

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

PART I

Project title: Micro-modules for Fundamentals of Nursing I

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Department / Unit: The Nethersole School of Nursing, Faculty of Medicine

Project duration: From January 2016 to December 2016

Date report submitted: 31 December 2016

1. Project objectives

This project aimed to produce four micro-modules that covered four major topics in a first-year nursing course titled “Fundamentals of Nursing I.” The four topics included “Nursing diagnosis and care plan”, “Nursing care for patients with pain”, “Process of wound healing and wound care” and “Techniques in wound dressing”. Each micro-module consisted of: (1) An annotated PowerPoint; (2) a set of self-test questions; and/or (3) a tailored-made video.

The objectives of the project were as follows: to (1) facilitate the students’ understanding of foundational knowledge and essential nursing skills in promoting the health and wellness of patients on the designated topics before class, (2) maximize the students’ learning by enabling them to learn at their own pace using the micro-modules, and (3) support the implementation of the flipped classroom strategy of the course. The project has been completed with all the objectives met. No modification has been made.

2. Process, outcomes or deliverables

Four micro-modules have been produced and were used to facilitate flipped classroom implementation in a Year 1 Term 1 course titled NURS 1162 Fundamentals of Nursing I.

During the process of micro-modules production, we determined that the content of the three-minute video showing the clinical profile of a patient in pain, which we intended to produce in MMCD 2, could be incorporated into the three animated cartoon scenarios that the students would use to develop a nursing care plan in class. Thus, we decided to exert our effort to produce the cartoon scenarios instead. Besides, the production of the care plan cartoon in MMCD 1 and three animated cartoon scenarios in MMCD 2 were delayed and completed near the end of the course. Therefore, these two components could not be used in this academic year. Accordingly, we have provided the students with a PowerPoint to replace the content of the care plan cartoon and written materials to describe the scenarios in the animations.

Despite of it, the project was completed satisfactorily. The care plan cartoon and one of the animated cartoon scenario have been shared and used in a Year 2 Term 2 course, NURS 3142 Nursing in the Community, to support the flipped classroom implementation in that course. All the MMCD will be continued to use in the course NURS 1162 Fundamentals of Nursing I in next academic year (2016-2017). The details of the four developed micro-modules were described as below.

MMCD1: Nursing diagnosis and care plan

- Short lecture using annotated PowerPoint

http://course.nur.cuhk.edu.hk/restricted/NURS1162/Nursing_Care_Plan

- English cartoon video - Nursing Care Plan

<http://course.nur.cuhk.edu.hk/restricted/index.php?codeno=G005>

- Online exercise

https://elearn.cuhk.edu.hk/webapps/assessment/take/launchAssessment.jsp?course_id= 59065_1&content_id= 1621977_1&mode=cpview&target=blank

MMCD2: Nursing care for patients with pain

- Short lecture using annotated PowerPoint with a set of self-test questions

http://course.nur.cuhk.edu.hk/NURS1162/Facilitating_relief_from_pain/player.html

- Three animated cartoon scenarios for discussion

Scenario 1 – Acute Appendicitis:

<http://course.nur.cuhk.edu.hk/restricted/index.php?codeno=G006>

Scenario 2 – Hip Fracture:

<http://course.nur.cuhk.edu.hk/restricted/index.php?codeno=G007>

Scenario 3 – Low Back Pain:

<http://course.nur.cuhk.edu.hk/restricted/index.php?codeno=G008>

MMCD3: Process of wound healing and wound care

- Short lectures (consists of 4 parts) using annotated PowerPoint with a set of self-test questions

[http://course.nur.cuhk.edu.hk/NURS1162/Process_of_wound_healingandwound_care/
player.html](http://course.nur.cuhk.edu.hk/NURS1162/Process_of_wound_healingandwound_care/player.html)

MMCD4: Techniques in wound dressing

- Short lecture using annotated PowerPoint with a set of self-test questions

[http://course.nur.cuhk.edu.hk/NURS1162/Micro_module_Wound_dressing_materials/
player.html](http://course.nur.cuhk.edu.hk/NURS1162/Micro_module_Wound_dressing_materials/player.html)

- A video demonstrating poor dressing techniques for students to critique

mms://winmedia.itsc.cuhk.edu.hk/nursing/NURS1162/Dx_Ct_1.wmv

mms://winmedia.itsc.cuhk.edu.hk/nursing/NURS1162/Dx_Ct_2.wmv

3. Evaluation Plan

As the care plan cartoon (i.e., one of the components in MMCD 1) and the three animated cartoon scenarios (in MMCD 2) were not yet ready for use before the completion of the course. Thus, the evaluation plan proceeded without these two components. The evaluation plan comprised student surveys, focus group interviews, and web logs analysis. Data analysis indicated that the objectives of this project have been achieved. A brief summary of these tasks and results were listed as follows.

i. Student surveys

The “Satisfaction with Micro-modules and Flipped Classroom” is a self-developed questionnaire employed to evaluate the students’ perception and satisfaction toward the four developed micro-modules and the flipped classroom teaching. It consists of 10 items and the responses are gathered using 5-point Likert scale ranging from (5) ‘strongly agree’ to (1) ‘strongly disagree’. Students were invited to complete an evaluation of this questionnaire at the end of the course. SPSS version 22.0 (SPSS, Chicago, IL, USA) was used for data analysis.

