morbidity.

In particular, students have reduced exposure to such patients due to the nature of family medicine being clinic based and not ward based. There are reduced opportunities for clerking and for case review due to the workload of the clinics, the hurry of patients and the lack of privacy in the waiting rooms. Meanwhile, e-learning resources are rarely available in this specialty from other international medical schools but would also be difficult for students learning due to the differences in cultural, clinical management and health care system aspects.

The student learning outcomes include:

- c) Understand common presentations, diagnoses, investigations and treatment options in family medicine
- d) Application of knowledge and to enhance critical thinking about interacting factors to diagnosis formulation and care plan management.

In total 12 micromodules were produced that encompassed different skills or knowledge in family medicine. These include:

Domain	Micromodule	Blended learning
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Approach	Approach to undifferentiated symptoms and diagnoses formulation	Case Scenarios & discussion Spot diagnosis & discussion U-reply Roleplay workshop
	Patient management in primary care	
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	Vague symptoms (Dizziness, headache)	
	Common Skin conditions	
	Common genitourinary conditions	
	Hypertension and hyperlipidaemia	
	Diabetes mellitus Type 2	
	Hyperthyroidism and Hypothyroidism	
	Gastroenteritis symptoms and disorders	
	TIA and stroke	
	Emergencies: unstable angina, MI and anaphylaxis	

The blended learning modalities involved one or combination of the following:

- I. Case and spot (photo) diagnosis & discussion – cases and photos discussed from diagnosis to management – whole class
- II. Video discussion – with own student video or other professional video cases in class/ whole class
- III. U-reply – Multiple choice assessments can anonymously answer the class
- IV. Roleplay workshop – 16 cases highlighting different cases in 4 roleplay workshops (using 4 tutors in small groups)

The micromodules content encompassed the latest evidence base from dynamed and essential evidence plus for students students self directed learning and relevant to current practice.

The interactive workshops/tutorials are case based which test student on the acquired skills applicable to a clinical scenario commonly presenting to family medicine clinic.

Students liked flipped classroom using the micromodules and had felt that it was useful for their teaching and liked more practical applications to be delivered in class. Students generally wanted more teaching in this format.

Overall, clinical teaching can be achieved using flipped classroom and may be considered in other specialties.

## 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: Blended learning  
 Keyword 2: Flipped classroom  
 Keyword 3: Family Medicine  
 Keyword 4: Primary Care
- (Least relevant)      Keyword 5: E learning

## 2. Summary

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

<b>Table 1: Publicly accessible online resources (if any)</b>
<p><b>(a) Project website:</b></p> <p>After the launch of the micromodules in module III of the family medicine course. We have made additions to the material and reconfigured the resolution of the e-learning material and placed them on your tube to be more accessible as requested by the students. We will be placing the link under the family medicine website in due course.</p> <p>Samples of the reconfigured videos are shown below:</p> <p>Knowledge for case discussion and U-reply case scenarios</p> <p><a href="https://youtu.be/OvoDZcHNuJA">https://youtu.be/OvoDZcHNuJA</a> (Common skin conditions).  <a href="https://youtu.be/j37YRTK9uO8">https://youtu.be/j37YRTK9uO8</a> (Common genitourinary conditions)</p> <p>Framework for video and roleplay workshops:</p> <p><a href="https://youtu.be/mARt_SaYNpQ">https://youtu.be/mARt_SaYNpQ</a> (Approach to undifferentiated symptoms and diagnoses formulation).  <a href="https://youtu.be/9SJ44RaQhoM">https://youtu.be/9SJ44RaQhoM</a> (Patient management in primary care).</p>
<p><b>(b) Webpage(s):</b></p> <p><a href="http://dfmphc.sphpc.cuhk.edu.hk/">http://dfmphc.sphpc.cuhk.edu.hk/</a> The division of family medicine website was launched in October 2016. We are still configuring the format and layout for the course contents to be available for the 2017/2018 for all courses we offer which includes MEDU4010 which is what the flipped classroom material has been formaluated and will sit in this space  <a href="http://dfmphc.sphpc.cuhk.edu.hk/index.php/education/under-graduate">http://dfmphc.sphpc.cuhk.edu.hk/index.php/education/under-graduate</a></p>
<p><b>(c) Tools / Services:</b></p> <p>N/A</p>

