

# Research on computer network English language learning

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## Abstract

Network information technology affects English language learning mode all the time with the rapid development of information technology. University English course teaching also turns from traditional classroom to modern network teaching. As a bran-new teaching form, university English teaching brings not only advantage for classroom teaching but also impact on teaching idea, teaching means, teaching pattern, etc. It breaks through the ecological balance of traditional university English course and affects the successful implementation of teaching reform mode. Aiming at improving university English course teaching quality and perfect teaching reform mode, this paper studied new English teaching means based on computer network technology, analysed imbalance of university course teaching in teaching reform mode and then strove to construct a frame of ecologicalization university English course teaching.

*Keywords:* network environment, university English teaching, voice recognition confidence level, digital game teaching

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## 1 Introduction

Rapid development of modern information technology brings huge change in the world such as life, work and communication mode. It affects education quality with its flexibility, convenience and effectiveness. Internet provides unprecedented learning opportunity for learners. People can not only share study resource but also overcome the obstacle of space and time, which brings new prospective for education. Education idea changes a lot with the rapid development of network information technology. Nowadays, rapid development of education in our country aims at promoting education modernization by network information technology [1]. National Medium and Long-term Plan for Education Reform and Development (2010-2012) clearly points out that the revolutionary effect of information technology on education development must be paid high attention to and education reform should go on information development way from the macroscopic level. Therefore, many domestic scholars devote themselves to the research on this aspect. Luo Hongwei from East China Normal University constructed network English teaching emotional design frame and conducted empirical research so that solved athymia of network English teaching based on soft systems methodology and instructional design theory in Research on Emotional Design of Network English Teaching [2]. Chen Jing from Suzhou University analysed relative concept and theoretical basis of autonomous learning and ability composition of autonomous learning in network environment combining with the characteristics of network environment in Research on English Autonomous Learning of Secondary Vocational Students under Network Environment [3]. That paper systematize scattered knowledge and form relative

complete knowledge content system, which provides guidance for network English autonomous learning of secondary vocational college students. Ma Chongyu and Yang Gang made a comprehensive remark on historical development and foreign and domestic research overview of 3-D virtual language learning environment and discussed enlightenment and development prospect on foreign language education in New Direction of Computer Assisted Language Learning Development - 3-D Virtual Language Learning Environment [4]. It is not hard to find that these researches are prompting English teaching in our country to move towards informatization.

This paper is about optimal frame of university English class teaching in network environment supplemented by bran-new teaching mode based on computer network technology under the background of university English teaching reform pushed by Education Ministry. It emphasized construction of autonomous learning strategy and teacher development idea in the environment of network. Its achievement has certain practical value and practical significance for construction of ecological system balance of informationization foreign language teaching and improvement of university English teaching reform effect.

## 2 Main thought of research

Overall, foreign language system is a natural and open large ecological system composed by factors and environment within a certain space according to education ecology theory. In university English teaching ecological system, teaching factors affect and depend on each other in existing process. Although integration of information technology and university English teaching has advantage, imbalance of university English teaching ecological

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system appears in integration process. The key point of construction of dynamic balanced university English class teaching ecological system is to discuss how factors in that system own specific reasonable dynamic ecological niche and achieve harmony [5]. This paper would construct a university English teaching ecological system according to

optimality principle to improve university English reform effect in the perspective of ecology in the aspects of student, teacher and teaching environment. The following Figure 1 shows optimal frame conception of university English course teaching under network environment.

