

THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 1: Basic Scheme

Final Report (2016-17)

Report due 30 April 2018 (expended to 31 Aug 2018)

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

PART I

Project title: “Flipped Classroom for Physical Fitness Appraisal & Exercise Prescription –
Coursewear Development for SPED4560”

Principal supervisor: Prof. Stanley Sai-chuen HUI

Co-supervisor(s)

Department / Unit: Department of Sport Science & Physical Education

Project duration: From May 2017 to April 2018 (expended to 31 Aug 2018)

Date report submitted: 1 September 2018

1. Project objectives

Is the project on track to meet its objectives?

Have the objectives been changed as a result of the experience of working on your MMCDG project?

The objective of the MMCDG for the course SPED 4560, was to produce 2 lecture video series and 4 laboratory video series. Ideally, the MMCD videos should be available by September 2017 when the course SPED 4560 commenced, however, since we received the grant in May 2017 and the preparation work lasted from June to August (meeting with ELITE, scripts writing, production planning ...etc), we started the filming and editing from late August, and all the MMCD video production were completed and uploaded to course Blackboard by December 2017, just the week before the last week of classes. At the end of the production, we modified the lecture series slightly and produced 5 lecture videos instead of 2, and 4 laboratory videos. Due to the tight schedule for the MMCD production, almost all of the MMCD videos were completed and uploaded to the course blackboard after the scheduled dates of teaching, which was about one to few weeks after the original planned teaching schedule. Hence, the flipped teaching strategy cannot be really implemented.

All the Micro-Module Courseware were produced and posted on the Blackboard system. Usage of each by students was being tracked via the system. Their viewing time and quiz scores were all being monitored. In summary, the MMCDG project objectives are achieved, although some minor modifications were made. For the students' evaluation, students opined that they would recommend this learning method in this course for the future.

2. Process, outcomes or deliverables

Please specify the number of micro modules produced, and the course(s) (with course codes and titles) that have used the micro modules in Part IV, and provide more detailed descriptions here. Must specify duration of each micro-modules (in terms of students online contact hours), total duration time of all deliverables and style. (With reference to the "Summary of video presentation styles" developed by CLEAR)

Has the nature of the deliverables been changed?

Have you adjusted your timeline?

Overall, was the project completed satisfactorily?

Below is a summary of the MMCD videos produced and the corresponding schedule:

Title of MMCD	Objective	Duration (min)	Date of teaching listed in course schedule	Completion date & uploaded to Blackboard
<u>Lecture Series</u>				
1. Physical Activity, Fitness, and Health	To introduce the association between physical activity, fitness and health, and to identify major components of health-related fitness.	10'53"	5 Sept 2017	6 Oct 2017
2. VO2max Test and Treadmill VO2max Protocols	To introduce testing protocols & procedures for measuring VO2max using treadmill	7'27"	26 Sept 2017	20 Oct 2017
3. Submaximal Exercise Test & bicycle Ergometer Tests	To introduce testing protocols & procedures for estimating VO2max using submaximal bicycle tests.	9'20"	3 Oct 2017	20 Oct 2017
4. Submaximal VO2 Calculation: walking & Running	To explain procedures and computation for estimating VO2 from walking and running exercise.	3'38"	10 Oct 2017	14 Oct 2017
5. Submaximal VO2 Calculation: Bike & Bench Stepping	To explain procedures and computation for estimating VO2 from cycling and bench stepping.	4'27"	17 Oct 2017	27 Oct 2017
<u>Laboratory Series</u>				

1. Treadmill tests	To demonstrate and acquire students the procedure of various Treadmill testing protocols	4'19"	26 Sept 2017	24 Oct 2017
2. Bike tests	To demonstrate and acquire students the procedure of various bicycle testing protocols	6'48"	17 Oct 2017	24 Oct 2017
3. Skinfolds & body composition measurement	To demonstrate and acquire students the procedures and techniques for measuring body composition using skinfolds, under-water weighing, and bio-electrical impedance methods.	12'46"	19 Sept 2017	13 Nov 2017
4. Flexibility tests	To demonstrate and acquire students the procedure of various flexibility assessment protocols	12'23"	14 Nov 2017	22 Nov 2017

