

Research on the ecological balance and construction of English teaching mode under computer information technology

Lili Gao *

Wuhan Technology And Business University, Wuhan, China

* Corresponding Author Email: 348927697@qq.com

Abstract. With the development of information technology, the ecological environment of English teaching has undergone significant changes. Under the influence of new technologies such as big data, VR/AR, and cloud computing, English teaching has changed all aspects of English teaching, which has brought considerable challenges to the traditional English teaching model. This paper constructs an ecological balance system of computer information technology based on English teaching. The computer system innovatively uses the ecological fitness function algorithm and combines computer information technology with English teaching through extensive computer data collection. Under the application of data, the system realizes the application of the ecological balance practice operation mode of the English teaching mode. In this paper, the research and development of this computer system have played an essential role in the informatization upgrade of the English teaching model.

Keywords: Information technology; English teaching; ecological balance.

1. Introduction

In the ecological balance of teaching, the structure and function of an ecological system must maintain a dynamic nature. The balance of its structure and function is not static, and its regulatory function characteristics make the purpose of balancing its structure and function. Be achieved. The viewpoint of the ecological balance of English teaching mode is: English teaching mode is an ecological system composed of schools, teachers, and students, and these elements have an organic connection and interaction, thus forming a dynamic, balanced, or unbalanced state English teaching. The English ecological system is composed of English teachers, students, teaching content, and other elements in the English ecological system [1]. It continuously circulates material information in English teaching, thus forming a stable structure and function. From the perspective of the ecological balance of teaching mode, to achieve efficient teaching of English teaching and build a stable and functional English ecological teaching system, China must establish a teaching environment of dynamic balance and mutual adaptation.

2. The ecological balance of English teaching

The ecological balance of the English teaching mode under the informatization of English technology is a crucial link in developing the Chinese English teaching mode. It has been more than ten years since the reform of English teaching in China. With the integration of information technology and English teaching in recent decades, some English classrooms at the forefront of change are gradually changing from chaos to order, from stability to stability. However, due to the difference in geographical location and the actual situation of schools, English teaching information technology in China is not developed in parallel [2]. Therefore, there are still many problems in English teaching. From an ecological perspective, the ecosystem of English teaching is still in a particular imbalance. This conclusion comes from systematic application observation, interviews, and literature surveys. In general, to explain that an English teaching ecosystem is unbalanced, one of the following three situations should exist in the system:

All aspects of the ecosystem are not well developed, and it is not easy to realize its role;

There are problems such as disharmony, conflict, and unsmooth information flow among various factors in the ecological environment;

Unable to realize the function of the entire ecosystem, unable to adapt to people's expectations for English teaching.

2.1. Structural Imbalance

Before the reform, the English teaching model maintained a balance, and various ecological factors have adapted well in many years of teaching, which is relatively stable. However, there has also been some laziness, which has led to a decline in classroom efficiency. With the continuous deepening of English technical English teaching and the continuous deepening of information technology, various ecological factors in the classroom are constantly changing [3]. For example, in English classes, English teachers ignore the subjectivity of learners, differences in learning effects, individualized development needs, and the characteristics of indoctrination English. This phenomenon shows a severe imbalance between English teaching and students' class ecological structure.

2.2. Imbalance

The interference caused by information technology far exceeds the organization and self-recovery ability of the English teaching model. The imbalance it brings affects other ecological subjects in the classroom. That has had an impact on English teaching for years. Judging from the change cycle of the system and the current situation, the optimization function of the system is weakening, and it is not easy to recover by itself. For example, due to time constraints, teachers cannot conduct in-depth English teaching in a broader field, resulting in an imbalance in the content of English courses [4]. See Figure 1.