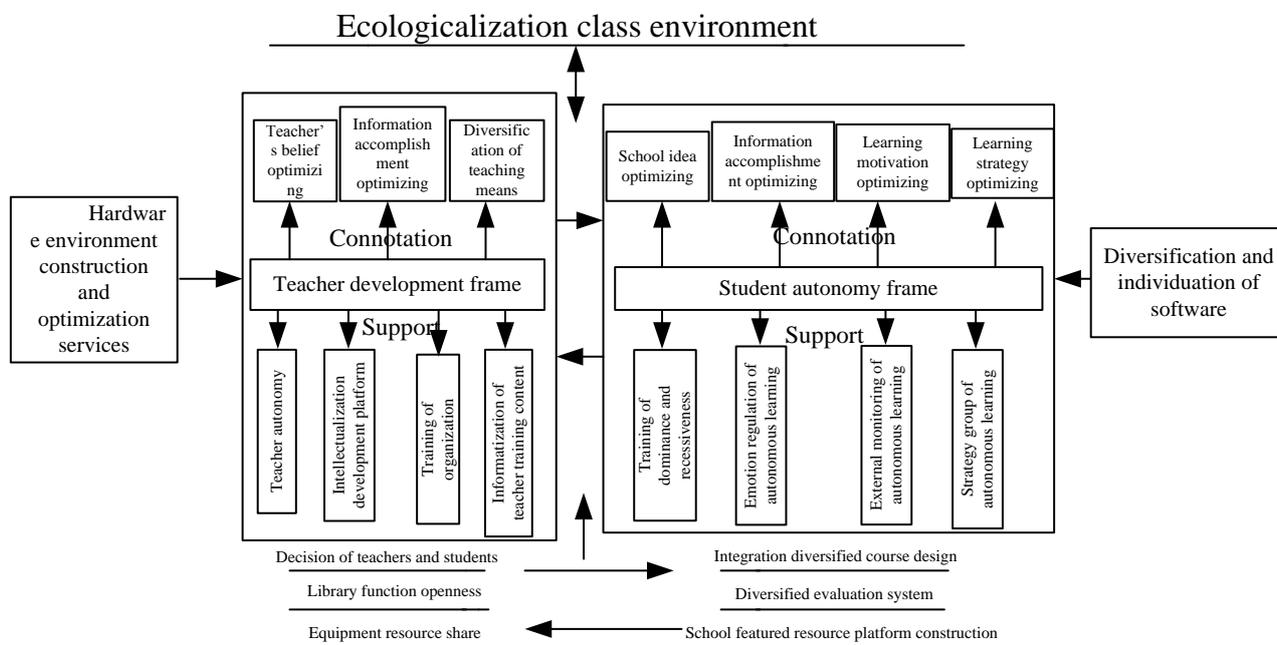


FIGURE 1 Optimal frame of university English class teaching under network environment

### 3 Main content of research

#### 3.1 INTEGRATION NATURE OF INFORMATION TECHNOLOGY AND UNIVERSITY ENGLISH COURSE

Nature and connotation of information technology and university English course integration is under the guidance of advanced foreign language teaching theory. In the process of English teaching, we should apply computer network technology scientifically, promote students' cognition, motivate students' emotion, enrich teaching environment and integrate various teaching resource and teaching factors to make university English teaching system generate aggregation effect in technology application, improve university English education quality and realize ultimate goal of teaching reform [6]. Integration means that information technology will become an organic component of teaching. It is not only the tool of teaching but also the driving force of career development of university English teacher, autonomous learning of students and cultivation of creative thinking

ability. And technology also becomes important component of teaching evaluation and management.

#### 3.2 UNIVERSITY ENGLISH CLASS TEACHING OPTIMIZATION THEORY AND PRINCIPLE UNDER NETWORK ENVIRONMENT

University English class teaching optimization theory is an education ecological theory based on ecology. Its nature is to study relationship between student, teacher and factors as well as their relationship with environment applying theory and principle of ecology, think and explain imbalance phenomenon and reason in class teaching in the perspective of education ecology, construct university English class teaching ecological system under network environment by ecological principles and optimize university English course teaching. Optimality principle of university English course teaching is explored out combining with university empirical research under the guidance of education ecology theory. Its main content is based on the following five principles, as shown in Table 1.

