Research Article

CET Resource Database Construction Model Based on Cloud Computing

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Chinese students began learning English during compulsory education, have a long history of English learning, and focus on vocabulary, grammar, and other aspects of the language in middle school. Teaching resources include a variety of teaching conditions, such as materials. In a broad sense, they also include educational policies and other contents. They typically include teaching materials, cases, films and television, pictures, courseware, teacher resources, teaching aids, and infrastructure. In this case, cloud computing provides a good technical platform for solving the problems mentioned above in college English teaching (CET). Cloud computing enables the desktop use of Internet resources while reducing personal computer performance. In this paper, we will create a data resource database based on the cloud computing concept, making the most of existing resources, avoiding repeated development, and achieving curriculum content sharing. Reduce the cost of developing online courses, shorten the development cycle, and ensure that they are of high quality. This paper investigates the use of cloud computing to build a CET resource database. The cloud computing platform enables multiperson collaboration, document creation, editing, and sharing, all of which are characteristics of constructivism and collaborative learning theory.

1. Introduction

Teaching resources are various available conditions for teaching, such as materials, generally including teaching materials, cases, films and television, pictures, courseware, teacher resources, teaching aids, and infrastructure; in a broad sense, they also involve educational policies and other contents [1]. Chinese students began to learn English at the stage of compulsory education, have long been familiar with English learning, and focus on vocabulary, grammar, and other parts in middle school. Most students lack confidence in the development of college English because they feel that they lack a learning resource pool that can attract their interest in learning. CET aims to integrate the five skills and training of college students’ listening, speaking, reading, writing, and translation and comprehensively improving college students’ language ability. The realization of this teaching goal needs various teaching resources.

In this case, the emergence of cloud computing provides a good technical platform for solving the above-mentioned problems in CET [4]. Cloud computing realizes desktop resources on the Internet and minimizes the performance of personal computers. The second layer is platform layer or platform as a service. The platform layer is built on the cloud infrastructure for application developers and English educators who understand computer technology and can develop applications to develop software [5, 6]. This is a question that can be removed. Simultaneously, the “total correlation of modified items” value can be used as a reference. When the
value is less than 0.400, the question has a low correlation with other questions and can be removed. Students’ enthusiasm wanes over time, and autonomous learning becomes a chore. The creation and design of a CET resource pool in a cloud computing environment is a new form of trust and hope for excellent courses. The infrastructure layer, also known as computing environment is a new form of trust and hope for the development of education. However, the enthusiasm wanes over time, and autonomous learning becomes a chore. We will create a data resource data bank based on the cloud computing concept, making the most of existing resources, avoiding repeated development, and achieving curriculum content sharing. Reduce the cost of developing online courses, shorten the development cycle, and ensure the development quality of online courses [7, 8]. English teaching based on cloud computing technology will have a brand-new development in teaching philosophy, mode, content, and teaching effect [9, 10]. The use of cloud computing technology can realize the sharing of CET resources and reduce the cost of construction, maintenance, and upgrading of teaching resources [11]. Improve the utilization rate of existing resources and avoid repeated construction of the same resources.

The development of cloud computing plays an important role in updating teaching resources and optimizing teaching methods, better improving the CET information resource data bank, opening up new ways of information acquisition and teaching methods for CET, improving students’ autonomous learning ability, and broadening students’ vision of English learning. At present, the challenges faced by the construction of multimedia network resource base mainly lie in the lack of reusability and interoperability of digital resources and the lack of planning of digital teaching materials [12, 13]. We should pay attention to the convenience brought by cloud computing to the construction of CET information resource data bank, but we should also face up to the problems brought by cloud computing. We should make rational use of the benefits of new media, allowing it to play a larger role in the development of the CET information resource data bank and improving the CET information resource data bank [14]. By designing various forms of learning contents such as words, pictures, audio, and video, such as English songs, English situational conversations, English short stories, English jokes, English speeches, and business English vocabulary, interesting content and expression forms can create a free and happy learning experience and improve learning efficiency [15].

