Chapter 68
The Web–Based Intelligent English Instruction System CSIEC

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ABSTRACT

This chapter presents the architecture of Web-based intelligent English instruction system CSIEC (Computer Simulation in Educational Communication) and illustrates its important components with examples: dialogue simulation functions including multiple roles talk show and user participating roles play, vocabulary exercises including crossword, single choice questions and cloze questions, listening, reading comprehension, grammar exercises, reading aloud, individual learner portfolios, collaborative learning, the teacher's management function, feedback, and so on. The system's function of instant feedback to every student and statistical analysis upon all students' responses to question answers characterizes this system as a learner response system. The Web-based system can be browsed not only by the user through traditional personal computers but also through fashionable tablet computers. Besides the Web-based system, a standalone vocabulary learning and assessment system for Windows OS is developed. Its functions are also introduced.

INTRODUCTION

Since 2001, the author has been developing a web-based intelligent English instruction system CSIEC (Computer Simulation in Educational Communication), which can talk with the online users either for free chatting or for specific topics from the English textbooks (Jia, 2004, 2009). Though it is a virtual chatting partner that can be accessed at anytime and anywhere for English learners, the computer mediated communication falls short as learning platforms because they lack comprehensive functionalities towards the development of language skills, as Yu, Sun, and Chang (2010, p. 345) stated. Therefore the research team extends its functionality to meet the practical needs of English teachers and students. After ten years' application in school English lessons, the author and the research team extends its function

from single chatting to vocabulary, listening, grammar and reading exercises and assessment. Of course the most specific feature in those functions remains, i.e. instant feedback to the users' input. Moreover, the users' answers to the system and other interaction process are all kept into the system and can be browsed by the teacher as the system's manager. In accordance to the school English instruction regularity, all the functions from vocabulary, grammar, listening, reading and dialogue are organized in the sequence of units or modules in the textbooks. Therefore they can supply an appropriate exercise and self-assessment system for the regular instruction.

The programming languages used in the CSIEC system include Java and PHP. The human-computer dialogue function is written in Java, and the other functions like vocabulary are implemented through the further development of the open source project Moodle (http://www.moodle.org). The two systems are combined together through the web communication mechanism.

Moodle is a free and open source course management system, and is developed and improved by thousands of programmers interested in e-learning together with university researchers and school teachers. Its latest version, for example V2.5 and later, can be packed with Apache http server, PHP program language and MySQL database management, i.e. all the other software required to make it run with Windows, through XAMPP (v1.7.4) technology. This integrated version is very easy to be installed in Windows operating system and is easy to be maintained. Besides the basic content (course, activity and resource) management, and user management functions, it has also been constantly implementing new educational concepts and theories, such as game-based learning through progress tracking regarding activity completion and grades, and social learning with web 2.0 technology, etc. Because of those above advantages, this CMS (Course Management System) is widely used by educational institutes from primary and secondary schools to universities and colleges through the world.

For the English instruction in middle schools, one of the most interesting functions in Moodle could be the quiz activity module. The Quiz activity module allows the teacher to design and set quizzes consisting of a large variety of Question types, including multiple choices, cloze, true-false, and short answer questions. These questions are kept in the Question bank and can be reused in multiple quizzes. Quizzes can be configured to allow multiple attempts. Each attempt of the quiz with multiple choice and cloze questions, which have the definite answers, is automatically and instantly marked, and can be given corresponding feedbacks by the teacher. These quizzes can be manually scored by the teacher, too. Instant feedbacks including scores, correct answers and other explicit information can be read by the users themselves.

The completed architecture of the web-based CSIEC system for English instruction is shown in Figure 1. The system is comprised of the content of units corresponding to the textbook, and every unit may have the following component: multiple roles dialogue including talk show and human-computer interaction, vocabulary learning including crossword, single choice question and cloze question, listening, grammar, reading comprehension and reading aloud, etc. This system provided every student with an electronic portfolio, and supports collaborative learning among the students and the teacher through blog, forum, short message and chat room. The teacher can manage the content and the users in the course, and review all the students' learning result and progress. This chapter will introduce all the functions one by one. Additionally, upon the students' requirement, the research team also developed a standalone vocabulary learning system, which will be introduced at the end of this chapter. The research team's previous work (Jia & Yang, 2012) introduced some functions of the CSIEC system, and this chapter will present the panoramic view of this system.

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