Challenges and Solutions of Computer Professional English Teaching
Yanhong Yang*
School of Information Engineering, Beijing Institute of Graphic Communication, Beijing, China
Email: yangyanhong@bigc.edu.cn

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Abstract. For computer science students in China, learning English is very important. Whether new technology or a new product published, the usual version is in English. However, most textbooks in China are mainly in Chinese. Then the students meet difficulties in reading, understanding and expressing by the formal correct way. This paper will introduce how to carry out this course with the idea students are the center of teaching and output based learning under the background of a computer major. It will elaborate from the aspects of challenges in teaching, course objectives, course content, course assessment and feedback, so as to enable students willing to participate in the classroom.

Introduction

Although students have studied College English during their freshman and sophomore years and passed CET-4 and CET-6 in China, they still find it difficult to read English professional literature or write [3]. Most students do not have training of reading academic literature, and the general English teaching cannot basically meet the requirements of students’ graduation thesis.

Computer English is a selective course for computer science majors. It is of great significance to help students learn computer technology well [4]. This course content is related to the field of computer in English, covering the scope including hardware, software, network, database and cutting-edge technology. In addition, it also involves writing, translating and communicating skills of business e-mail of abstracts of scientific and academic papers [1]. The course had been canceled in the Department of Computer Science of Beijing Institute of Graphic Communication (BIGC) in 2015. But students failed to write abstracts and translate essays in English. As a result, the Department of Computer Science of BIGC re offer this course in 2017.

According to the survey, there are many problems in the current computer English teaching. Therefore, according to the characteristics of computer English course and the existing problems in teaching, this paper puts forward effective curriculum reform measures, explores scientific and reasonable teaching mode, achieves good teaching effect.

Challenges in Teaching

In the past teaching process, it encountered many difficulties [3]. Especially the students can't cooperate well with this course. Some students feel conflicted and some feel that the content of the course is very boring. More students think that the importance of other professional courses is not comparable [5]. In this part, the following challenges are listed.

1. The English proficiency of the students differs greatly

Take the students in BIGC as an example, about 50% of the students passed CET-4 in the first semester of junior high school are English proficiency, while the remaining 50% are poor in English expression. Although they have studied College English course, they have not learned the English expression in academic type. Most students are exposed to English through movies, series and games, but seldom to the original English lectures and English literature.

2. The motivation is insufficient
A few students have insufficient interest. Treating this course as an English course leads to weak learning initiative, laziness, procrastination homework. Some students find it difficult to read English literature, so they are reluctant to participate in the course. Other students feel that the course content is too cutting-edge or incomprehensible.

3. Content is difficult to choose

The content of the course covers a wide range. The best learning effect of this course is that students can participate in it. Therefore, teachers need to create a lot of discussions, experimental courses, videos and other forms. Therefore, how to improve students' ability in limited time is very difficult in content selection.

Course Goal

This course is an important elective course for the major of computer science and technology which is suit for students completed the basic English learning tasks, to further consolidate and improve their English level, improve reading ability [5]. The introduction of computer science through the introduction of computer science, so that students can use English as a tool to obtain information about the professional needs.

The course has taken into account the students' learning status, and has established the following five project training objectives:

1) Know vocabulary, grammar and terminology in information area;
2) To be able to access literature from the right database, and to read and understand correctly;
3) Improve listening ability, and be able to understand general technical speeches;
4) Improving writing ability, refining documents, correctly reporting, and avoiding plagiarism;
5) Master the skills of expression, improve the level of spoken English which can be clear, accurate, and logical.

Course Contents

This course uses the task-driven teaching method, which enables learners to acquire knowledge and skills in the process of accomplishing specific tasks. Table 1 shows the knowledge points and section and arrangement of teaching hours. In the actual operation process, video materials and text reading materials will be supplemented so as to enrich the content as much as possible. Table 2 shows the lab content and requirement briefly.

In each class, there will be about 5 minutes of listening time. The content is related to the content of the class, mainly from YouTube BBC and so on. In addition, the whole teaching process will also teach some small skills, such as how to attract people's attention in speech, logical structure.

It should also be noted that in the course of class, let your students speak. Increase the time for group discussion or practice by themselves. There is no need to worry about the disorder of classroom order, on the contrary, the benefits are that students deepen their impression.
| Chapter                  | Section                                                                 | Teaching hours | Job 1:                                                                 | Job 2:                                                                 | Job 3:                                                                 | Job 4:                                                               |
|--------------------------|-------------------------------------------------------------------------|----------------|------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------|
| Chapter One              | Section 1 Numbers represent the basis                                    | 2              | 1. File format description                                              |                                                                        |                                                                        |                                                                      |
|                          | Section 2 Digital Sound                                                  |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 3 Digital Pictures                                              |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 Digital Video                                                 |                |                                                                        |                                                                        |                                                                        |                                                                      |
| Chapter Two              | Section 1 Equipment Foundation                                          | 4              |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 2 Types of Computers                                            |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 3 Processors and Memory                                         |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 Storage                                                       |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 5 Input and output                                              |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 6 E-mail Writing                                                |                |                                                                        |                                                                        |                                                                        |                                                                      |
| Chapter Three            | Section 1 Network Basics Overview                                      | 4              |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section II Internet                                                     |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 3 Network Access                                                |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 LAN                                                           |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 5 File Sharing                                                  |                |                                                                        |                                                                        |                                                                        |                                                                      |
| Chapter Four             | Section 1 Content                                                       | 2              |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 2 Blog Weibo wiki                                               |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 3 Online Communications                                         |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 The Value of Social Media                                     |                |                                                                        |                                                                        |                                                                        |                                                                      |
| Chapter Five             | Section 1 Basic concepts of software                                    | 4              |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 2 Operating System                                              |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 3 Application software                                          |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 Office Software                                               |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section V File Management System                                        |                |                                                                        |                                                                        |                                                                        |                                                                      |
| Chapter Six              | Section 1 Software Development Process                                  | 2              |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 2 Software Development Tools                                    |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 3 Code Development Process                                      |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 Object-oriented Program Design                                 |                |                                                                        |                                                                        |                                                                        |                                                                      |
| Chapter Seven            | Section 1 Database Overview                                             | 2              |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section II Database Tools                                               |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section III Database Design                                             |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 4 Database SQL                                                  |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Section 5 Big Data                                                      |                |                                                                        |                                                                        |                                                                        |                                                                      |
|                          | Comprehensive exercises                                                 | 6              |                                                                        |                                                                        |                                                                        |                                                                      |
| Seven chapters           | Includes: 7 teaching modules; 7 topics                                   | 32             |                                                                        |                                                                        |                                                                        |                                                                      |
Table 2. Practice Content.

