

# Comparative Research on Major MOOC Platforms in China from the Perspective of Learners and Its Enlightenment

Wanqiu Liang

College of Foreign Languages  
Yanbian University  
Yanji, China 133002

**Abstract**—The emergence and development of MOOC has injected unprecedented vitality into the reform of higher education teaching, and has cast a revolutionary impact on education. This paper teases out the development process of China's MOOC platforms by using the documentary method, and conducts a comparative analysis on platform presentation mode, platform resource design, classroom organization and interaction, performance assessment and course-completion certification method of five MOOC platforms in China, namely, "XuetangX", "CNMOOC", "Chinese University MOOC", "Zhihuishu" and "Fanya". Research results suggest that MOOC platforms in China should be further optimized in four aspects: the optimization of interface, the standardization of course guidance resources, the diversification of course learning resources, and the richness of interactive functions of platforms, so as to meet the needs of learners at different levels.

**Keywords**—learners; MOOC platform; comparative research

## I. INTRODUCTION

MOOC is an acronym of Massive Open Online Courses, which is translated as "Mu Courses" in Chinese. MOOC comes into being with the continuous development of information technology, network technology and cloud computing, and the rise of global high-quality learning resource sharing movement represented by Massachusetts Institute of Technology, Stanford University, Harvard University and Massachusetts Institute of Technology in the United States have become leaders of the world's MOOC movement. During this period, more and more MOOC platforms have been born, which has brought great convenience to learners. So, what are the advantages and disadvantages of these platforms in terms of construction for learners? This will undoubtedly have a positive guiding effect on learners to choose suitable platforms for learning. This paper will analyze the operation of major platforms in China by using comparative method, and explore the advantages and disadvantages of the construction and operation of each platform, so as to provide reference suggestions for further optimization of platform construction and create more convenient conditions for learners.

## II. DEVELOPMENT STATUS OF MOOC LEARNING PLATFORMS IN CHINA

Currently, the largest MOOC platforms abroad include Coursera, Udacity and edX in the United States, FutureLearn in the United Kingdom, FUN in France, Open2Study in Australia, and Iversity in Germany. [1]

The earliest independent MOOC platform in China should be the course resource sharing platform for Shanghai universities established at the end of 2011. The MOOC platform with largest scale and the highest standard and the most comprehensive disciplines is the "iCourse" website, which is supported by the Ministry of Education and the Ministry of Finance. [2] "XuetangX" established by Tsinghua University in 2013 and "CNMOOC" led by Shanghai Jiaotong University in early 2014, together with "Zhihuishu" platform, "Fanya" platform, "iCourse", and "Chinese University MOOC" have constituted the coexistence of China's non-profit MOOC platforms. [3]

"XuetangX" is the first MOOC platform in China founded by Tsinghua University. It is also a platform for research exchange and results application of the Ministry of Education research center for online education, as well as an online education platform of International Center for Engineering Education (ICEE) of United Nations Educational, Scientific and Cultural Organization (UNESCO). [4] In 2015, "XuetangX" operated high-quality courses from dozens of top universities at home and abroad, including Tsinghua University, Peking University, Fudan University, Stanford University, Massachusetts Institute of Technology, Berkeley of University of California, etc., covering many fields such as computer, business management and entrepreneurship, science, engineering, literature, history, art and so on. In "global MOOC ranking" released in 2016, "XuetangX" has been praised as one of the top three platforms that "have the most classical and high-quality courses". At present, "XuetangX" has operated more than 1900 high-quality courses and covered 13 major discipline fields from first-class universities at home and abroad, including Tsinghua University, Peking University, Fudan University, University of Science and Technology of China, and Massachusetts Institute of Technology, Stanford

University, Berkeley of University of California, etc. According to a report released by Class Central, an internationally renowned third-party online education institution, the number of courses and accumulated users in “XuetangX” platform rank among top three in the world and the first in China. [5]

“CNMOOC” is the official website of China’s high-level university MOOC alliance, which is an open cooperative education platform voluntarily set up by some high-level universities in China, as well as a non-profit, open, non-official, non-legal cooperative organization. On April 8, 2014, “CNMOOC”, a Chinese-language MOOC platform independently developed by Shanghai Jiaotong University, was officially launched, and the first batch of 10 courses from four universities in mainland China, Taiwan, and Hong Kong and Macao were released. [6]

