

# 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](mailto:mmcd@cuhk.edu.hk)

#### PART I

Project title: Development of an interactive course for clinical approach to haematological malignancies and interpretation of blood count results.

Principal supervisor: Dr. Radha Raghupathy

Co-supervisor(s) Dr. Stephen Chan, Dr. Ashley Wong, Dr. KH Wong

Department / Unit: Clinical Oncology

Project duration: From January 2016 to December 2016

Date report submitted: 3<sup>rd</sup> Feb 2017 (extension for 1 month requested and approved)

#### **1. Project objectives**

*Is the project on track to meet its objectives? Yes*

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

We have completed preparing the slides and the animation for the micromodules and course materials. We have recently worked on optimizing the audio quality and animation and user interface for the different interactive segments. 5 micromodules and their audio optimization is fully complete. The final micromodule is undergoing modifications to make it more interactive.

This final micromodule is being developed on a completely interactive and question/ answer based format as suggested by students during the focused feedback sessions. The reason for the slight delay in optimizing this micromodule is to make it better suited to student requirements as they wish for one module to be fully question/ answer based.

#### **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.*

5 micromodules have been developed and the 6<sup>th</sup> micromodule is nearing completion. The micromodules developed so far and uploaded as course material include the following:

1. Introduction to hematopoiesis and classification of hematological malignancies  
*Uploaded to blackboard course: 2016-hematology-clo*  
This micromodule covers the process of hematopoiesis, cell differentiation and development. The material enables understanding of the cell of origin of different hematological malignancies and their classification into myeloid, lymphoid and plasma cell neoplasms.
2. Laboratory investigations beyond CBC (Modified title for Understanding laboratory investigations in Hematology as initially proposed)  
*Uploaded to blackboard course: 2016-hematology-clo*  
This micromodule covers basic tests in hematology beyond the CBC. These include understanding and interpreting normal and abnormal peripheral smears, immunophenotyping abnormal blood cells by flow cytometry and immunohistochemistry, bone marrow examination including aspirate and trephine morphology, cytogenetics and FISH studies.
3. Hematological Oncology Primer (Modified title for Acute Leukemias as initially proposed)  
*Uploaded to blackboard course: CU-2015-MBChB-CLO*  
This micromodule covers the basics of diagnosis of acute leukemias, differentiation of myeloid from lymphoid leukemias and interactive materials on identification and management of common hematological emergencies. This micromodule has already been included as a mandatory course requirement for final MBChB students in the academic year 2016-2017. The micromodule has been received well and feedback from students is attached.
4. Lymphomas  
*Uploaded to blackboard course: 2016-hematology-clo*  
This micromodule covers the basics of B and T cell development, the cell of origin of different lymphomas, the classification, identification, diagnosis and staging of lymphomas including CLL
5. Plasma cell dyscrasias  
*Uploaded to blackboard course: 2016-hematology-clo*  
This micromodule focuses on making a clinical diagnosis of myeloma, the different tests performed and their interpretation. Also facilitates student understanding of the spectrum of MGUS to smoldering to symptomatic myeloma
6. Myeloproliferative disorders  
This micromodule is in its final stages of development. The unforeseen delay in development of this section is mainly due to the decision to incorporate student feedback in an effective manner. We are making this section completely interactive with different cases to understand the diagnosis of different MPDs as requested by students. We anticipate this module will be complete in 1 week from now

*Has the nature of the deliverables been changed?*

1. Minor modifications have been made to the titles of two micromodules to better reflect the content. However the content of these micromodules remains the same as originally proposed.
2. The last micromodule is being developed in a completely interactive question/ answer type format

*Have you adjusted your timeline?*

We have had to extend the micromodule development timeline by 1 month to optimize audio quality and incorporate student feedback

*Overall, was the project completed satisfactorily?*

Yes, the project has been completed and additional information is being incorporated into the final micromodule

### **3. Evaluation Plan**

*Have you altered your evaluation plans?*

1. Student evaluation of the pre-engagement learning material has been obtained in focused feedback sessions and in the form of anonymous surveys. These surveys have been attached with the report
2. Teacher evaluation of students has been performed during clinical sessions including 15-18 students at a time and tutorials and workshops covering this material. Each small batch of 15-18 students have had at least 2 workshop/clinical sessions/tutorials to evaluate their knowledge on the topic. Pre and posttest quizzes will be administered during the next academic year
3. Peer-review of the material has been performed internally by the department. The material was also presented to the Visiting committee comprising of overseas professors, our Dean and Final MBChB coordinator, who have favorably regarded this teaching material.