| Chapters | Name | Abstract | Hours |
|----------|------|----------|-------|
| Chapter 1 | Experimental 1: CPU architecture | Find the official website of the CPU brand. Complete the comparison of the latest CPU indicators. Introduction to the latest CPU technology. Submit Excel documentation. | 2 |
| Chapter 2 | Experiment 2: choosing and purchasing computers | Set a budget of $3500. Find the official computer website abroad and choose the right computer according to your own needs. Write an email to the leader, explain the computer to be purchased, and briefly introduce the configuration of the computer. Submit Word documents | 4 |
| Chapter 3 | Experiment 3: crawling and Analysis of packet | View the English documentation for wireshark. Crawl data from the network. Analyze the types of packets in the network. | 2 |
| Chapter 6 | Experiment 4: Python | Go to the official website of python and install the environment. Write Tread code. | 2 |
| - | Experiment 5: comprehensive exercise | Select the topic and complete 8 pages of PPT. Record the speech presentation for 5 minutes. | 6 |

Course Assessment and Feedback

Assessment

The students’ course scores are divided into four grades: A, B, C and D, which are synthesized by the speech presentation scores and the daily performance. Video speech is mainly judged from three aspects: content, pronunciation and expression [2].

Content: Is the content described novel and interesting?

Pronunciation: Whether the English pronunciation is accurate or not, whether the sentences are fluent or not;

Presentation: Whether the way of expression is reasonable, so that people can understand the content of the story.

The daily performance is the score given by the teacher according to each student's classroom performance and homework completion.
Result Analysis

Content Selection

There is no limit to the scope of students' topics in the topic selection. The topics of introducing computer related companies include: HP company, apple company; introducing related software: e-book, keep sports app, chrome; introducing domain knowledge: big data, AI, computer development history, Internet of things, Internet, network security, new media, AR; Introduce relevant knowledge points: 2-D code, peripherals, 5G, water-cooled case, CPU, Bluetooth, router; Introduce hardware products: Mac Apple laptop; Introduce games: mobile games, computer games.

Due to the emphasis on the prohibition of cheating in the classroom many times, from the collected video, there is no plagiarism, and the scope of topics is relatively wide.

Pronunciation Evaluation

Twenty of the 54 students pronounced smoothly, while some of the other students pronounced inaccurately. Typical problems include: 1) inaccurate expression of professional vocabulary, such as MB should be read as Mega byte; 2) inaccurate pronunciation of abbreviated vocabulary, such as e.g. should be read as for example; 3) mispronunciation of vowels in some words.

Distribution of Achievements

Referring to the scoring criteria, 32 of 54 students achieved A, 7 B, 13 C and 2 failed. It can be seen that through the study of this course, most students have mastered the key points of the course requirements, and the difficulty of the course content is still acceptable.

Feedback

Through the adjustment of teaching content and the improvement of teaching methods, feedback is reflected in the following aspects:

Students feel the pressure of the course task, but the difficulty is not very great, as long as they work hard, most of them can still be completed.

Students have a basic knowledge of literature search and English writing skills, which will be very helpful in graduation projects.

The improvement of students' oral and listening abilities is not obvious, because professional vocabulary or familiarity with the content will affect the effect of hearing.

In the course of class, students reduce the frequency of playing mobile phones.

Summary

Computer English is not a popular course. Many students will think that their English is good enough to avoid this course. In fact, this course is to help students integrate their specialty with internationalization as soon as possible, and also to provide important help for their graduation projects. Taking the students of BIGC as an example, this paper analyses the challenges and solutions, and gives the specific learning effect.

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References

[1] P. Lu, A study on English teaching for computer majors in independent colleges and universities based on immersive teaching method. Software Guide (Educational Technology), 162 (6) (2018) 51-53.
[2] Y. Yang, Z. Ding, A Novel Assessment in Computer Professional English Course on Video Speech. Information and computer (theoretical edition), 2018(23):244-245.

[3] L. Ji, L. Yu, Computer education for Chinese College English teachers: Time to take action. International Conference on Computer Science & Education. (2010).

[4] J. Lu, L. Kai. Research on Syntactic Characteristics of Computer English and Its English to Chinese Translation Strategy. International Conference on Computing and Information Science (2013).

[5] Lawson, B., Szajda, D., & Barnett, L. Introducing computer science in an integrated science course. technical symposium on computer science education. (2013).

[6] Y. Zhou. On the application of eliciting technique in efl computer english classroom teaching. Research on Curriculum Education 18, (2015) 99-100.