A Study on the Improvement of Chinese Secondary School Students' English Reading Skills Based on Personalized Learning Functions in Artificial Intelligence Tools

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Abstract. With the development and advancement of technology, the artificial intelligence background of computers is getting deeper and deeper into every field of development. Also because of the advancement of computer technology, the development of various industries can not be separated from the advancement and support of computing technology. Based on the background of the development of big data, this paper researches and explores the improvement of Chinese secondary school students' English proficiency. Based on the rapid development of today's society, a higher and higher level of English is being needed. In order to follow up the basic language quality requirements for Chinese secondary school students in the new era, and also to improve the English reading ability of today's secondary school students, this study investigates the English learning ability of secondary school students based on the current learning platform. The innovation of this paper is to apply the existing big data background of artificial intelligence to improve the reading ability of secondary school students, which is undoubtedly a big breakthrough in cross-study . The existing computer-based big data learning platform is used to analyse the factors affecting secondary school students' English reading ability and improve them wherever possible. With the rapid development of AI technology, the education sector is beginning to see opportunities for change. Artificial intelligence can tailor personalised learning paths and teaching content for each student through big data analysis and intelligent algorithms. This type of personalised learning can better meet the needs of students, identify and cultivate potential, and provide real-time feedback and guidance during the learning process. Compared with traditional one-size-fits-all teaching, personalised learning can maximise students' interest and initiative in learning and enable each student to excel.

Keywords: English reading; Hadoop; Spark; teaching strategy.

1 Introduction

Over the years of teaching English reading in secondary schools, under the guidance and influence of other experienced teachers, I have developed my own way of teaching

Y. Feng et al. (eds.), *Proceedings of the 4th International Conference on Internet, Education and Information Technology (IEIT 2024)*, Atlantis Highlights in Social Sciences, Education and Humanities 26,
https://doi.org/10.2991/978-94-6463-574-4_64

reading with "influence" [1]. However, after several years of practice, it is felt that the reading level of students has not been greatly improved, students do not feel that reading is a happy thing on the contrary, more students are tired of reading and fear. Teachers also feel physically and mentally exhausted and are in a state of confusion [2]. In traditional English reading teaching, the teaching strategies commonly used by teachers are characterised by the following: teacher-centred, focusing on linguistic details and paying insufficient attention to the text as a whole, which is manifested in the classroom as the teacher explaining the text word by word, including grammar, linguistic points and the understanding of the content, which is taught at a slower speed and takes a longer time. Under the influence of such teaching strategies, students are bound to be in a passive position in the reading process, as can be seen only from the state of their preparatory work [3].

2 Hadoop Platform and Related Components

There are many types of components in the Hadoop ecosystem, which each have different functions but at the same time are interconnected and are essential to make up a recommender system [4] [5][6].

2.1 K-means Clustering

The specific steps of the K-means algorithm are as follows:

Step 1: Randomly select k sample points as the initial cluster centres and denote the centroid of the cluster by $O_1, O_2, \cdots, O_k$.

Step 2: Calculate the distance from each sample to the centre of the k clusters and divide the sample into clusters with the shortest distance, e.g., if sample x_r is the shortest from the cluster centre O_i, divide sample x_r into cluster O_i.

Step 3: According to the formula, for every sample point divided, recalculate the centre of the cluster in which that sample point is located, and finally the new cluster centre $O_1^*, O_2^*, \cdots, O_k^*$.

$$O_i^* = \frac{1}{n}\sum X$$

Step 4: Repeat steps 2 and 3 until the recalculated cluster centres are unchanged, indicating that k-means clustering has been completed;

Step 5: Output the clustering results.

2.2 HDFS Distributed File Storage System

HDFS full name is Hadoop Distributed File System (HDFS), which takes the job of data storage in Hadoop [7]. The storage framework of HDFS is shown in Figure 1. HDFS adopts the principle of master-slave structure design and consists of a master node NameNode and multiple slave nodes DataNode[8].

