

# THE CHINESE UNIVERSITY OF HONG KONG

## Courseware Development Grant (2017-18)

### Final Report

Report due 28 February 2019

Please return by email to Judy Lo judyl@itsc.cuhk.edu.hk

#### PART I

Project title: Medical Abbreviation References for Synchronous-learning (MARS)

Principal supervisor: Prof Lee Wing Yan, Vivian

Co-supervisor(s)

Department / Unit : School of Pharmacy, Faculty of Medicine

Project duration: From March 2018 to February 2019

Date report submitted:

#### **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 CDG project?*

In this project we developed an e-learning model for learning medical abbreviations. This model included a self-learning webpage and an Instagram account. We aimed at providing easy to use and mobile friendly learning materials for students to be familiarized with various medical abbreviations in order to interpret information efficiently during community outreach services, at their later clerkship training, and be ready for their future profession. We carried out the project as planned and it had met its objectives.

#### **2. Process, outcomes or deliverables**

*Please specify the number of different types of deliverables produced, and the course(s) (with course codes and titles) that have used the deliverables 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?*

The model was available to all students in order to improve their motivation on learning numerous and complicated medical abbreviations. Students' feedbacks and survey figures indicated that the model did help their learning and the project completed satisfactorily. The model not only benefited pharmacy students but also

reached to other students within Faculty of Medicine.

### Production Team

Project Coordinator x 1	<ul style="list-style-type: none"> <li>Supervised the overall operation,</li> <li>prepared proposal and report</li> </ul>
Project Assistant x 1	<ul style="list-style-type: none"> <li>Resource and research preparation,</li> <li>technical support of the webpage and design software</li> </ul>
Registered Pharmacist x 1	<ul style="list-style-type: none"> <li>Reviewed all memes photos and posts prior launching</li> </ul>
Students x 3	<ul style="list-style-type: none"> <li>Managed the instagram account</li> <li>Designed the meme posts</li> <li>Promoted the model among peers</li> <li>Assisted in data collection</li> </ul>

### The Model

Instagram	<ul style="list-style-type: none"> <li>90 medical abbreviation meme posts</li> <li>accessible to on mobile devices, laptop and desktop computer</li> </ul>
Sample	 <p>         Screenshot of an Instagram post from marscuhk. The post features a photo of a bus stop with the text "EVERYDAY" overlaid in large white letters. Below the photo, the text "q.d." is written in a stylized font. The post has 33 likes and a caption explaining the medical abbreviation "q. d. (quaque die) = everyday" and providing various hashtags related to medicine, health, and daily life at CUHK.     </p>

<p>Webpage</p>	<ul style="list-style-type: none"> <li>•Medical abbreviation meme photos</li> <li>•Abbreviation Search Tool</li> <li>•Study Cards</li> <li>•Abbreviation Questions Bank</li> <li>•accessible to on mobile devices, laptop and desktop computer</li> </ul>																				
<p>Sample</p>	 <p>The screenshot displays the CU CHAMPION website interface. At the top, it shows the site's name and logo, along with the tagline "Passion in Action". The main heading is "MARS CUHK Medical Abbreviation References for Synchronous-learning by The Chinese University of Hong Kong", supported by a grant from 2018-2019.</p> <p>Key features include:</p> <ul style="list-style-type: none"> <li><b>Search Abbreviations &gt;&gt;&gt;</b>: A search bar and a table listing abbreviations and their definitions.       <table border="1" data-bbox="890 936 1321 1209"> <thead> <tr> <th>Abbreviation</th> <th>Definition</th> </tr> </thead> <tbody> <tr><td>a.c.</td><td>Before meals</td></tr> <tr><td>a.d.</td><td>right ear</td></tr> <tr><td>a.m.</td><td>morning</td></tr> <tr><td>a.s.</td><td>Left year</td></tr> <tr><td>A&amp;O</td><td>Alert and oriented</td></tr> <tr><td>abd</td><td>Abdomen</td></tr> <tr><td>ABG</td><td>arterial blood gas</td></tr> <tr><td>ACS</td><td>Acute coronary syndrome</td></tr> <tr><td>ACTH</td><td>adrenocorticotrophic hormone</td></tr> </tbody> </table> </li> <li><b>STUDY CARDS</b>: A section showing a progress bar (344 items) and a card for "Specimen" with a definition and audio playback options. A "正確！很好" (Correct! Very good) message is displayed.</li> <li><b>QUESTIONS BANK</b>: A section for practicing with questions and answers.</li> </ul>	Abbreviation	Definition	a.c.	Before meals	a.d.	right ear	a.m.	morning	a.s.	Left year	A&O	Alert and oriented	abd	Abdomen	ABG	arterial blood gas	ACS	Acute coronary syndrome	ACTH	adrenocorticotrophic hormone
Abbreviation	Definition																				
a.c.	Before meals																				
a.d.	right ear																				
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### 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?*

