

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-teaching”: The application flipped learning to invert the sports science classroom with smartphone and tablet devices”*

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Department / Unit: Sports Science and Physical Education

Project duration: From January 2016 to December 2016

Date report submitted: December 31 2016

1. Project objectives

The project aimed to develop micro-modules as an effective teaching tool to assist the understanding of the basic principles involved at the research, organisational, officiating and administrative levels of sport and physical education (PE). These micro-modules help to develop a deeper understanding of the theoretical and practical educational materials which form a central element to students’ learning.

These micro modules comprised of demonstration, hands-on activities and online tutorials highlighting how IT (tablet / smartphone / computer) can be used as an effective tool to assist the understanding of the basic principles involved at the research, organisational, officiating and administrative levels of sport and physical education (PE). The pedagogical goals are as follows:

- To augment the understanding of research methodology, and develop a confidence in designing a research project, choosing and executing appropriate methods, and assessing its intellectual and academic rigour.
- To promote the 4Cs (communication, critical thinking, creativity and collaboration), which have been highlighted by the Curriculum Development Council (CDC), with PE as one of its Key Learning Areas
- To enhance professional practice and prepare pre-service teachers for their roles related to curriculum planning, assessment in PE, and officiating skills in practical skill courses.
- To develop a deeper understanding of the theoretical and practical educational materials which form a central element to students’ learning, through the provision of an advanced learning aide.

2. Process, outcomes or deliverables

These micro modules served to create a “flipped classroom” and an active learning environment, promoting student engagement. They are listed as follows:

1. *Introduction to Research Methods (SPED3630)*

Video tutorial: Research Design

Students learned the role and purpose of research design and how design fits into the overall research process from the formation of a research problem to the analysis and reporting of results.

2. *Introduction to Research Methods (SPED3630)*

Video tutorial: Explanation of Variables

Demystifying the concept of “variables” enhanced the potential of students to more effectively understand vital key learning areas across multiple undergraduate courses.

3. *Administration and Management in Physical Education and Sports (SPED3430)*

CPM/PERT network scheduling in PE and Sport (Athletic meets and swimming galas)

In order to provide better control of sport related activities and to develop better troubleshooting procedures, this micro module helped students to expedite planning and eliminate idling time with uncertainty in the development stage.

4. *Administration and Management in Physical Education and Sports (SPED3430)*

Tournament set-up (round robin, single and double-elimination and mixed system)

Through understanding the formula, rounds and seeding system, this micro module helped students to design and build fair tournament brackets.

5. *Curriculum Planning for Physical Education (SPED3410)*

Video tutorial: Curriculum Planning and Assessment in PE.

Pre-service teachers gained an understanding of the key concepts involved in the Hong Kong PE Curriculum, which enhanced their planning and was crucial for facilitating their learning at various different developmental stages throughout their career.

6. *Teaching Tennis: Theory and Practice (SPED2052)*

Video tutorial: Officiating Skills in Tennis

Pre-service teachers are not simply learning tennis skills in their course, they can acquire a better understanding of the rules and regulations of a formal tennis game via a flipped tutorial. Ultimately, they had the basic knowledge and be able to officiate a single/doubles tennis event.

The project team finished the production of these six modules within the timeline and completed them satisfactorily.

3. Evaluation Plan

In the practical skill course (SPED 2052 Teaching Tennis), the use of flipped tutorials facilitated students' understanding on officiating the single/double tennis games. Yet, they could have some background knowledge on the rules and regulations before class. When

students attended class, they could actively participate in the discussions on officiating the games. With the demonstrations in class, teacher could clarify some areas that they might have questions. Their learning outcomes could be reflected in the practical assessment on officiating a single/double tennis event, yet 100% of them attained above 4 out of 5. Based on their scores, teacher can further develop a video for providing feedback and further recommendations on their performance in officiating. For further suggestions on altering the evaluation plans, as the video clip lasts more than 30 minutes with abundant information, it is recommended that the rules and regulations of single and double plays and scoring methods can be separated into two to three videos.

In the course of Curriculum Planning for Physical Education (SPED3410), PE Curriculum Guides for Key Stage 1 to 4 and its assessment were delivered in the flipped tutorials. Students were advised to watch the videos before class. With the background information, students were formed in groups in class to complete a class worksheet on the topics. Through the group discussions, students were stimulated to find the answers and organize the information with group mates. They initiatively took an active role to share their views and ask questions on related topics. Their learning outcomes could be reflected by the class worksheet, yet 100% of them scored above 8 out of 10. Teacher can further produce a video for providing feedback and further recommendations on their learning. In addition, it is suggested that the Elective PE of the Hong Kong Diploma of Secondary Education (HKDSE) Examination can be included in the flipped videos.