Results

Participants’ characteristics

There were 211 students enrolled in this course. One hundred and sixty-seven valid responses (79.1%) were received. The mean age of the participants was 18.56 (SD = 0.86). A majority of them (80.8) were female.

Satisfaction with micro-modules and flipped classroom

Table 1 shows the satisfaction with micro-modules and flipped classroom as rated by the participants. A majority of participants (69.5%) agreed that the micro-modules helped them to gain a better understanding of nursing knowledge and skills on the designated topics, and most of them (74.3%) agreed that the micro-modules helped them to learn at their own pace.

However, only 38.9% of participants reported that they would view the micro-modules before coming to class. Over 70% of the participants were satisfied with the flipped classroom teaching.

Table 1. Satisfaction with micro-modules and flipped classroom

| | Strongly disagree (%) | Disagree (%) | Neither agree nor disagree (%) | Agree (%) | Strongly agree (%) |
|--|------------------------------|---------------------|---------------------------------------|------------------|---------------------------|
| I enjoy viewing the micro-modules. | 0 | 6.6 | 33.5 | 50.3 | 9.6 |
| I usually view the micro-modules before coming to class. | 3.0 | 28.1 | 29.9 | 35.3 | 3.6 |
| The micro-modules help me to gain a better understanding of nursing knowledge and skills on the designated topics. | 0 | 4.8 | 25.7 | 58.1 | 11.4 |
| The micro-modules help me to learn at my own pace. | 0 | 3.6 | 22.2 | 61.7 | 12.6 |
| Knowledge gain through the micro-modules help me to contribute my views in class. | 0.6 | 6.0 | 33.5 | 52.1 | 7.8 |
| More micro-modules should be produced in the future. | 2.4 | 4.8 | 30.5 | 48.5 | 13.8 |
| The various in-class activities enhance | 0 | 4.2 | 29.9 | 59.9 | 6.0 |

| | | | | | |
|--|-----|-----|------|------|-----|
| my understanding on the designated topics. | | | | | |
| The flipped classroom teaching approach is more engaging and interesting in comparison to traditional lecture. | 0 | 5.4 | 30.5 | 58.7 | 5.4 |
| More flipped classroom teaching should be used in the future. | 0.6 | 5.4 | 34.1 | 52.1 | 7.8 |
| Overall, I am satisfied with the flipped classroom teaching. | 0.6 | 3.0 | 23.4 | 63.5 | 9.6 |

ii. Focus group interviews

A total of 26 students were recruited with eight focus groups interviews were being conducted. These interviews were conducted between July to September 2016 after the course completed. Interviews were arranged at times convenient for those who agreed to participate. The interview captured the students' experience of flipped classroom and perception of micro-modules. Interview questions included "What is the most pleasurable aspect of the micro-modules?", "How the micro-modules facilitate your understanding of the concept in each topic?". All the interviews were conducted in Cantonese and tape-recorded. After the interview, the tape was transcribed verbatim by student helpers. Analysis of the data from the focus-group interviews indicated that students have positive and negative experiences regarding micro-modules and flipped classroom.

Results

Positive experiences

A majority of students enjoyed the new learning model, giving many comments phrased such as “I like the concept of flipped classroom”, “The idea is good”, “It is better than traditional lecture”. Many students said they liked viewing the micro-modules because they were interesting. They particular liked to do the quizzes embedded in the micro-modules because it helped them to consolidate what they have learnt. Others liked the video because it helped them to revise the nursing skills. When asked which aspects of flipped classroom they liked most, some said they appreciated the interaction and communication between teachers and students in the lecture theater, because it seldom occurred in traditional lecture. Many students perceived flipped classroom as beneficial as it “allow me to learn at my own pace, I can review the materials as many times as I want”, “helped me to think and understand some difficult concepts”. Few students thought that viewing micro-modules before class made them accountable to the information.

