

Reconstructing the College English Reading Teaching Model Based on Dynamic Systems Theory

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ABSTRACT

This paper examines the existing issues in current College English reading instruction. Grounded in Dynamic Systems Theory (DST), it conducts a comparative study of two distinct teaching models under different environments, and proposes a novel DST-based instructional framework for College English reading, aiming to enhance university students' reading proficiency.

KEYWORDS

College English reading; Dynamic systems theory; Teaching model

1 Introduction

Mastering English requires the development of fundamental skills—listening, reading, speaking, writing, and translation—which interact with and reinforce one another. In College English education, greater emphasis is placed on cultivating language proficiency, with reading ability serving as a crucial indicator. Therefore, reading instruction plays a pivotal role in College English teaching. Both university instructors and students continue to explore ways to enhance the effectiveness of English reading instruction and learning. Despite teachers' relentless efforts in traditional teaching models, the outcomes remain unsatisfactory. Conventional bottom-up reading instruction primarily focuses on grammar translation, language points, and expressions, treating reading as a static process. In this approach, students passively receive teacher guidance. Another critical issue is insufficient reading, as students often rely solely on prescribed textbooks or exercises. To address these challenges, this study proposes a new College English reading instructional model aimed at improving students' reading proficiency.

2 An overview of dynamic systems theory

Dynamic Systems Theory (DST) is an emerging theory born after World War II in the fields of mathematics, ecology, engineering and computer science. DST is also known as complexity theory, chaos theory, collaboration theory, and self-organizing systems theory. DST is rooted in four central assumptions: individuals and their environment are interdependent and changing; human development is an open system that grows increasingly complex over time; system changes are reflected within its internal parameters; and no developmental state or stage within the system is static. Currently, DST has been applied to several scientific fields and has successfully explained a variety of natural phenomena and human behavior. The study of DST in the field of applied linguistics began with Larsen-Freeman (1997), who basically laid down the framework of the theory by discussing more comprehensively the characteristics of language as a complex adaptive system. She pointed out that language is a system that changes all the time, and that language emergence, development, change, use, and language acquisition are all dynamic processes. Herdina and Jessner (2002) believe that language development is characterized by six features: nonlinearity, reversibility, stability, mutual independence, complexity, and qualitative change. Language acquisition is a complex and non-linear process with progress and possible erosion or rigidity. Chinese scholars Shen Changhong (2008) and Li Lanxia (2011) have thoroughly introduced the DST and the view of language development under this theory.

3 Current status of college English reading instruction

According to the College English Teaching Syllabus, one of the primary objectives of College English education is to cultivate students' strong reading proficiency. However, while the development of reading skills has gained widespread attention in current College English teaching practices, several notable issues persist.

3.1 Monotonous teaching models and contents

Current College English instruction predominantly follows a teacher-centered approach, where students passively

receive information. This essentially perpetuates the "cramming method" commonly seen in secondary education. Instructors often devote excessive classroom time to explaining discrete language points, while neglecting holistic text comprehension and reading strategy training. Consequently, this approach fails to adequately cultivate students' autonomous reading abilities. Such pedagogical practices lead to two detrimental outcomes: students' reading proficiency fails to achieve substantial improvement; the learning process inadvertently suppresses students' motivation and engagement. It must be emphasized that reading should constitute an active process of cognitive reception and response. Therefore, the paramount objectives should be stimulating learners' initiative and developing their independent reading competence.

3.2 Outdated reading materials and insufficient reading volume

In current non-English major College English courses, reading instruction primarily relies on standardized textbooks, typically featuring one intensive reading passage and one extensive reading passage per unit. However, due to time constraints, neither reading approach can be effectively implemented in class. For English majors, the situation is similarly problematic. The prescribed textbooks, often used for years without revision, contain articles that have become disconnected from contemporary contexts. These outdated materials fail to resonate with students' living environments and psychological states, resulting in diminished engagement. Three critical issues exacerbate the problem: unsystematic supplementary material selection by instructors, inadequate monitoring of extracurricular reading, students' underdeveloped autonomous reading skills. Consequently, students' overall reading volume remains substantially below expected standards.