TABLE 1 University English class optimality principle

Principle	Main content
Optimality principle	We should treat the overall process of teaching by systematic means. All components and teaching factors in and outside class contained in teaching system are all connected. We should choose optimal teaching means, technique, content and form and form optimal teaching construction.
Principle of “stabilizing teaching structure, compatible with teaching factor”	Education ecological theory emphasizes the relationship between stability of teaching factors and balance of teaching environment and the relationship between compatibility of class teaching factors and ecological environment harmony. The objective of stability need to be realized by compatibility technique and means
Principle of “restricting teaching operation, promoting individual development”	“Restriction” is the technique to maintain ecological system stability. “Promotion” is the objective of university English class teaching optimization. In the perspective of education ecology, university English class teaching factors have their specific function. All factors operate on their own space and time position in the meantime and play unique role in their ecological niche.
Principle of “autonomous learning of dominate type”	Students are encouraged to construct their own knowledge frame and turn from passive knowledge receivers to positive knowledge constructors.
Principle of “diversified interactive teaching”	Refer to multidirectional and multilevel interactive teaching mechanism between teacher and student, student and student, human and machine under network environment.

### 3.3 SCHEME OF UNIVERSITY ENGLISH CLASS TEACHING OPTIMAL FRAME

We constructed a university English class teaching optimal frame centred on teacher development and student autonomy and supported by ecological class teaching environment under the guidance of education ecology theory and five teaching optimality principles. This frame

involves teacher development frame, student autonomous frame and class teaching environment:

1) Teacher development frame refers to constructing modernized teacher development frame centred on optimizing teacher teaching views, teacher information accomplishment and construction of diversified teaching means conception. The specific content of frame is as shown in the following Figure 2:

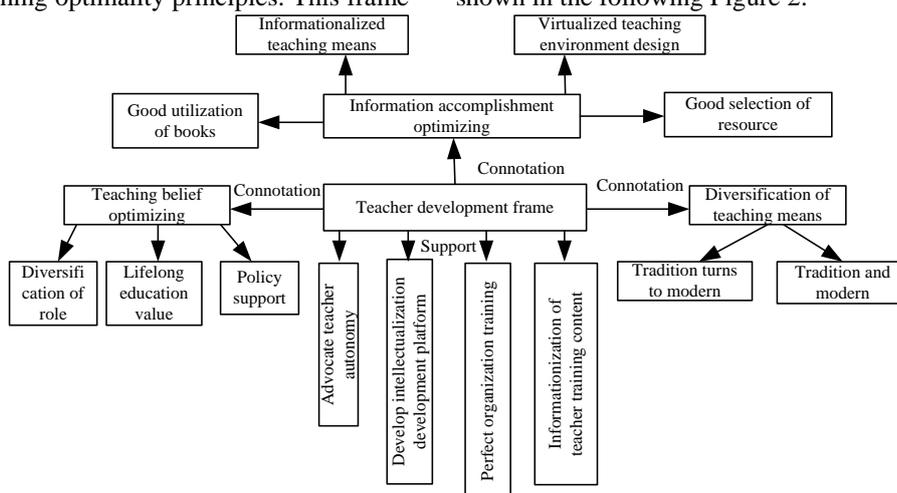


FIGURE 2 Modernized university English teacher development frame

2) Student autonomy frame refers to establish student autonomous learning ability cultivation frame involving optimizing of student autonomous learning value,

informational accomplishment, learning motivation and autonomous learning strategy, as shown in the Figure 3:

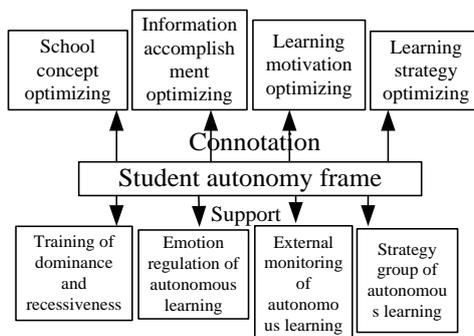


FIGURE 3 Student autonomous learning ability cultivation frame

3) Ecologicalization university English class teaching environment construction refers to university English class environment optimizing frame for optimizing hardware

construction and service and constructing diversified and individualized software environment, as shown in the Figure 4:

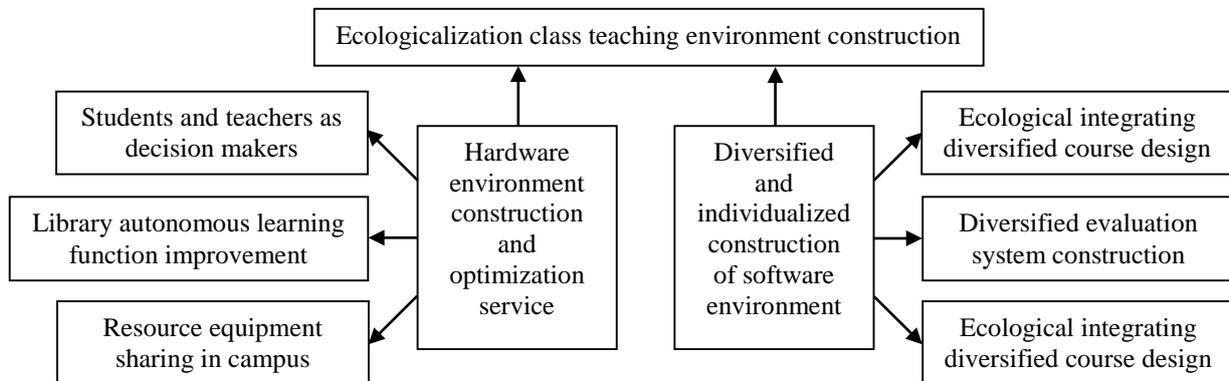


FIGURE 4 Ecologicalization university English class teaching environment

**4 Teaching means integrating with computer technology**

**4.1 INTEGRATION OF DIGITAL GAME AND ENGLISH COURSE**

Digital course is a kind of entertainment activity conducting by one or more people with electronic equipment according to certain rule. Nowadays, this kind of game has blended in teaching and an innovated teaching pattern has formed [7]. This pattern is termed as digital game teaching. It regards game as media to transmit teaching content. The application of digital game in English teaching in nature is the specific integration of computer information technology and course in practice. In the integration process, computer steps from secondary to domination. Teachers retreat from teaching centre to assistance while students become the subject and centre of teaching. And the whole teaching becomes a student-oriented, teacher-assisted and computer dominated

teaching pattern. Therefore, teachers can make out teaching game with strong pertinence to meet teaching requirement by authoring software and hardware based on teaching content.

**4.2 ENGLISH LANGUAGE LEARNING SYSTEM BASED ON CONFIDENCE LEVEL**

That system is composed of two independent subsystems: speech recognition and confidence level evaluation, as shown in the following Figure 5. In first stage (speech recognition), we first apply train out all HMM models by voice library and then search out likelihood and residing information by Viterbi beam. In second stage (confidence level evaluation), we should calculate out likelihood ratio from decoding information of the first stage, then make lots of statistics on likelihood combined with pronunciation subjective testing of trainer to confirm an objective distortion degree standard and finally evaluate the correctness of learners' pronunciation on that basis.

