

## An Exploration of Teaching International Students Practical Computer Literacy at Shanghai Dianji University

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### Abstract

"Practical Computer Literacy" has been a compulsory course for all international freshmen at Shanghai Dianji University for six years. This paper describes the purposes of this course, analyzes the characteristics of students, optimizes the organization of course contents, and discusses the teaching strategies adopted according to the mentioned factors. Due to some objective reasons, it is quite challenging to design and teach this course at a university effectively. It is even more difficult to make this course popular for international students who came to major in specialized science. A constructive plan is proposed to improve the practicality and flexibility of this course so that international students can understand and master the skills better. Future work includes evaluations of the plan and applications to other related courses.

### Keywords

Computer literacy, International student, Hardware, Software, Windows, Office.

### 1. Introduction

"Practical Computer Literacy", also referred to as "Computer Fundamentals" has been a compulsory courses for freshmen in China for several decades. Since international programs were launched in 2014, this course has also been offered as a compulsory subjects to students from overseas. The home-students oriented versions of this course are mostly similar across China, although the national and many local educational departments are innovating the contents and the teaching approaches. The major innovations include replacing outdated text with introductions to recent hardware and software, updated practices and labs, discussions on popular information technologies, and multilevel teaching according to students' grades in placement tests.

However, by far there has not been any standard for the international version of this course, because students from the global have distinctly different cultural and educational backgrounds, learning, and language abilities. Each university, and even each teacher has their own idea for this course offered to international students, so the implementations are various not only across universities, but also among teachers. It is posing a serious question how this course should be organized and taught, and how this course can be optimized to be useful and helpful for foreigner. There have been a plenty of discussions on the constructions and innovations of the course "Computer Fundamentals" [1-4]. But few literatures have focused on the pedagogical methodologies for international students [5-6].

This paper presents the ongoing practice at Shanghai Dianji University (SDJU), and endeavors to propose a suitable solution for a majority of international students. The paper is organized as follow: section 2 describes the purpose of course; section 3 analyzes the characteristics of international students in SDJU; section 4 presents the optimized organization of course contents according to the previous analyses; section 5 discusses the teaching strategies adopted based on the actual situation; and section 6 concludes the paper.

### 2. Purpose of Course

The course "Practical Computer Literacy" at SDJU introduces basic computer concepts and teaches essential computer operations. The course include 32 lectures and 32 labs of 90 minutes each and is 4 credits. It is a public fundamental course for students of all majors. It aims to give students a

fundamental understanding of computer hardware and software, and enable them to operate computers proficiently for daily life, and to use computers for solving questions and accomplishing other course, and to develop their computational thinking, and to strengthen their skills of utilizing information technology for future careers.

This course is not directly related to a specialization but is required by all undergraduate programs. As the first computer courses for international freshmen, this course at SDJU is also hopefully designed to introduce the up to date development of information technology in China, which may help students' life and increase their happiness in this exotic country. It is expected that students can immediately apply and benefit from what they will learn.

### 3. Characteristics of Students

A majority of the international students at SDJU are from underdeveloped countries including Africa and Southeast Asia. Unlike domestic students admitted through national college entrance exams, international students have greatly different education backgrounds and proficiencies in computer. Some of them do not own or have hardly used a computer, some of their computers are too old to run a recent operating system or software. Unlike China, Microsoft Windows and Office are not popular or widely taught at high schools in some countries. What is more, many of them speak French, and have difficulties in learning in English or Chinese. It is quite a challenging job to organize this course for a class of students of so various levels.

As far as learning habit is concerned, international students are totally different from domestic ones. They are much more active in and after class, like expressing themselves, asking questions, and sharing ideas with others. They are not shy or afraid to answer questions or discuss in class. Teachers will seldom feel bored or embarrassed after raising difficult questions. They also love to communicate with their teachers on social media apps. However, they do not always adhere to the regulations of the university or the rules set their teachers. For instance, punctuality and attendance are very hard for them to follow. Coming late, leaving early, and being absent are common among students of all majors. Instead of taking notes on notebooks or textbooks which is usually required by Chinese teachers, they prefer to record what they see and hear using phones. Chinese teachers always wish to think up efficient ways to give them lectures and help them pass exams.

