THE CHINESE UNIVERSITY OF HONG KONG

Micro-Module Courseware Development Grant

Scheme 2: Studies in Foundation Courses

<u>Final Report (2015-16)</u>

Report due 31 December 2016
Please return by email to The Ad hoc Committee on Planning of eLearning Infrastructure
<u>mmcd@cuhk.edu.hk</u>

<u>PART I</u>

Project title: HTML Slides

Principal supervisor: CHAN, Chung

Co-supervisor(s)

Department / Unit: Institute of Network Coding (INC)

Project duration: From January 2016 to December 2016

Date report submitted: Dec 31st, 2016

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 project is on track and the objectives remain unchanged: To create HTML slides with audio playback using reveal.js for each topic of ENGG1410 Linear Algebra and Vector Calculus for Engineers.

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.
Has the nature of the deliverables been changed?
Have you adjusted your timeline?
Overall, was the project completed satisfactorily?

29 sets of Audio slides have been created, one for each section of the foundation mathematics course ENGG1410 Linear Algebra and Vector Calculus for Engineers. The project has been completed satisfactorily.

In the first stage of the project, audio slides were created using the third-party service from slidespeech.com, and the slides were released to the students of my session ENGG1410A in 2016 Term 2 and forwarded to other instructors of ENGG1410. Valuable feedback was gathered from the students.

In the second stage, we developed our own audio-slide plugin using the open source library reveal.js. Based on the feedback from the students, we included searchable subtitles and improved the quality of the text-to-speech syntheses.

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?

The newly created audio slides have been uploaded to the CUHK KEEP course. It has been suggested to the current instructors of ENGG1410 (2017 Term 2). CUHK users can access the slides and comment in the forum.

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.

The project has been presented in CUHK Teaching and Learning Innovation Expo 2016.

The audio has been uploaded to CUHK KEEP Course, accessible by students of the foundation class ENGG1410.

The audio slides can be used for flipped classroom teaching. The tools developed is general and can be used for other subjects as well.

PART II

Financial data

Funds available:

Funds awarded from MMCDG $ 100,000

Funds secured from other sources $ N.A.

(please specify_____)

Total: $ 100,000

Expenditure:

Item	Budget as per application	Expenditure	Balance
Student helpers	90000	91547.5	-1547.5
Student prizes	10000	7800	2200
Total:	100000	99347.5	652.5

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?*

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: HTML slides

Keyword 2: Linear Algebra and Vector Calculus

Keyword 3: text-to-speech

Keyword 4: searchable subtitle

(Least relevant)   Keyword 5: flipped classroom

2. Summary

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:**   *If a publicly accessible project website has been constructed, please provide the URL.*   http://home.ie.cuhk.edu.hk/~cchan/engg1410/
(b) **Webpage(s):**   *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) here.*   https://moodle.keep.edu.hk/course/view.php?id=77   (accessible after CUHK login.)

(c) **Tools / Services:**
If you have used any tools or services for the project, please provide names of the tools or services in here. **Reveal.js** http://lab.hakim.se/reveal-js **with audioslides, svg-fragment and some other plugins for reveal.js** https://github.com/hakimel/reveal.js/wiki/Plugins,-Tools-and-Hardware
(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. **Like video lectures, the audio slides can help students learn the material before class, so that the lecture time can be provide a more interactive teaching/learning experience.**
(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.

Course Code/ Target Students	**Term & Year of offering**	**Approximate No. of students**	**Platform**
ENGG1410	*All first year studnets in 2nd term*	*500*	*KEEP (Moodle)*

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

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

Video lectures are useful for eLearning and flipped classroom approaches, where students are asked to review new materials before class. However, video lectures can be expensive and time-consuming to produce, especially when the right equipment and skill-set are not readily available. Once a video is made, its content is hard to change or customize to specific needs. The video file size can be large, making it impractical to watch when the bandwidth, device storage or screen resolution is limited.
In this project, we aim to replace video lectures with HTML slides for the foundation course on Linear Algebra and Vector Calculus for Engineers. The slides can be recorded and played in a web browser, the audio is synthesized with searchable subtitles optionally displayed. In addition, the content of the slides can be navigated and edited easily. The use of HTML also opens many new possibilities because web services and interactive components can be readily included in the slides.

Video:
https://youtu.be/ms4CRxrf2vk