#### Original evaluation plan

Courses	<ul style="list-style-type: none"><li>• PHAR 2018</li><li>• PHAR 3413</li></ul>
Evaluation mode	<ul style="list-style-type: none"><li>• Pre &amp; Post Learning Self Evaluation Survey</li></ul>
Student numbers	<ul style="list-style-type: none"><li>• 9 (PHAR 2018)</li><li>• 54 (PHAR 3413)</li></ul>

#### Final evaluation plan

Courses	<ul style="list-style-type: none"><li>• PHAR 3413</li><li>• Other Faculty of Medicine students</li></ul>
Evaluation mode	<ul style="list-style-type: none"><li>• Pre &amp; Post Learning Self Evaluation Survey (PHAR 3413)</li><li>• Learner Self Evaluation Survey (Others)</li><li>• Student helpers reflection</li></ul>
Student numbers	<ul style="list-style-type: none"><li>• 54 (PHAR 3413)</li><li>• 60 (Others)</li></ul>

### **Medical Abbreviation Student Evaluation Report**

Pre- and post- evaluation surveys regarding the medical abbreviation project were done before and after the introduction of the learning tools respectively. This report is based on the pre- and post- project surveys done by Pharmacy year 3 students, and post- survey done by other students.

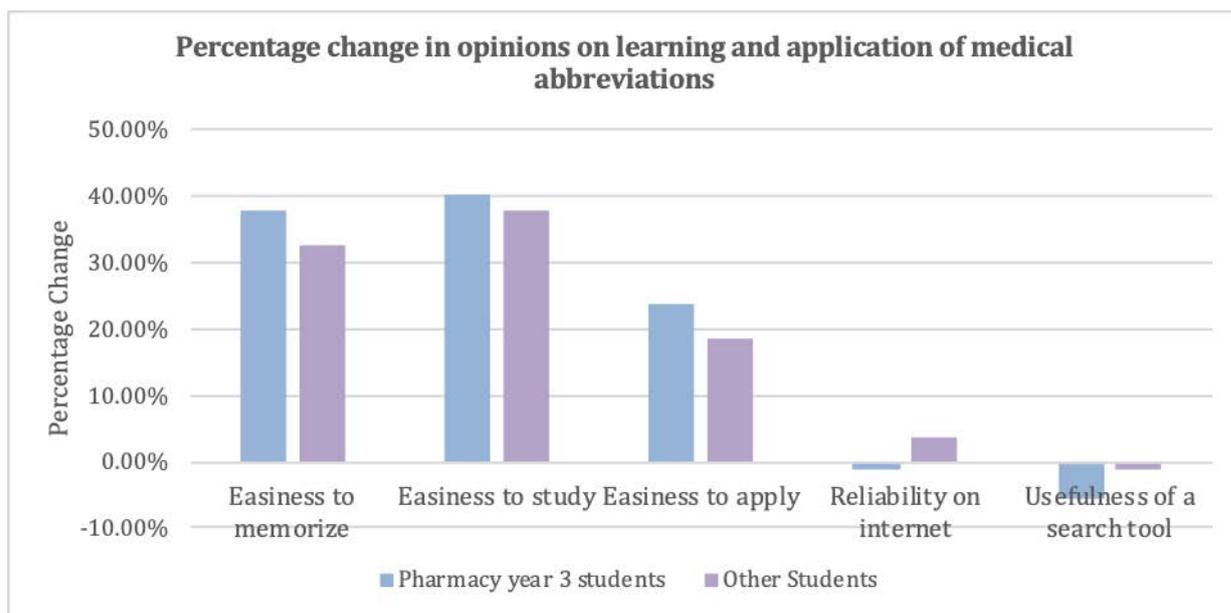
In our surveys, we used Likert Scale of 1 to 5, in which 1 is the lowest level whereas 5 is the highest, and 3 denotes neutral answer. This scale of values 1 to 5 is used throughout this report for calculation and data presentation. All p-values in this report were calculated by one-tailed t-tests at 95% confidence.

