

THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 3: eLearning Pedagogy Research

Final Report (2015-16)

Report due 31 January 2017

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

PART I

Project title: Effectiveness of e-learning using micro-module in cardiovascular pharmacotherapy for the training of pharmacy students

Principal supervisor: Lee Wing Yan, Vivian

Co-supervisor(s)

Department / Unit School of Pharmacy

Project duration: From February 2016 to January 2017

Date report submitted: 2 February 2017

1. Project objectives

The project is on track to meet its objectives. There is no change of the objectives.

2. Process, outcomes or deliverables

A total of 71 micro modules were produced for PHAR 3413 and PHAR 3812 in the cardiovascular pharmacotherapy areas in (1) hypertension, (2) heart failure, (3) dyslipidaemia, (4) thromboembolic diseases, (5) acute coronary syndrome and (6) arrhythmia. We have not changed the research design, methodology and timeline. Overall, the project was completed satisfactorily.

3. Evaluation Plan

We have not altered our evaluation plans. However, we have to cut down the number of pre-post tests since students were complaining about the quantities of tests. For the knowledge enhancement, we compared the final examination test scores. The maximum score was 30 for cardiology pharmacotherapy section. The summary of examination scores from 2014-2016 is listed in Table 1. There is no statistical significant difference after the implementation of micro-modules in cardiovascular pharmacotherapy.

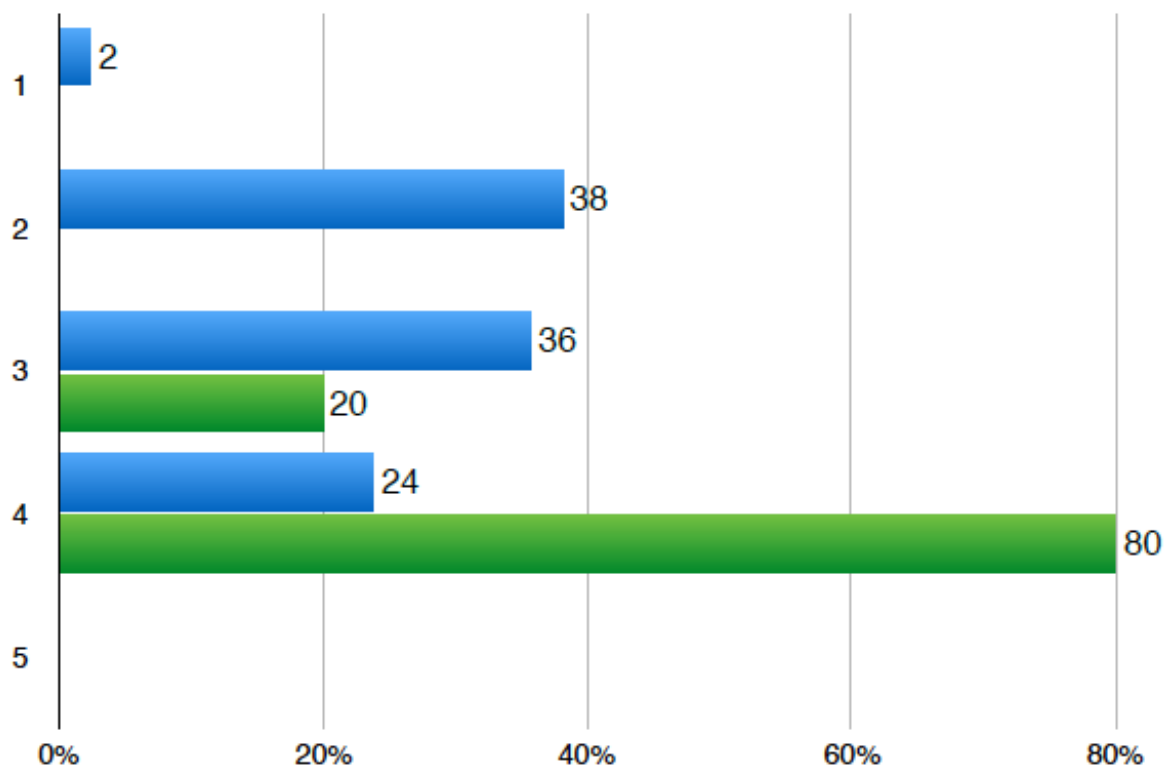
Table 1. Summary of Examination Scores from 2014-2015