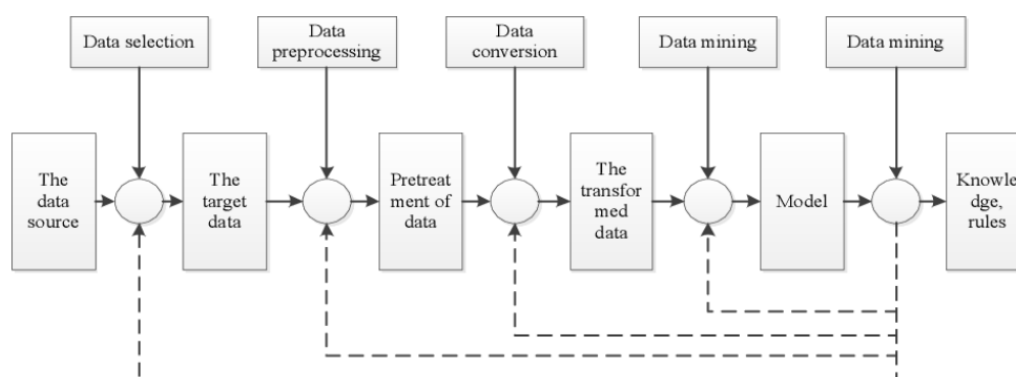


Fig 1. English Teaching Computer Information System Process

2.3. Assessment Imbalance

The unbalanced assessment of English teaching is that the English test is the primary assessment indicator of English courses. The purpose of English teaching is to cultivate unique English talents to meet the needs of the times, and its practicality and applicability are its most important standards. From this point of view, the unbalanced evaluation of teachers will limit the focus of English teaching to a certain extent, thereby deviating from the development direction of teachers' English teaching.

3. The role of computer information technology in English teaching on the ecological balance system

The balance and construction of English teaching, with English teaching as the core, has carried out in-depth exploration and research on the mutual influence of various elements of English. This paper collects and organizes researchers relying on network technology from three levels: classroom, extracurricular, and practice. Various systems and multimedia materials are studied through the collection of online materials, and they are systematically sorted and organized.

3.1. Contact between teachers and students

The application of computers and related technologies has changed the relationship between traditional and teaching modes. With the development of computer information technology, some changes have occurred in the relationship between teachers and students. Teachers should mobilize students' enthusiasm, correctly guide their practice understanding, and use scientific methods to guide their thinking. The communication between teachers and students ranges from simple teaching to cooperation. In the "teaching" ecosystem, "learning" is dominated by students, led by teachers, and dominated by "doulas" rather than "performers." Let students love learning, learning, learning, learning, and learning is the theme of English teaching. Therefore, both teachers and students form a harmonious social atmosphere of equality, harmony, and joint development in a harmonious atmosphere.

3.2. English teaching methods and effects

Under the background of English teaching reform, according to different characteristics, a large amount of information technology is used to collect information on students to improve students' learning effect. Different students, combined with different characteristics in teaching practice, make corresponding teaching plans for them. At work, teachers try their best not to distinguish between "good students" and "bad students," "top students" and "students with disabilities," treat students equally, try their best to explore the advantages of students, give praise and encouragement, and help students Overcome inferiority and improve their learning confidence. The new era puts forward new requirements for English teachers. In order to effectively overcome this contradiction, they must constantly innovate their own English teaching concepts in the new teaching practice, find new ways of thinking, and overcome the existing defects, to Effectively overcome the imbalance in the English classroom. English teachers should conform to the trend of the times, establish harmonious classes, reasonably arrange English teaching, and effectively improve the level of English teaching to better integrate into the needs of the times. In English teaching, due to the constraints of test-oriented English teaching, many teachers ignore outstanding students in order to achieve the assessment objectives, resulting in severe damage to the teacher-student relationship, teacher-student relationship, teacher-student relationship, and class relationship [5]. The ecological teaching mode needs to examine and analyze contemporary teaching with an ecological perspective, attitude, and method and treat everyone with an admiring perspective and attitude. First of all, teachers always integrate emotions into the whole classroom so that everyone can be involved in it, which stimulates their enthusiasm for learning, thereby increasing their confidence in English. Secondly, China must adhere to new teaching concepts, new English teaching concepts, adhere to the principle of colocalization, adopt practical teaching methods to balance "emotion" and "reason," and comprehensively improve students' comprehensive quality. See Figure 2.

