

Research on the Construction Mode of Financial Engineering Course Based on “Internet + “ Technologies

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Abstract

In the practical and talent-oriented higher education, to build the core professional courses with the help of “Internet +” technology can realize the multi-time learning, which is helpful for the cultivation of applied talents. This paper analyzes the necessity of combining internet technology in curriculum construction. Take the course of “Financial Engineering” as the example, from the aspects of class time setting, textbook selection, practical system construction, developing three kinds of curriculum construction modes, which provides a reference for the construction of higher education curriculum.

Key words: Internet +; Financial engineering; Course construction

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With the development of technology, internet technology and education are deeply integrated. This kind of integration is usually in the industry called “Internet +”. Curriculum construction is one of the important issues in the development of higher education. In “Internet +” background, how can we better use the internet technology to carry out higher education curriculum construction, which is related to higher education talent cultivation and development. The idea of “Internet +” is raising the construction of financial engineering courses

and professional training a new horizon, using internet technology to create a vivid multimedia courseware, you can also send pre-class reading materials, case study, professional information presentation, course content and professional platform (such as excellent mines, etc.) combined use. Internet technology can be applied to the construction of the curriculum all the time, and the class setting, textbook selection, curriculum system and practical system construction need to be adjusted accordingly. This is a new mode of transformation and real-time integration of curriculum construction. This article takes the construction of financial engineering courses as an example. Conducting the discussion of the above related issues.

1. THE NECESSITY OF INTEGRATING INTERNET TECHNOLOGY IN CURRICULUM CONSTRUCTION

In this era, computers and other portable smart devices are quite popular, unlimited and general coverage of wireless networks. In every corner, this provides hardware and environmental support for the use of internet technology for course construction. Integrating internet thinking and technology into the construction is the need to adapt to the development of the society, to solve the course real-time studying, to meet the practical requirements.

1.1 Adapting To the Needs of the Development of the Times

Contemporary students are in the age of the internet, and the internet has become part of learning and life. The internet is an upgrade media of the dissemination method. The internet thinking methods is used in the field of higher education. The integration of construction and Internet technology is in line with the needs of the development of the times. Open any educational

content broadcasting platform, or media platform such as Youtube, can search for many videos and sounds related to education and teaching. These content may be fragmented, but available. Such content in a large number of appearances are inseparable from people's needs and the development of the times. Course construction with "Internet +", Give full play to the advantages of internet technology in information dissemination, and systematically and completely present relevant educational and teaching content. It is the curriculum construction requirements that the new era demand.

1.2 Solving the Need for Real-Time and Repeated Learning

One of the greatest conveniences of using internet technology for course construction is the ability to solve real-time, iterative learning demands. In the majors of higher education, some courses are difficult, theoretical and practical. In teaching of such courses, students generally believe that theoretical knowledge is difficult to grasp, although this will be felt during the study. It is a course worthy of in-depth study, but it is regrettable because its knowledge points are difficult to master. Such an important, attractive but difficult course includes pre-class preparation, after-school review, and digestion absorption and application needs. The internet can store and host course resources almost permanently, providing students with time to the opportunity to learn repeatedly, that will be very helpful to master the difficult professional knowledge.

1.3 The Need for Curriculum Practice

In higher education, some courses have both the characteristics of the social science discipline and the science & engineering science. There are more textual descriptions in the course, and there are hands-on practical content. The difference is that the part cannot perform laboratory experiments like traditional science & engineering subjects. In the era of developed internet, such courses can be used network platform for professional practice and real-life presentation, or programming code with computer software, on the platform to verify and develop the relevant content of the course, so the construction of such courses is usually inseparable from the integration of the internet.

2. THE DESIGN OF CURRICULUM BASED ON THE "INTERNET +" CURRICULUM CONSTRUCTION

The use of internet technology for higher education curriculum system construction should be based on the needs of learners, design time tolerance. A curriculum system that is subject to complete content and gradual progress. The curriculum construction system module

includes a setup lesson, scheduling class time, choosing textbooks, building knowledge systems and teaching aids.