As described in section 1 above, the completion date for the MMCD production was behind the teaching schedule. It was just due to our original plan for MMCD production was not realistic. We underestimated the time needed for the preparation, discussion, and scripts writing. The video filming and editing also took considerable time. For the format and style of the MMCD, we adopted the format that filming the course lecturer introducing the course materials on the right side of the screen, while key contents, terms, pictures and graphs appeared on the left side of the screen. Within each video clips, we embedded 2 to 3 checking questions (MCQ) in order to make sure that the students watched the videos. Hence all videos were uploaded to the Blackboard system using the SCORM function.

The ultimate objective of this MMCD project was to provide flipped learning opportunity for students who enrolled in the course of "SPED4560: Physical Fitness Appraisal & Exercise Prescription". According to flipped learning approach it was supposed that students spent time at home to view these MMCD videos, so as to allow them have more time for interactive hands-on practices in scheduled class time. Since all MMCD videos were provided after the scheduled teaching, the flipped learning was not realized in this course

3. Evaluation Plan

Have you altered your evaluation plans?

What monitoring data did you collect?

Does your evaluation indicate that you have achieved your objectives?

Primarily there were two types of evaluation: 1). the end of the course evaluation questionnaire survey; and 2). the viewing statistics as extracted from the blackboard system.

Questionnaire Evaluation:

At the very last day of the course, a questionnaire survey was distributed to all students. A sample of the questionnaire is provided in Appendix A, and a summary statistical report is

provided in Appendix B.

Out of 20 students enrolled in the class, 18 of them responded to the questionnaire (response rate 90%). As can be seen from Q1 of Appendix B, out of the 18 students who responded to the questionnaire, the MMCD videos were being watched by 77% to 88% of the students (mean: 80.9%), which suggested that the majority of students (not all) had watched the MMCD videos. However, from the Blackboard system statistics, it indicated that ONLY 50% to 70% of the students (~10-14 students out of 20) had clicked on the video links (Table 1 below). Among those who clicked on the video links, about one-fourth (~3-4 students) of them watched for only 1-2 minutes. These results indicated that students did not really spend time watching these MMCD videos and did not watch these MMCD videos in a serious manner.

Table 1. Viewing Statistics as Retrieved from Blackboard System

MMCD Titles	Clicking Statistics	
	N	%
1. Physical Activity and Healthy	20	60
2. VO2 max test and treadmill VO2 max protocols		60
3. Submaximal Ex test and Bicycle Ergometer Tests		70
4. Submaximal VO2 Calculation: Walking & Running		60
5. Submaximal VO2 Calculation: Bike and Bench Stepping		70
6. Treadmill Lab Tests		65
7. Bike Lab Tests		50
8. Body Composition		65
9. Flexibility		60

From Q2 of Appendix B, 56% of the students agreed (agree + strongly agree) that these e-learning videos can help students to learn better in this course.

From Q3 of Appendix B, 67% of students felt that this e-learning approach was more appealing than the traditional classroom learning. However, about one-third of students did not think that e-learning is any appealing to them.

From Q4, it can be summarized that, about 30% to 41% of the students did not feel any differences by watching those 9 MMCD videos in terms of better understanding the course contents. Only around 34% to 39% of the students agreed that these MMCD videos help them learn better. On the contrary, there were 17% to 24% of the students who did not feel these MMCD videos were any helpful at all. Overall, the students did not feel that watching these MMCD videos would make a big difference. Such result may probably be due to the delay in posting of the MMCD videos, as contents were introduced in the class using traditional format before students were able to watch these videos online. Hence, students may think that they already had gone through the contents so that it was useless to repeat the learning process by watching the MMCD videos.

From Q5, about 30% to 40% of the students felt that the quality of the videos was neutral. There were 15% to 30 % of the students felt that the quality of the videos was good. According to these data, the students did not have much negative feeling for the quality of the videos (17% - 24%). Therefore, the survey showed that the quality of the videos was not yet a major concern.