*What monitoring data did you collect?*

Specific monitoring data collected include student feedback forms which are attached with this report

*Does your evaluation indicate that you have achieved your objectives?*

Our objectives on developing the micromodules and dissemination for use to the medical students have been achieved. The major impediment is the access of the pre engagement learning material by the students. The students cite lack of time as a major concern limiting their ability to review the material before the class/ tutorial/ workshop. Therefore a small amount of time is dedicated during the flipped classroom session for covering the basics of the pre engagement material before proceeding to the interactive session.

#### 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 micromodule content has been disseminated in our department. Assessing the impact of these micromodules on student learning, our chairman Prof Tony Mok has now moved the entire lecture series of the Clinical Oncology department to the e-learning platform. I have been responsible for coordinating this effort and now all final MBChB oncology lectures are posted to the blackboard and accessed by students prior to the lecture time to enable a flipped classroom engagement. We plan to expand this to the junior clerkship students in the upcoming academic year.

#### PART II

##### Financial data

Funds available:

Funds awarded from MMCDG	\$ 96,190
Funds secured from other sources (please specify _____)	\$ 0
Total:	\$ 96,190

Expenditure:

Item	Budget as per application	Expenditure	Balance
Computer time for development and refining of multimedia micromodules: 0.25 x 8 months	50,000	50,000	0
Research assistant for development and refining of micromodules: CUPSB 12 grade staff: 0.25 x 8 months	45,440	45,440	0
Student helper for collating results of student evaluations.	750	0	750
Total:		95,440	

Identifying a student helper for the task of collating student feedback was fraught with some difficulty and delay. Hence the project leader completed this task herself and the budget amount of 750 HKD was not utilized but returned to the bursary.

### 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?*

The micromodule “Haematological Cncology Primer” was launched successfully for the entire batch of over 200 final MBChB students. Students have found the material very useful and the presentation format user friendly. Flipped classroom engagement has been successful and the conduct of workshops and bedside tutorials were well received by the students. The limitation noted is that the students do not have enough time or sometimes inadequate motivation to access the pre-engagement materials beforehand. Therefore some content of this material needs to be repeated in the flipped classroom engagement first.

The Department of Anatomical and Cellular Pathology has been greatly helpful in providing images of peripheral smears and bone marrow aspirates for inclusion in the course material. The Office of Medical Education and its staff have been instrumental in developing the animated course material.

We will proceed to launch all additional micromodules in the next academic year for final MBChB students and we will also open this course material for junior clerkship year students.

### 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: Flipped classroom  
                                 Keyword 2: Case study  
                                 Keyword 3: Problem based learning  
                                 Keyword 4: Workshops
- (Least relevant)      Keyword 5: Image based study

## 2. Summary

*Please provide information, if any, in the following tables, and provide the details in Part I.*

<b>Table 1: Publicly accessible online resources (if any)</b>
<p><b>(a) Project website:</b></p> <p><i>If a publicly accessible project website has been constructed, please provide the URL.</i></p>
<p><b>(b) Webpage(s):</b></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) here.</i></p>
<p><b>(c) Tools / Services:</b></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><b>(d) Pedagogical Uses:</b></p> <p>The micromodule “Haematological Cncology Primer” was launched successfully for the entire batch of over 200 final MBChB students in June 2016. Students have found the material very useful and the presentation format user friendly. Flipped classroom engagement has been successful and the conduct of workshops and bedside tutorials were well received by the students. We will proceed to launch all additional micromodules in this course in the 2017 academic year for final MBChB students and we will also open this course material for junior clerkship year students.</p> <p>In addition, given the success of this micromodule flipped classroom approach, all the lectures conducted by the Department of Clinical Oncology for final MBChB students for this academic year have been moved to the e-learning platform as a department wide initiative.</p>
<p><b>(c) Others (please specify):</b></p>

**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 &amp; Year of offering</u>	<u>Approximate No. of students</u>	<u>Platform</u>
CU-2015-MBChB-CLO	<i>All final MBChB students 2016-2017 and after</i>	215	<i>Blackboard</i>
2016-hematology-clo	<i>To be offered to incoming batch of final MBChB students and 4<sup>th</sup> year MBChB students in June 2017</i>	~400	<i>Blackboard</i>

