

## Research Article

# Research on the Realization Path of College English Education Based on the SVM Algorithm Model under the Background of Cloud Computing and Wireless Communication

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The rapid development of cloud computing and wireless communication technology has brought a huge impact to traditional education methods, especially for college English education where the teaching mode is relatively simple and the impact is more than other disciplines. How to make full use of this information technology revolution and make it an opportunity for us to innovate in English education has become a topic that many scholars are paying attention to. Research on teaching innovation in the context of cloud computing and wireless communication has yielded fruitful results. This research wants to fully absorb the valuable experience of these research results, through the establishment of an optimized SVM algorithm model, and then conduct an online questionnaire survey of English majors in colleges and universities in Zhejiang Province in the form of a questionnaire survey. The design of the questionnaire mainly includes the following aspects: students' satisfaction with English education in the context of cloud computing and wireless communication, their own comprehensive English ability, and teacher's teaching ability. According to the data obtained from the questionnaire survey, combined with the SVM algorithm model for analysis, so as to optimize English teaching, the research results show that, in the context of cloud computing and wireless communication, college students are generally low in satisfaction with traditional English classroom teaching, but have a higher interest in the teaching innovation of cloud computing and wireless communication technology. This provides us with useful ideas for the realization of the path innovation of college English education at this stage.

## 1. Introduction

The development of cloud computing and wireless communication technology has caused violent turbulence in the traditional working mode of various industries. At this stage, people have become accustomed to life and work forms that once existed only in imagination, such as digital payment and mobile office. The influence of cloud computing and wireless communication has become more and more widespread in terms of geographical breadth and age level. In order to occupy a leading position in technology in the new era, many countries and regions have deployed and made efforts in this field. The changes brought by cloud computing and wireless communications to the education industry are also obvious [1, 2]. In addition to enriching the teaching content of the classroom, it can also promote

education to a level of individualization and refinement through the construction and development of supporting applications. Therefore, whether it can actively respond to the changes brought about by the development of wireless communication technology will greatly affect the actual effect of teaching [3, 4].

English teaching has always been an area that is easily overlooked in the teaching reform of colleges and universities. On the one hand, the importance of English in nonprofessional colleges is decreasing, and on the other hand, teaching resources are limited. It is difficult for many schools to achieve innovation in teaching models through their own teaching power [5]. Under the comprehensive influence of these factors, it is difficult for college English teaching to play its due role in improving students' English ability. Xu Liangliang believes that cloud computing and

wireless communication has achieved a large-scale expansion in application fields based on 5G technology. Reflected in the field of education, it is to innovate from the PPT and multimedia at the beginning of the 21st century to the current stage of network teaching and intelligent classrooms [6]. Zhang Jianhui pointed out that the development of cloud computing and wireless communication technology enables college English education to use network platforms to promote the transformation of innovative learning, and this transformation also conforms to the trend of demand for talents in the 5G era and, therefore, builds a full range of digital and intelligent English. The learning system has become an important support for college English education in the future [7]. Li Huahua believes that the English education system built on the basis of cloud computing and wireless communication technology will help teachers better arrange learning tasks according to the students' personal abilities. With the assistance of big data mining, teachers can conduct online analysis and real-time guidance of students' learning, which helps to realize the real-time communication and mutual communication between teaching subjects and objects and achieves the goal of precise teaching [8–10].

At the same time, the research results are not limited to the theoretical field. At the practical level, research on this subject is also widely carried out [10]. Some colleges and universities use cloud computing and wireless communication technology to record, broadcast, and replay English classroom content and teaching priorities, and some schools have formed a teaching resource-sharing platform to build English classrooms online so that the advantages of teaching resources can be shared [11, 12]. Teachers are only responsible for the teaching of a number of units. Teachers take turns to answer students' questions on the learning platform, avoiding the shortcomings of communication and communication between English teachers and students in colleges and universities in the past [13, 14]. The student office of some colleges and universities uses wireless intelligent assistants to remind students of English classes, sign in, etc., which not only strengthens the management of students but also reduces the workload of teachers so that they can devote all their energy to teaching [15]. In order to better transform the existing research results into practice, this research combines it with the results of the questionnaire survey to guide our follow-up teaching innovation. The SVM algorithm model is used to detect it, so as to build a college English teaching system that meets the needs of the times.