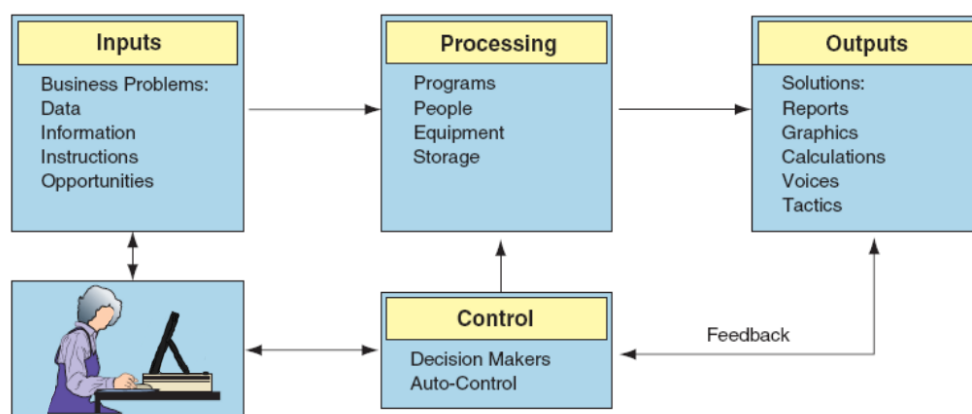


Fig 2. Input-output feedback system of computer information technology ecological balance system in English teaching

3.3. Classroom Activities and the Influence of Classroom Teaching

Student-centered learning body is established, categorized, and individualized according to the way of thinking and the way knowledge is received. Using computer information technology, evaluate the learning effectiveness of students' extracurricular and secondary extracurricular activities, and arrange and implement extracurricular activities for students. The English "ecological balance" system itself can combine the two to realize the functions of "extracurricular practice" and "second classroom." For example, hold English games and storytelling competitions, hold English corners, listen to English radio, and watch English films. Through teaching practice, public can enrich students' extracurricular life, strengthen what they have learned in class, create a good learning atmosphere, improve their enthusiasm for learning English, and enhance their ability to connect with reality, contact the society, and use English, to achieve the goal of in-class and out-of-class appropriate combination.

3.4. The ecological balance model of English

With the rapid development of modern information technology, English teaching has surpassed the limitation of time and space. The use of computer information technology can effectively improve the comprehensive ability of the company and rationally integrate, use and schedule massive learning materials. English classroom is the primary ecological system of English teaching activities with advantages of system, balance, and harmony. In English teaching, computer and information technology are considered essential systems. In the whole ecosystem of English teaching, both teachers and students should strengthen the ability of computer applications. The use of computer information technology can improve the teaching effect of English teaching and create more resources for students' learning according to student's learning characteristics and actual conditions. It can fully mobilize students' learning motivation.

3.5. English Teaching System Algorithm Model

The individual's strengths and weaknesses were assessed while satisfying the various characteristics of the various problems. On this basis, according to the mathematical model of the computer information technology group and the final purpose function, the function of the fitness value of English teaching is obtained:

$$\min z = \sum_{i=1}^n w_i \times x_i \quad (1)$$

z is the set volume objective function value. n is the total number of people who took the test. w_i is the weight coefficient of the i -th indicator. x_i is the error of the i -th metric.

The information content of the topic is expressed in the form of interval weighting, and the size of its components indicates that its density is high and the probability of selecting a topic is high. Thus, the initialized pheromone Q should be $Q > (\tau_{\min} \times L) \times u$, and u is a factor of a parameter. A corresponding expansion should be carried out with the number of questions when the Q value cannot meet the above conditions. The extended sentence is:

$$\text{While}\{Q < (\tau_{\min} \times L) \times u\} \quad \text{do } Q = Q \times v \quad (2)$$

τ is the test pheromone. L is the number of people in the low-scoring group who answered this question. v is the amplification factor of the initial value of the pheromone. See Figure 3.