**Table 3: Presentation (if any)**

<i>Please classify each of the (oral/poster) presentations into one and only one of the following categories</i>	<b>Number</b>
(a) In workshop/retreat within your unit (e.g. department, faculty)  Presentation within the department in March 2016.  Presentation to the visiting committee to the department in November 2016 which comprised of overseas professors as well as the Dean of the Faculty of Medicine of CUHK.	2
(b) In workshop/retreat organized for CUHK teachers (e.g. CLEAR workshop, workshop organized by other CUHK units)	<i>Please insert no</i>
(c) In CUHK ExPo jointly organized by CLEAR and ITSC	<i>Please insert no</i>
(d) In any other event held in HK (e.g. UGC symposium, talks delivered to units of other institutions)	<i>Please insert no</i>
(e) In international conference	<i>Please insert no</i>
(f) Others (please specify)	<i>Please insert no</i>

**Table 4: Publication (if any)**

<i>Please classify each piece of publication into one and only one of the following categories</i>	<b>Number</b>
(a) Project CD/DVD	<i>Please insert no</i>
(b) Project leaflet	<i>Please insert no</i>

(c) Project booklet	<i>Please insert no</i>
(d) A section/chapter in a booklet/ book distributed to a limited group of audience	<i>Please insert no</i>
(e) Conference proceeding	<i>Please insert no</i>
(f) A chapter in a book accessible internationally	<i>Please insert no</i>
(g) A paper in a referred journal	<i>Please insert no</i>
(h) Others (please specify)	<i>Please insert no</i>

### 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.*

Abnormal blood results are often encountered in clinical practice and may signify the presence of an underlying serious hematological malignancy. A sound knowledge base in hematological malignancies is a must for the general practitioner to accurately identify and manage these conditions. I have often noted a disconnect in young students in correlating their knowledge from pathology and medicine to practical application for diagnosis of hematological disorders. These micromodules were designed with the intent of bridging this gap between theory and practice.

6 micromodules have been developed, the last of which is currently undergoing revision to have a completely interactive case based learning format. The first micromodule was launched successfully for the academic year 2016-2017 for 200+ final MBChB students as a mandatory requirement. The pre engagement material was developed on animated story line and presented on the blackboard interface. Students were able to easily access the material, scroll through the thumbnails and study the different topics. A tutorial was then conducted for the students where the lecture material was briefly reviewed followed by interactive case discussions. This was followed by real life experiences and case based learning during bedside and workshops. This micromodule was received very well by the students and their feedback in questionnaire format is attached. The questionnaires were presented to all students rotating through the department between October 2016 and January 2017 and anonymous feedback was requested. Based on the success of this micromodule, the chairman and of the Department of Clinical Oncology suggested to move all lectures for final MBChB in oncology to e-learning and flipped classroom format. I have facilitated this process and it has been in effect since June 2016.

The common concern noted by the students was lack of enough time to review the pre engagement materials beforehand. Therefore we have started reviewing some of the core concepts in the tutorial before proceeding to the engagement materials. We have encountered some problems in quality of audio recordings and have had to modify these. We have also incorporated changes in the last micromodule to have a completely interactive micromodule full of case studies as the students had requested.

We plan to launch all the remaining micromodules to the incoming batch of final and 4<sup>th</sup> year medical students in 2017. We will further modify the material based on their additional

comments. We hope to further expand and develop this endeavor to encompass learning all core concepts in hematological malignancies and solid tumours.

## A Questionnaire on “Flipped Classroom” Methods

Course name: Old-2015-MBChB-CLO:Hematological Oncology primer

Please answer following questions based on **your experiences in these activities**.

### Part I Select the best answer(s).

Q1 Before attending class, I (select **one only**) :

- watched videos only                       read notes or textbooks only  
 watched videos and read textbooks       neither watched video/ read textbooks

Q2 I watched the video before attending class (select **one only**):

- 0 time                                       once  
 twice or 3 times                           more than 3 times

Q3 I did **not** watch the videos before class because (select **all suitable**):  
[Please ignore this question if you watched the video before class.]

- the video was not interesting.                       the video was not helpful to my learning.  
 the video was too difficult.                           the video was too long.  
 I had no time.     Other reasons: \_\_\_\_\_

Q4 I did **not** read a textbook before class because (select **all suitable**):  
[Please ignore this question if you read a textbook before class.]

