THE CHINESE UNIVERSITY OF HONG KONG

Courseware Development Grant (2018-19)

<u>Final Report</u>

Report due 31 May 2019
Please return by email to CUHK cdgs@cuhk.edu.hk

<u>PART I</u>

Project title: What goes on inside a hospital clean room? A closer look at parenteral products
and how they are made

Principal supervisor: Dr. Celeste LY Ewig and Dr. Isabel Hwang

Co-supervisor(s) and other Project Team Members:

Number	Project Team Member	Position	Department
1	Dr. Justin Tenney	Lecturer	School of Pharmacy, Faculty of Medicine
2	Mr. Eddie Ng	Functional Manager	Office of Medical Education (OME), Faculty of Medicine
3	Dr. Yan Jin	Research Associate	Office of Medical Education (OME), Faculty of Medicine
4	Mr. Alex Yung	Assistant Computer Officer	Office of Medical Education (OME), Faculty of Medicine
5	Mr. Taylor Tang	Assistant Computer Officer	Academic Support Service, ITSC
6	Ms. Eva Cheng	Computer Supervisor	Academic Support Service, ITSC
7	Dr. Benjamin Lee	Department Manager	Pharmacy Department, The Prince of Wales Hospital
8	Ms. Brenda Chan	Pharmacist (Aseptic Dispensing Suite)	Pharmacy Department, The Prince of Wales Hospital

Department / Unit: School of Pharmacy

Project duration: From September 2018 to May 2019

Date report submitted: 5 June 2019

1. Project objectives are as follows:

This project aims to enhance students' understanding of complex concepts involving
parenteral / sterile products by:

- Developing **interactive eLearning materials** (micro-modules + instructional videos) for students to access before, during and after class.
- Convert more classroom time for discussions on the application of concepts
- Provide **more time for students to practice complex skills** needed to safely prepare sterile products
- **Encourage self-directed learning** and a broader understanding of preparing sterile products in the hospital and industrial setting

Our team was able to meet our objective of creating 6 micro-modules that delivered sufficient content to encourage self-directed learning while incorporating more classroom time towards a flipped classroom setting.

2. Process, outcomes or deliverables

Process:

For this project, we developed micro-modules which presented the learning points of key topics regarding preparing sterile products in a hospital clean room. Additionally, we incorporated demonstration videos for students to better understand the techniques used.

The project was completed satisfactorily and will be used by the students starting in the coming school year 2019-2020

Outcomes and deliverables:

The following micro-modules will be incorporated into the course Phar 2313 Principles of Pharmaceutical Dispensing

Micro-module Title	Brief Description	Estimate Duration
Introduction to Sterile Products	• This module will introduce students to sterile products and how it is applied to patient use	• 11-15 mins
Aseptic Dispensing	• This module introduces students to the Aseptic Dispensing Suite • Incorporates video #1 and 3	• 15-20 mins
Aseptic Technique	• This module will discuss measures to minimize the risk associated with the use of sterile products/ • Includes video #2	• 11-15mins
Preparing Sterile Products	• Discusses the use of aseptic technique used when preparing sterile products • Includes video #4a, 4b, 4c	• 15-20 mins
Parenteral Route of Administration	• Provides an overview of the various routes of parenteral administration	• 11-15 mins
Parenteral Products	• Introduces students to the various types of parenteral products used in clinical practice	• 11-15 mins

Links to Micro-modules:

MM 1: Introduction to sterile products

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http://www.ome.cuhk.edu.hk/elearnshowcase/drcelesteewig/2019p5/story_html5.html

MM 2: Aseptic dispensing

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http://www.ome.cuhk.edu.hk/elearnshowcase/drcelesteewig/2019p1/story_html5.html

MM 3: Working inside a biological safety cabinet (aseptic technique)

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http://www.ome.cuhk.edu.hk/elearnshowcase/drcelesteewig/2019p6/story_html5.html

MM 4: Preparing sterile products

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http://www.ome.cuhk.edu.hk/elearnshowcase/drcelesteewig/2019p2/story_html5.html

MM 3: Parenteral route of administration

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http://www.ome.cuhk.edu.hk/elearnshowcase/drcelesteewig/2019p3/story_html5.html

MM 4: Parenteral Products & Routes of injection

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http://www.ome.cuhk.edu.hk/elearnshowcase/drcelesteewig/2019p4/story_html5.html

3. Evaluation Plan

We evaluated the project on a pilot group of students via an online survey
https://forms.gle/jK2ScYMWSkouaDCV7
The survey asked about the following general areas of the project:

- Content and scope of the micro-modules
  - Clarity of information
  - Amount of information in each module
  - Usefulness of the module and how they can be incorporated into the course
- User experience
  - Time it takes to view the modules
  - Visual aids and presentation of information

- o Whether the content and quiz was interesting/ appealing towards their learning
- Quality of the production
  - o Sound quality
  - o Pace of the voice over/ narration

Feedback provided by the students were quite positive. The pilot group of students provided excellent suggestions regarding the modules which will be incorporated into the existing project. A formal evaluation of the project will be conducted as part of the course evaluation at the end of Term 1 of the school year 2019-2020.

