

# THE CHINESE UNIVERSITY OF HONG KONG

## Micro-Module Courseware Development Grant

### Scheme 1: Basic Scheme

### Final Report (2016-2017)

#### PART 1

Project Title: English for Medicine  
Principal Supervisor: Ms Helen Lavender  
Co-Supervisor: Ms Anna Ma  
Department / Unit: ELTU  
Project Duration: March 2017 – August 2018  
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#### 1. Project Objectives

This project aimed to produce three micro-modules for use on English language courses offered to students from the Faculty of Medicine. Micro-modules 1 and 2 focused on developing students' communicative competence in two key spoken text-types, namely *Taking a Patient's Case History* and *Breaking Bad News in a Clinical Setting*. The third module focused on developing an awareness of how medical terminology is formed.

The text-types covered in micro-modules 1 and 2 were previously taught components of a course designed for third year medical students of the English Language Teaching Unit (ELTU) course *English for the MBChB Programme*. Converting materials designed for a face-to-face setting into micro-modules would allow teachers to flip the classroom, freeing up more time to apply the skills and thus helping students develop greater communicative competence. The third micro-module on understanding and learning medical vocabulary was also designed to flip the classroom for second and third year for second and third year medical students from diverse disciplines. Learning the composite parts of medical terminology is time-consuming and repetitive if approached in a classroom setting. Flipping the classroom would thus allow students to acquire a basic understanding of the terminology out-of-class before consolidating and applying learning through further in-class activities.

The intended learning outcomes for each module were:

Micro- Module	ILOs – <i>By the end of this course, students should be able to</i>
1. Taking a Patient Case History	ILO1 – understand the general framework for taking a patient case history ILO2 – access language structures and vocabulary appropriate to the text-type to ensure clear doctor-patient communication ILO3 – reflect on the roles and concerns of both doctors and patients during history taking.

2. Breaking Bad News in a Clinical Setting	<p>ILO1 – understand the stages of communicating bad news to patient through the adoption of medical protocols.</p> <p>ILO2 - access language structures and vocabulary appropriate to the text-type to ensure clear doctor-patient communication</p> <p>ILO3 - reflect on the roles and concerns of both doctors and patients during the interaction.</p>
3. Understanding and Acquiring Medical Vocabulary	<p>ILO1 – understand how medical words are formed.</p> <p>ILO2 – understand the meaning of medical vocabulary from its constituent parts and be able to form new words from those parts.</p> <p>ILO3 – adopt strategies for retention of new words learnt.</p>

Content for micro-modules 1 and 2 was developed by the Project PI and a member of ELTU 3017 teaching team, Ms Jessica Acuña. Content for the third micro-module was developed by the Co-Supervisor.

## 2. Process, Outcomes and Deliverables

### 2.1 Process

Work on the development and adaptation of classroom-based materials began in June 2017. Alongside writing the first draft of the storyboard, the team investigated whether to outsource the authoring of the modules or create them in-house. As two of the micro-modules would include film recording and editing, the team decided to complete the authoring in-house to stay within budget. Completing the development in-house would have the additional benefits of allowing editing and further development of the material to be managed by team members and for also colleagues at the ELTU, where the project was based, to gain hands-on experience of authoring.

Articulate Storyline 360 was identified as an authoring tool for its relative ease of use in developing interactive courses from a web browser that can run on PCs and mobile devices. Once the authoring software had been identified, some time was then devoted to finding out exactly what could be produced using the software. The programme supports 13 graded question types but developers are limited to a maximum of ten possible answer options for each question. The software also limits the number of questions that can be included in each slide and when compared with traditional tools such as Microsoft PowerPoint, there are also limitations on the variety of fonts and object animations that can be incorporated. Therefore, to some extent the content of the micro-modules was limited by the tool itself and this led to multiple rewrites of the original storyboard to ensure the team's pedagogical requirements could be achieved without excessive development hours. This learning curve caused considerable delays in the early stages of the project, as content had to be adjusted to allow production within the parameters of the authoring tool.

Secondly, the team had decided to produce video-clips for micro-modules 1 and 2. Given the budget, the project team opted to invite medical students to participate in filming these. Due to the tight schedules of the medical students, filming was not possible during the term time and was thus the last development item to be completed.

The editing process for five clips took around 2.5 months, much longer than anticipated.

