PSYCHOLOGICAL MECHANISM OF ENGLISH LEARNERS IN READING COMPREHENSION

Xia Geng

Abstract
The traditional teaching mode of English reading emphasizes vocabulary and grammar over the psychological mechanism of learners, making it difficult to improve their English reading skills. This paper mainly explores the psychological mechanism of English learners in reading comprehension, aiming to optimize their learning strategies and thinking mode. The psychological mechanism was theoretically analyzed in the three stages of English reading, namely, pre-reading, while-reading and post-reading. Then, a three-stage teaching model was established and applied to a contrastive experiment on non-English majors in a university of Guangzhou, China. The students in the experimental group were taught English reading using the three-stage model while those in the control group were taught by the traditional teaching model. The psychological state of the students in English reading was measured by a questionnaire survey, a pre-test and a post-test. The results show that the three-stage teaching model has a positive effect on the psychological mechanism of college students in English reading. The research findings promote the application of cognitive psychology in English reading teaching.

Key words: English Reading, Psychological Mechanism, Three Stages Teaching Model, Comparative Teaching Experiment.

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INTRODUCTION
With more and more international exchanges, English, as a global language, plays an increasingly important role. English reading, as a main way to obtain information, is an important part of English Teaching (Cohen, 1996). At present, English reading teaching in colleges and universities in China is still centered on vocabulary and grammar. Bottom-up English reading teaching model is predominant. Students are not apt to read independently and their reading strategies and reading ability need to be improved (Proctor, August, Carlo et al., 2016). English reading should be an active cognitive behavior of learners. The process of cognition is full of complex psychological changes. Only through continuous screening and accumulation of new reading knowledge and experience, can learners form a mature reading psychological mechanism and thinking models.

Taking advantage of advanced foreign linguistic theories and years of researches and practice, China has obtained rich research results in English reading. The advantages and disadvantages of vocabulary reading method, schema reading method and text reading method have been summarized and applied to teaching practice (Symons, Peterson, Slaughter et al., 2005). The application of cognitive linguistics in reading comprehension teaching has made clear that students’ autonomous cognitive ability plays a decisive role in improving their reading level (Beckman & Mandrekar, 2005). Schema theory including language schema, content schema and form schema has been applied in teaching practice and played a positive role in improving reading performance (Plant &
Although some achievements have been made in the study of English reading theory in China, there are still problems in reading teaching in colleges and universities. Most of the reading teaching focuses on the understanding of the literal meaning of reading materials; the teaching revolves around grammar and sentence structure; the content is mainly limited to teaching materials, ignoring reading strategies (Weaver, 2012). In order to improve the teaching effect of English reading and analyze the psychological mechanism of learners in the process of reading, this paper studies the process of reading comprehension based on cognitive psychology.

This paper uses the method of theoretical analysis and practical demonstration to carry out the research: in terms of theoretical research, on the basis of the analysis of the psychological nature and psychological process of English learners’ in reading process, this paper puts forward the three-stage teaching model including before, during and after reading and explains the theoretical basis of psycholinguistics, educational psychology, cognitive psychology and schema theory in each stage. As for practical demonstration, three-stage English teaching class is designed and teaching practice is carried out. Through tests before and after class and questionnaire the psychological mechanism of college students in the reading process is further analyzed (Yu & Liu, 2015). Through the study of the three-stage teaching model in the process of English learners’ reading comprehension, it provides new ideas and enlightenment for English teaching in China.

PSYCHOLOGICAL MECHANISM AND THEORETICAL BASIS IN THE PROCESS OF READING

English Learners’ Reading Process

Reading is a complex mental activity of human brain. The purpose of reading is to obtain the author’s intention through the language that the reader has mastered. The reading process of English learners is shown in Figure 1. Starting from the visual input of reading articles, the learners understand the articles through the following process (Namnum & Prelinger, 1961).

Cognition and Processing of Vocabulary

Word recognition is the beginning of reading and the basic information processing. Only by understanding words and vocabularies, can one understand a sentence.