3.3 Monolithic reading environment

As we all know, a good language learning environment is crucial for foreign language learners. Especially the cultivation of English reading ability requires a lot of time for drilling. Nowadays, university English reading teaching is mainly carried out in the classroom, and the language learning environments vary from school to school, and there is a general lack of hardware facilities and platforms, as well as a lack of corresponding auxiliary means. This brings obstacles to the cultivation of students' reading ability.

4 Constructing a reading teaching model for college English under the guidance of dynamic systems theory

Anderson (1999) points out that reading is an important skill for learners of a second or foreign language. If learners have high reading skills, it will help them to a great extent to acquire new information through reading. We mentioned reading skill, which is the key to improve foreign language proficiency, as the main issue of research and constructed a model for teaching reading in college English based on the characteristics of DST. According to the self-organizing characteristics of DST, Dai Yuncai and Wang Tongshun (2012) believe that DST language learning contains three subsystems, namely, linguistic factors, environmental factors and learner factors, and the environmental factors in the subsystems include the social environment, the linguistic environment and the learning environment. Learning environment mainly refers to learning in formal environment (classroom environment) and informal environment (natural environment). In the following, the author will explain the model from both formal and informal environments. In the classroom environment, certain reading strategies are adopted for the reading materials, teacher-student and student-student interactions provide learners with rich and effective language input, so that learners utilize correct reading strategies to analyze the reading materials, and teachers strengthen the feedback and assessment of learners; in the natural environment, teachers and learners can share resources in the form of the network and upload bilingual reading materials respectively, so that learners are always in the natural environment, teachers and learners can share resources through the Internet and upload bilingual reading materials separately, so that learners are always in a dynamic language learning environment to enhance language input.

4.1 Formal environment

In a formal classroom environment, teachers can act as reading strategy trainers to teach reading strategies to learners to comprehend reading materials through cognitive, metacognitive, and affective strategies to improve language awareness and comprehension. In addition to the acquisition of the necessary amount of vocabulary, syntactic structures and a certain amount of background knowledge, language learners have to learn to adopt appropriate reading strategies for different reading materials. Training learners' reading strategies reflects the initial state sensitivity of the DST, which is

derived from the results of the survey questionnaire on the initial state of students' English reading learning. Small differences in the initial state of the language system may change over time and thus have a great impact on the results. Therefore, the content of the reading strategy training and the design of the questionnaire mainly include the following aspects: how to make predictions, how to infer the meaning of words through the context, how to grasp the main idea of the article as a whole, how to search for and skim readings, how to abandon bad reading habits, how to determine the topic sentence to infer the meaning of the whole paragraph, and how to formulate a reading plan and so on. Teachers should have a certain understanding of the students' initial state before teaching, and target the training to the students' original reading strategies. In DST, feedback sensitivity is an important feature, and teachers should give more positive feedback to students in the training process as a booster for learners' continuous language output and progress. Feedback as a natural choice can help learners abandon inappropriate reading habits, which can make learners' reading ability move forward positively. In addition, in the classroom environment, learners are in a cooperative learning relationship with each other, and the reading mode guided by the dynamic system theory emphasizes the learner's dominant position, in which the learners exchange important information about the reading materials and the experience of applying reading strategies in English through the group cooperation, and the linguistic output of each learner becomes the linguistic input of the other members of the group. The learning state of learners is spiraling upward, and the progress at each stage is based on the previous learning foundation. The progress made by learners through cooperative learning reflects the self-organization of the dynamic system theory, and the learners promote the interaction of internal self-organization through the external language communication and information sharing, as well as the reorganization of the linguistic subsystems to achieve the progress of the learners' linguistic competence and the improvement of the reading comprehension level.

4.2 Informal environment

In the informal environment, i.e. in the environment where network resources can be utilized, according to the interactivity and openness of the dynamic system theory, the teacher provides students with extracurricular reading materials through online learning platforms, WeChat or group emails, etc., and the students upload their experiences regularly through reading extracurricular materials, and this process realizes the interactivity through the teacher's timely feedback and assessment. In addition, the reading materials provided by the teacher should take into account the level of the learners' zone of nearest development and should be of a certain degree of difficulty. In addition to the teacher, students also need to upload their own reading materials to the group email, so that learners can share the materials they are interested in with each other to stimulate their interest in reading and motivation to learn. Learners, as both input and output of language, need to evaluate and give feedback to their peers on their reading experiences. Since language development is a dynamic process, a reading model based on dynamic systems theory can benefit learners.