2.1 Class Time Allocation

Taking financial engineering as an example, as a core course in different higher institutions, financial engineering class hours vary from 48 class hours to 96 class hours. Class time settings can be broadly divided into three categories. The first category is a lesson setting method that only provides a theoretical course. Basically it will be set to 48 class hours including the exercises and the in-class experiments, and some local colleges and universities will adopt such curriculum. The second category is on the basis of the establishment of financial engineering theory teaching, a pre-requisite course in financial engineering or a follow-up course setting method will be established. This type of class design basically takes about 72 class hours. For example, the financial engineering of well-known financial universities in China, including the introduction of financial engineering and derivative financial instruments courses, the two parts add up 4 credits, which takes 72 hours to complete. In some financial institutions of some local colleges, 48 hours of application are completed. Study in a theoretical course and spend the remaining 16 to 32 hours on professional course practice. The third type of financial engineering that is the financial engineering pre-course, theoretical teaching plus professional practice. It takes 96 class hours, including 16 hours of financial engineering foundation, 64 hours of financial engineering theory, 16 to 32 class hours for financial engineering practise.

2.2 Selection of Teaching Materials

Textbooks used in financial engineering are based on different methods of course setting. Under normal circumstances, there are three types of methods for the selection of teaching materials. First, the content of the teaching materials is what the students learn, and most of the content that students learn from the textbooks. This kind of teaching materials is relatively simple, the teacher and students can benefit from it. Students can be informed and relatively convenient in their studies. Teachers can concentrate on stressing the knowledge in the textbook. For example, "Financial Engineering Theory and Practice". Second teaching material selection method is to choose a comprehensive textbook, which is often long and suitable for a pre-scheduled course or a long-term course setting method for theoretical classes. Such the classic textbook as "Options, Futures and Other Financial Derivatives", covering the basic knowledge and classical knowledge of financial engineering theory. That is usually chosen in the second case. The third category is self-editing textbooks, and teachers are professional author based on the college. The exhibition needs to prepare financial engineering pre-course textbooks, theoretical teaching materials and practical teaching materials. This

kind of teaching material selection is a systematic project for most institutions and is also a great challenge.

2.3 Knowledge Framework

The theoretical knowledge framework is the soul of higher education curriculum construction. Can students master the knowledge of a course? The knowledge network basically depends on the theoretical curriculum system. There are many points of knowledge in financial engineering courses. Take the professor John Hull's "Options, Futures and Other Derivatives" as an example, its theoretical courses include basic articles, advanced articles and application articles. The basics include financial derivatives and related terminology, mastering forwards, futures, related pricing methods for basic financial derivatives such as options and swaps. The basic teaching goal is to understand finance engineering, establishing the idea of financial engineering, preliminarily mastering some financial engineering terminology and basic financial derivatives and the pricing method of the tool. According to the 72-hour design, the basics need to be completed in 36 hours to 48 hours. Advanced articles focus on the analysis of complex problems in financial instrument trading and related classical financial engineering solutions, such as forward rollover in futures trading, interest rate swaps in pricing, Hedging and Arbitrage Trading Theory, Ito lemma, BS option pricing, etc. The advanced parts take 16 to 32 hours to learn. Advanced part is the charm and difficulty of financial engineering, because there are many theories that won the Nobel Prize, you want to learn task difficultly. This part of the course is based on the curriculum design requirements and the mastery of the students. It is also because of this is extremely important and difficult, so it can be better integrated with internet technology. Application is mainly computer sciences for financial engineering product design, such as capturing financial data, portfolio construction and options price and so on. This part takes 16 to 32 hours to complete, including reviewing some computer software techniques, The method of solving financial problems and the preliminary design of financial engineering products.

2.4 Teaching Aid

Any course construction is inseparable from teaching aids. As a financial engineering project, it leads to employment in financial engineering. Teaching assistance is extremely important. The teaching aids for this course include related exercises. For example, the "Options, Futures, and Other Derivatives" textbooks have as many as 20 to 30 sub-questions for each chapter. In addition, exercises include textual knowledge and understanding of relevant databases, Using Yahoo Finance and other related websites to get data sets.