#### A. Number of response of the surveys

	Pre- survey	Post- survey (Pharmacy year 3)	Post- survey (other)
Number of response	49	48	48

We obtained 49 and 48 valid responses (average respond rate : 89%) on pre- and post-surveys in the group of Pharmacy year 3 students respectively. We also obtained 48 responses (respond rate 80%) from non-Pharmacy students, including students from Medicine, Community Health Practice, Nursing and Biomedical Sciences.

B. Percentage change in opinions on learning and application of medical abbreviations



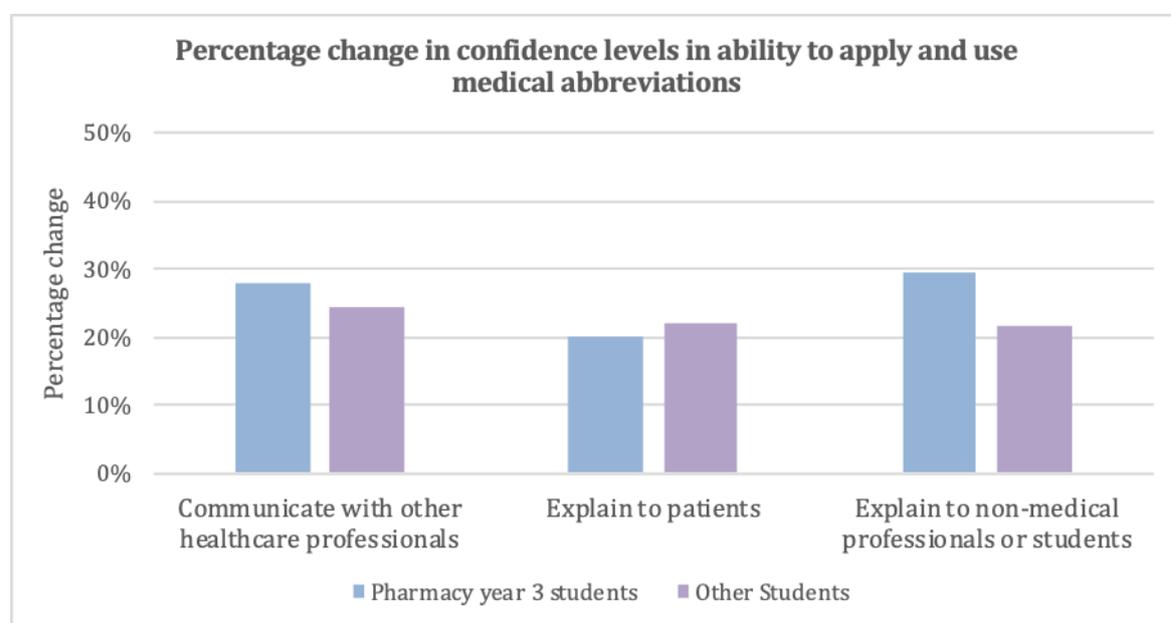
	Pre- survey	Post- survey (Pharmacy year 3)	Post- survey (other)
<i>Easiness to memorize all medical abbreviations</i>	2.67 ± 0.99	<b>+37.9%</b> (3.69 ± 0.80) <b>p-value &lt; .00001</b> <b>statistically significant</b>	<b>+32.5%</b> (3.54 ± 0.99) <b>p-value = 0.000021</b> <b>statistically significant</b>
<i>Easiness to study medical abbreviations</i>	2.57 ± 1.00	<b>+40.2%</b> (3.60 ± 0.82) <b>p-value &lt; .00001</b> <b>statistically significant</b>	<b>+37.7%</b> (3.54 ± 1.01) <b>p-value &lt; .00001</b> <b>statistically significant</b>
<i>Easiness to apply medical abbreviations</i>	3.06 ± 0.80	<b>+23.9%</b> (3.79 ± 0.74) <b>p-value = 0.000044</b> <b>statistically significant</b>	<b>+18.4%</b> (3.63 ± 0.94) <b>p-value = 0.001847</b> <b>statistically significant</b>
<i>Reliability on internet to study and find references of medical abbreviations</i>	4.02 ± 0.80	<b>-1.0%</b> (3.98 ± 0.70) <b>p-value = 0.407744</b> <b>statistically insignificant</b>	<b>+3.6%</b> (4.17 ± 0.81) <b>p-value = 0.212162</b> <b>statistically insignificant</b>
<i>Usefulness of a medical abbreviations search tool for study</i>	4.02 ± 0.85	<b>-5.7%</b> (3.79 ± 0.82) <b>p-value = 0.110867</b> <b>statistically insignificant</b>	<b>-1.0%</b> (3.98 ± 0.79) <b>p-value = 0.411619</b> <b>statistically insignificant</b>

\*1: strongly disagree, 5: strongly agree

Using one-tailed t-tests at 95% confidence, there were statistically significant improvements in easiness to memorize, study and apply medical abbreviations for both Pharmacy year 3 and other students in Faculty of Medicine after launching the medical abbreviation project.