By adopting a flipped classroom approach in SPED 3630: Introduction to Research Methods, we aimed to encourage student involvement, assess the effectiveness of it and provide a strong foundation to develop flipped classroom teaching materials, as well as assessment tools. In terms of the evaluation plan for this section of the project, we aimed to assess the impact of the flipped classroom approach on both teaching and learning, we will hand out two sets of questionnaires in class and invite students from both non-flipped and flipped classed to participate in the focus group interviews. Further data analysis and report write-up will then take place.

A trial of the CPM/PERT and tournament set-up was administered in the SPED3430 course. Feedback from students were positive. Without giving any notes and preliminary knowledge, students could just follow flow of the demonstration and teaching materials such as number of tasks and teams/players, they could be able to understand how to expedite planning and eliminate idling time and build fair tournament brackets.

4. Dissemination, diffusion and impact

These micro modules serve to create a “flipped classroom” and an active learning environment, promoting student engagement. They are listed as follows and tentatively

placed at http://it2.bwwtc.edu.hk/sspe_cdg/ :

1. *CPM/PERT network scheduling in PE and Sport (Athletic meets and swimming galas)*
In order to provide better control of sport related activities and to develop better troubleshooting procedures, this micro module helps students to expedite planning and eliminate idling time with uncertainty in the development stage.
Module 1 - CPM / PERT (Teaching Materials)
Module 1A - CPM / PERT Apps (Demo Version)
2. *Tournament set-up (round robin, single and double-elimination and mixed system)*
Through understanding the formula, rounds and seeding system, this micro module helps students to design and build fair tournament brackets.
Module 2 - Tournament (Demonstration Video)
Module 2A - Tournament Apps
3. *Video tutorial: Officiating Skills in Tennis*
Pre-service teachers are not simply learning tennis skills in their course, they can acquire a better understanding of the rules and regulations of a formal tennis game via a flipped tutorial. Ultimately, it is expected that they will have the basic knowledge and be able to officiate a single/doubles tennis event.
Module 3 - Flipped Classroom(Tennis)
4. *Video tutorial: Curriculum Planning for Physical Education(PE)*
Pre-service teachers have to learn the skills on developing PE curriculum for primary and secondary school students. To acquire the knowledge and skills, they should have better understanding on the PE curriculum guides in advance. The flipped tutorials would facilitate them to understand the themes, position, direction and structure of PE for curriculum planning.
Module 4 - Flipped Classroom (Curriculum Planning for PE)
5. *Video tutorial: Research Design & Explanation of Variables*
Students were provided access to log on to the online material, which was made available on-demand via the blackboard system prior to attending the classroom or laboratory practical sessions. Thus, the students had the best possible advantage leading into the class and also this allowed for a more efficient and resourceful use of laboratory time for both the students and teachers.
Module 5 - Introduction to Research Methods

PART II

Financial data

Funds available:

Funds awarded from MMCDG	\$ 99,500.00
Funds secured from other sources (please specify _____)	\$ Nil
Total:	\$ 99,500.00

Expenditure:

Item	Budget as per application	Expenditure	Balance
Staff cost	46,000	46,000	0
Animation and graphic design for mentioned deliverables, editing, captions, end products	53,500	50,448.16	3,051.84
Total:	99,500		*3,051.84

* as of 28 December 2016

PART III

Lessons learnt from the project

To develop the flipped learning materials for the practical and theoretical courses, the team have made good use of the micro-module courseware development grant for creating and developing the courseware for various kinds of modules for maximizing students' learning. Moreover, the teachers have visited the ELITE of the CUHK to learn the skills of editing, video making and other e-Learning sources for preparing the materials for the flipped videos. With the first experience on conducting flipped tutorials, it is believed that the teachers would be more confident to further design their course materials with the aid of the e-Learning tools. This new way of teaching and learning strategy creates an interactive platform to construct students' learning out of direct teaching and drive our students' to develop critical thinking and problem solving skills throughout the learning process. With obvious learning outcomes of students and motivational learning atmosphere by conducting the flipped tutorials, teachers would will keep modifying the course materials with the considerations of the use of flipped learning. Although difficulties may be encountered during the process, like how to ensure all students have watched the videos before class, the positive outcomes of flipped learning would be no doubt for the betterment of teaching and learning.

Preparing materials for students to enhance their level of learning and enjoyment of the classroom environment was a fundamental element of this project. It was of paramount importance to provide students with an advanced learning aide to more efficiently develop a deeper understanding of the theoretical and practical educational materials which form a central element to their learning.