## 2. SVM Algorithm Model and Research Method

The SVM algorithm model has a good solution to machine learning problems with a relatively small sample size, can solve high-dimensional problems, and has a high resolution. Therefore, this paper chooses the SVM algorithm model to assist the research.

*2.1. SVM Algorithm Model.* The original intention of SVM is to solve the problem of binary classification, and it has a

good effect on solving the problem of binary classification. The collected samples are classified in a certain way to expand the scope of the classification interval, and at the same time, the confidence interval is converged and reduced, and the empirical risk is reduced by improving the accuracy. Later, SVM introduced soft intervals to solve the nonlinear inseparable problem, through a series of kernel function transformations; the data were spatially mapped to solve the nonlinear classification problem. The architecture diagram of the SVM model is shown in Figure 1:

The optimized SVM algorithm model is as follows. When the classification is a binary classification, the output  $x = \{0, 1\}$  is a binary function. The prediction function  $g(k, a)$  is the discriminant function in pattern classification, and the loss function is shown in Formula (1). Among them, the loss function is  $\phi F(x, g(k, a))$ :

$$F(x, g(k, a)) = \begin{cases} 0, & x = g(k, a) \\ 1, & x \neq g(k, a) \end{cases}. \quad (1)$$

The loss function  $P$  is the loss caused by the error between the prediction function  $g(k, a)$  and the real output  $x$ , where  $P$  stands for machine learning. A different  $P$  is composed of different loss functions:

$$P(a) = \oint F(x, g(k, a))dF(x, g). \quad (2)$$

*2.2. Research Methods.* In this paper, the method of questionnaire survey is used to obtain research data, and the sample size is calculated according to Formula (3), where  $Q$  is the sample size,  $M$  is the statistic,  $M=1.93$  when the confidence is 95% and  $M=1.67$  when the confidence is 90%,  $H$  is the error value, and  $U$  is the probability value:

$$Q = \frac{M^2 U (1 - U)}{H^2}. \quad (3)$$

*2.2.1. Design of the Questionnaire.* The main goal of the development of college English teaching behavior under the background of wireless communication is to improve the comprehensive ability of college students, especially non-English majors, in this field. Therefore, this questionnaire will also focus on this type of student group. In order to better eliminate the impact of students' own English ability on the survey results, the coverage of the colleges distributed by the online questionnaire of this survey is very wide. Among the 5 colleges, there are 985 colleges and ordinary undergraduate colleges. There are 30 questions in the questionnaire. The first 5 questions provide a simple understanding of the students. The remaining 25 questions can be divided into 5 aspects, namely, satisfaction with English courses, their own comprehensive ability in English, and the school's wireless communication, the application of technology, the teaching ability of English teachers, and the effectiveness of the school in teaching management. The questionnaire starts with the sixth question, and each question is set with 4 alternative answers, arranged in order

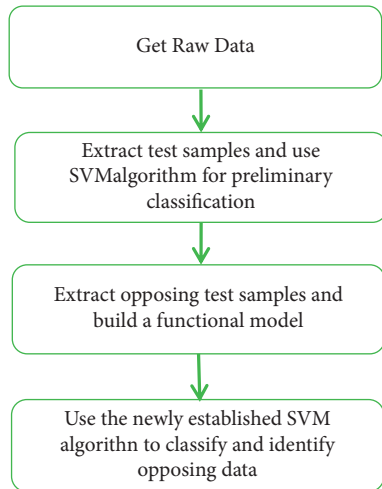


FIGURE 1: The architecture diagram of the SVM model.

from low to high, and are assigned values of 1–4. In order to make the calculation results more intuitive, all points are converted into a hundred-point system for horizontal comparison, as shown in Table 1.