Negative experiences

Some students share their negative experiences. Specifically, they commented the amount of work required for class preparation. Students said there were lots of materials to read and the length of the “micro-modules” were a bit long. Few students admitted that they only selectively viewed the micro-modules before class. One student said “this learning approach (flipped classroom) is good, but it depends on students’ discipline. Some of my classmates came into the classroom without preparation, resulted in poor quality discussion.” Besides, as students were required to share their ideas after discussion with groupmates in few lectures, some students commented that they felt embarrassed to present in front of class. For improvements, students said they preferred to have more online exercises and less in-class discussion.

iii. Web logs analysis

The track number of views for each micro-modules has been generated and showed in Table 2. The web-log analysis showed that the micro-modules were viewed a lot (i.e., ranging between 438 to 3965 times).

Table 2. Track number of views of each micro-module.

| | Total no. of web logs |
|---|-----------------------|
| <i>Micro-modules 1: Nursing diagnosis and care plan</i> | |
| - Short lecture using annotated PowerPoint | 438 |
| - Online exercise | 3965 |
| <i>Micro-modules 2: Nursing care for patients with pain</i> | |
| - Short lecture using annotated PowerPoint with a set self-test questions | 832 |
| <i>Micro-modules 3: Process of wound healing and wound care</i> | |
| - Short lectures (consists of 4 parts) using annotated PowerPoint with a set of self-test questions | 1089 |
| <i>Micro-modules 4: Techniques in wound dressing</i> | |
| - Short lecture using annotated PowerPoint with a set of self-test questions | 917 |
| - A video demonstrating poor dressing techniques for students to critique | 919 |

4. Dissemination, diffusion and impact

We will continue to share our experiences in flipped classroom implementation in local, regional, and international conferences. Poster and oral presentations have been given in the CUHK "Teaching and Learning Innovation Expo 2016". The title of the presentation is: A Flipped classroom with micro-modules in a foundational nursing course. Another abstract has also been submitted to an international conference related to Nursing Education. One

manuscript has been prepared and submitted to an international refereed journal for publication.

The micro-modules produced in this project have been used in a Year 1 Term 1 course titled NURS 1162 Fundamentals of Nursing I. Some components such as the care plan cartoon and animated cartoon scenario have been shared and used in a Year 2 Term 2 course titled NURS 3142 Nursing in the Community. In addition, as “wound dressing” and “nursing care plan” are skill competency examinations’ topics in some clinical courses, it could be shared in other nursing courses to provide opportunities for students to review the skills before practical examinations. Besides, the developed micro-modules can be shared with other post-graduate nursing courses or other health care-related programmes, such as medicine, pharmacy, Chinese medicine, and public health.

As flipped classroom will be continued to implement, the results of the current project help to motivate teachers to produce micro-modules to facilitate flipped classroom implementation in other nursing courses.

PART II

Financial data

Funds available:

| | |
|--|-----------|
| Funds awarded from MMCDG | \$ 54,615 |
| Funds secured from other sources (please specify _____) | \$ 0 |

Total: \$ 54,615

Expenditure:

| Item | Budget as per application | Expenditure | Balance |
|--|---------------------------|-------------|---------|
| 10-minute English cartoon video with a set of multiple choice questions embedded | 13,860 | 13,860 | 0 |
| Three 5-minutes animated cartoon scenarios | 24,255 | 24,255 | 0 |

| | | | |
|--|--------|--------|---|
| Student helpers to collect quantitative data and transcribing qualitative data | 16,500 | 16,500 | 0 |
| Total: | 54,615 | 54,615 | 0 |

PART III

Lessons learnt from the project

With the experiences gained from this project, we will continue to produce micro-modules in other nursing courses to support flipped classroom implementation. To move forward, the School has invited experts in CLEAR to deliver a talk in January 2017 to our teaching staff to share active learning (mainly flipped classroom and enhanced lecture) and explore ways to overcome the barriers. Besides, meetings were conducted with the Vice Director (Education) of the School and Programme Director of the Bachelor of Nursing Programme to identify needs of different courses and determine which lectures are more suitable to produce micro-modules and implement flipped classroom. A meeting has also been held with the IT team of the School to explore other user-friendly software to record and edit mini-lectures. A workshop will also be arranged in the first quarter of 2017 to share with staff how to use the identified software.

The success of this project lies on the effort of our dedicated course teachers. Besides, we have good planning prior to the project commenced. For instances, several teaching team meetings were held before the course commenced to determine the format of micro-modules (eg. videos, scenarios, annotated lectures, discussion questions, quizzes). Another purpose of these meetings was to discuss how flipped classroom could be implemented and other in-class activities that could facilitate flipped classroom implementation. On the other hand, the students were informed that they would attend innovative and interactive lectures instead of the traditional didactic lectures during course introduction. The expected learning activities were also outlined. The students were reminded to study their pre-class learning materials before attending their classes.