2. Related Work

According to reference [16], the “time-consuming and inefficient” phenomenon is a serious problem in CET. They are among them. The main negative factors affecting the quality of CET are cultural barriers. Many articles have discussed and studied this issue, but the positive impact of cultural cross on English learning has been overlooked. The attention theory is constructed using the method of big data analysis, and it holds that college English learning is not only the transfer and transmission of knowledge from outside to inside in the construction of teaching resource data banks but also the process of learners walking around to construct their own knowledge and experience, that is, enriching and transforming their own knowledge and experience through repeated and two-way in-class interactions [17]. According to research [18], students with limited class hours can only grasp the surface content of culture, and there is a lack of illustrated and vivid interactive cultural learning environments, as well as high-quality and refined learning content, in after-class knowledge expansion and autonomous learning. This makes it difficult for them to deepen their cultural learning, unable to meet the needs of personalized learning and autonomous learning, and thus lose their interest and enthusiasm for learning. Reference [19] suggests that teachers should divide the learning content of a unit into several interrelated and relatively independent fragmented knowledge modules according to the core knowledge points. These knowledge modules are concise and focused, so as to adapt to the students’ discontinuous attention state, and at the same time, it is also convenient for learning to happen anytime, anywhere. In reference [20], through the method of big data analysis, according to the actual teaching needs, some colleges and universities have targeted English courses such as English-speaking countries’ society and culture, English literature, American literature, British and American literature appreciation, Chinese culture, comparison and exchange between Chinese and western cultures in CET-4, English intensive classes, English majors, and English double-degree classes. The research of literature [21] shows that learning resources should be constructed from the perspective of practicality, and English learning and practice materials conducive to the development of students’ English listening, speaking, reading, writing, and translation ability should be designed. The content selection should be from shallow to deep, step by step, and in line with students’ cognitive characteristics. According to reference [22], teachers can support teachers’ scientific research or teaching, students’ language learning, and real-time collaborative learning among students through the construction and optimization of teaching resource data banks in various forms in the process of learning and teaching activities under the guidance of constructivism, collaborative learning, and other educational theories. Tacit knowledge exchange and co-learning is a collaborative network support platform for self-directed professional development. In the construction of a CET resource data bank, some teachers pay more attention to the technical level of PPT courseware production and ignore the design of actual teaching content, according to reference [23]. The courseware is, to some extent, an “empty shell without pulp.” Some teachers rely too heavily on multimedia tools in the classroom, such as PowerPoint presentations, blindly read courseware, and lack effective communication with students, and students are unable to grasp the course’s focus. Some teachers pursue the “student-centered” teaching concept on their own, creating a large number of classroom activities while ignoring the teaching of teaching resource data banks. According to a review of the literature [24], there are also some issues with the teaching process. The majority of teaching methods and content, for example, are still in the traditional mode. There is a lack of three-dimensional and comprehensive data resources for culture teaching, in addition to the
use of multimedia courseware such as PPT. Reference [25] puts forward that CET information resource data bank is based on college English learning theory and teaching content, using computers and networks to efficiently transmit teaching content, teaching control and feedback information, and realize the information resource synthesis of teaching objectives and teaching content.

This paper investigates the construction of a CET resource base using cloud computing. College English is taught at various levels, encouraging students to learn independently and incorporating advanced multimedia technology into the CET process to promote multimedia teaching of English and break down the barriers of time and space in English learning. The creation of a network teaching platform for cultural courses will benefit a wide range of people: managers will benefit from more standardized cultural course teaching; educators will benefit from increased work efficiency and quality. Increased collaboration: learners gain a better understanding of cultural learning, and the interaction between teachers and students in the learning process improves, having a lot of resources for learning.


