Educational Practice Based on the Integration of Support Vector Machines and English Curricula

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ABSTRACT

At present, IT (Information Technology) with computer network as its core has begun to integrate into CET (College English Teaching) practice, which has brought unprecedented influence on ELT (English Language Teaching). This paper adopts the strategy of active learning to build SVM, overcomes the shortcomings of typical SVM, and comprehensively considers various actual situations to build an assessment model of college English classroom instructional quality. The experimental results show that the classification accuracy of this algorithm can reach 96.21% on Zoo data set and 94.36% on Iris data set. This study is of great theoretical and practical value for improving the level of college English classroom teaching in the IT ecological environment.

KEYWORDS

College English Teaching, Information Technology, Support Vector Machines

Due to the continuous progress of information technology (IT), it is more and more widely used in college English classes. The extensive application of IT provides good conditions and possibilities for improving instructional quality and efficiency. Since IT with computer networks as the core entered into college English teaching (CET) practice, many changes have taken place in the traditional CET mode, which has also brought confusion and challenges to English language teaching in general (Wang, 2021). In fact, the emergence and development of IT inevitably has brought great impact to conventional education theories and models, thus contributing to the continuous development and improvement of instructional resources with the changing of the times (Timotheou et al., 2023). IT makes some conventional education theories and models face challenges, while new instructional resources and models emerge as the times require. At present, CET is the main form of university education, which means it is the foundation of university education and plays a very important role in the instructional process (Zhou et al., 2022). The conventional method of education, with the participation of only teachers and students, has made some achievements, but there are still some problems that have not been well solved. Accordingly, CET gradually presents the characteristics of information education. In terms of course teaching, the integration of IT and teaching should be combined with the trend of networking and multimedia educational technology. We should not only regard IT as a means and tool throughout, but also conduct feasible practical research according to the

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new ideas contained in IT and sum up a convenient application mode. Paying attention to the effective combination of IT and CET is an important new feature of teaching theory and mode. Therefore, it is of practical significance to study the application optimization of IT in CET.

With the continuous expansion of the scale of university education, instructional quality has become an increasingly concerning issue in the development of education. Today's quality education, as an educational concept, has obvious value tendency, which represents the direction of educational reform (Altbach et al., 2019). Evaluation is a process of value judgment, so the assessment of quality education in the new period should determine scientific assessment standards and content framework. Along with the assessment activities, universities should have their own instructional quality assessment system, so as to pre-evaluate their own teaching and ensure the instructional quality between two teaching assessments (Fang, 2021). In recent years, the research of classification algorithm in data mining is a hot spot in this field, mainly focusing on the comparison of research results of different classification methods. At present, the earliest and most widely used classification algorithm in data mining software is neural network. Because neural networks are based on the principle of empirical minimization, it has some inherent defects. For example, the structure is complex, it is easy to fall into the local minimum, and it is easy to have learning problems, that is, the promotion ability of the training mode is not strong. In order to overcome the shortcomings of traditional neural networks, a support vector machine (SVM) algorithm is proposed. SVMs can solve not only linear classification problems, but also nonlinear classification problems and incomplete classification problems (Bansal et al., 2022). At the same time, an SVM has penalty parameters and has certain fault tolerance. This paper uses an SVM algorithm to evaluate the optimization quality of CET in an IT ecological environment.

The innovations of the article are as follows: According to the actual situation of CET reform practice, this paper discusses the multi-interaction instructional mode under the IT environment, and improves the CET level by combining with the IT ecological environment. Through research on the integration of IT and CET, this paper explores some methods that can promote the effective teaching of English teachers and the effective learning of students, and then finds out the strategies to promote the effective integration of IT and CET. This study has important theoretical and practical value on how to improve the level of CET in conjunction with the IT environment.

In this paper, the SVM method is used to replace the complex function in traditional statistical methods, which reduces the influence of subjective factors on teaching level assessment, mines the potential factors in the assessment process, and provides algorithm support for establishing a more scientific and objective teaching level assessment system. At the same time, this paper adopts the strategy of active learning to build SVMs, overcomes the shortcomings of typical SVMs, and comprehensively considers various actual situations to build an assessment model of college English classroom instructional quality. This study is of reference value and significance to the establishment of CET quality evaluation.