“Chinese University MOOC” was launched in 2014. A complete online teaching mode supports the construction of online open courses in colleges and universities, and realizes the personalized learning of students and on-the-job students. “Chinese University MOOC” is an online education platform jointly released by Netease and Higher Education Press. It undertakes the task of national high-quality open courses of the Ministry of Education, and provides the public with MOOC courses from well-known Chinese universities. Everyone who wants to improve himself can get high-quality higher education of here for free. [7]

“Zhihuishu” website, affiliated to Shanghai Zhuoyue Ruixin Digital Technology Co., Ltd., is a large global credit course operation service platform. It serves nearly 3,000 member universities, and more than 17 million college students have taken courses and obtained credits across universities from “Zhihuishu” website. It helps member universities to realize cross-university course sharing and credit mutual recognition, and complete cross-university

course selection and study. It is committed to becoming a leading educational information manufacturer and Internet education operator in China. A unique trinity business mode of “platform + content + service” helps colleges and universities to complete the introduction of high-quality courses and the implementation of supporting services. [8]

“Fanya” is an educational brand that Chaoxing Group strives to build, with 1,424 courses in four fields: undergraduate, higher vocational colleges and secondary vocational schools, basic education, and training. Functionally, “Fanya” platform covers the whole teaching process of course construction, course learning, learning community, learning analysis and course management. Learners can use the platform to log into the course website for learning activities of course learning, homework, test, study topic discussion, etc. They can also view and use teaching materials, learn to record, and enter the learning community to share and exchange. [9]

### III. COMPARISON OF MOOC PLATFORMS IN CHINA

This paper mainly compares five aspects of platform homepage presentation mode, platform resource presentation mode, platform classroom organization and interaction, platform performance evaluation and platform course-completion certification mode. Five courses are selected from each platform for analysis, and the following results are obtained:

#### A. Platform Homepage Presentation Mode

Platform homepage is the first page for learners to study a MOOC. The information presentation form of the homepage, navigation information and other designs will affect learners’ further study of specific courses. This paper mainly compares the homepage of five MOOC platforms as follows:

TABLE I. COMPARISON TABLE OF OVERALL STRUCTURE OF MOOC PLATFORM HOMEPAGE [10]

Items Platforms	Classification	Indicator	Search Engine	Navigation
XuetangX	Divided by upper and lower interface	With obvious demarcation, cursor becomes gray symbol background in course area and changes color at the course name	Search course according to course name, teacher and school	Yes
CNMOOC	Divided by upper and lower interface; divided courses	With obvious demarcation, cursor becomes gray symbol background in course area and it appears learning time and credit hour	Search course according to course name, teacher and school	Yes
Chinese University MOOC	Divided by upper and lower interface; demarcation between courses	With obvious demarcation between courses, mouseover area has obvious visual change	Search course according to course name	Yes
Zhihuishu	Obvious demarcation	Not obviously, home page does not have course area	Search course according to course name, teacher and school	No
Fanya	Obvious course classification	Obvious course classification, specific courses are not showed	Search course according to course name, teacher and topic and lecture name	Yes

From the comparison and analysis in "Table I", it can be seen that the presentation mode of the homepage of XuetangX platform is relatively good, which is reflected in:

1) *Clear classification and indicator*: As there is a large amount of information on the platform, it is very important to classify and divide different types of information into different sections. The demarcation between different courses should also be clear, so it is easy to find different information. Reasonable indicators can help learners quickly locate the page, and color can highlight the course content they are looking for, concentrate learners' attention, and improve the efficiency of online browsing.

2) *Fast location by search engine*: MOOC has large-scale and open features, with a large number of courses and growing numbers, while search engines can help learners quickly locate courses. Search engine provides search restrictions, and the search scope can be limited according to keywords of course name, teacher, and university, and then the search course can be targeted. In terms of search engine, "Chinese University MOOC" needs to be improved, and Fanya search engine has added the name of the lecture.