On the other hand, there were no significant changes in both groups of students' reliability on internet for studying and finding references for medical abbreviations, as well as in their opinion on the usefulness of a medical abbreviations search tool for study. On average, both groups of students has an average score around 4 for these two items, indicating they rely on internet for studying and finding references for medical abbreviations, and agree that a medical abbreviations search tool is useful for study.

C. Percentage change in confidence levels in ability to apply and use medical abbreviations



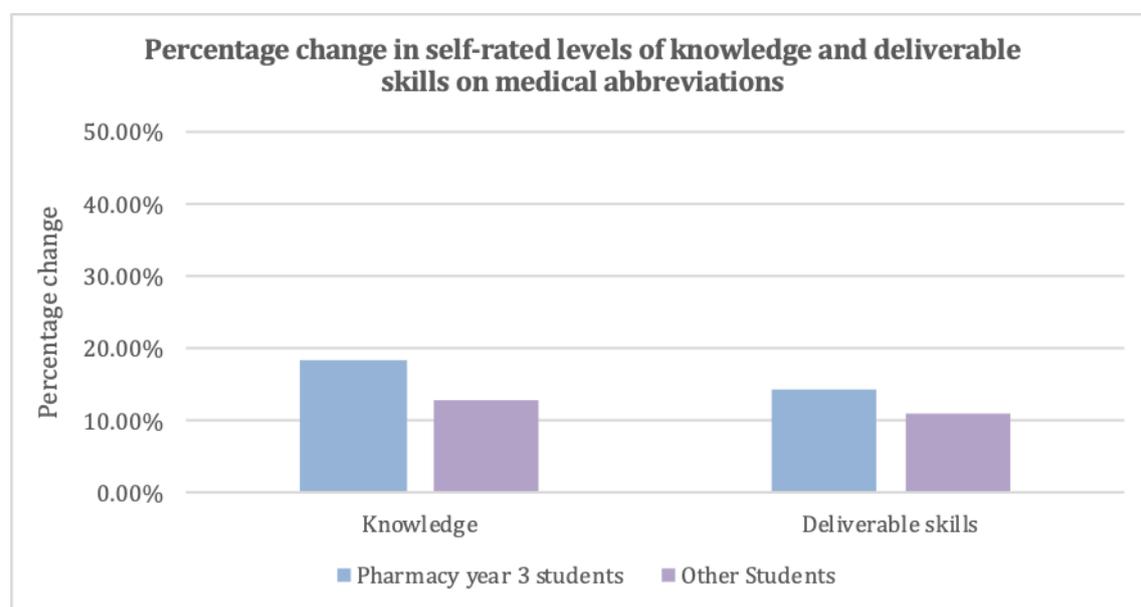
	Pre- survey	Post- survey (Pharmacy year 3)	Post- survey (other)
<i>To communicate with other healthcare professionals during clinical clerkship</i>	2.90 ± 0.90	<b>+28.0%</b> (3.71 ± 0.82) <b>p-value = 0.00002</b> <b>statistically significant</b>	<b>+24.4%</b> (3.60 ± 1.05) <b>p-value = 0.000324</b> <b>statistically significant</b>
<i>To explain to patients</i>	3.02 ± 0.99	<b>+20.0%</b> (3.63 ± 0.89) <b>p-value = 0.001388</b> <b>statistically significant</b>	<b>+22.1%</b> (3.69 ± 0.99) <b>p-value = 0.000682</b> <b>statistically significant</b>

<i>To explain in laymen language to non-medical professionals or students</i>	2.96 ± 0.89	<b>+29.5%</b> (3.83 ± 0.72) <b>p-value &lt; .00001</b> <b>statistically significant</b>	<b>+21.8%</b> (3.60 ± 0.89) <b>p-value = 0.000553</b> <b>statistically significant</b>
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\*1: strongly disagree, 5: strongly agree

Both groups of students have statistically significant improvements in the confidence levels to apply and use medical abbreviations when communicating with other healthcare professionals, patients and non-medical professionals or students.