**2.2.2. Investigation Process.** After the opening of each university in the first semester of 2021, one 985 university and 4 general undergraduate universities in Zhejiang Province were selected as the survey subjects. With the approval of the Academic Affairs Office of 5 universities, we loaded the questionnaire on the campus official website and invited non-English majors of grade 1–3 undergraduates to participate in answering. The questionnaire answers are valid for 2 months, and each ID is limited to one answer. A total of 1423 students participated in answering questions during the period. After screening for obviously unreasonable extreme values, there were 1298 valid questionnaires, with an effective rate of 91.2%.

It can be seen from Table 2 that the gender ratio of the students participating in the survey is relatively balanced, while the difference in grade distribution is relatively large. Sophomores accounted for more than half of the total number [16]. The second and third places were freshmen and junior students.

**2.2.3. Experimental Process.** Using the SVM algorithm to build a model, the first step is to preprocess various factors that affect the effect of college English classrooms and exclude specific and individual factors. Next is the extraction of general factors. It is based on the preprocessed dataset to extract information that is helpful for vector processing. Specifically, in this study, what factors can better improve the teaching effect and make it close to the ideal assignment?

### 3. Results and Discussion

**3.1. Results.** It can be seen from Figure 2 that, in the five main aspects covered by the questionnaire survey, except for the satisfaction with English courses and the English

teacher’s teaching ability score of nearly 80, the scores of the other three aspects are all below 70. Among them, in the school, the effectiveness score in teaching management just exceeded the passing line.

It can be seen in Figure 3 that there are certain gender differences in the respondents’ responses to the questionnaire. In addition to the average score of girls in their own assessment of comprehensive English ability which is slightly higher than that of boys, the average scores of other four aspects are slightly lower than boys. It shows that girls demand for English teaching which is slightly higher than that of boys, and their comprehensive ability is also slightly higher than that of boys.

As shown in Figure 4, students’ scores for the same question in this survey are also different in different grades. In addition to assigning average points in the assessment of their own comprehensive English ability, the average points assigned in the other four areas are all in the same grade as the increase in the response decreases. This reflects from the side that the enthusiasm of students in English is gradually weakening.

### 3.2. Discussion

**3.2.1. The Characteristics of College English Courses in the Context of Cloud Computing and Wireless Communication.** College English education in the context of wireless communication refers to the rapid development of wireless communication technology. College English has made a series of changes in order to conform to the trend of the times. This allows both teaching parties to get rid of the constraints of fixed learning locations and time to a large extent and achieve more efficient English teaching in the form of online teaching, video playback, and online exams. At this stage, a number of online classrooms and student management apps have been developed [17]. The former, such as Tencent conferences and Huihui classrooms, can achieve excellent teaching effects under wireless transmission; the latter includes the school treasure APP, curtain APP, and various question-making APPs. With the support of wireless communication technology, contemporary college English education has changed significantly from traditional teaching in terms of teaching mode and training goals.

- (1) Professionalism: college English education at the current stage has gradually changed the past mode of unifying teaching content. Instead, in addition to public English, it has also tried to combine with the students’ majors so that students can independently read the foreign literature of their majors.
- (2) Practicality: under the background of wireless communication, English teaching in colleges and universities reflects higher practicability, and the teaching content can be closer to the learning needs of students and has a stronger practical value.
- (3) Sustainability: although the system of linking English scores with degrees is cancelled at this stage, it does

TABLE 1: Thematic distribution of the questionnaire.

Title attribution	Number of questions
Basic student information	5
Satisfaction with English courses	3
Own comprehensive ability of English	4
School's application of cloud computing and wireless communication technology	7
English teacher's teaching ability	6
Effectiveness of the school in teaching management	5

TABLE 2: Basic information of students participating in the survey (only valid answers).