Last but not least, result from Q6 revealed that 50% students would recommend this course to continue to adopt flipped classroom e-learning. Even though they thought the contents and the quality of the video are neutral, or not as good as they expected, they would still recommend e-learning for this course. However, 39% of the students did not want to give any opinion. It may be because e-learning was still a kind of new learning method for them. In addition, there are 11% (n=2) of the students did not recommend this course to continue to use flipped classroom e-learning. These students, perhaps, preferred the traditional way of classroom teaching

4. Dissemination, diffusion and impact

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

Please provide examples of diffusion: how the project results/process/outcomes/deliverables have been used in your unit and other parts of CUHK or other institutions?

Please provide examples of impact: how the project results (micro modules) can be adapted to other disciplines.

This MMCD project produced 9 e-learning videos for posting on the course blackboard. Other than the course blackboard there is no other means of dissemination. No other workshop, conference, nor any publication generated. So far there is no any specific diffusion, other than the internal departmental discussion on use of e-learning and flipped classroom approach, during our undergraduate committee special meeting.

The experience learned from this MMCD project may be share with among our teachers of the same department as well as other departments or faculties.

PART II

Financial data

Funds available:

Funds awarded from MMCDG	\$ 100,000
Funds secured from other sources (please specify _____)	\$ N.A.
Total:	\$ 100,000

Expenditure:

Item	Budget as per application	Expenditure	Balance
Project assistant	40,000	39,110	890
ELITE production cost	50,100	49,230	870
Student Helpers	6600	11,660	(-5,060)
Contingency	3300		3300
Total:	100,000	100,000	0

PART III

Lessons learnt from the project

Please describe your way forward.

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

- *Key success factors, if any*
- *Difficulties encountered and remedial actions taken, if any*
- *The role of other units in providing support, if any*
- *Suggestions to CUHK, if any*

Example: what should be done differently?

Overall speaking, a few positive outcomes were observed from this project. First, students in this course would recommend to continue to adopt this flipped classroom e-learning approach for the course. Second, the students felt that this e-learning approach was more appealing comparing to the traditional classroom learning. Third, students thought that these e-learning video can help them to learn better in this class. These findings showed that the students viewed positively with the e-Learning method.

However, there were some difficulties which appeared during this project. First of all, some students reflected technical problems of completing the online checking questions in the

Blackboard successfully. They said that, sometimes, the system displayed errors and forcing them to logout. These errors making them difficult for using the e-learning platform. Secondly, some students did not appreciate the checking questions in the videos because they felt that the questions were not relevant from the online lecture (which in fact is not true). Thirdly, the learning attitude of the students was one of the major issues. There were 6 students (out of 20) did not use any of those e-learning materials at all. They did not appreciate for what we had provided for them. Fourthly, it was hard to ensure that “flipped learning” has been taken place. The fact was, the majority students did not watch the online lecture before coming to classes. It became a challenge to the teacher as it was hard for the teacher to prepare for the class. Fifthly, the teacher do not have any knowledge on the design of e-learning videos and production, hence the entire production process was highly relied on the ELITE. And there was difficulty for the teacher to comment on the quality or requirement for the video production. According to the teacher’s experience in this project, it seems like the ELITE could only provide the basic service. Due to the limit knowledge of the teacher in designing e-learning videos and production, there were not much ideas or information that could be contribute to improve the video production.

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.

The project aimed at producing 2 lecture videos and 4 laboratory videos for assisting the flipped classroom learning of the course SPED 4560 “Physical Fitness Appraisal & Exercise Prescription”. The videos production using the instructor-led instruction plus key contents displayed on screen format, which is similar to the classroom powerpoint presentation format in a traditional classroom, was adopted. After 7 months of effort a total of 5 lecture video series and 4 laboratory video series were produced, and with 2-3 checking questions being embedded within each of the video. At the end of the course, about two-third of students had watched the videos and most students viewed that the e-learning videos were helpful in assisting their learning. They also recommended the course to continue to adopt e-learning. However, there are still one-third of students did not value the use of e-learning and flipped classroom learning approach.