D. Percentage change in self-rated levels of knowledge and deliverable skills on medical abbreviations

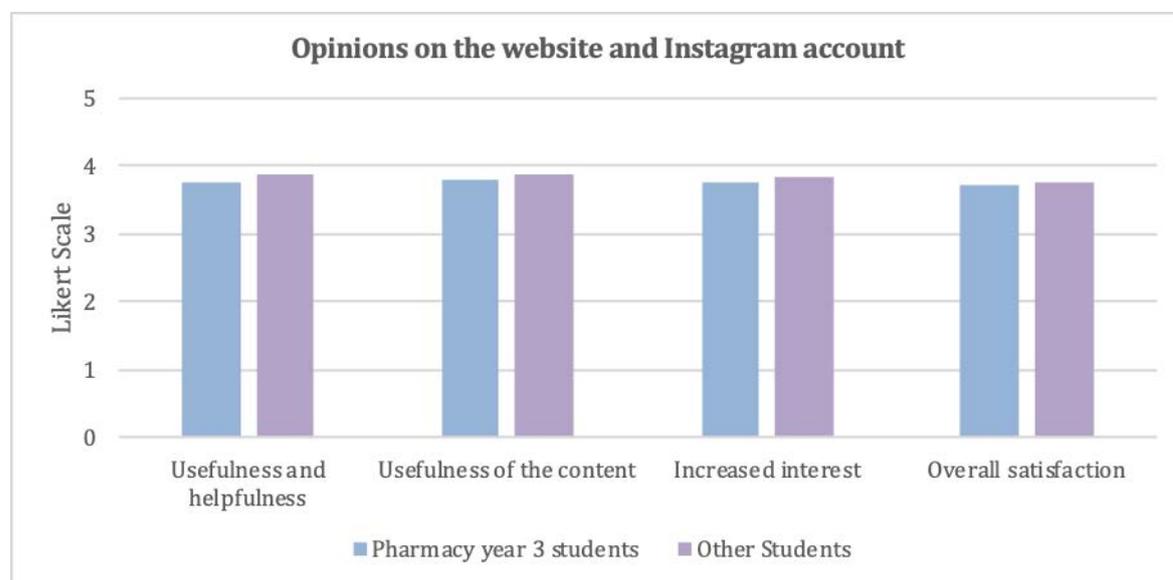


	Pre- survey	Post- survey (Pharmacy year 3)	Post- survey (other)
<b>Knowledge</b>	2.94 ± 0.83	<b>+18.4%</b> (3.48 ± 0.68) <b>p-value = 0.001425</b> <b>statistically significant</b>	<b>+12.7%</b> (3.31 ± 1.01) <b>p-value = 0.029102</b> <b>statistically significant</b>
<b>Deliverable skills</b>	3.04 ± 0.84	<b>+14.4%</b> (3.48 ± 0.68) <b>p-value = 0.007574</b> <b>statistically significant</b>	<b>+11.0%</b> (3.38 ± 0.89) <b>p-value = 0.040085</b> <b>statistically significant</b>

\*1: lowest, 5: highest

Both groups of students have statistically significant improvements in self-rated levels of knowledge and deliverable skills on medical abbreviations, in which Pharmacy year 3 students had the highest percentage increase in the knowledge of medical abbreviations.