College English learners carry out network autonomous learning, and English teachers carry out network teaching mainly in the application layer. You can refer to the shared course object reference model. It realizes the integration and cooperation of hard greedy resources through the unified management of computing resources and storage resources and dynamic scheduling. Developers do not have to worry about the resources needed for application running. In the process of secret bidding, content, structure, implementation, and evaluation, teachers need to use learning environment such as situation, cooperation, and conversation to stimulate students to actively learn knowledge and cultivate their ability to effectively construct knowledge. The platform layer provides all platform resources needed for application running and maintenance. The third layer is the application layer or software as a service. It is oriented to college users and provides simple software application services and user interaction interfaces. \( k \) represents the number of items in the questionnaire, \( \sum S_1^2 \) represents the total variance of the items in the questionnaire, and \( S_2 \) represents the variance of the total score of the questionnaire. The higher the coefficient, the higher the reliability of the questionnaire. According to the actual needs, students order the required teaching resources and services from service providers through the corresponding “cloud.” The foreign language teaching framework of cloud computing technology is shown in Figure 1.

Cloud computing technology can provide a variety of scenarios for teaching that meet the needs of teaching content, make students receive diversified classroom content, fully embody cognitive views, realize multidimensional input in language teaching, and help them understand deeply. At the same time, pure and authentic pronunciation and intonation can help students imitate and improve their interest in learning. The use of cloud computing technology in education will provide an open and collaborative platform for learners’ development, allowing every teacher to creatively develop curriculum design according to the characteristics of disciplines, integrating all available educational resources and focusing on an advanced platform, forming a specific curriculum structure to promote learners’ acquisition of knowledge, skills, and experience, and achieving the exp. The internal consistency of the questionnaire will be improved when a question item is removed. Instead, the coefficient rises, indicating that the quantity to be predicted in this question differs from that in the other questions in the survey. The infrastructure layer is made up of special computing and storage resources provided by colleges and universities for college English. The processor, memory, storage, and network resources are abstracted into virtual hardware, which is packaged in a virtual machine independent of hardware, along with the complete running environment, including the operating system and application programs, and saved as files. Due to network stability, traffic, and time constraints, students hope that the learning content does not simply copy the course’s knowledge, but rather provides clear, practical, and concrete knowledge points for the most practical part of the practical course. This standard specification was put forward by the US Department of Defense and widely promoted by the online education industry at home and abroad. It is currently one of the most authoritative standards in the field of digital learning. After the integration of CET resources, it will be provided to college users in the form of “cloud service,” which is divided into three layers or three service modes, as shown in Figure 2.

The 26% grouping method with the highest reliability for discrimination in the test preparation discrimination analysis method is used to group the samples. To test whether the average mean \( \mu \) of a question item in the high group is significantly different from the overall mean \( \mu \) of a question item in the low group, the corresponding hypothesis test problem is

\[
H_0 : \mu_1 = \mu_2 \iff H_1 : \mu_1 \neq \mu_2. \tag{1}
\]

Levene is used to test whether the population variance of high and low groups is equal, in which the first line represents zero hypothesis and the variance is equal. When \( \sigma_1 = \sigma_2 \), the combined variance is used as the estimate of population variance, which is defined as

\[
S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}. \tag{2}
\]

\( S_1^2 \) and \( S_2^2 \) in the formula are the variance of high and low group samples, respectively; \( N_1 \) and \( N_2 \) are the number of samples in the high group and the low group, respectively. The sampling distribution variance \( \sigma^2_{12} \) of the mean difference between the two samples is

\[
\sigma^2_{12} = \frac{n_1}{n_1} S_p^2 + \frac{n_2}{n_2} S_p^2. \tag{3}
\]
The second line indicates that the alternative hypothesis indicates that the variances of the two populations are not equal, that is, when \( \sigma_1 \neq \sigma_2 \) is used, the respective variances are used. At this time, the variance \( \sigma_{12}^2 \) of the sampling distribution of the mean difference between the two samples is

\[
\sigma_{12}^2 = \frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}.
\]  

The mathematical definition of the statistic \( t \) of the mean test of two populations is as follows:

\[
t = \frac{\bar{X}_1 + \bar{X}_2 - (\mu_1 - \mu_2)}{\sqrt{\sigma_{12}^2}}.
\]  

Determine whether to keep or delete the item through the probability of significance test of average.

