Teaching Reform of English Reading Ability Based on Big Data

Hongbin Li1,*
1Jilin Business and Technology College, Jilin, 130000, Changchun, China
*Corresponding author e-mail: lhbin401@jlbtc.edu.cn

Abstract: With the development of the information age, the channels through which students obtain knowledge and information through reading are constantly changing. Among the four basic skills of listening, speaking, reading and writing, college English reading ability is an important part of them. This article aims to study the reform ability of English reading data based on big data. This article explains the teaching reform strategy in the context of big data, and highlights the practicality of the reform of English reading teaching. In addition, this article constructs a college English reading teaching model based on big data to improve students' reading level. The results of the teaching experiment in this paper show that the reform of college English reading teaching based on big data helps students fully master reading cognitive strategies, cultivate their awareness of cognitive strategies, and improve their English reading level by 15%.

Keywords: Big Data, English Reading Ability, Teaching Reform

1. Introduction
In the international world of the 21st century, English as a universal language is most commonly used in various activities [1]. Following the trend of the international community, China pays more attention to the development of English to make today's prosperity [2]. As we all know, students start to learn English as a foreign language in most parts of China since elementary school [3-4].

Among the four skills of listening, speaking, reading and writing, reading plays a vital role most of the time [5]. The reading method collects text information and background knowledge to understand the importance of [6]. Therefore, reading can provide enough information to help exchange ideas and share the target knowledge language [7]. Anderson pointed out that "reading is English as an essential skill. For anyone, reading is the most important skill to master" [8].

Research on the role of speech representation in learning to read is almost entirely focused on speech perception. Van d B M R studied the connection between the motor control of speech, reading and reading-related abilities. He studied two languages, English and Dutch, which have different pinyin mapping rules. There were 236 American and Dutch children aged 4 to 8 who performed the
modified auditory feedback task, in which the first formant of the vowel was modified. Compared with pre-literacy children, the response to feedback changes after literacy is stronger, especially Dutch children. He believes that these findings may be related to the changes in children's speech expression ability, which promotes the integration of orthogonal information and speech information. However, these studies have large errors [9].

The innovation of this article is to cultivate and improve students' applied language ability, so as to effectively reform college English teaching goals, teaching methods and teaching assessment, and lay a solid foundation for cultivating high-skilled compound talents [10].

2. English Reading Teaching Reform Method Based on Big Data

2.1 English Reading

In a nutshell, English learning plays an important role in learning and guiding the second language, and it contains many complex psychological activities. For example, in psychology, anthropology, cognitive linguistics, sociolinguistics, and education, defining reading content is a difficult task. Therefore, with the development of reading research by many scholars, they have put forward their own reading expressions from different fields and different angles.

Reading is a personal communication activity. The reader goes from the smallest morpheme to the largest text. This activity is completely personalized, a secret judgment of thinking. This is because the nature of reading is confidential. It determines that the process of reading is a complex process that combines psychological and physical factors, rather than paying special attention to scanning.

Reading is defined as "this is a printed page with the ability to derive meaning from it and interpret this information correctly". He further explained Anderson's definition and provided his own understanding. Readers can get information not only from the printed page, but also explain the information from the author's expression.

For a long time, the definition of English reading has been from person to person, but from the above point of view, we can confirm that reading is a kind of psychological process. English reading means that readers can use their background knowledge, language errors, and psychological process authors to construct meaningful communication discourse from the text. On the one hand, the author sends text messages to the outside world; on the other hand, readers use text to extract and process information.

2.2 Teaching Reform Strategies Based on Big Data

(1) The change of teaching concepts and the application of higher-level design. Creativity determines new ideas, and creativity leads the trend. Higher-level plans must follow the laws of education and be systematic, emphasizing practicality and professionalism. On the one hand, make full use of big data analysis to strengthen the status of courses and learning. Statistics and big data analysis are more conducive to the design and arrangement of English courses; it is conducive to cultivating students' complete English literacy, promoting important English skills for sustainable career development, and comprehensive listening and speaking skills in the workplace, oral English and oral English communication skills. On the other hand, make full use of big data analysis to enhance the diverse needs of English courses. Carry out "target" and "individual" curriculum settings, apply basic English + industrial English settings tailored to different companies or professional groups, and convert public English from the traditional "basic", "universal" and "unified" types Language teaching and vocational training.