	<u>2014</u> <u>(Control Group: No</u> <u>Micro-modules)</u>	<u>2015</u> <u>(Intervention Group</u> <u>with Micro-modules:</u> <u>1st year)</u>	<u>2016</u> <u>(Intervention Group</u> <u>with Micro-modules:</u> <u>2nd year)</u>
Mean scores (SD)	19.40 (2.63)	19.64 (2.56)	19.42 (2.60)
Number of Students	55	47	50
p-value		0.6429	0.9689

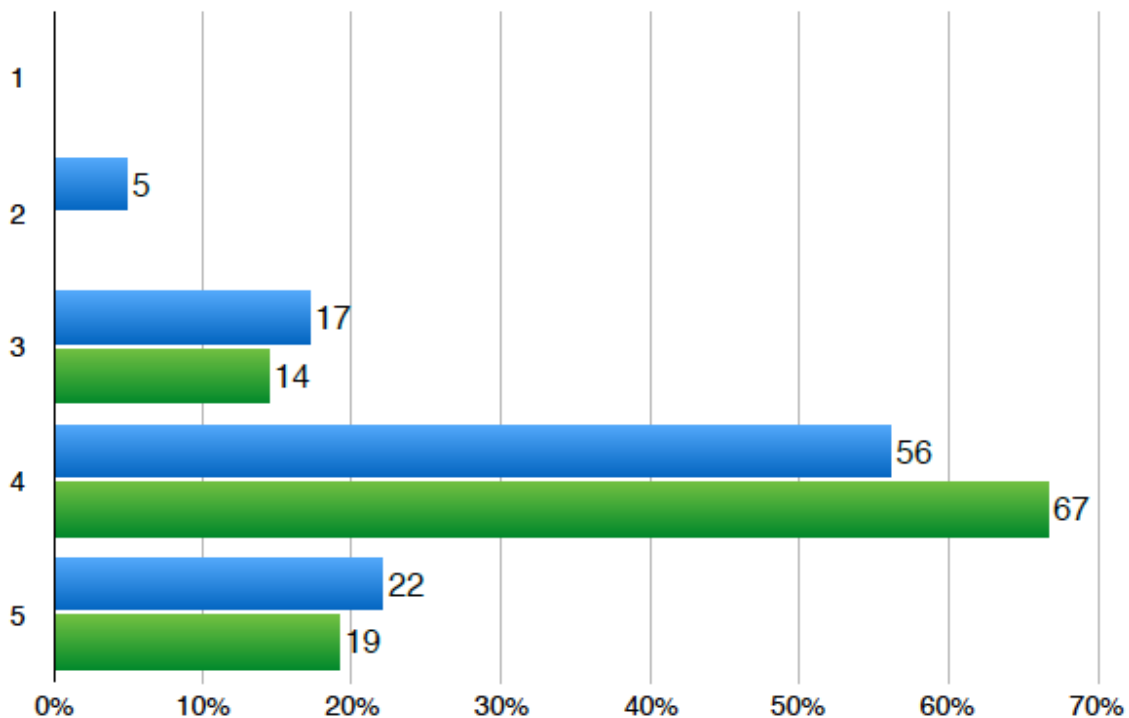
The pre-post test for students' understanding of Cardiology Therapeutics

Blue color – pretest Green color – post test

1. Your understanding of Cardiology Therapeutics.
1 (lowest) - 5 (highest)



2. Your attitude and awareness toward learning
Cardiology Therapeutics. 1(lowest) - 5(highest)



Summary of Students' Comment on e-learning

Ms. Viki Cheung

“E-learning

E-recorded lectures would be useful in subjects that solely instill hard knowledge, such as biomedical knowledge foundation courses: health science, physiology and etc. It will also be convenient for students as they can also replay and listen again if they can't catch at the first time. (On lessons students do find it difficult to catch every single word from the lecturer.)

But as the curriculum progresses and courses require more student-lecturer interactions, E-lectures may not be a good idea for learning. In therapeutics lesson, we have a lot of case studies incorporated among lectures. Pharmacy students value and rely heavily on interaction in case discussion to learn, as instant feedbacks from professors are crucial to guide thinking and decision-making in case studies.

The role of e-learning in the pharmacy curriculum remains supplementary. As lesson hours are often insufficient, e-learning may be useful in covering supplementing topics which we do not have time to go through on lesson but would be good to know, such as diagnoses, nonpharmacological treatment and follow-up planning, or modules on explaining lab charts and interpretation.”

