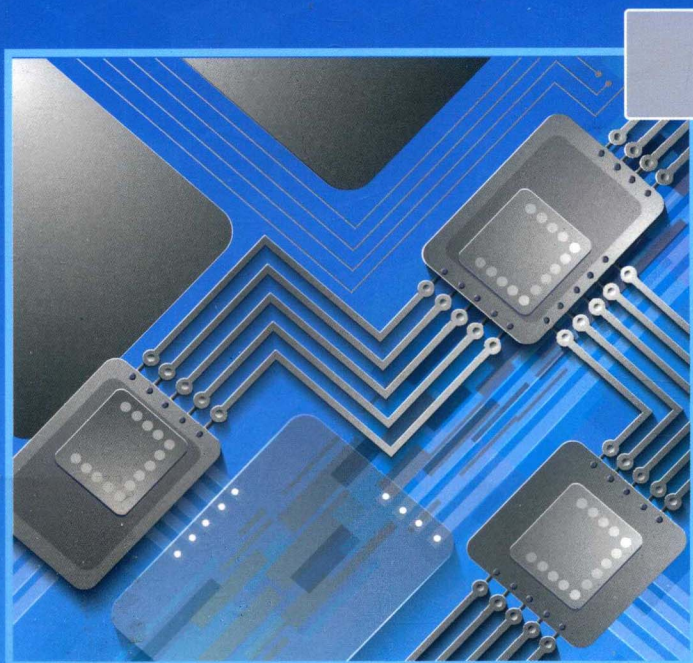On Optimizing the Cyber-based Ecological
Environment for Foreign Language Learners

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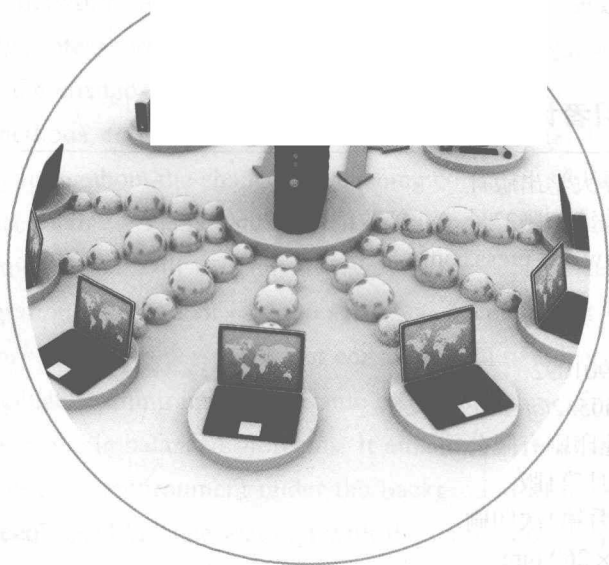
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PREFACE

From the 1990s onwards, modern information technology, taking computer networks as the core, is developing rapidly. In 2004, "College English Curriculum Requirements（For Trial Implementation）" was issued by the Ministry of Education, China, proposing "Computer-and-Classroom-Based English Teaching Mode". The new teaching reform is to improve the traditional English teaching mode and build the network-based autonomous foreign language learning mode by establishing three-dimensional network-based multimedia teaching system. Thus the position of computer networks is defined as an indispensable part of foreign language teaching, to be brought up for the first time in the history of foreign language education. Computer networks are for the first time taken seriously and from then on the integration of computer networks into foreign language curriculum truly began.

As the computer networks technology and foreign language teaching belong to two different disciplines, the integration of computer networks into foreign language curriculum will inevitably lead to the changes of traditional teaching factors, such as its teaching model, teaching objectives, methods, tools, materials, curriculum and others. The changes of these factors correspondingly bring about the changes of teaching concepts. Obviously, these changes have broken the balance of foreign language learners' traditional ecological environment. The imbalanced learning environment will undoubtedly witness the occurrence of many disorders. Interdisciplinary integration is a tendency of the scientific development in the 21st century. Therefore, it is necessary to adopt a perspective of constructing a new learning environment to reexamine foreign language learning under the frame of ecology, the principles of which can offer feasible solutions to the imbalanced problems. It aims to construct and optimize foreign language learners' ecological environment under the background of computer networks, by making it into a new ecological balance featured with the harmonious, dynamic, flexible and healthy development.