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: E – Learning

Keyword 2: Exercise

Keyword 3: Fitness

Keyword 4: Micro-Module

(Least relevant) Keyword 5: Prescription

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: N/A.
(b) Webpage(s): N/A
(c) Tools / Services: N/A
(d) Pedagogical Uses: <i>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.</i> This project produced 9 MMCD e-learning videos for supporting the flipped classroom activities. The videos production using the instructor-led instruction plus key contents displayed on screen format, which is similar to the classroom powerpoint presentation format in a traditional classroom, was adopted. Students were encouraged to watch the videos (with checking questions online) before attending classes, so as to accelerate teaching progress and to save teaching time. The outcomes from this MMCD project were: about two-third of students did watch the MMCD videos, and most students appreciate and recommend the use of this e-learning flipped classroom teaching.
(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/</u>	<u>Term & Year of</u>	<u>Approximate No.</u>	<u>Platform</u>

<u>Target Students</u>	<u>offering</u>	<u>of students</u>	
SPED 4560	1 st term 2017	20	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)			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			N/A
(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)			N/A

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		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 a referred journal		N/A
(h) Others (please specify)		N/A

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.

The use of flipped classroom and micro-module courseware is getting more popular in the educational setting. This project aimed at producing 9 MMCD videos for supporting the

teaching of SPED 4560. It was a 39 hours course that included half and half lecture time and laboratory practical experience, respectively, about the subject matter of physical fitness appraisal and exercise prescription. Over the past two decades of teaching the instructor found it difficult to cover all essential lecture materials and laboratory experience within such a limited time, hence the lecturing quality was hindered and has to be compromised in order to fit into the limited time. This project aimed to develop an e-learning platform in which selected key lectures and laboratory demonstrations can be filmed and uploaded into the e-learning classroom platform.

At the end of the course, all 9 MMCD videos were uploaded and students were encouraged to adopt flipped learning using this e-learning platform. End of the course evaluation indicated that the majority of the students did not have strong views and comments, nor any specific suggestions for this kind of e-learning approach. Having said that, most students opined that the MMCD videos were useful and would recommend the course to adopt these MMCD videos and the flipped learning approach. About one-third of students were still not willing to adopt new learning format and did not see MMCD and flipped learning any useful.

Appendix A

Flipped Classroom E-learning Evaluation SPED 4560

1. Which of the following E-learning videos have you watched?

Video Lectures

- Physical activity and Health
- VO2 max test and treadmill VO2 max protocols
- Submaximal Ex test and Bicycle Ergometer Tests
- Submaximal VO2 Calculation: Walking & Running
- Submaximal VO2 Calculation: Bike and Bench Stepping

Video Labs

- Treadmill Lab Tests
- Bike Lab Tests
- Body Composition Lab
- Flexibility Lab

- All of these videos**

2. These E-learning videos can help me learn better in this class.

- Strongly disagree disagree no change agree Strongly agree

3. Compare to traditional classroom learning, do you feel this e-learning approach more appealing to you?

- yes no difference no

4. Please rate the following e-learning videos regarding the contents:

	The contents helps me better understanding the concepts				
	Strongly disagree	disagree	no change	agree	Strongly agree
Physical activity and Health					
VO2 max test and treadmill VO2 max protocols					
Submaximal Ex test and Bicycle Ergometer Tests					
Submaximal VO2 Calculation: Walking & Running					
Submaximal VO2 Calculation: Bike and Bench Stepping					
Treadmill Lab Tests					
Bike Lab Tests					
Body Composition Lab					
Flexibility Lab					

5. Please rate the following e-learning videos regarding the quality of production:

	The contents helps me better understanding the concepts				
	Very poor	Not so good	Neutral	Good	Very Good
Physical activity and Health					
VO2 max test and treadmill VO2 max protocols					
Submaximal Ex test and Bicycle Ergometer Tests					
Submaximal VO2 Calculation: Walking & Running					
Submaximal VO2 Calculation: Bike and Bench Stepping					
Treadmill Lab Tests					
Bike Lab Tests					
Body Composition Lab					
Flexibility Lab					