After the independent sample \( t \)-test, the overall reliability of the questionnaire was tested. For the reliability

Figure 1: Foreign language teaching framework based on cloud computing technology.

Figure 2: Structure of college English cloud computing system.
The estimation of the Likert scale used in social sciences, Cronbach’s \( \alpha \) coefficient is the most widely used, which also indicates internal consistency. The formula is as follows:

\[
a = \frac{K}{K + 1} \left( 1 - \frac{\sum S^2}{S^2} \right),
\]

where \( K \) represents the number of items in the questionnaire, \( \sum S^2 \) represents the total variance of the items in the questionnaire, and \( S^2 \) represents the variance of the total score of the questionnaire. The higher the \( \alpha \) coefficient, the higher the reliability of the questionnaire. When a question item is deleted, the internal consistency of the questionnaire will be improved. The \( \alpha \) coefficient increases instead, indicating that the quantity to be predicted in this question is different from that in other questions in the questionnaire. This question can be deleted. At the same time, the value of “total correlation of modified items” can also be used as a reference. When the value is less than 0.400, it means that the question is low related to other questions, which can be deleted.

The infrastructure layer, also known as infrastructure as a service, is the first layer. The infrastructure layer is made up of special computing and storage resources provided by colleges and universities for college English. The processor, memory, storage, and network resources are abstracted into virtual hardware, which is packaged in a virtual machine independent of hardware, along with the complete running environment, including the operating system and application programs, and saved as files. The infrastructure layer not only provides university users with virtualized computing resources and storage, but it also ensures network bandwidth when they visit. The platform layer, also known as platform as a service, is the second layer. For application developers and English educators who understand computer technology and can develop applications to develop software, the platform layer is built on cloud infrastructure. Developers do not need to be concerned about the resources required to run an application. All platform resources required for application running and maintenance are provided by the platform layer.

The third layer is the application layer or software as a service. It is oriented to college users and provides simple software application services and user interaction interfaces. College English learners carry out network autonomous learning, and English teachers carry out network teaching mainly in the application layer.

Cloud computing creates a free and extensive space. When applied to teaching, it not only ensures the flexibility and convenience of teachers’ courses but also helps learners’ lasting learning. The CET mode of cloud computing technology can randomly group the students in the classroom and discuss the topics written by the teacher on the electronic whiteboard through multimedia equipment and network technology. Cloud computing platform is a virtual education system without boundaries. The creation of the cloud platform teaching environment with “efficient use of time as the starting point, students’ dominant position as the center, interactive and hybrid teaching mode as the main line, and multidimensional teaching evaluation as the support” breaks through the limitations of the traditional teaching mode and provides students with the choice of learning time and learning methods. The infrastructure layer not only provides virtualized computing resources and storage for university users but also ensures the network bandwidth when users visit. Because of the strong autonomy and self-control requirements of cloud computing platform, students do not want to spend too much time searching and searching aimlessly like looking for a needle in a haystack.

