Combining MOOC with Offline Practical Courses to Popularize Medical Knowledge in China

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Abstract. Popularization of medical knowledge is the key to ameliorate the tense physician-patient relationship and cope with the aging of population in China. Here we reported an attempt of medicine popularization by teaching non-medical students basic health care knowledge with blended learning approaches. The geographic information and leaning habit of the students, who took the MOOC course “Gate way to Medicine” as well as those who participated in the blended learning program, were collected either by questionnaire or through the MOOC platform. Our courses got high praise from most of the students. Students in MOOC course and blended learning program both think face-to-face teaching is more important. In conclusion, our results indicated that although MOOC is a very powerful and convenient tool in popularization of medical knowledge, face-to-face training is a necessary supplement for better teaching quality.

Introduction

Over the past two decades, doctor-patient relationship has been continuously deteriorating in China. Doctors are often involved in tense medical environments where they have to bear complaints, threats, and accusations from patients [1]. The very limited understanding of modern medicine leads to the public’s over expecting of the doctors. Once any accident happens, the patients or their family will be so angry with the doctors and nurses that they would not like to cooperate anymore. Experts believe that in order to improve the circumstances, the health literacy of Chinese adults needs to be improved [2].

Massive open online courses (MOOCs) have been widely applied in a variety of disciplines and successfully attracted a large number of learners from all age groups and different education background [3]. Many medical educators have also established their own MOOCs [4]. There are now hundreds of medical MOOCs covering from basic medical microbiology to cutting-edge medical informatics [5, 6]. Compared with traditional teaching methods, MOOC delivery has many advantages. On MOOC platforms, educators could use multimedia technology to create attractive online content and interact with the students and organize the students to communicate [7]. Researches showed that in terms of medical education, MOOCs are as popular as traditional lectures among medical students [8].

To exploit the advantages of online resources, blended learning (BL), which means combining face-to-face and online instruction in pedagogical practice [9], is widely applied across higher education in course delivery.

But how blended learning impacts teaching and learning environment remains unclear. Investigators showed the complexities of how blended learning affects students’ access to the course and their behavior during the learning progress [10].

In this study, we applied blended learning to our general medical MOOC named “Gateway to Medicine”, and investigated the students’ basic information and got a better teaching outcome.
Previous Research on Blended Learning

Application of Blended Learning in Medical Education

Application of blended learning to medical teaching can date back to 2000s. In 2004, Kitt and Juan reported the application of blended learning in radiologic anatomy course in Harvard University [11]. From then on, many investigators and educators tried and reported their attempt of applying blended learning to medical education.

Characters of Blended Learning Based Medical Education

In most cases, blended learning combines online sources with traditional teaching method, such as face-to-face teaching, group discussion, and hands-on practice.

MOOCs were first founded in 2006, based on that, development history of blended learning approach can be divided into two stage: offline-online combination stage and offline-MOOC combination stage.

When MOOCs are combined with face-to-face training sessions, most of the students who participated in the blended learning enjoy this teaching form, and research show that blended learning could improve student performance [12, 13].

Methods

MOOC Platform and Students

“Gateway to Medicine” was first delivered via xuetangx.com in 2015. There are two types of course models: in-class mode and autonomous mode. In-class courses are only available for one semester, and the videos are delivered by chapters every week. While in autonomous mode, all of the contents are showed online, and students can arrange their study schedule depending on their own situation. In this study, we collected our data from 21 out of 3685 students who took the in-class mode of “Gateway to Medicine” of spring semester 2018.

Course Content and Arrangement

Our blended learning course was designed based on our MOOC “Gateway to Medicine”, which includes 9 chapters. The contents of the offline training are expanded from the MOOC mainly focusing on hands-on practice and daily application.

Students who are involved in the blended learning were introduced to the autonomous mode of the MOOC, which means they have access to all the online resources all the time.

Course Evaluation and Online Survey

We made our online questionnaire on wjx.cn. There are two versions of questionnaires, one for MOOC students (ID: 25307650), and one for blended learning students (ID: 24459907).

The questionnaires are sent by email to all the students. We received 21 from MOOC-only students and 7 from blended learning students. We also collected 12 questionnaires from the teaching assessment system of Tsinghua University, from students who took the blended learning.

Results

Background of the Students

There are 3685 students in total registered for the MOOC course this semester, and they come from 33 provinces, municipalities and autonomous regions of China as showed in Fig. 1. And there are 30 students in total took our offline courses.

The survey showed that one-third of the MOOC students don’t have undergraduate education experience, and most of the students have no medical education background. These results indicated that we have delivered most of our teaching materials to those who have very limited medical expertise.
Students Evaluated Highly of the Courses

The students of both the MOOC course and the blended learning course gave good evaluation to the experience. We set 5 points for great satisfaction and 1 point for very unsatisfied. Our course received 4.43 points out of 5 from our students who took either our MOOC or our blended learning program.

Discussion and Homework from Non-medical Students

Fig. 2 shows that more students watch the online videos after school from 18:00 to 23:00, which is the perfect time to review the knowledge that they learnt on offline class. And, much more students prefer weekends to weekdays in terms of study time. We suppose they may have more free time at weekends and they are willing to learn more medical knowledge to enrich their life quality.

MOOC Students Welcome Offline Training

In the questionnaire, we asked the students who took our MOOC online if they would like to communicate with the teachers face-to-face, and if they would like to take offline courses. 95.24% students want to see their teachers in person and communicate with them. They also said that they want to take face-to-face class if we offer one.

For the students who already took the blended learning course, most of them think the offline courses contribute more than online mode in their study progress. They also think the face-to-face classes are more attractive than the online videos.

However, when asked how the proportion of online and offline contents should be, the students want more online contents (39:61) than they have experienced (24:76).
Discussion

To promote efficiency and education affair, MOOC (massive open online courses) is now a very popular trend releasing education resources of the universities into the whole society. Therefore, it’s a perfect approach to spread basic medical knowledge to the public. Our practice indicated that a MOOC focusing on the daily healthcare related topic will attract many people, the major of which have no medical education experience. Thus, with MOOCs like “Gateway to Medicine”, we can deliver the basic medical education resources to those who have limited medical knowledge and who are more likely to misunderstand the doctors.

Through MOOCs, it’s very easy to attract students from all across the country and even over the world. With only one semester, our MOOC covers students from almost every province of China. The distribution of students across the country is similar to the density of population. In this way, our students will infiltrate the population equably, and they will spread the basic medical knowledge to the others.

One of the major advantage of MOOCs is that students can easily go over the courseware whenever they want. This is very important for non-medical background students, as they will need to go over the videos over and over again because one would have lots of difficulty and confusion when trying to get into a new field, not to mention that medicine is extensive and profound. Besides, most non-medical students have their own professional curriculum or work. Therefore, they often have to study their interested lessons after school or work. And MOOCs are just very convenient to study at home.

While there are lots of advantage of MOOCs for popularizing medical knowledge, the limitation of MOOCs exists. That is, how to convert online lectures to real courses. Online videos are flexible for arranging study time. However, real time communication with the teacher is also not possible while watching the videos. Besides, Clinical medicine is a very practical subject that need physical hands-on practice. That’s the reason why students would like to take offline class after they took the MOOCs.

On the other hand, positive relationship with teacher is important for students’ learning motivation[14]. In emerging relationships, moments of contact can have immediate influences on engagement and motivation. Therefore, the students who participate the blended learning thought the offline class contributed more to their study motivation. Interestingly, although the students thought offline class were more important than online videos, they think arranging 39% course content online would be appropriate.

References


