# Exploration on the Construction of the Open Online Course of *IT English*

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**Abstract.** Under the guidance of OBE (Outcome-Based Education) theory, educators, colleges, and universities are paying more attention to the demands for talents of society, and the course teaching in colleges and universities is more emphasizing the actual learning results of students. This paper elaborates on the construction of the open online course of IT English, including its design, structure, main content, learning tasks, assessment, etc. Various types of learning resources and materials are offered in the open online course. Effective and interactive learning activities are also arranged. The research and practice indicate that the students have achieved good learning results and positive experiences from the open online course of IT English.

**Keywords:** OBE · ESP · open online courses

## 1 Introduction

As communicating on professional issues is indispensable in any business, English skills in the IT industry are quite important for college students majoring in computer-related disciplines. In China, most computer majors just learn the *College English* course in the first two years. Furthermore, *College English* is a typical EGP (English for General Purpose) course, mostly focused on general context and seldom involved in IT professional topics. *IT English* is an ESP (English for Specific) course integrating IT knowledge and English skills for computer majors, especially for the junior students who have just completed their learning of College English. It can help computer majors fill the gap between their professional knowledge and language skills.

In the "14th Five-Year Plan, the Ministry of Education has put high-quality development as the general objective for education. As a brand-new course and teaching mode, the open online course has become popular rapidly because of its novelty, freedom, and wide coverage, promoting the renewal of educational ideas, the optimization of teaching contents, and the reform of teaching methods [1]. Online open courses provide students with more convenience and freedom, without any restriction of space, time, environment, or equipment.


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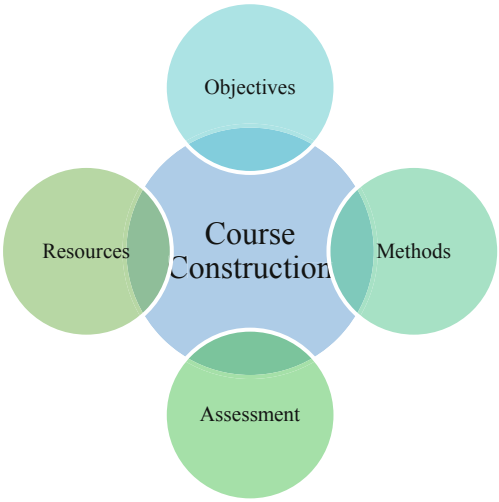


**Fig. 1.** OBE-Based Course Construction Model

## 2 OBE Concept

AS a widely accepted educational philosophy and theory, OBE has been studied and practiced for decades. OBE is an educational concept based on learning results. It represents the mainstream direction of professional engineering education reform, clearly focuses and organizes each link of education, and enables students to achieve the expected results in the learning process [3]. The whole process of OBE course teaching involves the design, implementation, and evaluation. As for a course, the teaching objectives should be confirmed in the first place, which should match the whole educational goal of the major and school and be able to clarify the position in the talent cultivation plan for the students. Accordingly, more specific teaching methods and activities can be designed and implemented in order to achieve all the above teaching objectives. Then, the teaching resources and materials should be allocated and prepared for the purpose of assisting the course teaching. Finally, it is vital to evaluate the course teaching effect by effectively checking the learning effectiveness of students in assessment, and accordingly put forward suggestions for continuous improvement, so as to form a closed loop of curriculum construction (Fig. 1).

## 3 Open Online Courses

In the era of big data, foreign language learners are facing the Internet plus. In the face of massive learning resources, the learning model has undergone tremendous changes, from traditional mode to electronic learning, mobile learning, ubiquitous learning, deep learning, and intelligence learning. With the generation of technology, innovation, and impatience, the current students prefer the learning method at their fingertips [2]. With the birth of 5G technology, the era of learning English via mobile phones has come,

which will greatly promote the reform of course teaching. Open online courses use multiple models and methods to present knowledge and content, such as text, images, animation, audio, and video [4]. Therefore, the courseware and other learning materials in the open online course should be well constructed and prepared by comprehensively applying multiple techniques and means to make all the course resources in line with online English learning mode, to highlight the advantages of open online course learning. The excellent open online courses should contain the following characteristics.

### 3.1 Diversification

The course integrates a variety of network techniques and digital resources to form diversified learning tools and rich course resources. Various forms and types of learning materials are included, such as vocabulary lists, micro-courses, multiple choice exercises, Chinese-English translation exercises, listening exercises, oral practice, writing practice, extended learning materials, unit tests, final examination, etc.