From: **Kathy Fung** kathyfung121@gmail.com
Subject: Comments regarding e-learning
Date: January 29, 2017 at 3:15 PM
To: Vivian WY LEE vivianlee@pharmacy.cuhk.edu.hk



Dear Professor Lee,

Here are my thoughts regarding e-learning below:

Whilst e-learning may be more convenient for some students, I believe classroom learning is irreplaceable, where direct interaction with the lecturer can allow me to concentrate more and take in the information better. There can also be direct motivation and immediate feedback from the instructor. Also, being in a classroom environment allows more interaction with classmates as well, where we can have discussions that further facilitate learning and building of social networks.

Although with e-learning there may be higher flexibility for time management and can allow users to replay the content, it calls for more self-discipline for us to manage our own progress with the course materials and I believe some students may experience even more difficulty with time management and cram all the e-learning materials to study right before exams.

In addition there are many learning activities that cannot be replaced with e-learning, for example ward rounds and workshops where we have the opportunity to look at some OTC products and devices, for example inhalers and blood glucose monitoring devices.

Thank you!

Best regards,
Kathy

From: **SZE CHING MIRANDA TI** mirandaticuhk2013@yahoo.com
Subject: My thoughts about E-learning in support of teaching and learning of therapeutics
Date: February 1, 2017 at 4:21 PM
To: Vivian WY LEE vivianlee@pharmacy.cuhk.edu.hk



Dear Prof. Lee,

I hope you had a good time during the Lunar New Year holiday. I would like to share some of my thoughts about how to incorporate E-learning to enhance teaching and learning of therapeutics.

The purpose of incorporating e-learning in therapeutics is not to replace face-to-face class hours, but to synergise with face-to-face classes and to facilitate teaching and learning. But eventually, e-learning activities can at the same time allow reduction of face-to-face class hours. Some of my suggestions may be quite difficult to actually be carried out, but I am just sharing what improvements could possibly be made in the point of view of a student.

Most of the time, the content of the lectures is to summarize and highlight the more important aspects of the background and pharmacotherapy of a disease state. Most of the content intended to be delivered should more or less remains similar over time. Therefore, I think most of the content of the lectures can be recorded into lecture videos which can be used over and over again. Prof. Justin Tenney of our school also tried using videos to deliver some of his lectures and my feedback would be positive. I noticed that the language used would be more concise in his videos than his face-to-face lectures. He only used 1.5 hrs to deliver the content that was originally scheduled into a 3-hour lecture (You may refer to the following link for an example of his lecture videos: <https://www.youtube.com/watch?v=Wj1zchMVZWY&t=76s>). Sometimes in face-to-face lectures, if students miss some points, it would be quite difficult for them to follow afterwards. Videos have an advantage that it allows pausing and rewinding. Also, some of the contents delivered by professors in class may be not be understood instantly by students. Some students may require more time to "digest" the content or some time to search the answer using the internet. Many students may find it embarrassing or inconsiderate to disturb the lectures too often and often leave the questions to be solved after lessons. If the lectures are delivered as videos, students can follow their own pace when learning.

Maintaining student's interest in learning is crucial to the promotion of learning. Engaging students and providing more chances for students to think and inquire is one of the elements that contribute to student's learning interest. With some of the more factual or routine aspects of the lectures delivered through e-learning videos, the face-to-face class hours can be better utilized for interactive activities that can arouse students' learning interest more. Proposed in-class activities include Q & A sessions for students to raise questions about the content of the e-learning videos and clinical case discussion. I will elaborate more in the following.

The Q&A sessions allow professors to understand students' learning progress and address issues that are not well-covered by the e-learning videos. Students can raise questions in online discussion board (available on blackboard). The questions can be answered by peers or professors online, or professors can bring some questions to class for more thorough discussion. Students, provided that they digest the e-learning videos well before the Q&A sessions, will be more "conscious" of what they are doing in class and more ready to raise and answer questions in these interactive Q&A sessions.

The chance to assess real or even hypothetical clinical cases is crucial to learning therapeutics. Coping with examinations can be quite different from evaluating a clinical case. Some students may feel detached when they listen to lectures and find it difficult to associate textbook knowledge to clinical situations. Students may not be able to gain interest by looking at all the drugs, dosages, drug-drug interactions and side effects, and end up just reciting everything for exams. In this way, the content recited is often difficult to be retained for long. Therefore, it would be great to include more clinical case discussion activities when teaching therapeutics. There could be a case discussion session every 2-3 weeks, depending on the complexity of the cases. Real clinical cases could be quite complex with many aspects of discussion that is not directly related to what is intended to be the focus of the class. Those areas can easily make students confused and lost. After distribution of the cases, the more important issues that are expected to be focused can be delivered to students by micro-module videos. Other information that are crucial for students to assess the cases can also be included in the micro-module videos. The cases can be presented to the students in the format of case handouts (without the "assessment and plan" table). The class can be divided into groups of four and two groups will be responsible to present a case each time. The approach of these two groups may be different and this can allow more room for in-class discussion. Each group will be presenting once in a semester. And all students will be required to complete soap notes of two cases at their own choice (but not of the case that they presented), with focus on the more important issues using 2-3 paragraphs. This may be a way to make students more engaged in the case discussion sessions.