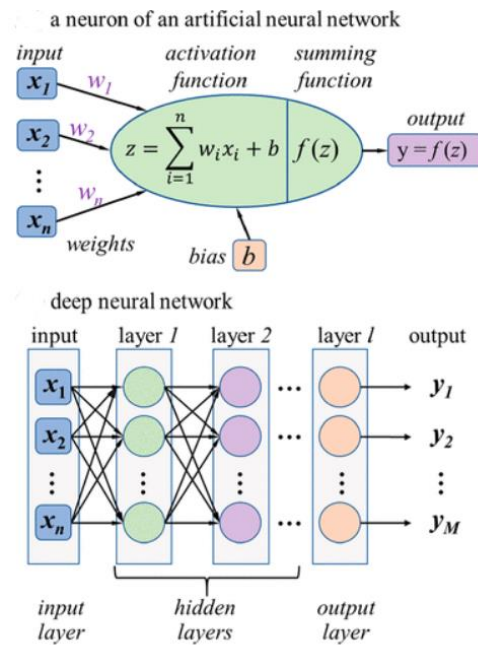


Fig 3. The fitness value function of computer information English teaching

In the iterative method, the pheromone in the test paper is updated, ρ is the residual factor of pheromone and the change rule of the pheromone is shown in equation (3):

$$y(t+1) = \rho x(t) + \Delta x(t) \quad (3)$$

Newly added test papers for test paper pheromones when adding test papers:

$$x_{new0} = \frac{Q}{L+1} \quad (4)$$

τ_{new0} represents the newly added test content.

After the examination, the examination materials have been revised, and the selected examination questions are as follows:

$$y_i^{new} = x_{min} \quad (i = 1, 2, \dots, m) \quad (5)$$

No topic selected:

$$y_i^{new} = x + \frac{\sum_{j=1}^m x_j^{old} - m \times x_{min}}{L} \quad (j = 1, 2, \dots, L - m) \quad (6)$$

y_i^{new} is the pheromone change of the selected question after the exam is completed; x_i^{new} is the pheromone change of the unselected question after the exam is completed; x_j^{old} is the pheromone contained in the question selected by the examinee before the exam; x_j^{old} is the test questions that have not been selected before the test; m is the number of test questions in a group, and L is the number of test questions in the test-question database. (5) and (6) can reduce the selection probability of selected items and increase the selection probability of no-choice items, thereby ensuring that the repetition rate of the paper is low.

4. The construction of ecological balance in the English teaching mode

4.1. Look at the problem from the perspective of cultural and ecological balance

The construction of English teaching methods and the reform of English teaching based on "cultural, ecological balance" considers both local and foreign languages in English. Based on establishing the ecological balance of English teaching, the ecological balance of the cultural level must be considered. In particular, there are two initiatives:

Establish the English cultural ecology theory, selectively introduce Chinese civilization into English, and combine Chinese traditional and modern culture to achieve diversified and balanced development;

Researchers to enhance cultural self-confidence and increase the proportion of English and English, for example, measures can be taken to increase the proportion of Chinese culture in English textbooks and open English courses with Chinese culture as the theme to promote the balance between English teaching and English culture. See Figure 4.

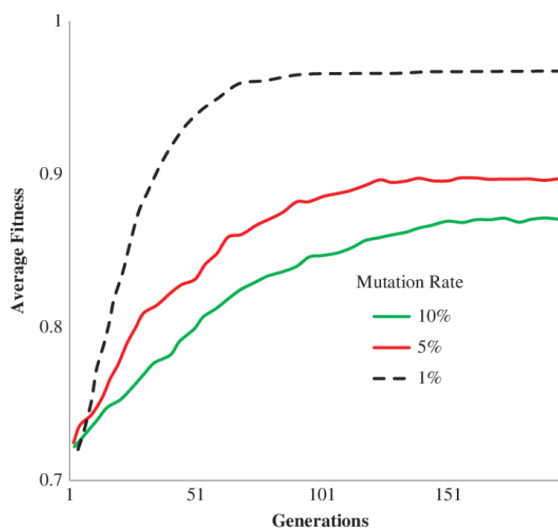


Fig 4. Validation of Ecological Balance System Model in English Teaching Model

4.2. From the perspective of teachers' ecological balance

Taking teachers as the focal point to explore the ecological construction of the English teaching mode can start from the following two aspects:

4.2.1 Teacher-oriented internal ecological construction

Teachers should recognize their teaching mode, let students return to the "subjectivity" in the classroom, carry out classroom teaching in a "people-oriented" classroom, and adequately "position" their own "ecology." In "ecological teaching," teachers should give full play to the roles of teaching organizers, trainers, assistants, etc., and improve their skills through corresponding training, to achieve the purpose of development.