As the medical courses are only offered in semester one, the micro-modules were integrated into the relevant English language courses in the first semester of the academic year 2018-2019. Small-scale piloting was completed during the development stage with adjustments to the modules based on the feedback integrated into the modules before the launch of the modules. Feedback from the around 38 groups of students using the micro-modules in semester one of the current academic year will inform further revisions.

The micro-modules on *Taking a Patient History* and *Breaking Bad News in a Clinical Setting* required around 170 hours on instructional design and script writing, authoring, audio / visual recording, sound and content editing and testing. Completion of both modules will take students around 10 – 12 hours. The micro module on *Medical Vocabulary* required more than 60 hours of production including creating and designing storyboard, developing content materials, recording and editing sound, and script writing. Students generally will spend over 10 online hours in this part with detailed explanation of the formation and rules of medical vocabulary as well as tasks to be completed.

Given the cap on teaching relief allowed to the project PI and co-supervisor, one member of ELTU teaching staff was released for one unit of teaching to work on the project.

## **2.2 Outcomes and Deliverables**

Micro-modules 1 and 2 present students with good and poor communication models for *Taking A Patient's History* and *Breaking Bad News in a Clinical Setting* through input, video viewing and quiz questions. These models include i) the stages of each interaction and the relevant language used at each stage, ii) exemplars of positive and negative non-verbal communication and iii) a focus on the role of empathy in clinical communication. A variety of question types were used, including matching, true/false, multiple choice, listening for main ideas, detail and inference and short answer responses. Video simulations of patient-doctor interactions were used to highlight key features of non-verbal communication and displays of empathy. Both micro-modules include a series of short quizzes to consolidate understanding.

Micro-module 3 uses animation to present students with the key features of understanding word formation of medical terminology. Over 168 items were developed and text types include: multiple choice, drag and drop, picture matching, reading comprehension, matching list, and listening for gist and facts. The categories covered in the micro-module comprise word part analysis, prefix and suffix, medical term definition, word parts of body parts and systems, abbreviations, and the use of medical vocabulary in context.

The team is satisfied with the micro-modules produced but recognizes that multiple-feedback loops are required to fine-tune e-learning resources so that they fully meet the learning and teaching needs of all stakeholders. The actual process of developing the micro-modules has been invaluable in terms of understanding the different

modalities of blended learning / flipped classroom components and appreciating the strengths and challenges of promoting this learning environment.

### **3. Evaluation**

Small-scale evaluation was conducted during the production of the micro-modules and before the modules were launched in the relevant courses. Overall, students' feedback suggests that they appreciated the opportunity to become familiar with the purpose, structure and language of the two-text types introduced in the first two micro-modules outside the classroom and overall felt that the flipped classroom approach would support a deeper understanding of these spoken texts. They found the multi-media content of the modules attractive with the design facilitating easy use on both PCs and mobile devices. Overall the length of the two modules was found to be manageable, especially if delivered as part of course content. Some bugs were reported and fixed and suggestions to limit the number of question items agreed to and acted on.

Modules 1 and 2 were designed as self-contained learning units, which students can revisit throughout their course of study. Micro-module 3 was designed to be support course content. When the three modules were integrated into a two or three-week cycle of study, students commented that the flipped approach allowed the opportunity to complete the modules out of class at their own pace before clarifying their understanding with course teaching and applying language / communication strategies learnt in class. Within relatively short courses, this approach may possibly lead to deeper learning.

Feedback from testers and students on the design and technical aspects of the micro-modules provided useful information for further refinements of the packages. Some students suggested including more video simulations and shortening some of the quiz items in the first two modules. A small number of students requested that sub-titles be included in module 3 and that a time bar be provided to allow students to navigate between sections of the animation.

#### **Further evaluation**

The micro-modules have been integrated into three English language courses and made available to students via Blackboard course sites from semester one of academic year 2018-2019. Further evaluation and module revision will be based on:

- i. survey feedback from completing the modules to evaluate the effectiveness of this approach in delivering course content
- ii. student access and completion
- iii. teacher feedback to evaluate to what extent offering these modules as blended learning has contributed towards achieving courses learning objectives.
- iv. teacher reaction to using e learning to deliver course content.

Longer term, the findings of this project should help inform the development of e - learning within the ELTU.