(2) Optimize teaching content and reform English teaching and learning methods. Big data can be used to count and analyze the common needs and personal needs of students, and make full use of massive data and massive methods to optimize teaching content to the greatest extent. At the same time, classroom teaching methods such as heuristic and instructive questioning and learning guidance are used to increase students' interest, cultivate students' skills and improve learning efficiency. Apply
project-based teaching methods and scattered and mobile learning methods such as online learning to enhance independent learning and training of mobile terminals that have been heard and heard, thereby improving students and communication skills.

(3) Use data analysis to innovate English assessment. With the help of complete statistical information and big data analysis, the assessment process can be enhanced and the English test can be innovated. Speaking, writing, reading, project teaching process, MOOC, personalized learning and personalized teaching are all innovations in teaching testing. Innovative English test process assessment. Make full use of online and offline process learning for regular listening, speaking and composition training.

3. Reform Experiment of English Reading Teaching

3.1 Subject
This experiment takes a total of 100 students from two classes of non-English majors in our college as the research object. One class is an experimental class (50 students) and the other class is a control class (50 students). Before the start of the study, a reading level test was conducted on 100 students in the class. The test was in the form of multiple-choice questions, using the reading comprehension part of the previous year's level four exam. There was no significant difference in test scores between the two classes. At the same time, use the form of questionnaire to conduct a survey of English learning background and used strategies. The content of the English learning background questionnaire includes English learning experience, interests, etc.; the used strategy surveys the metacognition of reading learning, cognitive strategy, difficulties in reading comprehension and solutions.

3.2 Experimental Process
The experimental class and the control class use the same teaching materials. The control class is carried out according to the traditional teaching mode and unified teaching plan. The original teaching mode is optimized in the experimental class, and the task-based and interactive teaching method is adopted. Multimedia courseware and other integration are fully used Online learning resources to carry out various contextual dynamic interactive activities based on the theme of each unit. When explaining specific reading materials, a new model is adopted, that is, a teaching model that combines strategies, texts, and language points. In classroom teaching, more attention is paid to students' ability to use reading strategies and grasp the ability of text structure, and to use text analysis theory Related reading theories, such as, relevance theory, and thematic progression model, are integrated into the text analysis of reading materials, so that students will gradually become accustomed to independent text analysis.

Classroom teaching focuses on integrating strategy training. Strategy training adopts explicit training methods and is carried out simultaneously with the analysis and explanation of each unit text. It lasts 15 weeks and is divided into 3 stages. In the first stage, the teacher introduces to students the definitions, use value, usage and occasions of cognitive reading strategies and metacognitive reading strategies, and encourages students to discuss and practice with the same table. In the second stage, students strengthen the practice of using strategies under the guidance of teachers, cultivate strategic awareness, especially metacognitive reading strategy awareness, and enhance the ability to use reading strategies to solve reading problems. Students use various reading strategies to complete the prescribed reading comprehension as quickly and accurately as possible within the prescribed time. At the same time, students are required to actively monitor, control and adjust their reading process during the reading process to improve their metacognitive monitoring ability. The third stage is to cultivate students' autonomous learning ability, provide students with extracurricular learning resources after class, require students to independently practice the use of cognitive reading strategies and metacognitive reading strategies, complete related reading tasks, and guide students in the process of solving each problem And the link is recorded.
4. Reform of English Reading Ability Teaching Based on Big Data

4.1 English Reading Problems Based on Big Data

Through the analysis of the results of the questionnaire by EXCEL software, we found that 78% of students have basically similar English learning experiences. Although all students think English learning is very important, only 66% of students are interested in English learning and 88% of students do not. After receiving any reading strategy training, 47% of students think that the biggest difficulty in reading is vocabulary, 9% think that the biggest difficulty is grammar, 49% think that lack of reading skills is the biggest obstacle in reading, 99% of students think there is no corresponding countermeasure when encountering difficulties. The result is shown in Figure 1. (A means English experience, B means interest in English, C means no reading training, D means vocabulary is the biggest problem, E means grammar is the biggest problem, F means lack of reading skills is the biggest problem, G means there is no countermeasure when encountering difficulties)

![Figure 1. Statistics of students' questions on English reading](image)