#### E. Opinions on the website and Instagram account



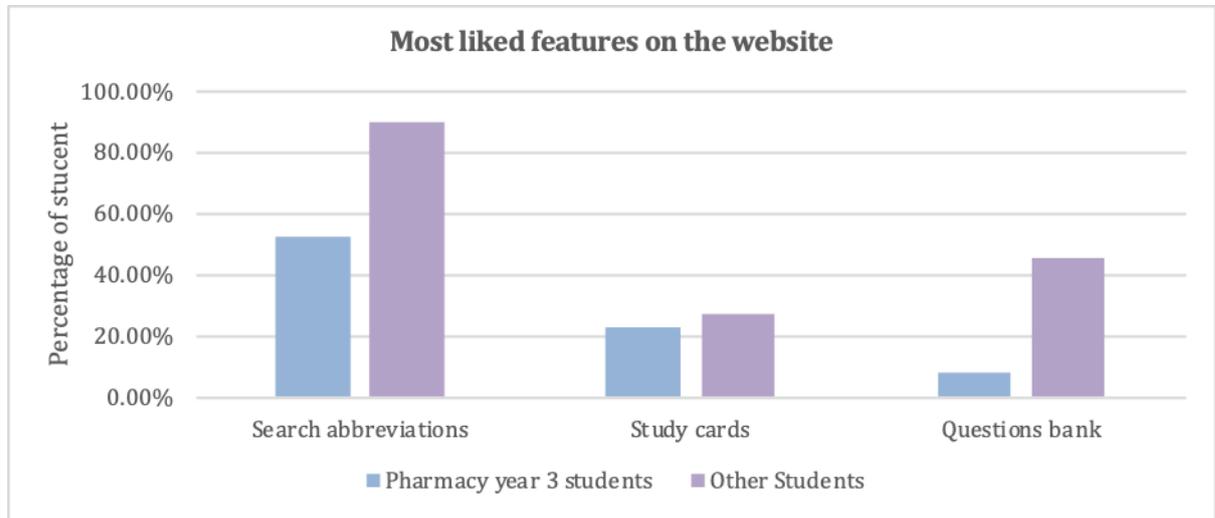
	Post- survey (Pharmacy year 3)	Post- survey (other)
<i>Usefulness and helpfulness for learning medical abbreviations</i>	3.77 ± 0.99 p-value < .00001 statistically different from 3	3.88 ± 1.02 p-value < .00001 statistically different from 3
<i>Usefulness of the content for learning medical abbreviations</i>	3.81 ± 0.94 p-value < .00001 statistically different from 3	3.88 ± 0.91 p-value < .00001 statistically different from 3
<i>Increased interest for learning medical abbreviations</i>	3.77 ± 0.88 p-value < .00001 statistically different from 3	3.83 ± 0.91 p-value < .00001 statistically different from 3
<i>Overall satisfaction</i>	3.73 ± 0.89 p-value < .00001 statistically different from 3	3.75 ± 0.89 p-value < .00001 statistically different from 3

\*1: strongly disagree, 5: strongly agree

Using one-tailed t-tests at 95% confidence, comparing the mean scores with 3.0 which denotes neutral opinion, we got all scores statistically different from 3, which means that both Pharmacy year 3 and other students from Faculty of Medicine averagely

agreed that the website and Instagram account and their contents were useful and helpful, and also increased interest for learning medical abbreviations. They are overall satisfied with the website and Instagram account.

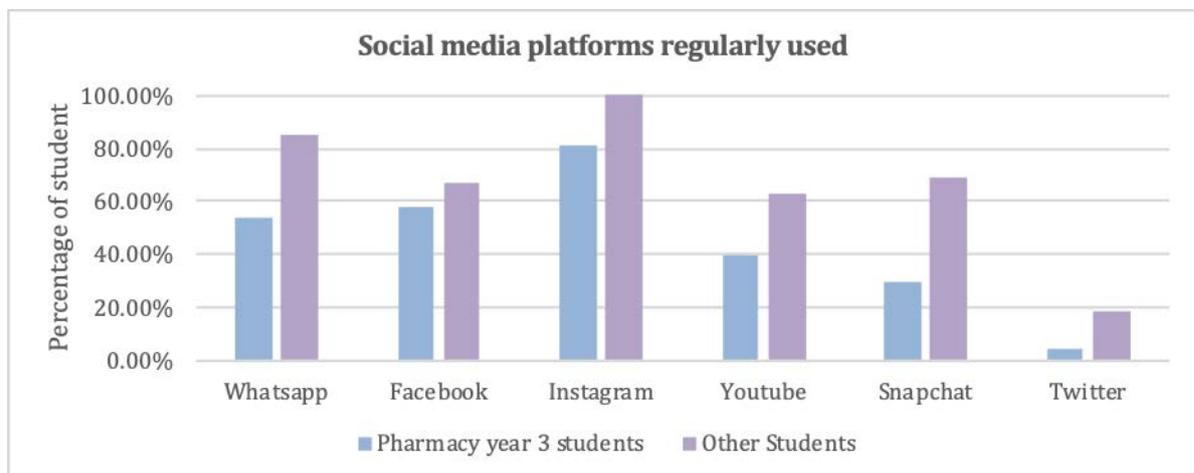
#### F. Most liked features on the website



	Post- survey (Pharmacy year 3)	Post- survey (other)
<i>Search abbreviations</i>	<b>52.1%</b>	<b>89.6%</b>
<i>Study cards</i>	22.9%	27.1%
<i>Questions bank</i>	8.3%	45.8%

The “search abbreviations” feature was the most liked by both groups of students. In particular, students from Faculty of Medicine in general liked the “questions bank” feature. The “study cards” function was generally less liked by both groups of students.