- each possible question-type is limited to a maximum of 10 answers. This resulted in significant workaround for question-types such as matching or multiple choice.
- the feedback layers do not currently support ‘invalid answer’ messages. This meant that either question-types needed to be changed or the triggers to create an invalid message needed to be created manually, which was a time-consuming process.
- the authoring software was slow when saving, previewing or publishing project files in excess of 500 MB. This became problematic as the project progressed with editing and reviewing significantly slowed down.
- any changes to the story size during editing would reposition or resize some of the texts and objects, creating further revision work.

In terms of the videos used, several consultations with a technician at the ELITE studio took place prior to filming. The scripts were sent to the student actors well ahead of filming for rehearsal. Finding a suitable venue for filming proved problematic as the team wished to create a doctor’s consultation room using props and this could not be done in front of the green screen at the ELITE studios. Fortunately, colleagues the Kai Chong Tong Clinical Skills Learning Centre at the Prince of Wales Hospital allowed the team to film at one of their teaching rooms. A film crew from ELITE used two cameras on site to capture the non-verbal communication of both the doctor and the patient. Post-production tasks were completed by a professional technician at the ELITE studio.

I would advise other educators planning to independently author micro-modules to expect delays and /or technical difficulties. The budget amount that can be claimed against teaching relief is relatively small compared to the actual development time needed to produce interactive and attractive micro-module materials to support a flipped classroom. Engaging skilled student helpers to support in authoring and editing can help but developers need to be familiar with the authoring tool themselves as it is significant in influencing pedagogical considerations. Colleagues at ELITE provided useful input in the production and editing stages of the videos.

## PART IV

### Information for public access

The three micro-modules produced with funding from the micro-module courseware development grant aim to enrich the language education courses and the communicative competence of medical students at CUHK by providing self-contained online modules, which can be integrated into face-to-face classroom courses as a flipped component or accessed independently for self-study or revision. The modules have enriched the new course offerings of ELTU 3017 English for MBChB programme and ELTU 2016 English for Medicine by catering to learners’ needs and through allowing teachers to flip the classroom, freeing up time for application and practice.

The first two micro-modules cover the common medical interactions of *Taking a Patient’s History* and *Breaking Bad News in a Clinical Setting*. The third micro-module addresses the formation and acquisition of medical terminology.

The intended learning outcomes for each module are given below:

<b>Micro- Module</b>	ILOs – <i>By the end of this course, students should be able to</i>
1. Taking a Patient Case History	ILO1 – understand the general framework for taking a patient case history ILO2 – access language structures and vocabulary appropriate to the text-type to ensure clear doctor-patient communication ILO3 – reflect on the roles and concerns of both doctors and patients during history taking.
2. Breaking Bad News to a Patient	ILO1 – understand the stages of communicating bad news to patient through the adoption of medical protocols. ILO2 - access language structures and vocabulary appropriate to the text-type to ensure clear doctor-patient communication ILO3 - reflect on the roles and concerns of both doctors and patients during the interaction.
3. Understanding and Acquiring Medical Vocabulary	ILO1 – understand how medical words are formed. ILO2 – understand the meaning of medical vocabulary from its constituent parts and be able to form new words from those parts. ILO3 – adopt strategies for retention of new words learnt.

Initial feedback from testers and students suggests that the three modules have been well received. The format of the modules and the use of multi-media were considered attractive and engaging to users. Initial feedback further suggests that the design of the modules (using multiple question-types with full feedback and looped opportunities to practice) supported students' learning. For micro-modules 1 and 2, most students felt the structure was sufficiently flexible to allow users to study at their own pace, complete tasks in sequence but be able to revisit sections for further consolidation. The use of medical students as actors in the same modules was also welcomed.

Micro modules 1 and 2 were designed as self-contained learning units, which students could revisit throughout their course of study whereas the third micro-module 3 was designed to be used in conjunction with classroom material. When integrated into a two or three-week cycle of study, students commented that using the modules to flip the classroom allowed considerable flexibility. Students were able to study at their own pace outside the classroom and then use classroom time to clarify queries and practice with their teachers and peers. In a language education course, where face-to-face contact hours are often insufficient for significant skill or proficiency development, this approach may possibly lead to deeper learning.