Category	Number	
Gender	Boys	632
	Girls	666
Grade	Freshman	442
	Sophomore	658
	Junior	323

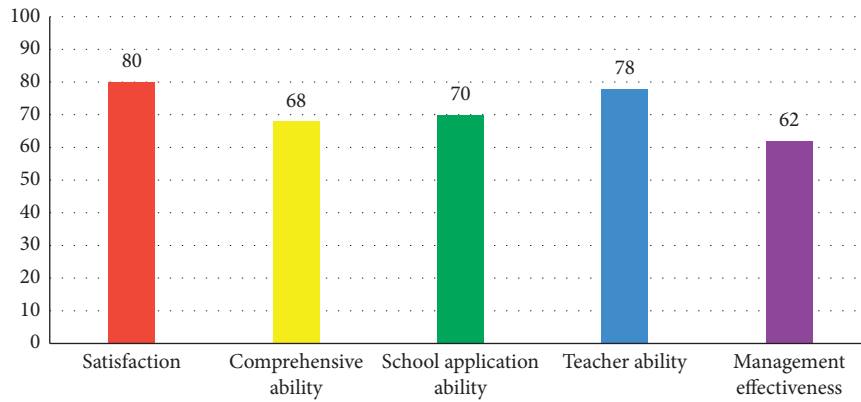


FIGURE 2: Distribution of average scores from questionnaire survey.

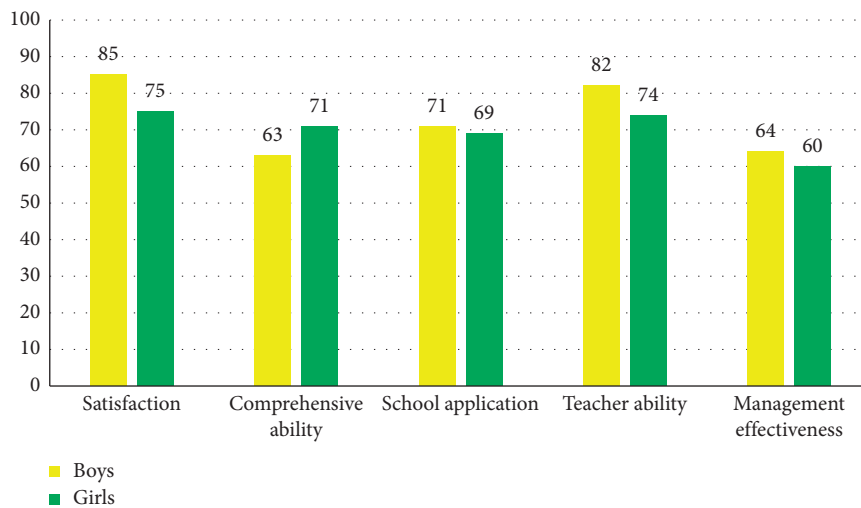


FIGURE 3: Analysis of the difference in scores between males and females in the questionnaire survey.