3. THE "INTERNET +" FINANCIAL ENGINEERING COURSE CONSTRUCTION MODES

As we have said that the "Internet +" is some internet-based thinking, the core of the transformation of educational content is the curriculum design oriented by learners' needs. Based at the above curriculum system design, this paper proposes three curriculum construction modes, Which are theoretical learning mode, basic application mode and practical application mode.

3.1 Theoretical Learning Mode

The theoretical learning mode usually refers to the basic foundation of financial engineering related terminology, including derivative instrument pricing and trading strategy theory learning. This mode requires 48 hours, and teaching materials use some theoretical textbooks containing about 13 chapters, such as "Financial Engineering Theory and Practice". In the theoretical learning mode, its knowledge framework is mainly the basic theory of financial engineering. Various financial instrument characteristics and related terms. Teaching aids are mainly after-school exercises. Overall, theory learning mode can also meet the requirements of students to complete 3 credits, and the teaching objectives can achieve financial engineering. The initial understanding and understanding of the content and ideas is a financial engineering course suitable for most colleges and universities. Combine "Internet +" technologies to design attractive courseware based on instructional design for pre-class content introduction, case analysis, after-school study, explain the questions and so on. The "Internet +" technology application in this mode is relatively simple, but it also satisfies the students in advance with the need for repeated learning.

3.2 Basic Application Mode

The basic application mode is the first upgrade of the theoretical mode of financial engineering. The basic application mode is in progress based on simple financial derivative pricing and trading strategy learning. It can be simple by computer simulation application. If you learn the B-S pricing method of the option in the theoretical part, you can use computer software performs a pricing simulation of an option product traded in the market. This course design mode needs 64 class hours, and the textbooks can choose materials with 18 chapters, such as "Financial Engineering Theory and Reality" or the "Introduction to Financial Engineering and Advanced". Its knowledge system is relatively complete, including in the financial engineering related trading and pricing theories, that is four basic financial derivatives, such as futures, futures, options and swaps, including classic financial engineering theory and preliminary

computer software foundation. The teaching assistant part needs after-school study questions, understanding of related databases and basic computer software technical support. In this mode, Internet technology technique is very important. In the course, “Internet +” is used to combine the theory and practice of the course in the realization of the “Internet +” advantages, and the content of the course is more practical.

3.3 Practical Application Mode

Learning to use is the pursuit of every learner, as is the learner of financial engineering. Financial engineering at the practical mode in the curriculum construction can basically achieve this goal. Practices means application. Based on the basic concepts of basic financial engineering and the classic financial engineering theory, we can apply computer technology creatively solves financial problems. This mode is related to the theoretical learning mode. The biggest difference is that the practical application mode needs to master the inherent and the extension of the classic financial engineering theory. The theoretical derivation and argumentation also needs to be able to solve financial problems creatively, and thus become the pursuit of engineering learners. From the perspective of engineering learners, the practical application mode requires at least 96 class hours. The knowledge system includes basic financial engineering terminology, basic financial instrument pricing and trading strategies. There are about 27 pieces of content, and sometimes even a fusion of multiple textbooks. And teaching aids not only need to practice after-school exercises, more is to carry out the deduction of classical theory and the skilled use of computer technology.

CONCLUSIONS AND RECOMMENDATIONS

This article takes the “Financial Engineering” course as an example and analyzes the addition of “Internet +” to the traditional curriculum design. Conductive mode construction, including theoretical learning mode, basic application mode, practical application mode. To the same extent, the integration of the theoretical content of the curriculum, the practice of the curriculum, and the internet has been realized, for the Internet + and the integration of curriculum construction provides a reference basis. It is true that in the deep integration of the Internet and education, it is not only the deep integration of the internet technology and education. It is also a deep integration of internet thinking and education. Design a curriculum mode that incorporates the “Internet +” element. It is an inevitable path to promote the deep integration of the internet and education. To teachers, students and educational staff, such course design based on Internet thinking is worth exploring now and in the future.

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