4. Research on the Construction of CET Resource Library

4.1. Construction Scheme of CET Resource Base Based on Cloud Computing

The lack of reusability and interoperability of digital resources, as well as the lack of planning of digital teaching materials, is the main challenges that the construction of a multimedia network resource base is currently facing. On the one hand, the online teaching platform purchased by some colleges and universities is outdated in content and single in form and thus cannot meet the needs of students’ self-learning; on the other hand, a lack of effective monitoring is also a major problem in online autonomous learning. The shared course object reference model can be used as a reference. The US Department of Defense proposed this standard specification, which has been widely promoted both at home and abroad by the online education industry. It is now one of the most widely accepted standards in the field of digital learning. Due to network stability, traffic, and time constraints, students expect the learning content to provide clear, practical, and concrete knowledge points for the most practical part of the practical course. On the one hand, the online teaching platform purchased by some colleges and universities is outdated in content and single in form and thus cannot meet the needs of students’ self-learning; on the other hand, a lack of effective monitoring is also a major problem in online autonomous learning. Students have a low attendance rate, and they are unable to solve the difficult problems they face in their studies in a timely manner. Students’ enthusiasm wanes over time, and self-directed learning becomes a chore. The interesting content and expression forms can create a free and happy learning experience and improve learning efficiency by designing various forms of learning contents such as words, pictures, audio, and video, such as English songs, English situational conversations, English short stories, English jokes, English speeches, and business English vocabulary. These mobile learning contents can come from news and entertainment programs or from textbooks or a group of test questions. In this paper, we will build a data resource data bank according to the idea of cloud computing, make the best use of existing resources, avoid repeated development, and achieve the sharing of curriculum content. Minimize the cost, shorten the development cycle of online courses, and ensure the development quality of online courses. Under the cloud computing environment, the construction and design of CET resource pool is a new form.
of trust and hope for excellent courses. Teachers must use learning environments such as situation, cooperation, and conversation to encourage students to actively learn knowledge and develop their ability to effectively construct knowledge during the process of secret bidding, content, structure, implementation, and evaluation. Students do not want to waste time searching aimlessly for a needle in a haystack because of the cloud computing platform’s strong autonomy and self-control requirements. As a result, designing English knowledge related to majors according to the knowledge and ability needs of corresponding professional fields should be a priority in the construction of a CET resource base based on cloud computing. The construction of the cloud computing platform resource section includes evaluation and testing as well. A scientific, comprehensive, objective, and accurate evaluation system is not only an important basis for teachers to adjust teaching methods and strategies but also for students to adjust learning methods and improve learning effects. In the content of resource pool, it is necessary to reflect the advantages of mobile learning anytime and anywhere and convenience, all for the sake of students’ personalized learning needs and learning styles. The construction of CET resource data bank under cloud computing environment is a learning method of CET. It can promote students’ effective interactive learning, cultivate students’ ability to collect and process English information and research ability, and strengthen the communication, sharing, and coordination between students and learning partners, so as to better complete learning objectives and build knowledge. In terms of cloud computing-based online self-regulated learning, some colleges and universities purchase outdated online teaching platforms with single form, which cannot meet the needs of students’ self-regulated learning. On the other hand, the lack of effective monitoring is also a major problem in network autonomous learning. The attendance rate of students is low, and the difficult problems they encounter in learning cannot be solved in time. Over time, students’ enthusiasm decreases, and autonomous learning also floats in the form. With its interactivity, flexibility, and multidimensional and three-dimensional information, the network multimedia system vividly presents language knowledge to students and effectively monitors students’ learning and teaching process so that teachers can better play a leading role and students can more actively participate in the whole learning process, so as to greatly enrich and develop the teaching model, making foreign language teaching more mature and perfect. Students are easily distracted by problems or the influence of the learning environment when they do not have direct guidance from teachers. Establish a shared, small modular, and fragmented college English mobile learning resource data bank, integrate learning interests, diversity, and divergence, stimulate students’ learning enthusiasm and attitude toward the construction of a CET resource data bank based on cloud computing, fully integrate teacher-student interaction, and give full play to the main role of students’ autonomous learning and the guiding role of teachers. Students’ subjectivity is highlighted by the teaching structure of “teachers as the leading and students as the main body.” Students are seen as active participants in the knowledge-building process. Students can find ways to solve problems in the process of completing tasks, resulting in a sense of excitement and success, when teachers use a collaborative teaching method and build a learning community. Teachers become consultants for students’ learning. Teachers who play a leadership role can improve the teaching process, which is an important aspect of teaching. As a result, in terms of content difficulty, media, color use, and browsing interface design, the content design of a cloud computing platform should take into account learners’ habits and hobbies and create an environment based on their participation. The cloud computing environment for building a CET resource data bank encourages students to create a comprehensive, open, and interactive learning environment based on real-world social context. One of the main research contents of the current CET reform is experimental research on such a constructivist learning environment, which is also the result of extensive development of the integration of information technology and the college English curriculum.