However, we have encountered some difficulties to produce micro-modules. First, it took some time for us to explore which software could be used to do video/ audio recording and editing. Although we finally came up with the conclusion to use Camtasia, however, we did not familiar with using this software. To tackle this problem, we have visited the ELITE center and booked a face-to-face training session to consult the experts there. With their supports, we successfully produced micro-modules using Camtasia. Second, we underestimated the time to produce the care plan cartoon and the animated cartoon scenarios. As we took more than a month to draft the storyboard and write the scripts, the production of cartoon and scenarios were delayed and could not be used in this academic year. To solve this problem, we used the lecture notes in PowerPoint format to replace the care plan cartoon and written notes to replace the content of the animated scenarios. Despite of it, the care plan cartoon and one of the animated cartoon scenario has been shared and used in a Year 2 Term 2 course, NURS 3142 Nursing in the Community, to support the flipped classroom implementation of that course. Informal feedback from the Year 2 students indicated that they found the cartoon interesting and could enhance their understanding on how to formulate a care plan for the patients.

PART IV

Information for public access

1. Keywords

(Most relevant) Keyword 1: Flipped classroom

Keyword 2: Micro-modules

Keyword 3: Nursing

Keyword 4:

(Least relevant) Keyword 5:

2. Summary

| Table 1: Publicly accessible online resources (if any) |
|---|
| (a) Project website: <i>Nil</i> |
| (b) Webpage(s): <i>Nil</i> |
| (c) Tools / Services: Tools: Camtasia, Articulate Services: ITSC service for block grant activities |
| (d) Pedagogical Uses: The four micro-modules aim at facilitating students to gain preliminary concepts in the topics before class and support flipped classroom. The students were required to read or view the micro-modules before attending their classes to obtain a brief overview of the fundamental concepts that would be covered in the lecture. During the first 15 minutes of the lecture, the teachers reviewed all the important points presented in the micro-modules. The students were then divided into pre-assigned smaller groups (with 15-18 students in each group) and they worked collaboratively in discussing case scenarios or critiquing videos. This session usually lasted between 30-45 minutes to allow the students to share their ideas and learn from peers. Afterward, one to two representatives from each group would be invited to present their group's findings to the class. Following the presentation, the teachers provided feedback to their students. A short-quiz would sometimes be given to the students to help consolidate their knowledge. Finally, the teachers presented a short yet in-depth summary of the discussed topic. With the use of micro-modules to support flipped classroom implementation, course teachers can then make use of the class-time to further elaborate the contents and engage students to do in-class activities such as discussion and presentation thereby consolidating their knowledge. |
| (c) Others (please specify): Nil |

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 & Year of offering</u> | <u>Approximate No. of students</u> | <u>Platform</u> |
|---|--|--|-----------------|
| NURS 1162/ Nursing students | 2 nd term (2015-2016) | 211 | Blackboard |
| NURS 3142/ Nursing students | 1 st term (2016-2017) | 244 | 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) | 0 |
| (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 | 0 |
| (f) Others (please specify) | 0 |

Table 4: Publication (if any)

Please classify each piece of publication into one and only one of the following categories

| | 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 | 0 |
| (f) A chapter in a book accessible internationally | 0 |

| | |
|-----------------------------------|---|
| (g) A paper in a referred journal | 0 |
| (h) Others (please specify) | 0 |

3. A one-page brief write up

With support from a Micro-module Courseware Development Grant, four micro-modules that cover four major topics in a first-year nursing course, “Fundamentals of Nursing I”, were developed to facilitate flipped classroom implementation. The four topics include: “Nursing diagnosis and care plan”; “Nursing care for patients with pain”; “Process of wound healing and wound care”; and “Techniques in wound dressing”. Each micro-module consists of: (1) an annotated PowerPoint; (2) a set of self-test questions; and/or (3) a tailored-made video.

Students are required to view the micro-modules and answer the self-test questions before class to gain preliminary information about each topic. The course teachers can then make use of the class time to revisit the important concepts described in the micro-modules and clarify any misunderstandings that might arise. At the same time, students are expected to participate in various in-class activities, such as discussion sessions and presentations, to consolidate what they learned in the micro-modules.

The project has been evaluated by inspecting the web-logs, and via student surveys and focus-group interviews. The web-log analysis showed that the micro-modules were viewed a lot (i.e., ranging between 438 to 3965 times). The surveys indicated that 69.5% of the students agreed that the micro-modules helped them to gain a better understanding of nursing knowledge and skills on the designated topics, and over 70% of the students were satisfied with the flipped classroom approach to teaching/learning. Analysis of the data from the focus-group interviews indicate that the majority of students enjoyed the new learning model, but some preferred to have more online exercises and less in-class discussion.

The findings of the current project help to motivate teachers to develop micro-modules and to implement flipped classroom teaching approach in other nursing courses.