4.2.2 External ecological construction from the perspective of teacher development

On the one hand, it is necessary to improve the English teacher training system and to cultivate the aspects of teaching concepts, teaching methods, teaching strategies, teaching informatization, etc., to improve the overall quality of English teaching and to make the best improvement in the English teaching process; among English teachers, to have a certain degree of autonomy, according to the needs of students, according to their own needs, to make appropriate plans and adjustments to their teaching, to improve their subjective initiative and subjectivity, thereby improving their teaching level.

4.2.3 Encourage social groups to provide training opportunities for in-service teachers

The concept and method of teachers' English teaching should be closely linked with the actual operation. To improve the overall quality of teachers is to improve the quality of students. Although the construction of the English teaching system is discussed from the perspective of teachers and students, it involves factors such as students, teachers, schools, and social enterprises. That is a remarkable feature of the English teaching system under the idea of ecological balance. Reform and optimization still need to be further explored.

5. Practical strategies

In the ecological construction of English teaching, the basic principles of ecology, system, human nature, and effectiveness should be followed, and the guidance of primary factors, the influence of restrictive factors, and the construction of ecological English teaching methods should be used to realize the construction of English teaching ecosystem. In the teaching mode of the English, public should start from the reform of English teaching concept, create a multi-interactive teaching environment, improve the information technology literacy of teachers and students, adopt different teaching methods, establish an equal and harmonious relationship between teachers and students, and build a multi-variety evaluation mechanism.

5.1. Change from "teacher-oriented" to "people-oriented."

As far as English learning is concerned, English is not taught but the learner. They have their potential and can develop their potential spontaneously. Therefore, the content, method, and learning progress depend on the learners' opinions, teachers' help, and help.

5.2. "Capacity training" changes from "knowledge transfer" to "skill training."

"Knowing how to learn" means much more than "learning what." The primary purpose of ability training should be to cultivate students' autonomous learning ability and exploration and innovation ability. In the learning process, they should be guided to learn through learning metacognition and learning strategy. Teachers should cultivate students' knowledge and ability and mainly cultivate sustainability, creativity, and creativity in teaching practice.

5.3. Change from "Controlled" to "Open"

The open learning model essentially means that students self-regulate their learning process, making them responsible for their learning activities. Open learning is essentially an open learning concept, available learning time, open space, open learning method, open learning experience, open learning experience, open learning consciousness, open learning decision, and open learning space.

5.4. Build a graded teaching system

Hierarchical and classified teaching is organized into classes, levels, and classifications according to the differences in students' learning levels, learning needs, and learning styles, thus forming a new training system that is better than the traditional teaching according to the original class. Overall, students with similar grades showed similarities in various domains, including English proficiency and self-learning ability, and similarities in ecology.

6. Conclusion

At present, the combination of English teaching and computer information technology is an essential direction for the development of English teaching. With the development of English teaching in China, the "ecological balance" has become an essential topic in English teaching. From the perspective of "the ecological balance and construction of English teaching model," based on information technology, this paper makes a preliminary exploration of the ecological balance of English teaching to provide a helpful reference for the reform and innovation of English teaching. English is a language that matches its social environment. The research and understanding of English need to be carried out in learning and understanding its culture. The combination of technology and culture is the best way. This paper uses information technology to create a good learning ecosystem for students, improving students' learning effect and greatly enhancing students' interest in meeting different teaching needs better. In short, information technology can create a more balanced learning ecological environment for English teaching so that learners can experience a suitable English learning atmosphere in the learning process.

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