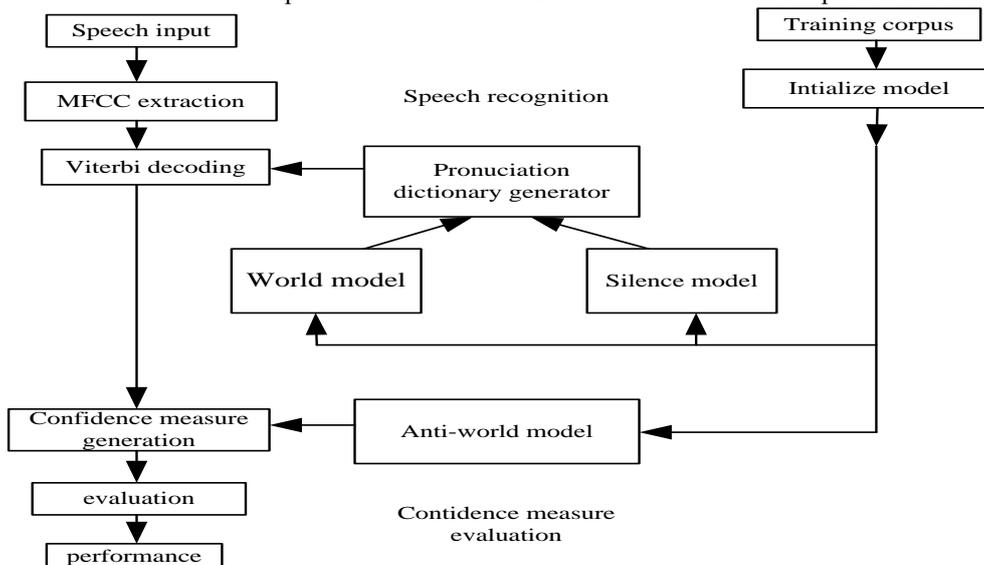


FIGURE 5 English language learning system based on confidence level

Network topology in English language learning system is shown in Figure 6. If we adopt network topology that only contains vocabulary words model, the recognition result will be “sil + in-vocabulary + sil”. Therefore, no matter the input voice is vocabulary word, we can always obtain decoding information related to vocabulary words

model. We can obtain decoding information related to anti-phoneme words model and anti-vocabulary words model by that method, then transmit this information to confidence level module, and finally evaluate the input voice.

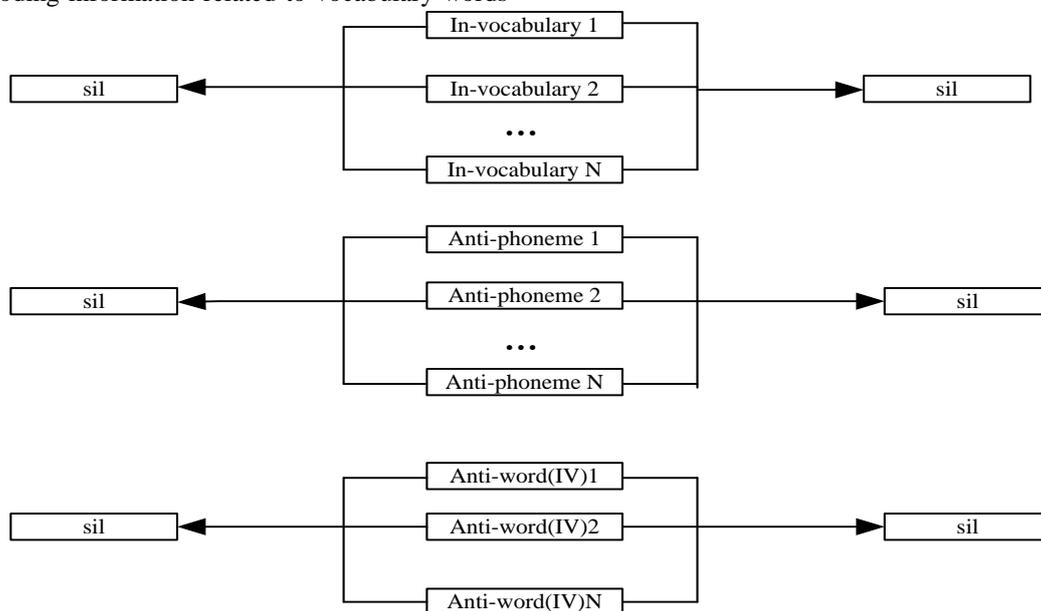


FIGURE 6 Network topology of English language learning system

5 Conclusions

Lots of scholars turn research direction to network foreign language teaching with its development. However, most of them only concern about the relationship between technology and learning. So far, most researches related to integration of network technology and course focus on comparative research on new and old teaching mode and research on construction of informatization teaching mode [8]. This paper is an exploratory research based on the relative researches of Chinese and overseas scholars combined with university English teaching and teaching

reform reality based on network environment. It tried to construct an optimal plan for English teaching with integration of traditional teaching course and computer technology in the perspective of theory of ecological education and then studied a new approach for informatization English language learning combined with new computer teaching means. It not only improves imbalance between students, teachers and environment of English course in network environment, makes full use of computer technology for teaching means innovation and improves teaching efficiency, which provides new pathway for later English language learning research.

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