With this targeting task, the following main problems need to be combed and solved. In what way does computer networks technology affect foreign language learning? What is the intrinsic relationship between computer networks technology and foreign language learning? What kinds of imbalances are brought about by the integration of computer networks into foreign language curriculum? What are the causes for these disorders? How to remove these

disorders? Why is it necessary to construct the new ecological environment for learners under the background of computer networks technology? How to optimize this imbalanced ecological learning environment to achieve the new ecological balance among various factors? What are the conditions and requirements to construct a balanced ecological learning environment? It is quite obvious that exploring the solutions to these issues can promote the depth of current theoretical research of cyber-based foreign language learning environment in China, making the complicated theoretical exploration of interdisciplinary research more refined, systematic and perfect. This study will not only for the first time enrich and perfect the theoretical system of constructing foreign language environment under the background of computer networks, but also make up for the blank in the study of constructing and optimizing learning environment. More importantly, this study will promote the construction of an ecological learning model as well as the development of college foreign language teaching.

This study, based on the proposition and reflection, as well as the exploration and solution to the above problems, mainly targets at the following research topic. The computer-network-based foreign language learning has become the auxiliary practice and preferential choice for foreign language study in current colleges and universities, thus based on ecological theories, by exploring and analyzing cyber-based foreign language environment as well as by relating to its empirical study and field investigation, this study attempts to put forward the fundamental principles and requirements for optimizing cyber-based foreign language learning environment into an integrated, dynamic and balanced ecological environment.

The main arguments in this study can be summarized into the following two aspects:

Firstly, the integration of computer networks into foreign language teaching and learning has changed the traditional way of information transmission and acceptance. Besides, the integration form of teaching content and teaching activities has taken drastic changes. The teaching concepts and teaching values as well as teaching evaluation standards have changed a great deal. These changes have broken the balance of traditional teaching environment. Correspondingly, the imbalance of teaching environment has led to the imbalance of students' learning environment. Therefore, this study is conducted to achieve its ecological balance again by optimizing cyber-based foreign language learning environment with ecological principles and ideologies.

Secondly, the ecological niche theory and the theory of ecological balance are especially used to optimize four imbalanced sub-ecological environments. The fundamental requirements and principles for its optimization have been proposed. Four optimized ecological environments can essentially realize the informationization of foreign language. That is to say, on the one hand, the information technologies can be maximumly integrated into foreign language curricula to achieve the real application of computer networks into students' learning and

teachers' teaching; on the other hand, the information technologies are reflected by foreign language learning curricula by cultivating students' interest in foreign language study and their language sense so that the students can readily handle all the problems in an informationized way during the process of foreign language learning. Four sub-ecological environments are of interdependence, interaction, mutual adaptation, and coordinative unification, constituting a wholly dynamic and balanced foreign language learners' ecological environment.

The research methods adopted in the paper are literature review and statistical analysis. With this macro research, some other quantitative studies are also employed, such as questionnaires and case study, aiming to prove the appropriateness and preciseness of some microscopic views and basic structures.

The structure for its argumentation is mainly divided into seven chapters:

The first chapter, presentation of the problems. Through an analysis of the relationship between computer technologies and foreign language teaching as well as its integration mechanism, this chapter mainly proposes the imbalances of four sub-ecological environments due to the integration of computer networks into foreign language curriculum, which shows that the original ecological learning environment has disequilibrated after the integration. Four imbalanced sub-ecological environments refer to physical learning environment, resourceful learning environment, technological learning environment and emotional learning environment.

The second chapter, literature review and theoretic framework. By making full use of and combing through all research literatures on cyber-based foreign language learners' ecological environment at home and abroad, the author intends to seek for the theoretical basis for constructing and optimizing cyber-based foreign language learners' ecological environment by relying on the theory of Computer-Assisted Language Learning, the relevance between multimedia networks and information technologies and foreign language learning, as well as the Cognitivism (learning theory), Constructivism (learning theory) and the theory of Ecology. In addition, the article has dug out all relevant research tracks through literature reviews and made full use of the existing research results to provide support and foundation for this study.