## 1. Keywords

Keyword 1: Blended Learning  
 Keyword 2: Flipped Classroom  
 Keyword 3: English for Medicine  
 Keyword 4: Clinical Communications  
 Keyword 5: E-Learning

## 2. Summary

Table 1: Publically accessible online resources (If any)
(a) Project website: Blackboard sites for ELTU 3017 English for the MBChB Programme; ELTU 2016 English for Medicine (Nursing); ELTU 2016 English for Medicine (Pharmacy & Bio-Medical Sciences)
(b) Webpage(s): The micro-modules can be viewed at <a href="http://eltu.cuhk.edu.hk/files/medical_micro_modules/">http://eltu.cuhk.edu.hk/files/medical_micro_modules/</a>
(c) Tools / services: ELITE video-taping and professional editing. Articulate Storyline 360 for authoring; PowToon for animation; Mac Music Editor;
(d) Pedagogical Uses: Flipped classroom activities included the following: For micro-modules 1 and 2, students completed the modules before class. Completion of this activity was tracked on Blackboard. In class, discussion about key learning points covered in the modules was facilitated. This followed by video viewing of good and poor exemplar and role-play practice. The content of micro-module one was integrated into an assessment cycle which involved preparation before class, formative feedback on in-class role-play followed by an unrehearsed assessed role-play. In this assessment, the descriptors developed aligned with the intended learning outcomes of the micro-module. For micro-module 3, students worked through sections of the package throughout the duration of the course. Each section was supplemented with in-class activities to consolidate and deepen learning.
(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>			
Course Code/ Target Students	Term & Year of Offering	Approximate No of Students	Platform
ELTU 3017	Modules 1,2,3	209	Uploaded to course Blackboard site
ELTU 2016 (Nursing/ Pharm/ Biomedical Sciences)	Module 3	308	Uploaded to course Blackboard site

Table 3: Presentation (if any)	
<i>Please classify each piece of the (oral/ poster) presentations into one and one of the following categories.</i>	
(a) In a workshop / retreat within your unit (e.g. department, faculty)	TBA
(b) In a 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 conferences	TBA
(f) Others (please specify)	N/A

Table 4: Publications (if any)	
<i>Please classify each piece of publication into one and 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 book/ book distributed to a limited group	N/A



of audience.	
(e) Conference Proceeding	<i>TBA</i>
(f) A chapter in a book accessible internationally	<i>N/A</i>
(g) A paper in a referred journal	<i>N/A</i>
(h) Others (please specify)	<i>N/A</i>

## 2. A one-page brief write-up

The three micro-modules produced with funding from the micro-module courseware development grant aim to enrich the language education courses and the communicative competence of medical students at CUHK by providing self-contained online modules, which can be integrated into face-to-face classroom courses as a flipped component or accessed independently for self-study or revision. The modules have enriched the course offerings of ELTU 3017 English for MBChB programme and ELTU 2016 English for Medicine by catering to learners' needs and through allowing teachers to flip the classroom, freeing up time for application and practice.

The project facilitated the development of theme-based micro-modules for inclusion in newly developed courses for third year students on the MBChB students and second year students from the disciplines of nursing, pharmacy and bio-medical science. The topics covered in the micro modules, the common medical interactions of *Taking a Patient's History* and *Breaking Bad News in a Clinical Setting* and the formation and acquisition of medical terminology, were chosen for the following reasons: these require i) significant time to develop a high level of communicative competence (micro-modules 1 and 2) and, ii) a deep linguistic understanding of medical terminology for study and professional settings (micro-module 3).

The first two micro-modules of the project aimed to familiarize students with the general framework and expected language structures to take a patient's history and break bad news. The modules focused on communicative competence, as demonstrated in appropriate language use, non-verbal communication and developing a deeper understanding of the role of empathy in doctor-patient interactions. The last micro-module aimed to familiarize students with the formation and meaning of medical terminology by analyzing constituent parts. The module also aimed to support independent learning by advocating strategies for vocabulary retention.

Initial feedback from testers and students suggests that the three modules have been well received. Overall, the use of multi-media and interactive quiz items with full feedback was considered effective and engaging. While the modules can be used for self-directed learning, integrating them into courses has significantly increased the amount of time available to consolidate and apply learning, to receive feedback for further improvement and to build confidence in student's communicative competence and discipline related language knowledge. Drawing on e-learning pedagogy, the project and the associated learning amongst the development team may provide useful groundwork for peers wishing to open up opportunities for language learning outside the classroom while catering to diverse learner needs.