Above all, flexibility is another advantage of e-learning over classroom teaching. The e-learning videos can be reached by students at any time when they feel mentally and physically fit for learning and at the same time the videos can be prepared by professors at any time. And most of the e-resources prepared by professors can be reused in the following years.

Some may argue that requiring students to preview the lecture notes before lessons can avoid them missing the content of lectures and to allow more room in the face-to-face lecture hours for interaction between professors and student. That is true of course, but I believe that if students are guided by a video when self-studying, they can be better kept on track and will find it more interesting.

The current online case study questions can be incorporated. Students can be offered online lecture videos one to two weeks before the Q&A sessions and are required to complete the online case study questions after self-studying the online lecture videos.

For the distribution of class hours, there could be 1-1.5 hours of online lecture videos and 1 hour of Q&A session each week. And there could be a 1-to-2-hour session of clinical case discussion every 2-3 weeks.

In conclusion, the e-learning activities that I think may be useful are lecture videos and micro-modules for guiding clinical case studies. When some lectures are delivered as videos, the face-to-face class hours can potentially be reduced. Clinical ward

rounds in clerkship definitely can never be replaced by e-learning. Face-to-face interaction is very important in clinical case discussions.

Thank you for giving me the opportunity to express my view on e-learning which I hope can enhance the teaching and learning of therapeutics.

Best wishes,
Miranda Ti

Potential barriers and obstacles encountered in e-learning process

- Too much information for the students to review at home
 - Expectations from students towards e-learning are variable
 - Large deviations of time spent on e-learning among students
 - A lot of manpower resources are needed for the preparation of e-learning materials.
- It will not be possible without the valuable support from the Micro-module courseware development grant.

4. Dissemination, diffusion and impact

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

Please provide examples of impact: how the research results/outcomes/findings can be extended to other disciplines.

Please describe how the research results/outcomes/findings may support the University's strategic aims in promoting eLearning.

Kindly see the links below:

For 2015

The course materials are uploaded to the following websites:

- (i) https://elearn.cuhk.edu.hk/webapps/blackboard/execute/modulepage/view?course_id=53822_1&cmp_tab_id=90736_1&editMode=true&mode=cpview
- (ii) https://elearn.cuhk.edu.hk/webapps/blackboard/content/listContentEditable.jsp?content_id=1364198_1&course_id=56349_1

For 2016

Hypertension-related topic material links:

<https://www.youtube.com/playlist?list=PLtEd0IN1la00n1sJVd27ZaLiFq-XjTDQJ>

Hypertension Cases links:

<https://youtu.be/F2u97zeOmPM?list=PLhUMtEIV70Xr8WvD3Qw0enJkZZU3p68r0>

<https://www.youtube.com/playlist?list=PLtEd0IN1la01QzMLzCK8wJ2XgaDCWZ3J5>

<https://www.youtube.com/watch?v=L2HzoMSWIW8&feature=youtu.be>

Dyslipidaemia-related topic material links:

<https://www.youtube.com/playlist?list=PLtEd0IN1la00kTHdtZcjNtMqOV7LI9E0M>

Dyslipidaemia Cases links:

https://www.youtube.com/playlist?list=PLtEd0IN1la03im_PyIZjHr9o7UvSsD06W

Heart failure-related topic material links:

<https://www.youtube.com/playlist?list=PLtEd0IN1la00kTHdtZcjNtMqOV7LI9E0M>

Heart failure Cases links:

<https://www.youtube.com/playlist?list=PLtEd0IN1la02DL2KIgv2KVQuUU6zgV3h3>

Coronary Artery Disease-related topic material links:

<https://www.youtube.com/playlist?list=PLtEd0IN1la03-u-J-4TZskvZFhfvqU6z7>

Coronary Artery Disease Cases links:

https://www.youtube.com/playlist?list=PLtEd0IN1la019NDwnsu21YD2w_rWMJPFD

Thromboembolic Disease-related topic material links:

https://www.youtube.com/playlist?list=PLtEd0IN1la03wtYeWvuKwUHp91pckQ_PG

Thromboembolic Disease Cases links:

https://www.youtube.com/playlist?list=PLtEd0IN1la03hPmztMbjO-y_tH2ZIYJK

Publications:

One abstract and one manuscript will be prepared.