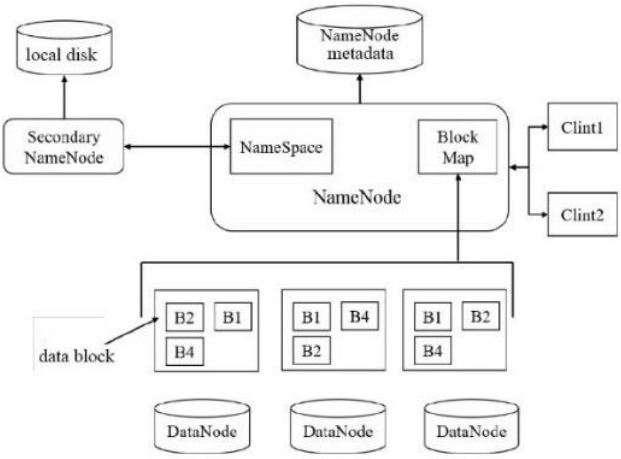

Fig. 1. Hadoop distributed storage system

The system will be configured with a minimum of three slave nodes for the sake of data security and these three nodes are distributed on different machines, two of them are stored on different servers on the same rack and the third one is stored on a different machine on a different rack, by doing this, the distributed storage of the data is ensured and at the same time it is ensured that irrespective of which node hangs up, the data is safe and secure [9].

2.3 MapReduce Distributed Computing Model

MapReduce workflow is divided into Map phase and Reduce phase [10]. The main work of Reduce is to receive the data from the Map stage for logical processing. The specific workflow of MapReduce is shown in Figure 2&3.

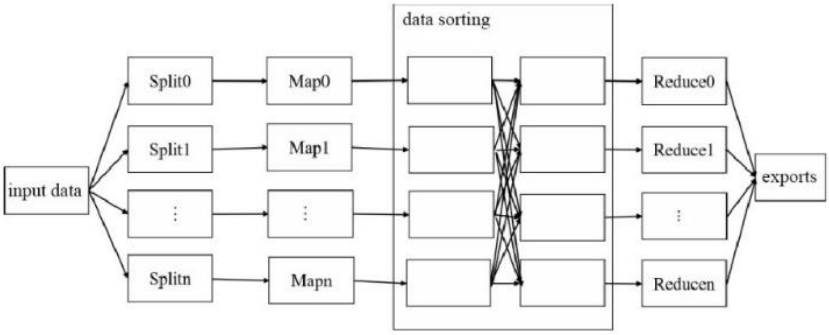

Fig. 2. MapReduce workflow

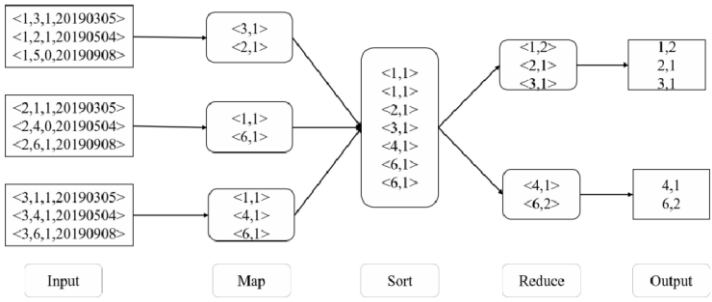

Fig. 3. MapReduce example diagram

The specific process of MapReduce processing data is: get the file from HDFS as input data, and according to the slicing information to slice the file to form the corresponding number of data blocks, the default size is 128 MB. According to the corresponding number of data blocks to start the corresponding Map task, will be in the Map side after some logical processing, the data in the form of key-value pairs to be sent to the partition to be annotated, the annotation information contains the data from which file.

3 The Construction of English Reading Teaching Strategies

The current "Internet +" is also the era of knowledge economy, with the development of artificial intelligence, knowledge sharing and Internet teaching has gradually become popular. Along with this is the new era of educational change, now the world's education reform, are focused on the concept of personalised learning into the education system. The ability to effectively use technology to help students truly achieve personalised learning is not only the main direction of future education, but also an important means to enhance the competitiveness of students in the future.In order to truly make students readers, the first step should be to clarify the concept of student-centredness. Teachers should make use of teaching strategies to help and guide students, and to fish for them instead of replacing them with readers. Teachers should find ways to mobilise students' initiative so that the original knowledge in their minds can be brought into full play.

