

THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 1: Basic Scheme

Final Report (2016-17)

Report due 30 April 2018

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

PART I

Project title: Micro-modules for Pharmaceutical Dispensing: A Bi-Lingual Micro-Dose Delivery of Concepts involved in Dispensing Medications

Principal supervisor: Dr. Celeste L.Y. Ewig Department: School of Pharmacy, Faculty of Medicine

Co-supervisor(s): Dr. Isabel Hwang Department: School of Biomedical Sciences, Faculty of Medicine

Project duration: From May 2017 to July 2018

Date report submitted:

1. Project objectives

Principles of Dispensing Medications is the one of the first professional courses taught in the pharmacy curriculum during Term 1 of the academic year. The course covers a wide range of topics and concepts which the students learn to apply during the practical portion of this course. At the conclusion of the term, we noticed that students often were not able to connect the concepts learned in class with the exercises performed in the labs. Students also found difficult applying the concepts to a patient case.

This project aimed to:

1. Introduce a flip classroom approach to increase number of in-class discussions
2. Provide a more integrated delivery of information (ex: videos, interactive questions, etc)
3. Improve learning through a bi-lingual mode of delivery and strengthen students' medical vocabulary to prepare them for their future career

We developed 6 bi-lingual micro-modules. These will be introduced to the Yr 2 pharmacy students in September 2019. The project is on track to meet its objectives.

2. Process, outcomes or deliverables

➤ Course Code/ Title: Phar 2313/ Principles of Pharmaceutical Dispensing

The project produced the following deliverables:

- ❖ Six (6) Micro-modules in both English and Chinese
- ❖ Seven (7) Instructional Videos
- ❖ Course website which contains photo bank of medications and links to the micro-modules and other eLearning resources
- ❖ Photo bank containing >60 photos of medications

No.	Title	Title (Chinese)	Duration	Links
1	Pharmaceutical Dosage Forms	藥劑製品嘅劑型	~7 mins	http://facs.med.cuhk.edu.hk/site/2017/p4/story_html5.html
2	Routes of Administration	給藥途徑	~9 mins	http://facs.med.cuhk.edu.hk/site/2017/p3/story_html5.html
3	Extemporaneous Compounding	臨時處方調製	~11 mins	http://facs.med.cuhk.edu.hk/site/2017/p1/story_html5.html
4	Compounding Techniques	調配技巧	~33 mins	http://facs.med.cuhk.edu.hk/site/2017/p2/story_html5.html
5	Oral Solid Dosage Forms	固體嘅口服劑型	~20 mins	http://facs.med.cuhk.edu.hk/site/2017/p5/story_html5.html
8	Oral Liquid Dosage Forms	液體嘅口服劑型	~20 mins	http://facs.med.cuhk.edu.hk/site/2017/p6/story_html5.html

Narrated interactive micro-modules available in both English and Chinese. All micro-modules followed the S2 style of presentation with exception to micro-module 4 which adopted an S2 and S9 style. Nature of deliverables has remained the same.

Slight modification of the topics were done to make the contents more concise and focused. The original project timeline was extended by 3 months as we encountered some unexpected difficulties during our video production process. The project has now been completed satisfactorily.

3. Evaluation Plan

Formal evaluation will be conducted in Sept 2018 as the course Phar 2313 is only available during Term 1 and this project was still in progress during Term 1 of the academic year 2017/2018. Evaluation of the project was done concurrently with the development of the micro-modules. A working group of 6 pharmacy students assisted producing the micro-modules as well as providing feedback throughout the process. Their input was considered throughout the process.

4. Dissemination, diffusion and impact

Preliminary results of the project has been presented at the Teaching and Learning Expo 2017 in both poster form and oral presentation.

The project has foreseeable diffusion potential as it can be made available to all pharmacy students from years 2 to 4. This is especially help for the seniors who will be preparing for their internship and may need to review some of the technical skills mentioned. Furthermore, this project was a pilot project. Future projects can be consolidated onto this project's website to provide a more robust content for the students.

PART II

Financial data

Funds available:

Funds awarded from MMCDG	\$ 77,032
Funds secured from other sources (please specify _____)	\$ 0
Total:	\$ 77,032

Expenditure:

Item	Revised Budget as per application	Expenditure	Balance
Office of Medical Education	\$22,200	\$22,200	0
ITSC	\$28,000	\$28,000	0
Fixed Assets	\$13,000	\$12,826	+\$174
Computer Software & Maintenance	\$3,152	\$3,942	-\$790
Printing, Stationary &	\$1,180	\$1,654	-\$474

Supplies			
Other Expenses	\$5,500	\$7,221.52	-\$1, 721.52
Medications	\$4,000	\$687	+\$3,313
Total	\$77, 032	\$76,530.52	+\$501.48

PART III

Lessons learnt from the project.

Students preferred information presented as an application of the information and concepts learned onto a patient. Instructional videos are also quite lengthy if explanation of concepts are incorporated. Future videos can be consolidated and the process fast forwarded to make the duration of the videos even shorter.

This project covers an introduction to pharmaceutical products and covers primarily oral drugs. Our plan is to continue producing micro-modules which focus on other modes of delivery such as inhalation and parenteral routes.

Key success factors:

- A good working team with members from different departments was crucial in developing this project. Each team member shared their unique talents and points of view which helped enrich the project and provided for good discussions to arrive at the best decision.
- Support from colleagues with the departments (outside of the working group) especially our laboratory technicians were extremely helpful in setting up an ideal setting for video taping
- Student helpers who were proactive in providing quality feedback were crucial in the production stage. This helped decrease the burden on the project members and provide extra feedback on areas easily missed by the working group.