**(d) Pedagogical Uses:**

Flipped classroom activities were taken in the following format:

- 1) In class discussion – using
  - a) case scenarios – clinical cases were described and utilised to highlight intricacies in the management of the cases
  - b) video review – of other consultations and their own to review their difficulties in using the principles outlines in the flipped classroom precourse material
  - c) U-reply – to answer anonymously on whole range of topics
- 2) Roleplay workshops – students are roleplayed to be doctor or patient or observer on a wide range of family medicine cases. From the flipped classroom material, there are 4 roleplay workshops which discusses 16 cases in groups of 5-6 students.

**(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.*

<u>Course Code/ Target Students</u>	<u>Term &amp; Year of offering</u>	<u>Approximate No. of students</u>	<u>Platform</u>
MEDU4010	Module III	54	Emailed resources before class/ roleplay workshop
MEDU4010	Module IV (Jan-Feb 2017)	48	You tube and emailed before class and MCU (medical timetable) website
MEDU4010	Module I-IV (2017/18)	230	To students – on you tube and MCU website  To tutors – on division webpage

**Table 3: Presentation (if any)**

*Please classify each of the (oral/poster) presentations into one and only one of the following categories*

	<b>Number</b>
(a) In workshop/retreat within your unit (e.g. department, faculty)	2  <i>Within department</i>



(b) In workshop/retreat organized for CUHK teachers (e.g. CLEAR workshop, workshop organized by other CUHK units)	TBA (for OME)
(c) In CUHK ExPo jointly organized by CLEAR and ITSC	<i>For clear expo 2017/2018</i>
(d) In any other event held in HK (e.g. UGC symposium, talks delivered to units of other institutions)	N/A
(e) In international conference	<i>For AMEE August 2018  (International Medical Education Conference)</i>
(f) Others (please specify)	N/A

<b>Table 4: Publication (if any)</b>	
<i>Please classify each piece of publication into one and only one of the following categories</i>	<b>Number</b>
(a) Project CD/DVD	N/A
(b) Project leaflet	N/A
(c) Project booklet	N/A
(d) A section/chapter in a booklet/ book distributed to a limited group of audience	N/A
(e) Conference proceeding	TBA
(f) A chapter in a book accessible internationally	N/A
(g) A paper in a referred journal	N/A
(h) Others (please specify)	N/A

### 3. A one-page brief write up

We are grateful for the micromodules courseware development grant in which we were able to successfully develop micromodules and incorporate flipped classroom in our family medicine teaching. These micromodules were able to convey key concepts in family medicine education and training. In particular these modules can help students who struggle with the breadth and depth of learning required from such a broad based specialty, that lies outside the protocol driven context of hospital based patient presentation, investigations and management and the difference of illness presentation in the community is also different from the hospital and the treatment may vary according to existing co-morbidity.

The student learning outcomes of the micromodules included:

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A survey of students in Module III (November 2016 – January 2017) (n = 45) rated showed that students rated the micromodules as useful (mean 5-5.15) on a likert scale from 1 strongly disagree to 6 strongly agree. They had felt that the micromodules was accessible and

convenient to use when in you tube format (mean 5.11), that they were encouraged to participate in class (mean 5.07) and that teaching time was put to good use (5.18). Lower ratings although positive were for preferring flipped classroom to ‘traditional’ lecture seminar learning (mean 4.91) and for all family medicine lectures to be ‘flipped’ (mean 4.49, [Disagree 2, Slightly disagree 9]). However, students generally wanted more teaching in these format.

Overall, clinical teaching can be achieved using flipped classroom and may be considered in other specialties.