4.2. Experimental Results and Analysis. There are already records of student users A, B, and C scoring teaching resources 1, 2, 3, and 4, respectively, in the student user-teaching resource scoring table. The system can query this data set in the scoring matrix $R$ of student users-teaching resources, as shown in Figures 3 and 4.

Finally, the cooccurrence matrix $C$ obtained through the scoring matrix $R$ is shown in Figure 5.

The scoring vectors of student users A, B, and C in the student user teaching resource scoring matrix $R$ are multiplied by the cooccurrence matrix $C$ to obtain a scoring matrix $T$, as shown in Figure 6.

Filter the scoring matrix $T$ once, that is, if the student user has scored on the teaching resources, it will remain unchanged, and if the student user has not scored on the teaching resources, it will be replaced. Thus, the final scoring matrix $n$ is obtained, as shown in Figure 7.

It can be seen from the final scoring matrix $n$ that student user A has not operated teaching resource 1 and teaching resource 3, and the system will give priority to recommending new teaching resource 1 to student users.

The experimental results show that the functions of teaching resource management are primarily divided into resource management and batch entry based on the above five groups of data. This functional group is primarily for system administrators, but it can also designate administrators of teaching resources who submit resources via the WEB page so that the system can save them. Managers can use a WEB browser to upload information and provide a brief introduction so that learners can quickly grasp the main content of resources. To create a new environment for students’ language practice, teachers should try to choose vivid realistic materials and integrate them with existing textbooks. Modernity: the resource data bank should be updated on a regular basis in order to meet the needs of students and teachers, as well as changes in textbooks. According to the needs of social development and the emergence of current affairs news, new content should be added at any time. Cloud computing platform integrable ware, with its primitive and flexible features, can effectively make up for the deficiency that the current cloud computing
Figure 3: Student user-CET resource scoring matrix $R$.

Figure 4: Cooccurrence matrix $C$ of CET resources.

Figure 5: Cooccurrence matrix $C$ of CET resources.
platform pays too much attention to the whole teaching process, which affects classroom teaching and greatly improves classroom teaching efficiency. Introducing cloud computing platform into English classroom teaching, designing and developing a multimedia integrable ware system that meets the needs of English classroom teaching are of great practical significance for improving traditional cloud computing platform to assist English teaching and improving teaching efficiency.

5. Conclusions

The “student-centered” teaching mode can also be effectively realized by establishing a resource data bank. After class, students can choose resources that best suit their needs in order to get the most out of their English classes. The success or failure of English teaching is determined by the creation of a good teaching resource data bank. This paper summarizes language learning strategies in a cloud computing environment using language learning based on cloud computing platforms and teaching practice. Teachers and students can compensate for a lack of time and limited materials in the classroom by using the rich resource data bank and the orderly and interesting content arrangement. To summarize, the creation of a resource bank is beneficial not only to teachers in terms of creative teaching but also to students in terms of research-based learning. Cloud computing is critical to furthering CET reform, implementing scientifically sound teaching methods, and improving teaching quality. Teachers participate in students’ activities through the cloud computing platform to explore common knowledge, cultivate teachers’ innovative education ability, and effectively enhance teachers’ ability to implement English quality education, allowing English teaching to reach new heights and stages. A new model of CET resource data bank construction is built on this platform. Its goal is to use high-tech multimedia and network assistance.
to cultivate students’ knowledge mastery ability and communication ability, in order to comprehensively subordinate and improve students’ English comprehensive application ability and to support the teaching strategic goal of cultivating elite talents.

**Data Availability**

The data used to support the findings of this study are included within the article.

**Conflicts of Interest**

The author does not have any possible conflicts of interest.

**References**