3) *Clear navigation*: Navigation settings provide convenience for learners. A drop-down list is used in XuetangX platform, and the navigation of "Chinese University MOOC" is located on the left side of the page, which can help learners to find information quickly. "Zhihuishu" platform needs to be equipped with navigation information. Although the other four platforms are provided

with navigation, they can only select a single item, without the function of multiple choices, which needs to be further enhanced.

**B. Platform Resource Presentation Mode**

Platform resources mainly consist of two parts, namely, course guidance resources and course learning resources. Course guidance resources mainly refer to that learners enter the course interface and judge whether they are enrolled in a course by understanding the introduction of course, introduction of instructor, course chapters, assessment criteria, etc. Course learning resources include video learning resources and learning materials, of which learning materials consist of presentation files, extended reading materials and reference materials. Course learning materials help learners to master the teaching content.

1) *Course guidance resources*: As can be seen from "Table II", the comparison of course guidance resources mainly includes video introduction, teachers, course overview, course evaluation, learning objectives, course chapters, preknowledge, assessment criteria, certificate requirements, reference materials, and frequently asked questions. All the five platforms have video introductions, teacher introductions and course chapters. Video introduction is more helpful for learners to understand a course. Introducing the teacher can also help students to understand the teaching direction of teachers and assist learners in expanding their learning.

TABLE II. COMPARISON OF COURSE GUIDANCE RESOURCES ON MOOC PLATFORMS [11]

Platforms Items	XuetangX	CNMOOC	Chinese University MOOC	Zhihuishu	Fanya
Video introduction	✓	✓	✓	✓	✓
Teacher	✓	✓	✓	✓	✓
Course overview	×	✓	✓	✓	✓
Course evaluation	✓	×	✓	×	✓
Learning objectives	×	✓	✓	✓	×
Course chapter	✓	✓	✓	✓	✓
Preknowledge	×	×	✓	×	×
Assessment criteria	×	✓	✓	✓	×
Certificate requirements	×	×	✓	×	×
Reference materials	×	✓	✓	×	✓
Frequently asked questions	✓	×	×	×	×

Course overview and course evaluation are the overall description and evaluation for a course. [12] Learners can make subjective judgments on whether to continue to understand a course through course overview and course evaluation. The course overview describes the nature of a course. There are two kinds of course evaluation: narrative evaluation and grading evaluation. There is no course

overview on XuetangX platform, and no course evaluation on CNMOOC platform and Zhihuishu platform.

Learning objectives and preknowledge are the basic contents for learners before the course study. Learners will know whether they can choose this course through pre-knowledge and learning objectives make them understand

what content they want to acquire. Learning with purpose is also more targeted. XuetangX, Chinese University MOOC and Zhihuishu platforms have the module of learning objectives, while only Chinese University MOOC platform has the module of preknowledge.

Assessment criteria and certificate requirements are only available in the Chinese University MOOC platform. These two contents are the evaluation of course learning results, indicating that Chinese university MOOC platform has more perfect evaluation methods.

Reference materials are auxiliary learning materials for learners, including books, specific text materials, and links. XuetangX, Chinese University MOOC and Fanya platforms offer reference materials on different aspects.

It can be seen from the comparison of course guidance resources that Chinese University MOOC platform is relatively complete.

2) *Course learning resources*

a) *Video learning resources*: Teaching video is the most important learning resource on MOOC learning

platforms. The video length of the five platforms is limited to about 10 to 20 minutes, which satisfies learners' fragmented learning style. Some courses set up courseware explanation of key knowledge and interactive questions, reflecting the timeliness of knowledge acquisition. As can be seen from "Table III", video subtitles are available on all five platforms, but not all courses on each platform. Based on the caption location function, clicking on the caption video can jump to the corresponding position, which is only available in some courses on XuetangX and CNMOOC platforms. Moreover, only XuetangX platform has video download function. On CNMOOC platform, its video definition cannot be adjusted, and some courses also cannot be fast-forwarded, so that learners can watch video completely. All platforms have functions of video captions and speed adjustment. Therefore, comparing the five platforms, it can be found that XuetangX platform is relatively perfect in terms of video function.