### 3.2 Ease of Use

The course teaching is flexible and easy to understand, applying diverse teaching forms to highlight the key points.

### 3.3 Universality

The course breaks through the limitation of the number of learners in traditional courses and meets the demand of large-scale course learners.

### 3.4 Autonomy

Relying on the Internet, Students can choose to learn any part of the course anytime and anywhere.

## 4 IT English

As the case study object, *IT English* is a main branch of ESP, focusing on the English teaching approach of the software industry in the field of computer science. *IT English* is an ESP course for college IT and software-related majors. The design idea of the course is to fill the gap between their professional knowledge and language skills, and cultivate applied and compound technical talents who meet the demands for the talents of the IT and software industry, with both IT professional knowledge and English communication ability in the IT industry.

## 5 Construction of the Open Online Course of *IT English*

### 5.1 Teaching Objectives

In the syllabus of *IT English*, 5 teaching objectives under the 3 types (quality, knowledge, and ability) are set as followed, with 5 corresponding expected learning effects (Table 1).

**Table 1.** Teaching Objectives of *IT English*

| Objectives | Expected Learning Effects |
|---|---|
| Quality:<br>Identification with professional norms | Fully understanding and complying with professional norms and ethics in the IT industry, keeping commitments, and having a sense of responsibility. |
| Knowledge:<br>IT professional knowledge | Correctly recognizing, understanding, and mastering the professional information of software development process and business, expressing and communicating in accurate and professional English. |
| Ability:<br>Electronic and multimedia communication | Skillfully using electronic and multimedia means to assist in the writing of research reports and the display of research contents in foreign-related information services in the IT industry. |
| Ability:<br>Written communication | Skillfully using English reading and writing skills to carry out accurate and professional written communication in the IT industry, |
| Ability:<br>Oral expression and interpersonal communication | Using accurate and professional English to conduct oral expression and communication. |

### 5.2 Course Structure

According to the structure of the professional knowledge, Software Development Life Cycle, the open online course is divided into 6 units, including Feasibility Study, Requirements Analysis, Design, Implementation, Testing, and Operation & Maintenance, as well as the Course Introduction part in the very beginning and the Final Test part in the end (Fig. 2).

Each paralleled unit contains the 5 parts of Overview, Technical Conversation, Technical Document Reading, Technical Email Writing, and Unit Test.

In each individual part, the main content and key knowledge points are explained in the corresponding video lecture, so the students can get to know and learn that in the first place. During this period, some necessary pre-learning or post-learning materials will be offered to assist the students in better understanding the knowledge. After watching the video, the students will find some corresponding exercises, practice, or quizzes to self-check how much they have understood and mastered in the lecture right away, which is very effective and helpful for the students to decide whether they will go on with the next part or just go back and review the knowledge in this part. Some further or higher-level learning tasks and projects are set for the students to apply what they've just learned in this part to deal with some comprehensive issues or offer effective solutions (Fig. 3).

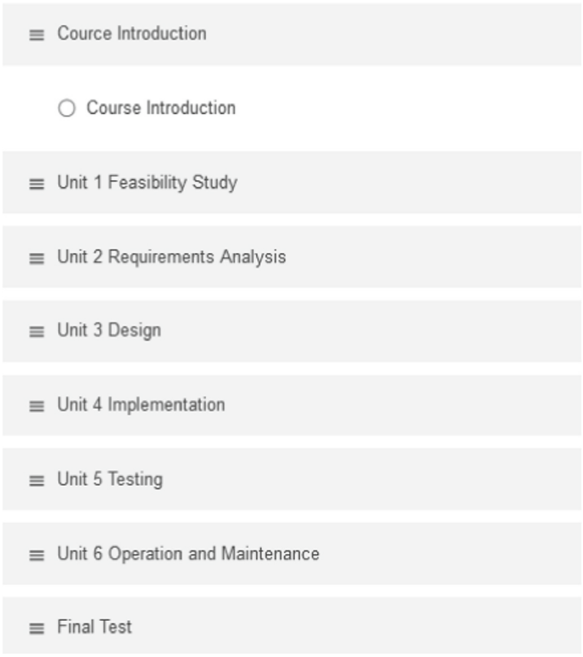


**Fig. 2.** Course structure

### 5.3 Course Resources

Diverse course resources are presented in the open online course of *IT English,* for the convenience of students to check online and download. In order to meet the requirements in different learning phases, each material has been well planned and organized, for the convenience of students to access, download and review on their PC or mobile terminals anytime and anywhere.