The third chapter, overview on the imbalance problems of cyber-based foreign language learners' ecological environment. The author points out the causes of imbalances of physical learning environment, resourceful learning environment, technological learning environment and emotional learning environment. Four learning environments are seriously imbalanced. The learning modes, concepts, learning methods, learning content, learning media, etc. are incompatible with existing cyber-based learning conditions, faculty force, students, management quality and supporting teaching materials; learners' social environment, regulatory mechanism, management level, emotional and psychological factors, etc. are all more or less in disorder. These imbalances or disorders undoubtedly have brought about an unbalanced informationized

learning environment, which is impossible to survive in the school education system.

The fourth chapter, the assumption to solve problems. With ecological niche and ecosystem balance theories to optimize the imbalanced four learning environments, this chapter puts forward the fundamental requirements and principles of optimization, to deduce the model of network-based ecological learning and the model of cyber-based ecological environments for foreign language learning. Through optimization, learners, teachers, computers and learning contents are no longer in one-way relation. Instead, they are in two-way mutual connection, interaction, interdependence and mutual conversion. The students have consequently become the active knowledge builder. The cyber-based foreign language learners' ecological environment, after optimization, can not only reflect ecological laws and principles, but also be a kind of student-centered integration of all ecological factors, with the features of being manipulated, perfected, optimized and developed, casting a positive influence on learners.

The fifth chapter, the supporting arguments and proofs for the necessity of optimizing the imbalanced cyber-based ecological environment for foreign language learners by adopting the methods of quantitative analysis and the experimental study. The main research objective in this paper is to explore, summarize and validate the theory of constructing and optimizing the cyber-based ecological environment for foreign language learners by two double-decks—theory and practice, and to prove the necessity of achieving a new balance of the ecological environment.

The experimental section is presented in this chapter. Five teachers from Qiongzhou University have conducted a series of experiments for the whole semester. 300 students were randomly chosen to do 11 kinds of questionnaires, informal discussions and English tests, involving their experiences or viewpoints on four sub-ecological environments（namely physical learning environment, resourceful learning environment, technological learning environment and emotional learning environment）, their actual use of computer networks in college English class, their perspective of teachers' role, students' role, and the positioning of computers in learning, and their present attitudes for college students' autonomous English learning under the environment of computer networks. With all of these, college students' actual needs are handy and their opinions or suggestions are collected. This kind of analysis is to provide relevant empirical basis for building and optimizing the model of cyber-based foreign language learners' ecological environment.

The sixth chapter, summary. By making comparisons between the cyber-based ecological learning environment to be optimized and the one already optimized, it is quite obvious that the optimized learning environment is generally stepping towards balanced development. The optimized learning environment is an ecological system with balanced input and output of material flow, information flow, energy flow and emotion flow. The optimized and balanced learning environment under the background of computer networks can be interpreted from three

levels—macro-ecology, meso-ecology and micro-ecology. The ecological balance of macro-ecology displays the balance between four sub-environments which are material learning environment, resourceful learning environment, technological learning environment and emotional learning environment under the background of computer networks. The ecological balance of meso-ecology is viewed from the balance between various elements within the learning ecological environment. And the ecological balance of micro-ecology refers to the balance between internal factors in each sub-environment. The cyber-based ecological environment for foreign language learners is a big integrated system which covers all sides and aspects of each sub-environment. Moreover, each sub-environment forms a new ecological system respectively. Within each independent sub-environment and system, various factors interact with each other through mutual adaptation, finally promoting the dynamic balance of the entire system in turn. The result of examining and optimizing cyber-based learning ecological environment from the ecological perspective is that whether it is an individual ecological niche like student, teacher, teaching administrator and technical staff or it is the group niche like group of students and group of teachers, all ecological factors are playing their respective roles in their respective niches. In other words, all ecological factors are in the appropriate and dynamic niches. Under the cyber-based ecological environment for learners, four sub-environments rely on each other, restricting each other and finally coming to an integrated unity through the process of balance—imbalance—a new balance.

Through the above systematic discussions, it comes to a conclusion that based on Computer-Assisted Language Learning theory, the Cognitivism, Constructivism and Ecology theory, the cyber-based ecological environment for foreign language learners, from inductive reasoning to conducting empirical study, then to the construction of the model, has been theoretically created, which is characterized by systematic integrity, stable balance as well as dynamic openness.

Finally, the seventh chapter, some innovations and limitations of the study are pointed out and discussed. Some prospects for future studies have also been made.