To continue to move this process forwards, further engagement in developing e-learning activities is encouraged among all staff members. In particular, it is important to build on the success of this recent project and further develop more interactive learning tools for students. A key element of success in this and similar projects is the engagement and positive attitudes

of the teachers and students to embrace this new teaching method. On the other hand, it must be noted that not all students will naturally embrace the micro-module or flipped classroom approach, therefore it should not be naturally assumed that this method of teaching and learning will be successful across all disciplines and cohorts.

CLEAR played an active and positive role in the development of these learning tools. Their professional advice, support, technical expertise and on-time delivery of service played a significant role in our project team being able to complete the project on-time and within budget. I would recommend that CUHK and the UGC increase funding for follow-on projects, where success has been clearly observed,

PART IV

Information for public access

For the courses of Administration and Management of PE and Sport (SPED3430), and Curriculum Planning for PE (SPED3410) and Teaching Tennis (SPED2052), the flipped videos and webs will only be provided on the CUHK Blackboard for enrolled students, as these materials are being used as a part of the course assessments.

In the course, SPED 3630: Introduction to Research Methods, all materials were provided to the students online, in most cases these were available via the blackboard system. In addition, some links to online resources were provided directly to the students in advance of their attendance in class.

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: flipped learning
 Keyword 2: sports science
 Keyword 3: sport pedagogy
 Keyword 4: research method

(Least relevant) Keyword 5: sport administration

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: http://it2.bwwtc.edu.hk/sspe_cdg/ (Only 3 modules are tentatively included in this website)

(b) Webpage(s):

<http://www.spe.cuhk.edu.hk/en-us/research/sportandsociety.aspx>

(will be ready in January 2017)

(c) Tools / Services:

nil

(d) Pedagogical Uses:

By conducting the flipped tutorials, teachers would will keep modifying the course materials with the considerations of the use of flipped learning.

(c) Others (please specify):

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>
<i>SPED3430</i>	<i>2nd term 2016</i>	<i>60</i>	<i>Blackboard</i>
<i>SPED3630</i>	<i>1st term 2016</i>	<i>25</i>	<i>Blackboard</i>
<i>SPED3410</i>	<i>1st term 2016</i>	<i>21</i>	<i>Blackboard</i>
<i>SPED2052</i>	<i>1st term 2016</i>	<i>22</i>	<i>Blackboard</i>

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

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	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

Please provide a one-page brief write-up of no more than 500 words and a short video.

Would John please help this on-page brief and a short video

The main objective of this project “Micro-teaching”: The application of flipped learning to invert the sports science classroom with smartphone and tablet devices”, was to provide students with an advanced learning aide to more efficiently develop a deeper understanding of the theoretical and practical educational materials which form a central element to their learning. This was achieved by implementing various modules for their use, which were designed based on the specific input of the teachers concerned.

In-depth research was conducted in relation to the newly available e-learning resources from both within and outside CUHK to implement with a view to enhancing the students’ experience of learning. A large amount of the materials generated in this project were sourced from both governmental and earmarked non-governmental organisations.

Using hands-on activities and online tutorials, smart technology was used to develop micro-modules as an effective teaching tool to assist the understanding of the basic principles involved at the research, organisational, officiating and administrative levels of sport and physical education (PE). A number of key pedagogical goals were developed with a view to augmenting the understanding of research methodologies and enhancing professional practice and preparation for pre-service teachers in training. Furthermore, these micro-modules helped to develop a deeper understanding of the theoretical and practical educational materials which form a central element to students’ learning.

Primarily, this was achieved by creating relevant “user interfaces” for students, which were built using cutting-edge technology, incorporating graphics and animation which will be fully

compatible with mobile and tablet devices for ease of access and to optimise participation and understanding. These micro-modules were designed for maximum usage across numerous courses at departmental and faculty level. In total, approximately 120-130 students will benefit from the use of these micro-modules over a period of 5 – 7 years.

Specifically, these micro-modules took the form of video tutorials and custom made “apps” designed to enhance the level of learning and student participation at various different developmental stages in the classroom setting.

Various methods of evaluation methods have taken place and are still ongoing. Student surveys and focus-group interviews measured the impact and outcomes of the eLearning upgrade. The projects’ impact was examined to assess the extent to which the project carries forward innovative, cutting edge developments in teaching and learning; and the breadth and sustainability of the project’s impact on teaching and learning activities. It is hoped that the feedback collected can benefit the next stage of development and further enhance the quality of teaching and learning within our department and across our faculty.