#### 5.3.1 Micro-course

In the open online course of *IT English*, micro-courses, or video lectures, are the leading content in each individual 2nd level chapter. Each video is only 5 to 10 min, highly focused on the difficult and key points of the current topic, which is quite in line with the short-term attention of the current college students. They can complete a learning stage, clear about what they've learned, and efficiently achieve the minor learning objective for the current stage. The lecturer is a native speaker with excellent and rich experiences in both software development and English language teaching. The figure of the lecturer is embedded into the courseware, which provides students with intuitive and clear interface, effectively capturing their attention and improving their learning effects (Fig. 4).

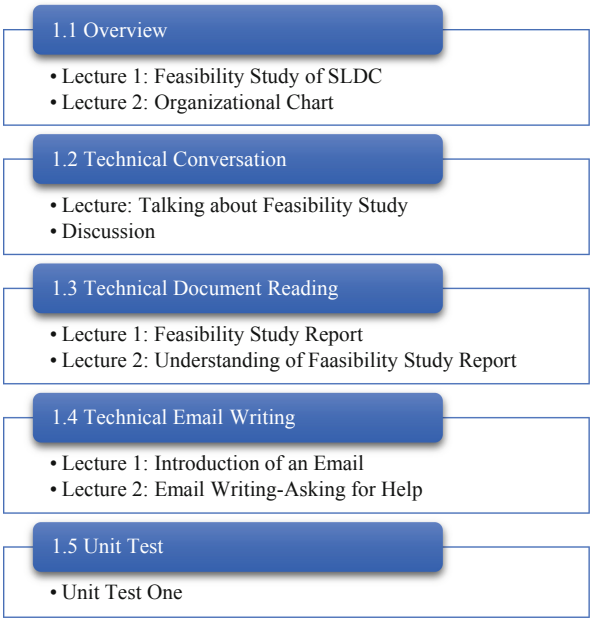


**Fig. 3.** Unit structure


**Fig. 4.** Micro-course (self-drawn by the author)

### 5.3.2 Preview Materials

For the purpose of promoting students' learning and understanding, some preview materials (PDF documents) are provided on the platform, such as vocabulary lists, technical terms, background information, technical documents, etc.

### 5.3.3 Reference Materials

During the process of online learning, some necessary reference documents and materials are presented to support students' learning. For example, a good sample of technical

**Table 2.** Course resources

| | | |
|---|---|---|
| **78**<br>Periods | **43**<br>Videos | **129**<br>Non-video materials |
| **314**<br>Video hours | **42**<br>Quizzes | **216**<br>Quiz question items |
| **1**<br>Exam | **36**<br>Exam question items | **3**<br>Course announcement |

conversation around a similar issue is offered to students for reference, before they organize their thoughts to talk about the given topic. Some recommended answers and solutions are also accessible in the open online course to illustrate students' learning.

#### 5.3.4 Extended Learning Resources

IN order to satisfy the differentiated learning needs of students with different learning capacities, extended learning resources are indispensable. These extended learning resources are presented in videos and text in the online course (Table 2).

### 5.4 Teaching Methods

Except for the aforementioned teaching methods and approaches of lecturing, task, project, and demonstration, the problem-based method is also used in the technical document reading part in each unit. Some pre-reading questions are proposed beforehand and thrown to students before they read the technical document, most of which are open questions set for students to read and understand the technical document with some specific aims or to-be-solved problems.

In the sectors of assignments, exercises, practices, and comments, students can interact and communicate with teachers and other students. Their assignments are also graded, evaluated, and commented on in time by teachers.

### 5.5 Assessment

#### 5.5.1 Unit Test

There is a test at the end of each individual course unit to check how much professional knowledge and language skills students have learned and mastered. 10 multiple-choice questions are contained in the unit test, covering all the key knowledge points in this unit. Their grades in this test directly and clearly reflect their learning outcomes in each individual course unit, which also helps students conduct a self-check and decide whether they will make necessary review of the professional knowledge and language skills in the current unit or just go on to the next course unit.