Difficulties encountered and remedial actions taken:

- Preparing the videos (editing, creating script and audio recordings) took longer than expected. This contributed to the reason for requesting an extension.
- Delivering contents via micro-modules (using Articulate software) was different from creating slides on PowerPoint. We had to adjust the scope of the topics in some of the modules to keep them from being too lengthy

The role of other units in providing support:

Number	Project Team Member	Description of Duties
1	Dr. Celeste Ewig	<ul style="list-style-type: none"> • Provide content for micro-modules • Coordinate entire project

		<ul style="list-style-type: none"> • Create quizzes and discussion questions to assess learning objectives for each micro-module
2	Dr. Isabel Hwang	<ul style="list-style-type: none"> • Oversee student's feedback and evaluation on project • Assist with creating student assessment activities • Provide Chinese (Cantonese) language support of scientific/medical terminology • Assist in project development
3	Dr. Yan Jin	<ul style="list-style-type: none"> • Provide professional advice regarding effective eLearning approaches • Responsible for the compilation of micro-modules • Conduct professional video taping of practical demonstrations • Design of micro-modules • Synchronize voice over with PowerPoint annotations
4	Mr. Alex Yung	<ul style="list-style-type: none"> • Conduct professional video taping of practical demonstrations • Assist in scene setting • Test compatibility of micro-modules in different mobile devices and CUHK eLearning platform • Editing of Mp4 videos
5	Mr. Matthew Hui	<ul style="list-style-type: none"> • Provide content for micro-modules • Assist in the creation of instructional videos
6	Mr. Taylor Tang	<ul style="list-style-type: none"> • Provide high-resolution photography of a wide variety of pharmaceutical products • Responsible for project website creation, voice over recording, background design of the modules • Provide character drawings for each micro-module

PART IV

Information for public access

Our project produced 6 micro-modules, 7 instructional videos in both English and Cantonese and a course website for the Year 2 pharmacy students. These modules were incorporated into the course Principles of Pharmaceutical Dispensing which is one of the first professional courses introduced to pharmacy students. The micro-modules developed here focus on the introduction of general topics involved in preparing and dispensing medications for patient use. These include:

- Pharmaceutical Dosage Forms (藥劑製品嘅劑型)
- Routes of Administration (給藥途徑)
- Extemporaneous Compounding (臨時處方調製)
- Compounding Techniques (調配技巧)
- Oral Solid Dosage Forms (固體嘅口服劑型)
- Oral Liquid Dosage Forms (液體嘅口服劑型)

1. Keywords

- (Most relevant) Keyword 1: Pharmaceutical Dispensing
Keyword 2: Bi-Lingual
Keyword 3: Micro-modules
Keyword 4: Micro-Dose Delivery of Concepts
- (Least relevant) Keyword 5: Instructional Videos

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: <i>If a publicly accessible project website has been constructed, please provide the URL.</i>
(b) Webpage(s): <i>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) here.</i>
(c) Tools / Services: Articulate Storyline Software
(d) Pedagogical Uses: The micro-modules developed for this project will be used as pre-class learning activity in order to facilitate a flipped classroom approach. Instructional videos will allow students to familiarize with the procedures to be done in the lab prior to the practical sessions.
(e) Others (please specify):

Table 2: Resources accessible to a target group of students (if any)			
<i>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.</i>			
<u>Course Code/ Target Students</u>	<u>Term & Year of offering</u>	<u>Approximate No. of students</u>	<u>Platform</u>
Phar 2313/ Yr 2 Pharmacy Students	1 st term 2018	32-56	BlackBoard & Course website

Table 3: Presentation (if any)			
<i>Please classify each of the (oral/poster) presentations into one and only one of the following categories</i>			Number
(a) In workshop/retreat within your unit (e.g. department, faculty)			NA
(b) In workshop/retreat organized for CUHK teachers (e.g. CLEAR workshop, workshop organized by other CUHK units)			NA
(c) In CUHK ExPo jointly organized by CLEAR and ITSC			NA
(d) In any other event held in HK (e.g. UGC symposium, talks delivered to units of other institutions)			NA
(e) In international conference			NA
(f) Others (please specify)			NA
Table 4: Publication (if any)			
<i>Please classify each piece of publication into one and only one of the following categories</i>			Number
(a) Project CD/DVD			NA
(b) Project leaflet			NA
(c) Project booklet			NA
(d) A section/chapter in a booklet/ book distributed to a limited group of audience			NA
(e) Conference proceeding			NA
(f) A chapter in a book accessible internationally			NA
(g) A paper in a referred journal			NA
(h) Others (please specify)			NA

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.

Our project involved developing bi-lingual micro-modules which focus on the principles involved when dispensing medications. The six micro-modules developed in both English and Chinese included an introduction to various pharmaceutical dosage forms, an explanation of different routes of administration, oral solid and liquid dosage forms, and finally extemporaneous compounding and the technique involved.

Each micro-module covered the necessary information related to the topic and examples of how it would be applied to a patient case. Technical concepts were then demonstrated through the 7 instructional videos within the pertinent micro-module for students to better understand the skills they were expected to perform in lab. All project deliverables were consolidated onto a website, accessible with a link from BlackBoard. Students may view the micro-modules on the website as well as browse the photo bank for a closer and detailed view of examples of the formulations presented in the micro-modules.

The micro-modules developed will be available to Yr 2 pharmacy students enrolled in Phar 2313 in the coming Term 1, 2018. Students will be asked to view the micro-modules prior to coming to class and practical session to convert class time into a flipped class room approach. A formal evaluation regarding these micro-modules will be conducted to obtain feedback for future development considerations.