#### G. Social media platforms regularly used by the students



	Post- survey (Pharmacy year 3)	Post- survey (other)
<i>Whatsapp</i>	54.2%	85.4%
<i>Facebook</i>	58.3%	66.7%
<i>Instagram</i>	<b>81.3%</b>	<b>100.0%</b>
<i>Youtube</i>	39.6%	62.5%
<i>Snapchat</i>	29.2%	68.8%
<i>Twitter</i>	4.2%	18.8%

Both groups of students reported highest utility rate of Instagram among social media platforms. Besides, Whatsapp and Facebook also have fairly high utility rates. On the other hand, Twitter is the least used social media in both groups of students.

#### H. Summary of opinions

- Suggestions for the learning

- Add handwritten prescription examples.
- Add some sections with specialized abbreviations for different disciplines to promote multi-disciplinary understanding.

- Comments

- 😊 I appreciate the team's effort to introduce medical abbreviations in an interesting way. While the Instagram account serves to stimulate interest, the website provides useful tools for in-depth learning. Both platforms are important.
- 😊 In MARS We Trust
- 😊 I like the photos and memes!
- 😞 It's not fun.

#### I. Reflection of student production team

##### Catherine Yiu (Year 4, Nursing)

As a nursing student, medical abbreviations are in every day with no doubt. We have to remember all of them in order to communicate with other healthcare professionals. Other than reminding me of the medical abbreviations that I have learnt, MARSCUHK introduced a lot of new abbreviations that I have never seen before. Besides, every time before I make a post on Instagram, I search for the related information and put them in the post description, trying to make the post more informative. It facilitated me to study more about health issues. Sometimes, I even searched for related diseases and their treatment. That's what I didn't expect when I first joined this program. It's so happy to see that some of my friends followed our Instagram and told me that they like the way that we present the medical abbreviation

which was always being considered as dull, boring stuff. It's such an honor to be a member of this project group. I really hope that more and more people can get to know MARSCUHK and medical abbreviations.

Ivy Tsang (Year 3, Pharmacy)

I am very happy to take part in the project of marscuhk. I really like designing when I was in secondary school, but I did not develop more in this area after entering the university. So, it is very happy for me to explore more on graphics design in this project. I like the process of mix-matching different ideas with the medical abbreviations, for example using ideas from gags and popular culture in our daily lives. Also, it is very rewarding to see my friends saying the posts are funny and interesting, and to see a steady increase in the number of followers of the instagram account. All in all, it was a very interesting project.

Artemis Chan (Year 3, Pharmacy)

In this project, my role was to design pictures for medical abbreviations. In my opinion, since a lot of medical abbreviations originate from Latin words, it is hard for medical students to memorize. In psychology, I have learnt that establishing retrieval cues do help people recall the corresponding memories. That is why I want to contribute to this meaningful project. When I tried to find suitable pictures or designs to match with the abbreviations, I could memorize the abbreviations easily.

I always feel so happy when my classmates and friends say the pictures are funny and they like them. I feel so satisfied and proud that even some of my friends from other faculties like our project idea as well and hope their own department also have this kind of projects.

I was also responsible for the data analysis of this project, and found that this project really improved the knowledge and deliverable skills of medical students regarding medical abbreviations. This project made studying and memorizing abbreviations easier. There were some negative feedbacks though. One single way of learning aid apparently does not fit everybody. In my feeling, we have done a great job as long as some of the students found what we did in this project helpful.

#### 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 can be adapted to other disciplines.*

The project website and instagram account are available for general public. We have also shared this model to all student volunteers participated in CU CHAMPION community outreach program. Furthermore, we will keep updating the terms searching and self learning materials on the website and producing new memes on Instagram to introduce other medical abbreviations. We will also introduce this model to the teenagers who will participate in CU CHAMPION’s high school student healthcare service learning program in summer 2019.

The model successfully attracted students’ attention on learning complicated terms. We will share this new approach and our experience with colleagues of other disciplines in upcoming academic forum and expos.