TABLE III. COMPARISON OF VIDEO FUNCTIONS OF EACH MODULE

Items \ Platforms	XuetangX	CNMOOC	Chinese University MOOC	Zhihuishu	Fanya
Video captions	√	√	√	√	√
Locating according to captions	√	√	×	×	×
Video download	√	×	×	×	×
Speed adjustment	√	√	√	√	√
Definition adjustment	√	×	√	√	√
Forward and backward adjustment	√	×	√	√	√

b) *Learning materials (presentation files, extended reading materials and reference materials)*: Presentation files mainly refer to the PPT involved in video courses, extended reading materials mainly are presented in the form of PDF documents or hyperlinks, and reference materials mainly refer to the references or bibliography provided by the platform course. [11] There is more courseware for science courses, but less for liberal arts courses on XuetangX platform. It does not provide reference materials, but there are essential notes that can be provided for learners. Most of courses on CNMOOC platform are equipped with presentation files and reading materials, as well as teaching materials and references. [14] Some courseware on Chinese University MOOC platform has presentation files or PDF documents, and only some chapters of a few courses on Zhihuishu platform are provided with materials. The last chapter of each course on Fanya platform is provided with the reading section, the interface of course introduction sets the module of references. Among them, the CNMOOC platform is relatively perfect in the setting of learning

materials, while Zhihuishu platform needs to be strengthened in the setting of information.

C. *Classroom Organization and Interaction on Platforms*

1) *Classroom organization on platforms*: The main processes of classroom organization on XuetangX, CNMOOC, Chinese University MOOC and Zhihuishu learning platforms are as follows:

Teachers regularly publish teaching videos, assign exercises, and organize topic discussions, and then students watch videos to complete exercises. [15] From "Table IV", it can be seen that the classroom organization of XuetangX, CNMOOC, and Zhihuishu platforms is relatively detailed, providing chapter navigation, chapter tests and homework, and offline examinations, and their discussion boards are also more complete. Fanya platform needs to be strengthened in classroom organization.

TABLE IV. THE COMPOSITION OF PLATFORM COURSE INTERFACE

Platforms	XuetangX	CNMOOC	Chinese University MOOC	Zhihuishu	Fanya
Course interface	It includes courseware, course information, discussion board and progress. Self-assessment exercises, homework and discussion boards will be set up in each chapter of courseware area. Examinations are conducted at the end of the course.	It includes course information, course content, discussion and communication. Course announcement, syllabus and assessment criteria are set in the course information section; chapter navigation, tests and assignments, and offline examinations are set in the course content section; discussion board, questionnaire survey and my notes are set in the discussion and communication section.	It includes bulletins, scoring criteria, courseware, tests and assignments, examinations and discussion boards.	It includes teaching team, course design, online courses, meeting classes, homework test and assessment criteria.	It includes course introduction, teacher team, teaching effect, reference textbooks and course chapters.

2) *Interaction on platforms*: Based on the setting of platform discussion boards in "Table V", in terms of interaction of the five platforms, Zhihuishu and Fanya platforms need to add discussion boards. Chinese University

MOOC platform is more detailed in discussion boards, which is divided into general discussion board, teacher question-answering board, communication board and comprehensive discussion board.

TABLE V. SETTING OF DISCUSSION BOARDS OF PLATFORMS

Platforms	XuetangX	CNMOOC	Chinese University MOOC	Zhihuishu	Fanya
Interactive discussion	Set up discussion boards, filter topics to find interesting topics, and vote for posts and report them	There are forums, the number of posts and the last post in the discussion boards. One can search for discussion board content with posts in the top 100.	Set up four kinds of discussion boards, namely, general discussion board, teacher question-answering board, communication board and comprehensive discussion board. Learners can post topics and make a search by keyword topic, reply and comment. Each topic has its latest publications, final responses, number of responses, and number of votes.	There is no discussion board, but there are meeting classes.	There are discussion boards and no meeting classes.