CONTENTS

1

Chapter

Introduction

◆ **1.1** ◆

The Origin of the Topic Selection

1.1.1 Background

Since the integration of computer network technologies into college students' life and study, college students' way of life and way of study have undergone profound changes. The convenient and intelligent electronic equipments are becoming their daily entertainment, communication or learning tools without which they can hardly survive. Their life, communication, study, and entertainment, even their language, behavior, thoughts, character, etc. are all deeply influenced or molded by network culture. In the face of such a generation as a teaching object group, the college foreign language teaching, including foreign language teachers, teaching materials, teaching methods and other elements, must be precisely positioned, either to get adapted or to be eliminated. China's foreign language teaching, generally speaking, is to improve the efficiency in its own development, to adapt to the social changes and conform to the development of technology. First and foremost, the teaching concept and teaching method must be changed. This hinges on the enhancement of teachers' informational technology literacy, the updating of the teaching mode which signifies the transfer from the original teaching type of "textbook, blackboard, chalk and teachers' monologues" into the network-based and informationized style. Changing the way of technology does not mean the renewal or replacement of teaching means, equipments and abilities, but an all-round adaptation of consciousness, cultures and ways of thinking, which is a must for current college foreign language teachers and foreign language teaching researches.

The integration of computer networks into foreign language teaching and learning has

changed the traditional way of information transmission and acceptance. Besides, the integration form of teaching content and teaching activities has taken drastic changes. The teaching concept and teaching values as well as its evaluation standards have changed a great deal. These changes have broken the balance of traditional teaching environment. The imbalances of teaching environment are characterized by the following five aspects: inconformity between national education policies and the actual implementations in local schools; inconsistency between concept and practice; imbalance between technology and its application; inadaptation between new teaching mode and traditional teaching system; disorders between teaching process and teaching organization or management. What's more, the imbalance of teaching environment causes many disorders in students' learning environment. The application of information technology in foreign language education has a great effect on the construction of foreign language learners' cyber-based learning environment and also on foreign language learners' development. However, the current cyber-based learning environment is full of disorders and imbalances, not an ideal virtual environment.

1.1.2 Research Basis and Conditions

The research of foreign language teaching and network technology is actually not a new topic to researchers and scholars. Apart from the numerous academic articles and dissertations, it is also natural for some scholars to conduct their explorations on foreign language teaching techniques（including computers, networks, multimedia foreign language teaching and other various concepts）from their professional accumulation and teaching experience. They are earnestly engaged in detailed research of teaching practices for informationized foreign language teaching and tenaciously reflect on the modernization of foreign language teaching.

It would be safe to say that from the new period onwards those scholars have been on their way to the research exploration of foreign language teaching. The new century has especially witnessed fruitful productions. With the rapid development of educational technologies since the new century onward and the absorption of the essence of its technology-based teaching theory as well as the research results on disciplinary teaching, another batch of outstanding research works are produced in the field of foreign language teaching. The representative works are as follows:

Educational Technology and Foreign Language Teaching（Dai Zhengnan & Huang Guangyuan, 1998）, *Modern Educational Technology and Modern Foreign Language Teaching* （He Gaoda, 2002）, *The Application of Computers in English Education*（Chen Hong & Liu Beili, 2005）, *Computers and English Teaching—from Theory to Practice*（Gu Yueguo, 2006）, *Computer-Assisted Language Learning—Theory and Practice*（Jia Guodong, 2007）,

Computer-Assisted Second Language Research Methodology and Its Application (Wang Lifei, 2007) , *Information Technology and Foreign Language Teaching* (Liu Risheng, et al., 2007) , *Foreign Language Teaching Technology* (Cheng Dongyuan, 2008) , *The Theory of Modern Linguistics and Multimedia Foreign Language Teaching* (Zeng Fangben, 2010) , *A Practical Coursebook of Modern Education Technology and Foreign Language Teaching* (Wen Heping, et al., 2010) , *The Integration of Computers and Networks into Foreign Language Curriculum* (Chen Jianlin, 2010) , *The Research of Information Technology and Foreign Language Teaching—Theoretical Construction and Practical Exploration* (Chen Jianlin & Hu Jiasheng, 2010) , and other relevant works authorized by Gu Peiya (2006) , Wang Qi (2006) , Zhang Hongling (2010) , etc.