**PART II**

**Financial data**

Funds available:

Funds awarded from CDG	\$	95,000
Funds secured from other sources (please specify _____)	\$	0
Total:		\$ 95,000

Expenditure:

Item	Budget as per application	Expenditure	Balance
1. Project Assistant II	93000	93000	0
2. Website (www.cuchampion.com) domain renewal and app	1600	1358.57	241.43
3. Printing toners and papers	400	400	0
<b>Total:</b>			

**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?*

We met our objectives in terms of courseware deliverables and learning outcomes. We believe this model can bring the following positive impact in the long run:

**Standardized communication between professionals:**

- Standard terms help healthcare professionals understand patient's condition and issue and helps them decipher complex information that makes their diagnosis more accurate.

**Easy documentation and communication:**

- Medical practitioners deal with many patients in the day to day basis, they are required to make a lot of documentations and since medical terms are standard, those abbreviations will still be understandable by other medical practitioners.

**Avoid errors:**

- Mutual understanding and standardized communication on using appropriated abbreviated medical terms can help medical practitioners to diagnose the patient more accurately and provide the right treatments.

Providing innovative learning experience to students has always been our team's mission. At a fast paced learning environment at CUHK, students have to process numerous study notes and loads of information every day. Remembering numbers of complicated terms can be a big hassle and it was the reason we develop this model – to make learning fun, easy, and interesting for students.

The findings in this project was rewarding. They gave us new insights on how to maximize the use of new media platform to develop new teaching approach for today's university students. We also believe that it takes both teachers and students' effort to discover new ways of study methods to improve overall learning experience and outcomes. We hope CUHK can provide a longer and larger funding grant for teaching staff and students to developing new pedagogies for health education.

**PART IV**

**Information for public access**

*Summary information and brief write-ups of individual projects will be uploaded to a publicly accessible CUHK CDG 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 relevance to your project) to describe your project.

(Most relevant) Keyword 1: Medical Abbreviation

Keyword 2: Instagram

Keyword 3: Mobile learning

Keyword 4: Interactive learning

(Least relevant) Keyword 5: *CU CHAMPION*

## 2. Summary statistics

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> <ol style="list-style-type: none"> <li>1. <a href="http://www.cuchampion.com/marscuhk">www.cuchampion.com/marscuhk</a></li> <li>2. <a href="http://instagram.com/marscuhk">http://instagram.com/marscuhk</a></li> </ol>
<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) in here</i></p> <p><b>NO</b></p>
<p><b>(c) Others (please specify):</b></p>

<b>Table 2: Resource accessible to a target group of students (if any)</b>			
<p><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. CU Learning Management System (Blackboard), facebook), please specify.</i></p>			
<u>Course Code/ Target Students</u>	<u>Term &amp; Year of offering</u>	<u>Approximate No. of students</u>	<u>Platform</u>
<i>PHAR 3413</i>	<i>All 3rd year</i>	<i>54</i>	<i>Instagram &amp;</i>

	<i>pharmacy students</i>		<i>Website</i>
<i>Other Faculty of Medicine students</i>	<i>All years</i>	<i>60</i>	<i>Instagram &amp; Website</i>

<b>Table 3: Presentation (if any)</b>	
<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)	<i>Please insert no</i>
(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>1 pending</i>
(f) Others (please specify)	<i>Please insert no</i>

<b>Table 4: Publication (if any)</b>	
<i>Please classify each piece of publications 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 refereed 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 for posting on*

*the CDG website.*

In this project we developed an e-learning model for learning medical abbreviation terms. This model included a self-learning webpage and an Instagram account. We aimed at providing easy to use and mobile friendly learning materials for students to be familiarized themselves with various medical abbreviations in order to interpret information efficiently during community outreach services, at their later clerkship training, and be ready for their future profession. We carried out the project as planned and it had met its objectives.

The model was available to all students in order to improve their motivation on learning numerous and complicated medical abbreviations. Students' feedbacks and survey figures indicated that the model did help their learning and the project completed satisfactorily. The model not only benefited pharmacy students but also reached to other students within Faculty of Medicine. We will maintain the model and develop new materials for students' self learning.

We received feedbacks and pre/post project survey data from over 100 Faculty of Medicines students of different disciplines. Most of them agreed that the website and Instagram account and their contents were useful and helpful, and also increased interest for learning medical abbreviations. Students responded that that the model could help them memorizing complicated terms and improved their interest in learning medical abbreviations.