4. Dissemination, diffusion and impact

The project will be incorporated into the course website and available for students enrolled in Phar 2313.   Links to the micro-modules can be made available to students from other health care disciplines who are interested in learning about how sterile products are made and the proper conditions required for their preparation.

PART II

Financial data

Funds available: $90,000

Funds awarded from CDG	$ 90,000
Funds secured from other sources	$ 0.00
(please specify _____)	
Total:	$ 90,000

Expenditure:

Item	Budget as per application	Expenditure	Balance
Technical Requirements			
Audio recording, editing, and character design and illustrations	$29,350	$29,350	$60,650
Micro-module production	$28,800	$28,800	$31,850
Project website design	$2,220	$2,220	$29,630
Poster design	$2,775	$2,775	$26,855
Part Time Research Assistant	$20,255	$24,486	$2,369

Student Helpers	$6,600	$1,815	$554
Total:		$89,446	

Lessons learnt from the project

The current project adds to the growing number of eLearning modules available within the course. It is our objective to use these modules to facilitate flip classroom learning.

The project had some key success factors that we think made the project successful:

1. **Multi-departmental team members and collaboration with external organizations**

   In this project, we included team members from different departments within CUHK (i.e. School of Pharmacy, School of Biomedical Sciences, ITSC and Office of Medical Education). Collaborating between the departments within CUHK allowed each team member to bring their skills and expertise to the project. Additionally, we collaborated with outside institution such as the pharmacy department of The Prince of Wales Hospital within the Hospital Authority. In doing so, we were able to incorporate the local aspects of the key concepts and incorporate their expertise into developing the modules.

2. **Obtaining feedback from a pilot group of student's**

   At the completion of our project, we asked a group of students to provide their feedback regarding the micro-modules. Although the overall feedback was positive, some raised the concern of the modules adding more "content" to the course which will increase the workload on the students during exams. They also expressed concerns that students will be expected to "learn on their own" which can lead to key concepts being missed. Students also provided suggestions on how the micro-modules can be improved such as adding more quiz questions to the modules and making the questions more difficult. These feedback were extremely valuable in moving forward with the design of the course while incorporating the modules.

PART IV

Information for public access

1. Keywords

Please provide five keywords (in the order of relevance to your project) to describe your project.

(Most relevant)   Keyword 1: Pharmacy

                Keyword 2: Sterile Preparations

Keyword 3: Micro-modules

Keyword 4:

(Least relevant)   Keyword 5:

2. Summary statistics

Please provide information, if any, in the following tables, <u>and provide the details in Part I</u>.

Table 1: Publicly accessible online resources (if any)
(a) **Project website:** https://ug.pharmacy.cuhk.edu.hk/ce/ppd/index.html
(b) **Webpage(s):** https://ug.pharmacy.cuhk.edu.hk/ce/ppd/index.html
(c) **Others (please specify):**

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. CU Learning Management System (Blackboard), facebook), please specify.			
Course Code/ Target Students	**Term & Year of offering**	**Approximate No. of students**	**Platform**
School of Pharmacy	*Yr 2 Students* *Term 1 2019-2020*	*58*	*BlackBoard*

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)	N/A
(b) In workshop/retreat organized for CUHK teachers (e.g. CLEAR workshop, workshop organized by other CUHK units)	N/A
(c) In CUHK ExPo jointly organized by CLEAR and ITSC	CLEAR EXPO 2019
(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	N/A
(f) Others (please specify)	

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	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	N/A
(f) A chapter in a book accessible internationally	N/A
(g) A paper in refereed journal	N/A
(h) Others (please specify)	

3. A one-page brief write up

The preparation of sterile products suitable for patient use requires specific skills, mastering of aseptic techniques and the understanding to apply these concepts into practice. Understanding these is important since sterile products are generally used by patients who are more ill compared to other patients and require admission to the hospital. They are also used by patients undergoing chemotherapy.

This project aims to enhance students' understanding of complex concepts involving parenteral / sterile products by developing interactive eLearning materials (micro-modules + instructional videos) for students to access before, during and after class. This will enable classroom time to be used for discussions on the application of concepts. We also hoped that by filming the local public hospital environment, students can also have a broader understanding of how these concepts are practiced outside the classroom.

Our team developed 6 micro-modules which focus on each key aspect involved in sterile compounding. We used incorporated videos, narrated contents and quizzes into each module. From the modules, students can tour the inside of a local hospital's clean room, observe the logistics of how sterile preparations are made, what preparations are procedures are necessary to prepare sterile products and view demonstration videos of the best technique to prepare these products. The micro-modules also cover the span of parenteral products such as an introduction to the different types of injectable solutions, as well as the different routes of

parenteral administration. These micro-modules were incorporated into the course website to build upon the existing library of micro-modules focusing on pharmaceutical preparations. CUHK students may access the micro-modules directly through the course website or via Blackboard.