Sentence Interpretation

Sentence interpretation is a cognitive process of reading based on sentences. It first constructs propositions according to the context and the knowledge it has mastered, and then finds the corresponding structural components in sentences. Sentence interpretation is to divide the article into several small paragraphs to understand, and then integrate the interpretation of each sentence in the article to realize the understanding of the whole (Mendes, Saldanha, Tabosa et al., 2013).

Chapter Understanding

According to the understanding of vocabulary and sentence, learners infer the structure and meaning of the article from the beginning to the end, and use the knowledge system of common sense, situation, and culture to synthesize the fragmentary understanding into the reading comprehension of the whole article.

Information Extraction and Memory

After reading, learners need to extract the information of the article according to the purpose of reading, and store the information according to their own needs.

Whether the process of English learners’ reading comprehension is smooth or not is related to their language ability and cognitive ability. Language ability refers to students' knowledge of vocabulary, grammar, pronunciation, semantics, syntax, structure, etc., while cognitive ability mainly refers to learners' familiarity with the language background, culture and other contents of the

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Figure 1. English learner reading process
second language in reading comprehension. These two abilities affect the reading ability of learners from bottom to top and from top to bottom respectively.

The Psychological Essence of English Learners’ Reading Process

The psychological essence of English reading process is to form reading strategy under the stimulation of reading motivation. Reading strategy is the communication channel between the learner and the author. Reading strategy will guide the mood of the learner when reading. Reading mood includes self-confidence, reading engagement, etc., and reading mood ultimately determines the reading effect of the learner.

In the process of reading, learners try to predict and deduce the information that the author wants to express through their own knowledge reserve. In the process of reading, learners’ initiative plays a positive role in obtaining the visible information of written text as well as the invisible information of article structure.

The psychological theory of English Learners’ Reading Process

The reading level of college students in China is higher than that of listening, speaking and writing. Improving learners reading ability can give full play to their advantages and stimulate learners’ active learning psychology and self-confidence, so that to indirectly improve their English in other aspects.

Psycholinguistics

Psycholinguistics holds that reading is a positive psychological process, which is an interaction between readers and authors. According to psycholinguistics, readers can quickly browse the title, length, illustration, font, etc., predict the reading content according to the existing knowledge, and quick skim the article. Then readers can further revise and predict the reading content model; finally, get the overall interpretation of the article through careful reading. The more the reader’s reading experience, the more accurate the prediction may be. The more accurate the reader’s prediction, the better the reading effect is (Rubenstein & Aborn, 2003).

Educational psychology

According to the theory of educational psychology, the learners’ reading mood is the most influential factor for learning effect. Only when the teaching content is enough to stimulate student’s interest in learning, can student be concentrated, and better use cognitive and memory functions to acquire more knowledge and skills. The stimulation of students’ interest in learning needs not only the activity in the classroom, but also the affirmation and praise of teachers (Smedslund, 2003).

Cognitive Psychology Theory

Mature reading ability depends on conceptual understanding, cognitive strategies and automatic reading skills. Reading ability is a complex mental skill. On the one hand, it requires learners to use the declarative knowledge stored in the brain, on the other, it needs to activate the basic skills and strategies in the existing procedural knowledge. And these knowledge, skills and strategies are indispensable to each other, interact with each other, and influence each other. The essence of reading is the process that readers encounter problems and solve problems in understanding the reading materials (Kristjánsson & Egeth, 2019).

Schema Theory

Schema is a situation stored in human long-term memory and can be applied. As a frame of understanding information, schema plays an active role in organization and construction in the cognitive process. It is a generalization of human brain’s general characteristics of objective things and a storage method of comprehensive knowledge of various attributes of objective things.

Linguists conclude that there are three main reasons for reading failure: 1. The reader does not have the corresponding schema theoretical basis; 2. The reader has a certain schema theoretical basis, but the reader fails to make full use of schema theory to explore the clues of the article; 3. The author’s real intention is not understood by the reader. From the perspective of schema theory, readers’ background knowledge is as important as their language ability (Brevik, 2019).

THREE-STAGE READING MODEL

Pre-reading

Pre-reading refers to the preparation before
reading teaching, and it is the stage of guiding students to prepare for psychology and knowledge. The teaching tasks in this stage are shown in Table 1.