Besides the works mentioned above, research fruits including the development of abundant network-based or multimedia-based college English textbooks, the establishment of large and medium-sized corpus, the technological development of various computer-based and cyber-based examinations for college English students, English majors and non-English majors, etc.

Having engaged in foreign language teaching and research for quite many years, the author has always been taking the theoretical and practical integration and application of computer networks as well as information technologies into foreign language learning as the core, analyzing the various imbalances during the integration process and creating an optimization mode which can conduct to change the disorders and to achieve a balanced development of learning environment and the enhancement of foreign language teaching.

All of the above are origins for this study.

1.2

The Targeting Problems

In light of the mentioned items, this study attempts to take the following concerns into account:

1) In a time of the spreading information technology, what impact does information technology represented by computer networks have on foreign language teaching? What is the fundamental relationship between computer technology and foreign language teaching?

2) What kinds of imbalances of environment during the integration of computer networks into foreign language curriculum are? What are the causes for these imbalances? How

to eliminate them?

3) Why is it necessary to construct the new ecological environment for learners under the background of multimedia and network technologies? What are the basic requirements and principles of this ecological environment? How to optimize this imbalanced ecological learning environment to achieve the new ecological balance among various factors?

It is quite obvious that exploring the solutions to these issues can make an induction from the current theoretical research of cyber-based foreign language learning environment in China, make the complicated theoretical exploration of interdisciplinary research more refined, systematic and perfect. This study will not only for the first time enrich and perfect the theoretical system of constructing foreign language environment under the background of multimedia and networks, as well as make up for the blank in the study of constructing and optimizing learning environment. More importantly, this study will promote the construction of an ecological teaching model as well as the development of college foreign language teaching.

◆ 1.3 ◆
Research Purpose and Significance

The construction of cyber-based learning environment followed by the application of information technology in English education has become an important factor in students' learning. However, due to the existing problems in the construction of environment and maintenance operation, etc., there is low efficiency in the web environment and web-based course, online community, etc., followed by students' learning problems in resource utilization, emotional exchanges and so on. That is to say, the environment is seriously imbalanced. Therefore, it is of necessity to construct a dynamic, harmonious and ecological computer-network-based learning system and environment with sustainable momentum and development from a new point of view, which will constitute another influential research project for theoretical and practical studies on current computer-based foreign language education.

The development of ecology has provided a new perspective for many research projects. From the ecological perspective, the dissertation targets at using the basic principles of ecology to optimize computer-network-based foreign language learning environment in order to achieve ecological balance again. The present study will undoubtedly put energy into the study of CALL (Computer-assisted Language Learning) and certainly deepen the research subject

of "integrating information technology of networks into foreign language curriculum". It is also a necessary step to achieve the objectives of college English teaching reform and crucial to consolidating the research foundations for teaching mode, curriculum positioning, student orientation, teacher's role and evaluation system under the cyber-based environment.

In the dissertation, it is to provide practical solutions to the imbalances in current computer-network-based foreign language learning environment by optimizing the imbalanced learning environment according to ecological principles. The optimization can guarantee cyber-based learning efficiency and students' healthy and sustainable development. Through the analysis of topic-related questionnaire and SPSS, learners can clearly understand what the existing imbalances in computer-network-based foreign language learning environment are, and how to construct and optimize their "second learning virtual space". If foreign language learners, as the main ecological body in cyber-based ecological learning system, know what to do to create a good learning environment and get better involved in effective learning, it will cast a profound influence on maintaining beneficial circulation of computer-network-based ecological learning system.

◆ 1.4 ◆
Theoretical Background

A clear interdisciplinary theoretical structure is of necessity to construct and optimize cyber-based foreign language learners' ecological environment. The theoretical systems within this discipline cover such disciplines as pedagogy, education technology, mass communication, psychology, language teaching, language learning, sociology, information technology and other natural sciences and humanities. Therefore, the study has theoretical foundations of behaviorism, cognitivism, constructivism, ecology, etc. These postmodern thoughts with social, cultural and technological perspectives are gradually diluting their differences and integrated, finally into an ecologically integrated concept and mode featured by postmodernism, which serves as the theoretical pillar for the research of constructing and optimizing cyber-based ecological environment for foreign language learners.