PART II

Financial data

Funds available:

Funds awarded from MMCDG	\$ 150,000
Funds secured from other sources (please specify _____)	\$ 0
Total:	\$ 150,000

Expenditure:

Item	Budget as per	Expenditure	Balance
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	application		
Staff Cost	150,000	152,295.98	-2,295.98
Total:			-2,295.98

I shall settle the negative balance with my other project accounts.

PART III

Lessons learnt from the project

Please describe your way forward.

The experience learnt from this project benefited me greatly in planning future e-learning activities. Although there is no significant change in terms of examination scores after the implementation of micro-modules, micro-modules enhanced understanding of cardiology therapeutics and positive attitude and awareness toward learning cardiology therapeutics. As a teacher, I found that the micro-modules allow me to have more interactive discussion with the students rather than didactic lecture in class. I have more time to further discuss real clinical cases and the application of knowledge in the real world. Students were more attentive and interactive in class after the implementation of micro-modules. I plan to continue to expand coverage of using micro-modules in those topics that students had difficulty understanding including clinical case presentation and discussion. I have applied for Micro-modules courseware development grant for clinical pharmacy case training this year (Scheme 1 application). In addition, I would also like to evaluate the impact of micro-modules on assessment (Scheme 3 application). I also plan to share my experience within the School of Pharmacy, Faculty of Medicine and other pharmacy schools in Asia.

Please describe any of the following item(s) accordingly:

- *Key success factors, if any*
 - Students welcomed micro-modules
 - Students found the micro-modules were helpful and facilitated their learning in cardiology therapeutics
 - Students' attitudes and awareness increased in cardiology therapeutics after the implementation of micro-modules.

- *Difficulties encountered and remedial actions taken, if any*
 - A lot of manpower resources are needed for the preparation of e-learning materials. It will not be possible without the valuable support from the Micro-module courseware development grant.

- *The role of other units in providing support, if any*
 - Not applicable

- *Suggestions to CUHK, if any*
 - *Example: what should be done differently?*
 - We may need to consider finding a centralized server to host all the e-learning materials in the university.

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: Micro-modules
 Keyword 2: Pharmacy education
 Keyword 3: Effectiveness
 Keyword 4: Cardiology pharmacotherapy
- (Least relevant) Keyword 5:

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)
<p>(a) Project website:</p> <p><i>If a publicly accessible project website has been constructed, please provide the URL.</i></p> <p>Some of the videos were posted in a restricted link of you tube as well as the CUHK Blackboard</p>
<p>(b) Webpage(s):</p> <p><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) in here.</i></p> <p>Not applicable</p>
<p>(c) Tools / Services:</p> <p><i>If you have used any tools or services for the project, please provide names of the tools or services in here.</i></p> <p>Not applicable</p>

(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.

We had conducted flipped classroom activities throughout the class. Students are required to watch the micro-modules before classes.

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. Blackboard, facebook), please specify.

<u>Course Code/ Target Students</u>	<u>Term & Year of offering</u>	<u>Approximate No. of students</u>	<u>Platform</u>
PHAR 3413	Fall semester 2014, 2015 and 2016	50	Blackboard

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)	1
(b) In workshop/retreat organized for CUHK teachers (e.g. CLEAR workshop, workshop organized by other CUHK units)	0
(c) In CUHK ExPo jointly organized by CLEAR and ITSC	1
(d) In any other event held in HK (e.g. UGC symposium, talks delivered to units of other institutions)	0
(e) In international conference	1 (plant to submit abstract to the AMEE)
(f) Others (please specify)	0

Table 4: Publication (if any)

<i>Please classify each piece of publications into one and only one of the following categories</i>	Number
(a) Project CD/DVD	0
(b) Project leaflet	0
(c) Project booklet	0

(d) A section/chapter in a booklet/ book distributed to a limited group of audience	0
(e) Conference proceeding	2 (<i>Will be submitted to one local and one overseas conference</i>)
(f) A chapter in a book accessible internationally	0
(g) A paper in an referred journal	1 (<i>in progress</i>)
(h) Others (please specify)	0

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.