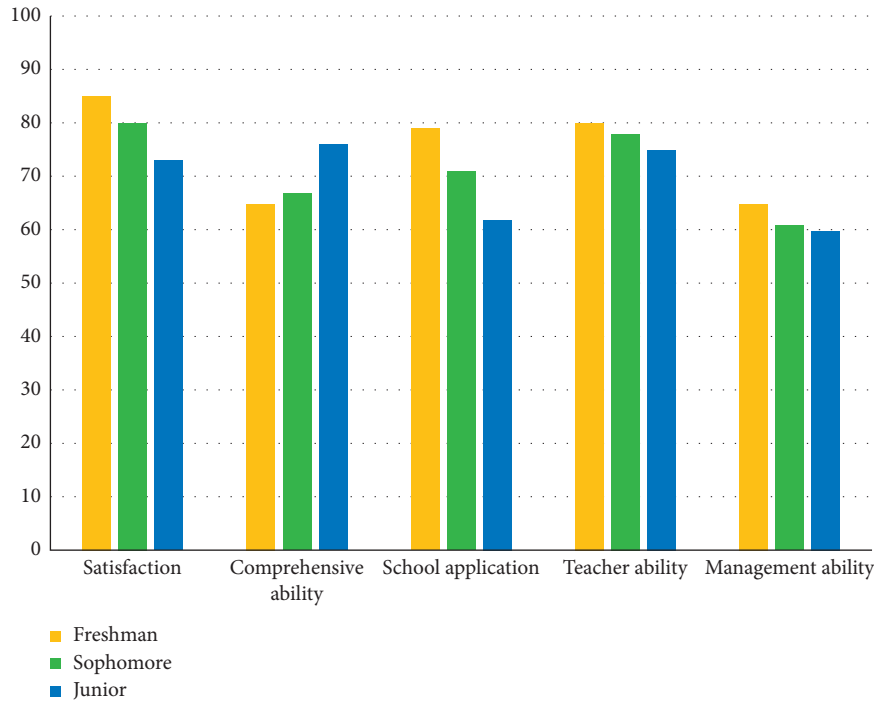


FIGURE 4: Analysis of the differences in the scores of students in each grade.

not mean that the “tradition” of students saying goodbye to English after taking the CET exam is still continuing. On the contrary, the continuity of English learning has been enhanced because the English that students learn has been transformed into a real boost to improve their professionalism.

- (4) Changes in teaching objectives: the goal of developing college English education is to improve students’ English proficiency so that students have better academic research and expression skills. This is very different from the one-sided focus on public English in the past and the emphasis on CET pass rate. In the past, most non-English major colleges and universities in my country only offered English courses in the freshman and sophomore years. Students basically say goodbye to English when they reach the third grade. Except for students who need postgraduate entrance examinations or going abroad, it can be said that they will not invest more in English and more in energy to learn. Today, with the rapid development of wireless communication technology, students have more opportunities and a broader platform to learn English, which provides a solid guarantee for the change of teaching goals.

### 3.2.2. The Changes Brought by Cloud Computing and Wireless Communication Technology to College English Education

- (1) Enhance the richness of teaching resources: wireless communication technology enables all kinds of resources to be transmitted to students’ information

terminals more quickly and conveniently. On the basis that 5G has increased the transmission rate by nearly a hundred times, students can browse the educational resources designated by teachers almost at any time. In addition, with the transformation of the teaching objectives of contemporary college English teaching, more and more colleges and universities use actual simulation as an important means to improve the practicality of English teaching. This requires not only comprehensive resource integration but also human-computer interaction and other forms to stimulate students’ enthusiasm. In this field, the advantages of wireless communication are enormous.

- (2) Expanded the flexibility of teaching methods: the traditional college English classroom is almost in the same line as the middle and high school stages. Teachers follow the fixed process of “word recitation-text explanation-grammar focus” and review later. Effective interaction between the two parties is extremely limited. The development of wireless communication technology provides an excellent opportunity to change this model. Both parties can expand according to the content to be taught in the classroom and adopt flexible teaching methods.
- (3) Promote students’ understanding and absorption of what they have learned: in the past, the most important way for college students to learn English was by rote memorization, striving to pass the CET exam in the shortest time. Students rarely have a deep understanding of word methods and grammatical connotations. As a result, although some students



obtain high scores in the CET exam, their practical ability to use English is very limited, and they lack the favorable conditions for actual simulation. The reduction in tariffs and the increase in the rate brought about by the development of wireless communication technology have greatly increased the opportunities for students to communicate online, thereby deepening the students' understanding and absorption of what they have learned.

- (4) Freedom of teaching space: the construction of college English teaching based on the highly developed wireless communication technology not only has obvious advantages in teaching content and teaching effects but also solves the fixedness of teaching space to a large extent. Teachers and students do not need to go to a fixed classroom to start teaching, but only need to participate in the teaching process through the wireless information terminal at the specified time. This not only saves time but also allows both teachers and students to interact in a more free and comfortable environment.