5 A case study

This case study chooses Text A of the first unit in the 21st Century College English (Special Edition) Book 2 as the teaching material, and incorporates the Dynamic Systems Theory (DST) to design an informative and interactive 90-minute reading class. The design concept is to regard students' English reading ability as a complex dynamic system, which consists of multiple interacting subsystems such as vocabulary decoding, information integration, critical thinking, etc., which are synergistically developed through non-linear interactions in a specific teaching environment.

The teacher would first present students with an elaborate timeline comparison diagram, with the left side labeling Churchill's political defeat as Secretary of the Navy in 1915, and the right side presenting his artistic accomplishments in the 1920s. This strong contrasting situation will likely trigger students' cognitive conflict, and the teacher then asks the guiding question, "How can a man in deep political crisis realize psychological reconstruction through painting?" This question not only activates students' existing background knowledge but also establishes a clear goal for subsequent deep reading. The lesson plan completely breaks with the traditional reading class model of linear explanation in paragraph order and adopts the non-linear development path advocated by DST. Teachers will require students to read key passages in the text that span a large period of time. For example, a passage describing the political crisis of 1915 (paragraphs 1-2) is compared to a passage describing a period of high artistic productivity in the 1930s (paragraph 12). During the activity, students need to document how each key event led to a change in Churchill's drawing ability. This type of reading helps students to understand more intuitively the non-linear character of the development of abilities.

Based on the environmental dependence principle of DST, the lesson plan is designed as an environmental parameter adjustment experiment. The teacher will prepare a series of cards, each represents a key factor affecting Churchill's artistic development, such as "Mrs. Lavery's guidance", "the loss of her daughter" and so on. After drawing the cards in groups, students were asked to role-play: one group of students simulate a situation "without Mrs. Lavery's guidance", focusing

on how Churchill's fears might have developed in paragraph 7; the other group explore how Churchill's style of painting would have been different "if he hadn't experienced the loss of his daughter" (paragraph 9). This immersive simulation provides students with a deep understanding of the impact of changing external parameters on reading comprehension and artistic development. In terms of multimodal interaction, the lesson plan introduces visual art elements. The teacher will display Churchill's real painting *Chartwell in Winter* and ask students to compare and analyze it with the textual description of "red and golden hills" in paragraph 9. Students are asked to work in groups to complete a "picture-to-text translation task": first identify the specific scene described in the text from the painting, and then analyze how the artist expresses the emotions through color and composition. This kind of cross-modal reading training can strengthen students' multiple representation ability and promote the synergistic development of different cognitive subsystems. The dynamic assessment system is another major feature of this lesson plan. The teacher will design three tasks: the first targets the lexical system by intentionally misusing keywords such as "barren" in the summary; the second creates a logical break by deleting key information about the new student in paragraphs 10-12; and the third introduces a cultural misinterpretation by incorrectly interpreting Churchill's motivation for his work. After each task, students are required to quickly identify problems through group discussion and apply textual evidence to make corrections. Teachers record each student's performance in vocabulary decoding, logical reasoning, cultural understanding and other dimensions in real time, forming a visual trajectory of systematic development.

The whole teaching design presents a complete mechanism of reading ability development from the perspective of DST through four key links: system initialization, ability self-organization, environmental interaction, and adaptive assessment. Compared with the traditional linear teaching paradigm, the most significant features of the lesson plan are: emphasizing the emergent rather than cumulative nature of reading ability, focusing on the adaptability rather than correctness of the system, and paying attention to the diversity rather than uniformity of development. This innovative teaching paradigm not only enhances students' English reading ability, but also develops their systematic thinking and adaptive ability to cope with complex texts.

6 Conclusion

Unlike the traditional bottom-up reading teaching model, the DST-based college English reading teaching model is not a linear developmental process, but a continuous cyclical process. Teachers, as supervisors of the learning environment and the natural environment, have the responsibility of evaluating and supervising the learning status of learners. The DST-based reading teaching model has an important and positive effect on college English reading teaching, but there are still some shortcomings. In the future reading teaching of college English based on the DST model, teachers should strengthen the training of reading strategies, emphasize reading teaching in an open environment, and give students more positive feedback. Only in this way can we improve students' language ability in a real sense, cultivate the foreign language talents needed by the country, and finally realize the goal of deepening the reform of college English teaching.

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