D. Platform Performance Evaluation and Course-completion Certification Method

Platforms' performance evaluation and course-completion certification method are shown in "Table VI":

TABLE VI. PERFORMANCE EVALUATION AND COURSE-COMPLETION CERTIFICATION METHOD

Platform	XuetangX	CNMOOC	Chinese University MOOC	Zhihuishu	Fanya
Performance evaluation	No explanation	Courseware browsing + objective practice + in-class discussion + off-line final exam	Homework + unit test + classroom discussion + final examination	Academic progress score + chapter test score + meeting class score + final exam score	No explanation
Course-completion certification method	Certificate (provide free electronic certificate) Credit certification (credit certification for some courses)	Certificate (provide electronic course-completion certificate) Credit certification (flipped classroom and offline examination are required for all courses)	Certificate (provide free electronic certificate) Credit certification (no credit certification)	Certificate (no certificate) Credit certification (credit certification for all courses)	Certificate (provide certificate) Credit certification (no credit certification)

Comprehensive consideration is required for performance evaluation. CNMOOC, Chinese University MOOC and Zhihuishu platforms give specific performance evaluation requirements and the proportion of each part, which is more reasonable. Zhihuishu platform takes the learning progress as a part of performance evaluation, which can facilitate learners' learning of courseware. Zhihuishu and CNMOOC platforms provide credit certification for all courses. Credit certification is an important way for a platform to obtain

economic benefits, which is also of great significance for the sharing of high-quality courses.

Based on the above analysis, it can be concluded that:

- The homepage of XuetangX platform is presented in a better way, with definite plate classification and indicator, fast locating by search engine and clear navigation, which is the most convenient way for learners.



- The comparison of course guidance resources shows that Chinese University MOOC platform is relatively perfect in this respect and has a positive guiding effect for students with poor autonomous learning ability.
- In terms of course learning resources, XuetaangX platform has a better video playback function. The learning materials of CNMOOC platform are relatively complete, and Zhihuishu platform needs to be strengthened in extended reading materials and reference documents.
- CNMOOC, Chinese University MOOC, and Zhihuishu platforms have given specific requirements for performance evaluation and its proportion. Zhihuishu and CNMOOC platforms offer all courses credit certification, which is more conducive to the sharing of high-quality course resources.

#### IV. SUGGESTIONS ON OPTIMIZATION OF MOOC PLATFORMS IN CHINA

##### A. *The Optimization of Platform Homepage Presentation Mode*

The presentation mode of platform homepage directly affects whether learners are willing to learn. Reasonable and effective classification can help learners locate the page quickly and find the course. Effective keywords need to be set up in search engines, which is more favorable to learners' course searching. Zhihuishu platform can add plate classification to the homepage to show the course classification.

##### B. *Standardization of Course Guidance Resources*

The standardization of course guidance resources can attract learners to learn and help them to make a choice among many courses. Each platform can improve its course guidance resources and highlight the advantages of this course in the course introduction, so that learners can know whether the course is suitable for them.

##### C. *Diversification of Course Learning Resources*

The diversification of curriculum learning resources helps learners to broaden their knowledge fields. By comparing platforms, it is found that learning resources in the MOOC platforms are mainly presented as video learning resources, and there are also more presentation files and PDF documents, and fewer extended reading materials and reference materials. In this respect, Fanya platform is better, with comprehensive reference materials, so other platforms can also increase learning materials appropriately.

##### D. *The Richness of Interactive Functions of Platforms*

The interactive function of platforms is mainly embodied in the discussion boards, where learners participate in topic discussion. As the interactive mode is too single, it can increase the number of discussions and online broadcasts when learners watch video on platforms, reflecting the

timeliness of learners' participation in courses. Moreover, learners' problems can be solved in time to promote their thirst for knowledge.

#### V. CONCLUSION

XuetaangX, CNMOOC, Chinese University MOOC, Zhihuishu and Fanya platforms have their own advantages, which greatly facilitates learners' learning and achieves good learning results. However, there are still some deficiencies in platform homepage presentation mode, platform resource presentation mode, platform classroom organization and interaction, platform performance evaluation and platform course-completion certification mode. Only by constantly improving the teaching design of MOOC platforms can learners' learning interest and quality be better enhanced, and advantages of MOOC learning platforms be given full play to, so as to enable more learners to love this learning style.

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