- the textbook is not helpful                           the textbook is too difficult.  
 the textbook is too boring.                           there was not enough time.  
 other reasons: \_\_\_\_\_

Q5 In all the learning activities, I benefit most from (select **all suitable**):

- pre-lecture video                                       pre-lecture textbook reading  
 Lecture based patient encounters                       in-class lecture  
 others: \_\_\_\_\_                                       in-class workshop/ case discussion

**Part II Indicate how much you agree with following statements based on your experience (SKIP Q6, Q7 or Q9 if you did not watch video or did not read notes before class).**

① Strongly Disagree      ③ Neutral      ⑤ Strongly Agree

Q6 Pre-lecture video helps me to understand the concepts.      ①   ②   ③      ⑤

Q7 Pre-lecture video helps me to engage in in-class learning.      ①   ②   ③      ⑤

Q8 Reading a textbook before class help me to understand concepts.      ①   ②      ④   ⑤

Q9 I like the video session before attending class.      ①   ②   ③      ⑤

Q10 In class case discussions make me more involved in this course.      ①   ②   ③   ④   ⑤

Q11 I learned more from "flipped classroom" teaching than from traditional teaching.      ①   ②   ③   ④   ⑤

Q12 I would recommend the teacher to keep using flipped-classroom methods in the future.      ①   ②   ③   ④   ⑤

**Part III Write down your experience, feeling, or any other comment.**

Q17 Which part of "flipped classroom" do you like most? Why?

*The online lecture has an audio part to it, which ~~is more~~ helps facilitating our understanding of the powerpoint.*

Q18 Which part of "flipped classroom" is the most difficult to you? Why?

*Would be hard to retain the knowledge without in-class discussion.*

Q19 How can "flipped classroom" be improved in this course?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Q20 Other comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

End



Q10 In class case discussions make me more involved in this course.      ①   ②   ③   ④   ⑤

Q11 I learned more from “flipped classroom” teaching than from traditional teaching.      ①   ②   ③   ④   ⑤

Q12 I would recommend the teacher to keep using flipped-classroom methods in the future.      ①   ②   ③   ④   ⑤

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Q17 Which part of “flipped classroom” do you like most? Why?

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Q19 How can “flipped classroom” be improved in this course?

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Q20 Other comments:

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End

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Course name: Old-2015-MBChB-CLO:Hematological Oncology primer

Please answer following questions based on **your experiences in these activities.**

### Part I Select the best answer(s).

Q1 Before attending class, I (select **one only**) :

- watched videos only
- read notes or textbooks only
- watched videos and read textbooks
- neither watched video/ read textbooks

Q2 I watched the video before attending class (select **one only**):

- 0 time
- once
- twice or 3 times
- more than 3 times

Q3 I did **not** watch the videos before class because (select **all suitable**):  
[Please ignore this question if you watched the video before class.]

- the video was not interesting.
- the video was not helpful to my learning.
- the video was too difficult.
- the video was too long.
- I had no time.
- Other reasons: \_\_\_\_\_

Q4 I did **not** read a textbook before class because (select **all suitable**):  
[Please ignore this question if you read a textbook before class.]

- the textbook is not helpful
- the textbook is too difficult.
- the textbook is too boring.
- there was not enough time.
- other reasons: \_\_\_\_\_

Q5 In all the learning activities, I benefit most from (select **all suitable**):

- pre-lecture video
- pre-lecture textbook reading
- Lecture based patient encounters
- in-class lecture
- others: \_\_\_\_\_
- in-class workshop/ case discussion

**Part II Indicate how much you agree with following statements based on your experience (SKIP Q6, Q7 or Q9 if you did not watch video or did not read notes before class) .**

①Strongly Disagree    ③Neutral    ⑤Strongly Agree

- |  |   |   |                                  |                                  |   |
|--|---|---|----------------------------------|----------------------------------|---|
| Q6 Pre-lecture video helps me to understand the concepts.          | ① | ② | ③                                | <input checked="" type="radio"/> | ⑤ |
| Q7 Pre-lecture video helps me to engage in in-class learning.      | ① | ② | ③                                | <input checked="" type="radio"/> | ⑤ |
| Q8 Reading a textbook before class help me to understand concepts. | ① | ② | <input checked="" type="radio"/> | ④                                | ⑤ |
| Q9 I like the video session before attending class.                | ① | ② | ③                                | <input checked="" type="radio"/> | ⑤ |