**Table 1. Teaching task list of pre-reading**

| Item | Teaching task |
|------|---------------|
| 1    | Introduce the theme of reading materials, conduct content forecasting activities, and stimulate students' reading interest |
| 2    | Let the students clearly understand the purpose of reading |
| 3    | Help students clear the language barriers |

**While-reading**

While-reading is the stage of teaching in the classroom. Under the guidance of teachers, students in this stage discuss the reading materials according to the theory of language psychology and cognitive methods. The teaching tasks in this stage are shown in Table 2.

**Table 2. Teaching task list of while-reading**

| Item | Teaching task |
|------|---------------|
| 1    | Help students understand the author's writing intentions |
| 2    | Help students to understand the structure and specific content of the text |
| 3    | Outline the center of complex segments and analyze the hierarchy |
| 4    | Retelling and elucidating the overall and partial content of the article; |
| 5    | Briefly analyze the various elements of the article according to the stylistic features; |
| 6    | Summarize and analyze the main content and characteristics of the article |

The reading activities in the teaching classroom include three steps: scanning, skipping and close reading. Scanning aims to help students to decode the article; skipping is designed to help students quickly find the scope of the article and improve the reading speed; close reading is to obtain the relationship between the paragraphs and the details of the article.

**Post-reading**

In post-reading, language ability is cultivated in depth through appreciation, analysis, evaluation, feedback and other measures. The teaching tasks in the stage are shown in Table 3.

Through the orderly combination of three stages of English reading teaching, a whole teaching model has been formed. In addition, scientific principle, interest principle, the principle of students as the main body, the principle of teaching students according to their aptitude and the principle of autonomy should be emphasized in the class.

**Table 3. Teaching task list of post-reading**

| Item | Teaching task |
|------|---------------|
| 1    | Students answer some questions about the details of the text |
| 2    | Complete some communicative tasks with the students' existing knowledge, interests, or opinions |
| 3    | Write the main points of reading the article |
| 4    | Abbreviated text or rewrite text |
| 5    | Oral or retelling text |
| 6    | Practice the corresponding exercises after reading the book, read the relevant articles, and consolidate the knowledge you have learned |

The three-stage teaching model is in line with the psychological mechanism of English learners' reading comprehension process. Corresponding teaching measures are arranged in each psychological process so that to effectively improve the reading effect of English learners.

**TEACHING PRACTICE OF THREE-STAGE READING TEACHING MODEL**

In order to demonstrate the teaching effect of the three-stage teaching model, a comparative teaching experiment is carried out combined with a questionnaire survey on reading psychological mechanism of college students in China.

**Experiment Preparation**

**Subjects**

Subjects are 100 non-English majors in a university in Guangzhou. They were divided into experimental class and control class. The ratio of male and female is 1:1. Taking the second semester of the second year as the teaching practice cycle, the experimental class adopted three-stage English reading teaching model, while the control class used the traditional English reading teaching model.

**Questionnaire survey**

100 questionnaires were sent out and 95 valid questionnaires were collected. The subjects were required to fill in the questionnaire about reading psychological
Table 4. Reading psychological mechanism questionnaire

| Item | Question                                                                 | Answer                                      |
|------|--------------------------------------------------------------------------|---------------------------------------------|
| 1    | What are the main ways you can read information?                         | a. classroom b. newspapers and magazines c.  |
| 2    | When you read, you have a word in your mouth.                           | internet, tv d. extracurricular books reading|
| 3    | Use your hand or pen to point to the material you read while             | a. always, b. sometimes, c. no              |
| 5    | When you read, adjust the reading style and speed according              | a. always, b. sometimes, c. no              |
| 6    | When you read, you can start to pay attention to the details.            | a. always, b. sometimes, c. no              |
| 7    | When you read, go back and read the phrases and sentences you just read.| a. always, b. sometimes, c. no              |
| 8    | Read one word at a time, after reading an article, I don’t know the     | a. always, b. sometimes, c. no              |
| 9    | You have read the English information that is not relevant to your      | a. yes, b. no, c. a little                  |
| 10   | Have you ever felt the impact of English reading on your English        | a. yes, b. no, c. a little                  |
| 11   | Do you remember the content of the English article you have read?       | a. yes, b. no, c. a little                  |
| 12   | You want to work hard to change your English reading.                   | a. yes, b. not matter, c. no                |

mechanism according to their own conditions, as shown in Table 4.