### 3.2.3. Current Problems in English Education

- (1) English teachers still occupy the leading position in the classroom: on the one hand, students' enthusiasm in class is not high. Except for professional English colleges, English is just an ordinary public course in colleges and universities. Coupled with the recent cancellation of the CET test score and degree linkage system, students' enthusiasm for learning has greatly reduced. On the other hand, college English teachers must complete the teaching tasks specified by the Academic Affairs Office within a very limited class time and can only tell as much as possible in the classroom.
- (2) Some students have a serious perfunctory mentality: based on wireless communication technology, many colleges and universities have developed or purchased APPs for students' English learning and uploaded corresponding learning resources in combination with the teaching plan. Students are required to check-in and complete a certain number of exercises every day. This idea is the scientific use of wireless communication technology. However, from the actual effect, many students have a serious perfunctory mentality, and some even spend money to hire classmates to complete their homework tasks. This not only failed to improve the ability but also caused a great waste of learning resources.
- (3) Limited improvement in students' English application ability: the study found that the English application ability of college students has not been significantly improved due to the development of wireless technology. The main reason is that the current evaluation of the teaching ability of English teachers in colleges and universities still stays at the

rigid indicator of the CET pass rate of the teaching class. Therefore, teachers have to focus on the students' test-taking ability in the teaching process. Although the application ability training has increased, in fact, the improvement of students' English application ability is very limited.

Therefore, colleges and universities should focus on improving students' enthusiasm for English learning and carry out targeted reforms in response to the above-mentioned problems existing in traditional English teaching. Exams are important, but the ultimate goal of English learning is to enable students to express themselves in English flexibly. Colleges and universities should pay attention to improving students' English application ability.

## 4. Suggestions on the Realization Path of College English Education under the Background of Cloud Computing and Wireless Communication

*4.1. Give Students More Room to Play.* Although the CET is cancelled through the degree-linked system, it does not mean that English teaching should be ignored. This will make students misunderstand the importance of English. Teachers in colleges and universities can boldly adopt a variety of teaching modes, reduce the prescribed teaching tasks, and advocate increasing the guidance of students' language expression and appreciation of masterpieces. Conditional schools can investigate students' learning intentions and points of interest through the Internet, divide students into corresponding groups for learning, and open up the assessment methods [18]. Enable students to learn really because of interest.

*4.2. Actively Adjust Students' Perfunctory Psychology.* Combine institutional management and ideological education to guide students to change their perfunctory psychology in the field of English learning. For example, regular video scanning is performed when students are doing questions, and check-in is performed by fingerprint entry or face recognition technology [19]. For students who adopt employment, plagiarism, etc. in the course of homework, once discovered, the final grade will be judged as a failure, in order to enhance the students' emphasis on English learning.

*4.3. Pay Attention to the Improvement of Students' English Ability.* Colleges and universities should focus on building a comprehensive evaluation system, formulate and emphasize guidelines for the improvement of CET pass rate and application ability, and allow teachers to actively balance the proportion of test-taking ability and application ability training. Choose more scientific methods in written expression and oral language, invest more energy, and fully realize the instrumental nature of English. Efforts to enable students to improve their comprehensive abilities while passing the CET exam.

## 5. Conclusion

With the closer integration of cloud computing and wireless communication technology with college English education, traditional English classrooms have undergone tremendous changes, showing many new features from teaching models and teaching concepts to teaching goals. At the same time, due to the adjustment of the system, the enthusiasm of non-English majors in colleges and universities for English learning has been reduced. How to scientifically deal with the challenges brought about by the combined forces of these multiple factors is a key issue facing our college English education at this stage. Through experimental research, it can be seen that, due to differences in gender and grade, students have different attitudes towards English learning in the context of wireless communication. We should actively adjust and start with self-transformation. Integrate English teaching with the professional needs of students and, at the same time, have the courage to break through the limitations of teaching methods, and choose teaching methods that can more stimulate students' interest to serve teaching. With the help of the SVM algorithm, find out several key factors to improve the teaching effect. This points out the direction for us to continue in-depth research and also provides a scientific basis for the next step of carrying out differentiated experiments.

## Data Availability

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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