A Blended Learning Model Combining MOOCs, Face-to-Face Teaching, and Practice in Professional Training

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Abstract—Massive Open Online Courses (MOOCs) started quickly in top western universities. These free online courses from famous universities push down the walls of traditional classroom and bring great impact to education, including professional training. MOOCs gives learners not only a chance to choose whatever courses which really help them in work, but also an opportunity to join in online and offline communities. Based on this idea, we proposed a blended learning model and piloted it in some training programs. Learning are blended with online courses and face-to-face courses while a kind of cooperative teaching team is blended with professors from universities and employees from companies or governments. This could help students a lot while professors from different schools explain a problem in different views, employees from different corporations tell stories in real world and online courses on different majors widen their visions.

Index Terms—blended learning, cooperative teaching, face-to-face teaching, MOOCs, professional training.

I. INTRODUCTION

A. MOOCs

Massive Open Online Courses (MOOCs) started in 2012 and boosted in 2013. Coursera platform started by two Stanford professors Daphne Koller and Andrew Ng in 2012. Now Coursera had 2000 courses, more than 160 specializations, more than 149 university partners, 24 million learners with 600,000 course certificates issued already. Coursera aims to build a platform where anyone, anywhere could learn and earn credentials from the world’s top universities and education providers. Coursera wants to provide open online education for everyone.

EdX open-source technology platform founded by MIT and Harvard University in 2012, had more than 1300 open courses and programs with more than 107 universities and organizations joined, 10 million learners and 33 million enrollments. EdX is the only leading MOOC provider that is both nonprofit and open source. Its goals, however, go beyond offering courses and content. With EdX, educators and technologists can build learning tools and contribute new features to the platform, creating innovative solutions to benefit students everywhere. EdX’s mission is to increase access to high-quality education for everyone, everywhere, to enhance teaching and learning on campus and online and to advance teaching and learning through research.

Another two professors from Stanford University founded Udacity which aims to be a commercial educational content provider.

These online open courses which are mostly free and non-degree oriented pushed down the walls of the traditional classrooms making it possible to join classes all over the world [1]. The number of students enrolled in a class listening to a famous teacher could be thousands, far exceeding that in a traditional classroom, which is the meaning of massive.

B. Professional training in China

Firstly, in the education system in China, education is mainly focused on the degrees. It pays much more attention to the degree education of a man for the first 20 years of his life but less to the non-degree education or professional development which could last nearly 40 years after he goes into the society as Figure 1 shows the unsatisfying distribution. There are more than 360,000 schools and universities for degrees and few learning resources for professional training. However, it is the employees with particular skills who continue their learning at workplace that companies are looking for.

Secondly, professional training has focused heavily on MBA programs for managers or entrepreneurs for a long time. A few learning programs are designed for professional talents which are a massive group with 60 million engineers in China. It’s really an unbalanced situation as Figure 2 shows. Nowadays, companies and government come to realize that it is the professional talents who are critical to the creativity, the industry and the economy. They would like to invest more on training professional engineers.
C. What MOOCs could bring to professional training

a. Collaborative teaching team

A course is no longer one tutor’s work but a collaborative teaching team’s. For instance, “Technicity” on Coursera had two major teachers with professors from other universities and employees from Cisco participating in teaching. Another course named “Creative programming: for digital media and mobile apps” on Coursera involved three teachers.

As teachers are not only professors in universities but also employees in companies, it also becomes natural that teaching is a kind of cooperative team work [2]. Of course, it is true because no teacher could master all of the knowledge in this era. It could help students a lot while professors from different schools explain a problem in different views and employees from different corporations tell stories in real world.

b. Non-degree certificates

There is no limit including degrees and ages for learners to enroll on Coursera and edX. Everyone who is interested could study the courses no matter if he is a teenager in middle school or a retired man with no degrees. Students who complete successfully their assignments will receive recognition of accomplishment for that course. If students pay for a little, they could get “Signature Track” from Coursera. In addition to the course name and instructor signature, the “Signature Track” or course certificate features the logo of the partner institution offering the course, a statement attesting to the confirmed identity, and a certification URL that allows others to check the Certificate’s authenticity. It is not a degree diploma but a non-degree certificate.