What we should explore is the specific application of strategies in reading teaching.

(1) Activate the original knowledge and experience.

(2) Summarising information.

Skimming through a text can be done in the following steps.

a. Read the title and sub-title of the article, which students can

b. Read the first, second and last paragraphs of the article. The purpose of reading the last paragraph is that usually the author will summarise his or her views and attitudes in the last paragraph.

c. Read the opening sentence of each paragraph, where the author tends to give a short summary of the passage being written. These, in turn, support the author's point of view.

d. Teachers need to make sure that students understand that skimming requires them to get the general idea of the text as quickly as possible, and does not require them to read every detail of the text from the beginning.

e. After these four steps have been completed, students will understand the general idea of the text, but they will also need to summarise the main meaning of the reading text in their own words or by quoting key words and phrases from the text.

(3) Scientific regulation of reading speed. Today, in the information age, people have realised the importance of improving reading speed.

4 Accurate Data: AI Platform Collects and Analyses Student Academic Data

The premise of personalised learning is the effective collection and processing of student learning data, model training through high-quality and massive data, and continuous optimisation of solutions. In this regard, many artificial intelligence enterprises have carried out practical exploration, love cloud school "good score" platform wine using artificial intelligence big data service school academic analysis, from the source to collect and analyse data.

Each child's natural endowment, ability to understand and points of interest are different, the use of information technology to capture the student's behaviour in the learning process, combined with big data analysis, you can assess the ability of each category, each student, and then according to the different circumstances of each child targeted learning programmes, so as to enhance the efficiency and effectiveness of learning, and improve their creativity, imagination and competitiveness.

What's more, the big data platform can also predict students' future learning trends, generate reports on students' academic conditions, generate exclusive academic portraits, and predict students' long-term development through all-round data analysis. It also gives the student more scientific development advice by combining his personality, interest, potential and other comprehensive factors.

From the perspective of teachers, they can promote the optimisation of teaching behaviours based on real, valid and consistent test and assessment data, understand the characteristics and learning needs of each student through accurate data, analyse the common and individual problems in students' learning, and reasonably drive the next teaching behaviours to provide support for students' personalised learning.

Different students have different levels of knowledge and should have different study plans. On top of the mapped knowledge points, there are a variety of corresponding test questions with detailed explanations. We track the learning process through the intelligent question bank, and based on the analysis of students' learning situation, we make accurate and intelligent personalised recommendations according to the dimensions of the test questions.

5 Conclusion

Reading has always been an important part of teaching English. Understanding from sentence to paragraph and from paragraph to article is done through careful reading. Developing students' reading comprehension ability has always been one of the goals of English teaching. In conclusion, English learning is a gradual process, the cultivation of reading ability is not a one-day effort. Readers must accumulate language knowledge for a long time, expand their vocabulary, read books, exercise their analytical ability, raise awareness; cultivate comprehension, strengthen memory, judgement, reasoning and other abilities, and must correctly grasp and use grammatical knowledge, learn certain reading skills, and master reading methods. The future revolution in education lies not only in personalised learning, but also in a shift in the mode of learning. While traditional classroom teaching emphasises the impartation of knowledge, future education will place greater emphasis on the cultivation of students' comprehensive literacy and creative abilities. Schools will pay more attention to developing students' teamwork skills, problem-solving abilities and innovative thinking, and through project-based learning and practical activities, students will be better able to cope with the changes and challenges of the future society.

In this era of change, education will become one of the key application areas of AI technology. Through the application of personalised learning and innovative teaching modes, education will further become intelligent and humanised. Schools, teachers and students need to actively embrace this change to meet the needs of the future society. Education in the future pays more attention to the growth and development of each student, providing them with more choices and opportunities for a better future. As long as we respond positively to change, a better future will always come.

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