At present, SDJU offers three international undergraduate programs: international trading, automation, and software engineering. All freshmen of these majors, approximately sixty students every year, will have to take this course.

### 4. Organization of Course Contents

At the beginning, the course for international students was merely a translation of the ordinary "computer Fundamentals". But it was soon proved unsatisfactory because international students had very different backgrounds from domestic students, as mentioned previously. Before formal introductions to computer science and applications, the very first chapter presents some recent development in information technologies in China such as mobile payment, online shopping, useful apps, and other aspects of digital life. This part is expected to arouse students' interests and gratifications, and help them start campus and daily lives more smoothly.

International students are rarely interested in theoretical stuff which cannot be applied soon. So some theoretical sessions, particularly on hardware and software are removed, reduced or reorganized to be practical with lab questions. For instance, the hardware chapter replace the long text of theories on CPU, memory, etc. with brief descriptions, the usage of hardware testing utilities, and purchasing guides which can hopefully help students select cost-effective computers and peripheral devices. The network chapter is kept for self-study only, because nowadays almost everyone is able to use cell phones and internet with widely accessible 4G and Wi-Fi. Students of non-network majors do not need to care so much about the complex theories of networking, at least for their first year in the university.

The software chapter discusses little about software classifications, but focuses on essential software in security and stability such as anti-malware, and widely used applications such as Acrobat and Format Factory, and also popular mobile apps. The file management chapter does not only give details about how to organize, protect, compress, print files and convert file types, but also introduces cloud storage for real time file backup. The knowledge covered in these two chapters potentially helps students lower their risk of financial and data loss and develop good habits.

The Microsoft Windows chapter focuses on the basic use and new features of and the most recent version of Windows 10. The Microsoft Office chapters introduce three core components of the Office Suite: Word, Excel and PowerPoint. Those chapters do not emphasize advance features which are not frequently used, but what students can actually do and solve. For instance, upon finishing the Word chapter, students will be able to format long documents, propose curriculum vitae, and write academic reports and theses. Upon finishing the Excel chapter, they will be able to analyze, summarize, and visualize data such as course grades. Upon finishing the PowerPoint chapter, they will be able to deliver vivid presentations.

## 5. Teaching Strategies

Based on the above discussions on the contents of the course and the characteristics of the students, the following teaching strategies have been adopted at SDJU:

- (1) Attracting students' interests in this course by introducing new IT in China at the first lesson.
- (2) Reducing theoretical knowledge that is not directly related to students in a short term.
- (3) Increasing practical exercises and lab questions.
- (4) Extending the discussions on computer science to information technology and cell phones.
- (5) Giving quizzes at the beginning of classes to lower absence rates and increase punctuality rates.
- (6) Letting students more time to discuss, express, and explore in and after class.
- (7) Providing students with knowledge summary notes and review sheets.
- (8) Assigning tasks involving innovation and creativity, such as asking every student to deliver a presentation using slides.
- (9) Conducting completely computer based final exams, and offering model paper before exams.

## 6. Conclusions

This paper analyzes the challenge to teaching international students "practical computer literacy". The difficulties arises from both the course contents and its audience. The authors have been teaching this course at SDJU for five years. According the experiences gathered previously, the course is redesigned to meet students' needs for daily and campus life. Boring theoretical stuff is large replaced by practical application and training. This renovated course centers on students' abilities in solving real problems with computers and information technology. Proper teaching strategies are adopted to accomplish the goals of this course, and to deal with students with various cultural and educational backgrounds. It is expected that this constructive plan will actually make this course a useful introduction to computer fundamentals and applications, and eventually a helpful guide to the era of information technology. Future work includes the evaluation of this exploration according to students' performances and feedbacks. The application of the gained experiences to other relates course is also a topic for future studies.

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