c. Virtual apprenticeship

Learning is no longer an individual work in a class but a collaborative and interactive one with the world-wide students. For example, learners can use wiki to discuss ideas with each other on edX and on Coursera they are asked to complete peer graded assessments. These collaborative activities between teachers and students stimulate some kind of social interactions in studies [3] which help them to continue studying in a virtual class. Another benefit is that by arguing with others and at the same time argued by others, learners could adjust their opinions and reach critical conclusions which may form virtual apprenticeship [4] and help them construct knowledge in society [5].

d. Self-paced

Studying becomes a personal decision in many ways. Firstly, learners could choose what courses they are interested to study. Sometimes they can even choose teachers as there are many of them teaching the same topics. Secondly, learning is more self-paced than scheduled which means that learners could study on their own schedules, fast or slow, in the day or at the night, more today or less tomorrow. Thirdly, they can skip any of the materials at their wills if they have mastered that part or study them in their preferred order. Lastly learners have an opportunity to choose their learning partners from the classmates all over the world.

e. Fragmented learning

Learning a specific knowledge point is generally a 30 minutes’ work on MOOCs which involves watching a short video lecture of 15 minutes, taking interactive quizzes and connecting with classmates and teachers. This would be very helpful as half an hour is easy for most of people to spare and pay attention to what they are learning. In addition to that, a 15 minutes’ short video could also be easily loaded into smart phones or tablets which enables learners to study anywhere they are and utilize fragments of time.

II. BLENDED LEARNING MODEL

A. Model of studying process

Studying is a series of practice through which we learn a little by a little. In daily life, we are always learning from our practice, experiences and lessons. Adults learn something better by experiencing it than just remembering it. Some people go further in which they communicate with others and learn from their experiences and lessons. Some people summarize these experiences and lessons, find out the rules behind and put them into theories. Refer to Figure 3.

![Figure 3 Model of studying process](image)

So, education should give students a chance to learn from their own practice which is also the same idea of constructivism theory, and should also give students a chance to collaborate with others and learn from others.

Two forces contribute a lot in the studying process. One is inner drive and another is outer drive. Inner drive includes one’s interests, will of winning. Outer drive includes competition, family influence. They “pull and push” the studying process in a collaborative environment [6].

B. Blended learning model

Based on the understanding of learning of adults especially employees, a blended learning model is proposed as Figure 4. In MOOCs, learners utilize fragments of time to learn knowledge points of theory. In face to face classes, teachers and students share experience and argue with each other. In practice, learners discuss problems and give different approaches. These emphasize the following:
a. It is not only teachers, but also learners themselves that play a role in education. They are encouraged to be self-paced learners.

b. It is not only theories, but also experiences shared that help learners construct knowledge. Real world stories are often welcomed by employees.

c. Besides Face-Face classes, MOOCs is a good solution to help learners to study in their own free time.

Lastly, in practice stage a real problem in work from one learner is proposed and discussed by the learners. Bearing how to solve this problem in mind, learners visit different companies and labs, observe and discuss with different people to share experience. A final report of solutions is submitted as the result of this stage.

III. PILOT IN TRAINING PROGRAMS

Firstly, some online courses on different majors like computer science, management, quality, business, English, finance are recorded and stored on a MOOCs website http://trainingcourses.sjtu.edu.cn as Figure 5 shows. These courses on different majors could be chosen on learners’ own decision which could widen their vision. The courses which a learner has studied will be printed on his/her certificate of training program issued.

Secondly, Face-Face classes like Figure 6 are designed so that a kind of cooperative teaching team is blended with professors from universities and employees from companies or governments. This could help learners a lot while professors from different universities explain a problem in different views, employees from different corporations tell stories or solutions in real world and employees from government explain policies. Learners are encouraged to ask questions in their real work. They also rate sand table simulation used in some classes high.

Most of pilot training programs are evaluated as best programs by more than 80% learners. Some programs are greatly welcomed by more than 90% learners. Learners suggest that sharing more real cases and designing different interactions would be much better and helpful in training programs.

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