4.2 Effect of the Reform of English Reading Ability Teaching

After the teaching experiment is over, the students in the experimental class and the control class will be tested again, and the test paper will continue to use the reading comprehension part of the last year and fourth grade exam. At the same time, questionnaire surveys and interviews were conducted with students in the experimental and control classrooms. Through reading and the use of cognitive strategies, the effectiveness of strategy training and students' satisfaction with the new teaching model were analyzed. In addition, SPSS was used to analyze the experimental results. The difference between the experimental level and the control group is compared by independent t-test samples, and the experimental level and the control group are compared longitudinally between the readings before and after the experiment. The results are shown in Table 1:
Table 1. Statistics before and after reading

| Attributes | Class          | Number of people | Mean   | Standard deviation | Standard deviation of the mean |
|------------|----------------|------------------|--------|--------------------|-------------------------------|
| Before reading | Experimental class | 50               | 56.8   | 10.7               | 2.1                           |
| Control class           | 50               | 56.4             | 11.9   | 2.4                |                               |
| After reading    | Experimental class | 50               | 86.9   | 5.1                | 0.9                           |
| Control class           | 50               | 62.1             | 7.9    | 1.6                |                               |

From Table 1, we can see that the average pre-reading test of the experimental class is 56.93, and the control class is 56.92. The p value of the independent sample t-test was 0.99, 0.99>0.05, indicating that the reading scores of the experimental class and the control class were not significantly different before the test.

In order to observe the data more intuitively, the table is drawn into a graph, as shown in Figure 2.

Figure 2. Comparison of test scores before and after reading

From the data analysis and summary in the figure, it can be seen that the descriptive statistics and independent sample t-test, the p value is 0.000, 0.000<0.05, indicating that the experimental class and the control class have significant differences in the late reading test results; the standard deviation of the experimental class 5.1, the standard deviation of the control class is 7.9, and the results of the experimental class are better than those of the control class. Finally, the paired sample t-test before and after the test, we found that the p value of the test class was 0.000, 0.000<0.05, and the t value was -12.035, indicating that the reading score after the test was significantly better than that before the test. The p value of the control class was 0.073. 0.073>0.05, indicating that there is no significant difference in reading scores before and after the test.
5. Conclusions
The reading teaching method based on big data has many advantages in promoting the critical thinking ability of students in the following aspects, but there are few comparative studies on it. There is a considerable amount of research in Western countries, which is very demanding for both teachers to take action and educators. It is recommended that teachers design reading teaching based on big data more comprehensively and because students have different levels and diversity, big data is tailored to various interests, habits and professions.

References
[1] Cai H, Xu B, Jiang L, et al. IoT-Based Big Data Storage Systems in Cloud Computing: Perspectives and Challenges[J]. IEEE Internet of Things Journal, 2017, 4(1):75-87.
[2] Sheng Shouzhao, Ye Fengchao, Sun Chenwu. The Experimental Design and Teaching Reform for the Course of Automatic Control Principle%[J]. Journal of Electrical & Electronic Education, 2017, 039(001):131 -134.
[3] Krenca K, Segers E, Chen X, et al. Phonological specificity relates to phonological awareness and reading ability in English–French bilingual children[J]. Reading and Writing, 2020, 33(2):267-291.
[4] Sun Huiran, Zhang Lijuan. Research on Experiment Teaching Reform of Computer Major in Colleges[J]. Agriculture Network Information, 2017, 000(011):84-86.
[5] Janssen M, Haiko V D V, Wahyudi A. Factors influencing big data decision-making quality[J]. Journal of Business Research, 2017, 70(JAN.):338-345.
[6] Rathore M M U, Paul A, Ahmad A, et al. Real-Time Big Data Analytical Architecture for Remote Sensing Application[J]. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2017, 8(10):4610-4621.
[7] Wang Y, Kung L A, Byrd T A. Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations[J]. Technological Forecasting & Social Change, 2018, 126(JAN.):3-13.
[8] Zhang Y, Qiu M, Tsai C W, et al. Health-CPS: Healthcare Cyber-Physical System Assisted by Cloud and Big Data[J]. IEEE Systems Journal, 2017, 11(1):88-95.
[9] Van d B M R, Groen M A, Frost S, et al. Sensorimotor Control of Speech and Children's Reading Ability[J]. Scientific studies of reading, 2018, 22(6):503-516.
[10] Xu W, Zhou H, Cheng N, et al. Internet of Vehicles in Big Data Era[J]. IEEE/CAA Journal of Automatica Sinica, 2018, 5(1):19-35.