6. Would you recommend this course to continue to adopt flipped classroom e-learning?

- Yes
 no opinion
 No

7. Any Other Comments / Suggestions::

Appendix B

Statistical Summary of Survey Results

Question Items	Options		Response	
			N	%
Q1. Which of the following E-Learning video have your watched?	Physical Activity and Healthy		18	83
	VO2 max test and treadmill VO2 max protocols			83
	Submaximal Ex test and Bicycle Ergometer Tests			77
	Submaximal VO2 Calculation: Walking &Running			77
	Submaximal VO2 Calculation: Bike and Bench Stepping			77
	Treadmill Lab Tests			88
	Bike Lab Tests			83
	Body Composition			83
	Flexibility			77
Q2. These E-Learning videos can help me learn better in this class.	Strongly Disagree		18	6
	Disagree			10
	No Change			28
	Agree			39
	Strongly Agree			17
Q3. Compare to traditional classroom learning, do you feel this e-learning approach more appealing to you?	Yes		18	67
	no different			28
	No			5
Q4. Please rate the following e-learning videos regarding the contents: (The contents helps me better understanding the concepts)	Physical Activity and Healthy	Strongly Disagree	18	5
		Disagree		17
		No Change		44
		Agree		28
		Strongly Agree		6
	VO2 max test and treadmill VO2 max protocols	Strongly Disagree	18	11
		Disagree		11
		No Change		39
		Agree		28
		Strongly Agree		11
	Submaximal Ex test and Bicycle Ergometer Tests	Strongly Disagree	17	6
		Disagree		18
		No Change		41
		Agree		24
		Strongly Agree		11
	Submaximal VO2 Calculation: Walking &Running	Strongly Disagree	17	6
		Disagree		12
		No Change		47
		Agree		24
		Strongly Agree		11

	Submaximal VO2 Calculation: Bike and Bench Stepping	Strongly Disagree	16	5
		Disagree		13
		No Change		44
		Agree		25
		Strongly Agree		13
	Treadmill Lab Tests	Strongly Disagree	18	6
		Disagree		17
		No Change		39
		Agree		27
		Strongly Agree		11
	Bike Lab Tests	Strongly Disagree	18	6
		Disagree		17
		No Change		39
		Agree		27
		Strongly Agree		11
	Body Composition	Strongly Disagree	18	6
		Disagree		17
		No Change		38
		Agree		33
		Strongly Agree		6
Flexibility	Strongly Disagree	18	6	
	Disagree		11	
	No Change		44	
	Agree		28	
	Strongly Agree		11	
Q5. Please rate the following e-learning videos regarding the quality of production:	Physical Activity and Healthy	Strongly Disagree	18	5
		Disagree		17
		No Change		44
		Agree		17
		Strongly Agree		17
	VO2 max test and treadmill VO2 max protocols	Strongly Disagree	18	11
		Disagree		11
		No Change		33
		Agree		28
		Strongly Agree		17
	Submaximal Ex test and Bicycle Ergometer Tests	Strongly Disagree	17	6
		Disagree		18
		No Change		35
		Agree		23
		Strongly Agree		18
	Submaximal VO2 Calculation: Walking & Running	Strongly Disagree	17	12
		Disagree		12
		No Change		35
		Agree		23
		Strongly Agree		17
	Submaximal VO2 Calculation: Bike and Bench Stepping	Strongly Disagree	17	5
		Disagree		18
		No Change		41
		Agree		18

		Strongly Agree	18
	Treadmill Lab Tests	Strongly Disagree	6
		Disagree	11
		No Change	39
		Agree	33
		Strongly Agree	11
	Bike Lab Tests	Strongly Disagree	5
		Disagree	16
		No Change	39
		Agree	29
		Strongly Agree	11
	Body Composition	Strongly Disagree	6
		Disagree	17
		No Change	33
		Agree	33
		Strongly Agree	11
	Flexibility	Strongly Disagree	11
		Disagree	11
		No Change	33
		Agree	33
		Strongly Agree	11
Q6. Would you recommend this course to continue to adopt flipped classroom e-learning ?	Yes		50
	No Opinion		39
	No		11