How to Attract More Adult Learners to Learn the MOOCs of Engineering Foundation Courses

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Abstract. The purpose of the construction of MOOCs is to help more people, including adult learners, to learn independently. However, engineering foundation courses require a higher accumulation of knowledge for learners, and the theoretical knowledge of those courses is abstract. So, common MOOCs for engineering foundation courses are difficult to attract adult learners. This paper puts forward some improved design of MOOCs. It is found that these improvements can make MOOCs to absorb more adult learners.

Introduction

In recent years, the development of MOOCs is very rapid, in the international and China. MOOCs refer to the whole process of online course teaching, including learning progress evaluation, task record, and so on. MOOCs and the traditional network courses have the essential difference. MOOCs not only provide rich free teaching resources, but also to achieve the full participation of the teaching process. Learners in the MOOC platform to learn, share ideas, homework, assess the development of learning, to participate in the examination, scores, to get a certificate, is a whole process of learning.

To find out the reasons why adult learners can't adapt to engineering foundation courses, we need to realize the characteristics of the engineering foundation courses and the social learners.

The Characteristics of the Engineering Foundation Courses

The students of the engineering foundation courses tend to focus on the campus, and the characteristics of these courses are as follows:

1. Theories are very abstract
   The theories of "Analog Electronics", "Communication Theory" and other engineering foundation courses are often vary abstract. These courses’ mathematical derivation process is complex, not easy to understand and master.

2. Need to learn leading courses
   Science and engineering courses in addition to the learner's ability of mathematical analysis and higher requirements, these courses also require learners to first master the leading knowledge, such as learning "Analog Electronics" course, need in order to master the knowledge of circuit analysis course.

3. Strong correlation between knowledge points
   Knowledge points in the course of engineering foundation courses are highly correlated. That is to say, for a engineering foundation course, learning knowledge must be in a certain order. If you do not follow the specific order of learning, it will be difficult to grasp the content of knowledge.

4. Unable to make a simple explanation
   Different from the liberal arts curriculum, many of the terms, theorems and formulas in the engineering foundation courses are derived from the intricate mathematical calculations. These terms are difficult to explain clearly through one or two sentences.
Characteristics of Adult Learners

Adult learners have the following characteristics:

1. Learning time fragmentation
   Adult learners have to be busy with work and family matters, it is difficult to have large chunks of leisure time, they are often only in the short time before going to bed or a certain period of time to learn the knowledge of interest.

2. Selective Learning
   The purpose of adult learners is very strong. They often learn in order to solve a specific problem. So, adult learners usually have to choose the learning course in their related knowledge, and not to care about other knowledge points.

3. Need to solve problems quickly
   Because of their limited learning time, adult learners need to quickly resolve the issue in a short time, and quickly understand the knowledge content. If a knowledge explanation is not clear, or do not correspond to their current level of knowledge, so adult learners will soon lose patience, no longer learn this course.

Improvement Design of MOOCs for Engineering Foundation Courses

From the characteristics of the analysis, it can be recognized that the adult learners are not suitable for the common MOOC form of the engineering foundation courses.

As a new model of higher education, MOOCs have been studied and used by the higher education workers in the world. The president of Stanford University in the evaluation of MOOC of momentum and position, it is a history of human education "digital tsunami". MOOCs through the Internet will be transferred to the university courses around the world, to meet the desire of people and the pursuit of knowledge and a new educational model. Full name of the MOOC is "Massive Open Online Course". "Open" is the core vocabulary in the definition of MOOC. The task of building a MOOC is to hope that more learners can participate in the course study. In order to get more adult learners to participate in the study, MOOCs for engineering foundation courses can be described as follows:

1. Try to visualize the abstract problem as far as possible
   In the production of teaching video, try to reduce the use of professional vocabulary, lower the threshold, as far as possible to use intuitive graphics to describe the content of hypothetical knowledge.

2. Making the structure diagram of knowledge points
   A simple structure diagram of knowledge points is indicated below.

![Figure 1. The Structure Diagram of Knowledge Points.](image-url)
The structure diagram of knowledge points, can help learners to grasp the knowledge characteristics of a course, diagram not only gives a knowledge point in the specific position and importance of knowledge in the tree, but also lists this knowledge leading knowledge, so that learners know the relationship between each knowledge point.

3. Give an overview of knowledge points

Adult learners have a limited time, they usually do not learn the complete course, but do not even know from which point of knowledge to start learning. In order to make adult learners more insightful understanding of the content of knowledge, all the knowledge points should provide an overview.

Although a lot of knowledge cannot be explained by one or two sentences, but at least they have a preliminary understanding of the knowledge. Adult learners can be based on the structure diagram and overview, to decide what knowledge to learn.

4. Provide hyperlinks to related knowledge points

In the explanation of a certain knowledge, not only to provide video, homework and other traditional content, should also provide the knowledge point referenced knowledge link, the learner clicks on the link, the first pop related knowledge introduction, if the learner is still not clear to the knowledge points, he can jump to the knowledge point of the corresponding course position. If the reference point of knowledge is not part of this course, it should give a reference to the relevant courses.

Summary

After practice, we found that improved MOOCs for engineering foundation courses not only to attract more adult learners, but also help students in school to gain a better understanding of the knowledge.

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References