Experiment Process
The subjects were tested first in reading psychology and reading level. Then the students in the experimental class were taught in three-stage reading model for half a semester, and the students in the control class were taught traditional vocabulary for half a semester. Finally, the changes of reading psychological mechanism of the subjects were investigated through the test and interview.

Analysis of Experimental Data
Reading Psychological Level
As shown in Figure 2, it is the way for the subjects to obtain English reading information.

Figure 2. Information acquisition method

![Information Acquisition Method](image)

It can be seen from the data in the figure for English learners, most of the English reading information is still obtained in the English classroom, and there are few ways to obtain English reading information from other ways. On the one hand, it shows the importance of English classroom for college students’ English reading in our country, on the other hand, it shows that the links before and after class are ignored in the traditional teaching classroom.

The statistical results of 2 to 12 items of reading psychology questionnaire are shown in Table 5.

Table 5. Questionnaire results

| Item | a(%) | b(%) | c(%) |
|------|------|------|------|
| 2    | 22   | 49   | 29   |
| 3    | 15   | 51   | 38   |
| 5    | 46   | 45   | 9    |
| 6    | 22   | 57   | 21   |
| 7    | 33   | 51   | 16   |
| 8    | 12   | 63   | 25   |
| 9    | 31   | 17   | 52   |
| 10   | 69   | 10   | 21   |
| 11   | 31   | 11   | 58   |
| 12   | 95   | 5    | 0    |

It can be seen from the data that there are defects in both reading habits and reading skills of reading learners before the teaching experiment, and the reading confidence needs to be improved. However, the results of
questionnaire show that the majority of learners expect to change their reading ability through efforts.

**Pre-test and Post-test Results**

The score statistics of reading level include average reading speed (words / time, unit: w / min), average accuracy rate (comprehension / total reading × 100%), reading efficiency (reading speed / understanding rate). Figure 2 and figure 3 show the pre-test and post-test results of the control class and the experimental class respectively.

**Figure 3. Test score of control group**

![Figure 3. Test score of control group](image)

**Figure 4. Test score of test group**

![Figure 4. Test score of test group](image)

From Figure 3, it can be seen that the traditional English reading class has little effect on students’ reading performance, and there is no significant difference between pre-test and post-test scores. According to the data in Figure 4, it can be seen that there is a significant difference between the pre-test and post-test reading scores of the experimental class, and the learners have greatly improved their reading speed, accuracy and efficiency.

**Experimental Conclusion and Enlightenment**

The three-stage teaching model makes students’ reading psychological mechanism more mature. Students acquire reading strategies and cognitive methods in the process of reading learning. The three-stage teaching model has a positive effect on English reading teaching.

The teaching enlightenment of the three-stage teaching model is as follows: make the purpose of reading teaching clearer. Pay more attention to the guidance of psychological mechanism in the reading process. Make clear the role of teachers in the teaching process and the rhythm of teaching. Help students overcome the psychological and emotional obstacles in the learning process.

**CONCLUSION**

English Reading Teaching in China generally pays too much attention to grammar and vocabulary. The teaching model is single with unclear teaching objectives and other shortcomings, making it difficult for English learners to improve their reading level. The process of English reading is a complex psychological cognitive process. In the process of reading, the teaching model based on cognitive theory, language psychology and other theories plays an important role in improving the reading level of English learners. Aiming at analyzing the psychological mechanism in the process of English learners' reading comprehension, the paper summarizes the related theory and put the theory into practice. The studies and the conclusions of the paper are as follows:

1. The process of English reading and its psychological mechanism are analyzed in detail.
2. Put forward three-stage English reading teaching model, and explain the teaching tasks of each stage.
3. Carry out a comparative experiment between class adopting three-stage teaching model and class with traditional teaching method. The experimental results show that the three-stage English reading teaching model has a significant effect on the improvement of learners’ reading level.
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