- Q10 In class case discussions make me more involved in this course.      ①   ②   ③   ④   ⑤
- Q11 I learned more from “flipped classroom” teaching than from traditional teaching.      ①   ②   ③   ④   ⑤
- Q12 I would recommend the teacher to keep using flipped-classroom methods in the future.      ①   ②   ③   ④   ⑤

**Part III Write down your experience, feeling, or any other comment.**

Q17 Which part of “flipped classroom” do you like most? Why?

Case Scenario discussion because it is similar to what we would encounter in the future and it helps me to apply my knowledge into real situation.

Q18 Which part of “flipped classroom” is the most difficult to you? Why?

Some unfamiliar case scenario can be difficult as I have no idea about it. I think it is due to the unclear concept.

Q19 How can “flipped classroom” be improved in this course?

Don't hold it too early of the year because student may not have enough to read before teaching and it may be less effective. I think hold in the middle of year would be good enough.

Q20 Other comments:

Thank you very much for teaching us.  
I really enjoyed your teaching and the logical deduction of the thinking.

End



Q10 In class case discussions make me more involved in this course.      ①   ②   ③   ④   ●

Q11 I learned more from “flipped classroom” teaching than from traditional teaching.      ①   ②   ③   ●   ⑤

Q12 I would recommend the teacher to keep using flipped-classroom methods in the future.      ①   ②   ●   ④   ⑤

**Part III Write down your experience, feeling, or any other comment.**

Q17 Which part of “flipped classroom” do you like most? Why?

*The pre-lecture video, a brief introduction and background knowledge.*

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Q18 Which part of “flipped classroom” is the most difficult to you? Why?

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Q19 How can “flipped classroom” be improved in this course?

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Q20 Other comments:

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End

## A Questionnaire on "Flipped Classroom" Methods

Course name: Old-2015-MBChB-CLO:Hematological Oncology primer

Please answer following questions based on **your experiences in these activities.**

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Q2 I watched the video before attending class (select **one only**):

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 twice or 3 times                                   more than 3 times

Q3 I did **not** watch the videos before class because (select **all suitable**):  
[Please ignore this question if you watched the video before class.]

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 the video was too difficult.                   the video was too long.  
 I had no time.                                       Other reasons: \_\_\_\_\_

Q4 I did **not** read a textbook before class because (select **all suitable**):  
[Please ignore this question if you read a textbook before class.]

- the textbook is not helpful                       the textbook is too difficult.  
 the textbook is too boring.                       there was not enough time.  
 other reasons: \_\_\_\_\_

Q5 In all the learning activities, I benefit most from (select **all suitable**):

- pre-lecture video                                   pre-lecture textbook reading  
 Lecture based patient encounters               in-class lecture  
 others: \_\_\_\_\_                                   in-class workshop/ case discussion

**Part II Indicate how much you agree with following statements based on your experience (SKIP Q6, Q7 or Q9 if you did not watch video or did not read notes before class) .**

①Strongly Disagree      ③Neutral      ⑤Strongly Agree

Q6 Pre-lecture video helps me to understand the concepts.                      ①    ②    ③    ④    ⑤

Q7 Pre-lecture video helps me to engage in in-class learning.                      ①    ②    ③    ④    ⑤

Q8 Reading a textbook before class help me to understand concepts.                      ①    ②    ③    ④    ⑤

Q9 I like the video session before attending class.                      ①    ②    ③    ④    ⑤

Q10 In class case discussions make me more involved in this course. ① ② ③ ④ ⑤

Q11 I learned more from "flipped classroom" teaching than from traditional teaching. ① ② ③ ④ ⑤

Q12 I would recommend the teacher to keep using flipped-classroom methods in the future. ① ② ③ ④ ⑤

**Part III Write down your experience, feeling, or any other comment.**

Q17 Which part of "flipped classroom" do you like most? Why?

*The part about different lineage of the ~~tum~~ haematological malignancies is very clear.*

Q18 Which part of "flipped classroom" is the most difficult to you? Why?

*An. In class discussion is quite useful to consolidate the knowledge.*

Q19 How can "flipped classroom" be improved in this course?

Q20 Other comments:

End