ENHANCING LEARNING IN PHARMACEUTICAL CARE SERVICES WITH AN E-LEARNING PLATFORM

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Abstract

A two-year government-funded project is aimed to enhance the learning experiences of post-secondary students in pharmaceutical care studies in Hong Kong with e-platform support. A project-website and a related mobile app are set up for registered users to access online lectures with multimedia content (audios, videos and animations) and hyperlinked reference materials via personal computer, tablet, and smart phone with commonly employed search machines and operating systems. Moodle, a free and open-source system, is adopted as the learning management system (LMS) for managing the project teaching and learning materials with additional integrated features, such as an online game with live score results. Based on a well-established, higher diploma curriculum in dispensing studies, two-level learning programs with carefully selected topics are designed and developed to facilitate self-learning for post-secondary students with a diverse science background and at different levels of English proficiency. Concepts and knowledge in natural science are integrated into the teaching and learning materials so as to enhance students’ understanding on professional knowledge, skills and techniques in pharmacy practice. Word parts and roots, many of which are of Greek or Latin origin, are introduced in order to facilitate students tackling difficult scientific and medical terms as well as English vocabulary. Learning and memorizing drug names becomes easier with audio pronunciations available on demand to users with online access. Each lecture with suitable multimedia content and quiz breaks is carefully planned and paced to optimize learning. On-screen hyperlinked lecture script in English with Chinese translation for selected vocabulary is available as the lecture video is streamed. To complement traditional face-to-face teaching and learning, the project aims to employ technology to enhance vocational professional education training (VPET) for better results. The project is funded by the Quality Enhancement Support Scheme (QESS) under the Self-financing Post-secondary Education Fund of the Education Bureau, HKSAR.

Keywords: Pharmaceutical Care, dispensing practices, English, e-learning, self-learning, technology enhanced learning (TEL), Moodle, multimedia, vocational professional education training (VPET)

Introduction

Due to the secondary education reform in Hong Kong, the basic entry requirement to higher diploma programs in Hong Kong Institute of Vocational Education (HKIVE) has been changed to students who have completed 6 years of secondary education instead of the previous 5 years and have obtained a minimum score of 2 in five principal subjects in Hong Kong Diploma of Secondary Education Examination (DSE). The corresponding duration of study of higher diploma programs has been reduced from 3 years to 2 years.

The change has a significant impact on the curriculum in a well-established 3-year, full-time program of Higher Diploma in Pharmaceutical Technology at the Chai Wan campus, which the core areas of study covering both pharmacy dispensing and pharmaceutical manufacturing. Two 2-year full-time Higher Diploma programs were launched in 2012-13, one in Dispensing Studies providing students as potential dispensers working in a pharmacy and the other one in Pharmaceutical Science serving the local pharmaceutical manufacturing industry.

With the reduced duration of study, a number of challenges for the teaching team in Dispensing Studies program surfaced. Firstly, there has been an overall change in the academic background of the students applying to the program; fewer students admitted have been those with a strong science background compared to the pre-DSE era. The teaching team realizes there is a growing need to bridge the knowledge gap as well as showing relationship between basic scientific knowledge and concepts in chemistry and biology and study of drug use for the incoming students. Secondly, the students have to assimilate basic knowledge in disease, pharmacology and dispensing practices, which involve acquisition of a large number of drug names and medical
terminology. They have to accomplish this within two years, instead of the previous three years. Ability to pronounce English words, including vocabulary and names, is vital to memorize drug names and medical terms. Websites with audio recordings of drug names and medical terms are available throughout the internet, which these links have been introduced to students. To incorporate these resources into the curriculum systematically can be challenging for the teaching team.

Long and difficult scientific and medical terms are made up of word parts that can be traced back to their Greek or Latin origin. Many word parts, such as hyper- and hypo-, repeatedly occurs in many commonly used medical terms. Recognition of these commonly used prefixes and suffixes as well as word roots and knowledge about the meaning of these word parts in any given vocabulary by the students have been incorporated in the curriculum since 2015-2016 with low success in terms of facilitating students to learn medical terminology. The list of word parts with meaning and sample terms for each word part is provided to the students; the list is long and hard to use effectively. How to use the list is introduced to the students in mass lectures supplemented with small group tutorial sessions. Availability of scheduled contact time is limited; the potential usefulness of the list is greatly hampered.

Lastly, industrial attachment is mandatory for graduation; students are assigned to different pharmacies in order to gain actual work experience during the summer break. With the shortened 2-year program, summer available for industry attachment has been reduced from two to one only. To compensate for the deficiency, an alternative is sought to supplement the reduced industrial exposure. Demonstrative videos can be an invaluable tool to enhance the learning experience of the students in order to gain competency in performing dispensing and pharmaceutical compounding.

Technology enhanced learning (TEL) is a much talk about topic in education. High definition video image capturing with high fidelity audio recording is a powerful tool for design and develop teaching and learning materials in this age of information technology. According to the 2017 Thematic Household Survey on Information technology usage and penetration from Census and Statistics Department of the Hong Kong Government, internet access via personal computer, laptop, tablet, and smart phone is extremely prevalent among the age groups which our students fall into. Internet is the platform of choice for dissimulation of lectures beyond the four walls of a classroom.

Funding was granted from the Quality Enhancement Support Scheme (QESS) under the Self-financing Post-secondary Education Fund of the Education Bureau, HKSAR. The project titled Enhancing learning in pharmaceutical care services with e-platform support is aimed at enhancing the learning experiences of our post-secondary students in our Dispensing Studies program as well as other students in related areas of study.

Materials and Methods or pedagogy

An information technology company is commissioned to design, develop, and maintain the project website and a related mobile app, which are searchable by commonly used internet search engines as well as via smartphones using the two most popular mobile operating systems. Moodle is chosen as the basis of the project learning management system with project-specific features. Moodle is a free and open-source learning management system (LMS), which is also adopted by HKIVE as the web-based platform for online communication and management of teaching and learning with all students under Vocational Training Council (VTC) of Hong Kong. The teaching team are already familiar with the LMS and can manage and expand the online contents with ease. The project website and the mobile app are expected to be launched in September 2018. Users are required to register for access to the learning materials.

A production company with experience in producing multimedia content and, more importantly, in developing educational online materials is selected to create and produce project-specific learning programs. PowerPoint-based lecture videos, demonstrative videos on pharmaceutical compounding skills, and animations and videos for pharmaceutic experiences for explaining scientific concepts are planned from June to November 2018.

Two programs are planned: A bridging program and a commentary-remedial program. The bridging program is aimed to equip incoming students with a weak science background. It covers basics in chemistry and biology as well as a reviewing English sentence structure. The commentary-remedial program is aimed to help progressing students in core study modules, which are Pharmaceutics, Pharmacology, Dispensing Practices, etc. This program covers key pharmaceutical concepts, areas in pharmacy practices and dispensing practices, pharmaceutical compounding and aseptic dispensing, word parts and medical terminology, medical and prescription abbreviations, and pronunciation of drug names.

Online quizzes are planned for each online lecture. In addition, a quiz-based game is planned for all users. The game is based on knowledge of word parts, abbreviation, and drug names. A live scoreboard will be published online to enhance the interest and participation from users.