### 5.5.2 Final Examination

After learning all the content of the open online course of *IT English*, students are required to take an online final examination, including various question patterns, such as multiple-choice, reading comprehension, listening, etc. The content of the final examination covers all the professional knowledge of software development (SDLC) and professional English language skills that they've learned through the online course. The overall learning outcomes of students will be checked in this part. Students can acquire a certificate of the open online course of *IT English*, only when they have completed all the learning tasks and successfully passed the final examination.

## 6 Students' Learning Outcomes

On the platform of UMOOCs, the open online course of *IT English* has been running open for 4 rounds. Some learning data can be collected to present the learning outcomes of students.

According to the background data of UMOOCs platform, the course has been learned by more than 1700 students from different colleges and universities all over China on UMOOCs platform within less than 9 months. Considering that the course has just run on the platform for less than one year, the teaching content, activities, resources, and methods are sufficiently interesting, attractive, and helpful for college students. The open online course construction team has interviewed some teachers in the colleges and universities whose students have learned this course on UMMOCs platform. The open online course has really won widespread praise and positive feedback from the interviewees (Fig. 5).

In the 4$^{th}$ round of the open online course of *IT English*, 412 students took the course on UMOOCs platform but only 37% of them have passed the final examination and successfully acquired the certificate. Apparently, the pass rate is much lower than most offline courses taken by students in colleges and universities. Yuan Li stated that, in the open online courses provided by Stanford University, MIT, and the University of California Berkeley, the withdrawal rate of students is as high as 80% to 95%. At

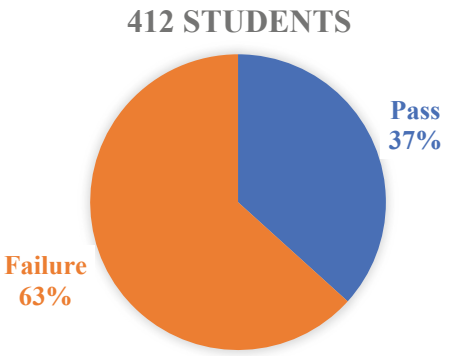


**Fig. 5.** Academic Transcript

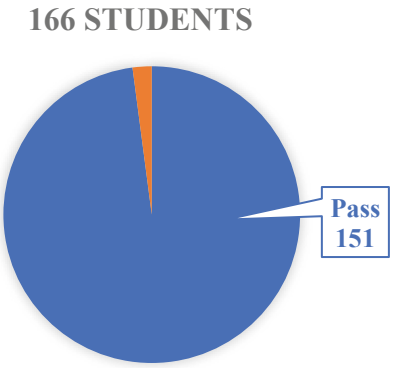


**Fig. 6.** Final examination data

the University of California Berkeley, 50,000 students have ever taken the course of Software Engineering, but only 7% of the students have finally completed the course [5]. Therefore, comparatively speaking, the pass rate of 37% is not that unacceptable for the newly-constructed open online course of *IT English*, which has been open 4 rounds on the UMOOCs platform (Fig. 6).

As the above learning data show, 151 of all the166 students completing the online learning have successfully passed the online course of *IT English*, accounting for 90.96% of the students who have taken the final examination after complete all the learning activities and tasks on the online platform. This percentage clearly represents that most of the students who have completed the overall learning of the open online course have achieved desirable and satisfactory outcomes. Therefore, the main cause of the low total pass rate of 37% is that quite a few students just dropped out halfway.

The open online course construction team also found that quite a few English majors in colleges and universities took the course, completed the learning and passed the final examination. Except for their curiosity and interest in the course, many of them just aim at working in companies or enterprises in the IT or software engineering industry after graduation. By learning the open online course of *IT English*, they actually acquire professional knowledge of software development and effectively improve their professional English skills in this field.

## 7 Conclusions

Based on the above discussion and analysis, it can be concluded that the construction of the open online course of *IT English* is successful, productive, and rewarding. College computer majors, especially juniors, can actually achieve good learning effects and experience in this course.

During the whole process of the course construction, accurate teaching objectives, high-quality resources, student-friendly teaching methods, and effective assessment are key to the success of an open online course. Additionally, in-time feedback, interaction, and grading are important guarantees of a successful open online course.

In order to increase students' completion rate of the open online course of *IT English*, it is critical to set milestones throughout their learning process, which can help students realize their achievements in different stages of learning and gain sufficient confidence to keep on going and complete the learning of the open online course.

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