According to the research needs, this paper is divided into five parts. The specific arrangements are as follows: The first section is the introduction, which mainly introduces the background and significance of the research on optimization of CET in the IT ecological environment. The second section is the introduction of related work and literature. The third section, methodology, gives the optimization strategy of CET based on IT. An assessment model of English classroom teaching optimization effect based on SVMs is constructed. The fourth section is the results analysis and discussion of the model experiment and compares it with other models. The fifth section is summary and prospect; this section presents conclusions and gives the direction and ideas for future research.

RELATED WORK

The integration of IT and English courses impacted by the internet has been discussed by relevant scholars, and there are certain successes. Bozorgian and Alamdari (2018) pointed out that the role of IT is to help learners make research problems clearer, to make learners' inquiry behavior easier to occur, and to promote advanced thinking activities. Beer (2018) pointed out that, as the main participants of teaching, teachers' teaching level and ability assessment are particularly important, and the main method to evaluate instructional quality is the combination of supervision, peer teacher, and student assessment. Seedhouse and Supakorn (2015) pointed out that the current research on teaching level assessment mainly focuses on using traditional methods to fit and solve nonlinear problems, and the final results are affected by the bias of the researchers' subjective factors, which cannot accurately and effectively mine the non-linear problems in the assessment model. Park et al. (2016) mentioned that it is very common to focus on the results and ignore the process in the current teaching assessment. The usual method only pays attention to the students' assessment of the teacher's teaching results and does not lay emphasis on the teaching behavior in the instructional process. Nes et al. pointed out that the fuzzy comprehensive assessment model constructed by the AHP can remove the subjective component as much as possible by using the mathematical method with strict logic on the basis of expert knowledge and subjective experience, and reasonably determine the weight of the assessment index (El Soufi & See, 2019). In order to further improve the scientific basis and rationality of the quality evaluation of students' education management, Cao (2022) proposed a quality evaluation method of students' education management based on intuitive fuzzy information. Wu (2022) constructed the teaching evaluation system of vocational undergraduate pilot colleges and tested it, which also verifies that the construction of a teaching ability evaluation index system is reasonable and scientific. According to the research content of teaching performance evaluation, Xu et al. (2018) established the framework model of education data collection and storage platform on a smart campus. Teaching performance evaluation first analyzes the shortcomings of traditional evaluation methods, then uses PCA algorithm to determine six principal components, and uses AHP to calculate the weight of each layer of the index set to avoid decision errors caused by subjective factors. Finally, the TOPSIS algorithm is improved by using gray scale. The evaluation results of the AHP-TOPSIS teaching performance model are consistent with the actual situation. Qi et al. (2022) proposed an active learning algorithm, which combined a Gaussian mixture model and sparse Bayesian learning, and enhanced the SVM to select and label samples strategically to build a classifier and combine the distribution characteristics of samples. The results show that the proposed model is effective and beneficial in evaluating the efficiency of university teaching and analyzing large data sets. Wei and Cai (2022) studied the advantages and disadvantages of commonly used SVM parameter selection methods, such as a grid search algorithm, gradient descent algorithm, and swarm intelligence algorithm, and made a detailed analysis and comparison of other algorithms. Finally, the advantages and disadvantages of quantum particle swarm optimization (QPSO) are analyzed, and an improved QPSO is proposed by introducing a bicentric idea into QPSO. The simulation results show that the improved QPSO algorithm has more advantages in optimizing the parameters of the SVM.

In the process of instructional practice, we found that many schools have misunderstandings about the integration of IT and curriculum. The existence of these misunderstandings hinders the developmental speed of educational informatization to some extent and will affect the implementation direction of the new curriculum standards. This paper starts with the meaning of mode and instructional mode and reviews the development and changes of English language teaching methods and instructional modes. On this basis, this paper discusses how to use IT to optimize CET. In addition, this paper constructs an assessment model of English classroom teaching optimization effect. Using this model, we can have a good understanding of the problems existing in teaching, which is conducive to further improving the CET level. The experimental results show that, compared with the traditional classification methods such as artificial fitting and neural networks, this method makes full use of the characteristics of small sample and efficient learning of SVMs and achieves efficient learning effects.

METHODOLOGY

Optimization Strategy of CET Based on IT

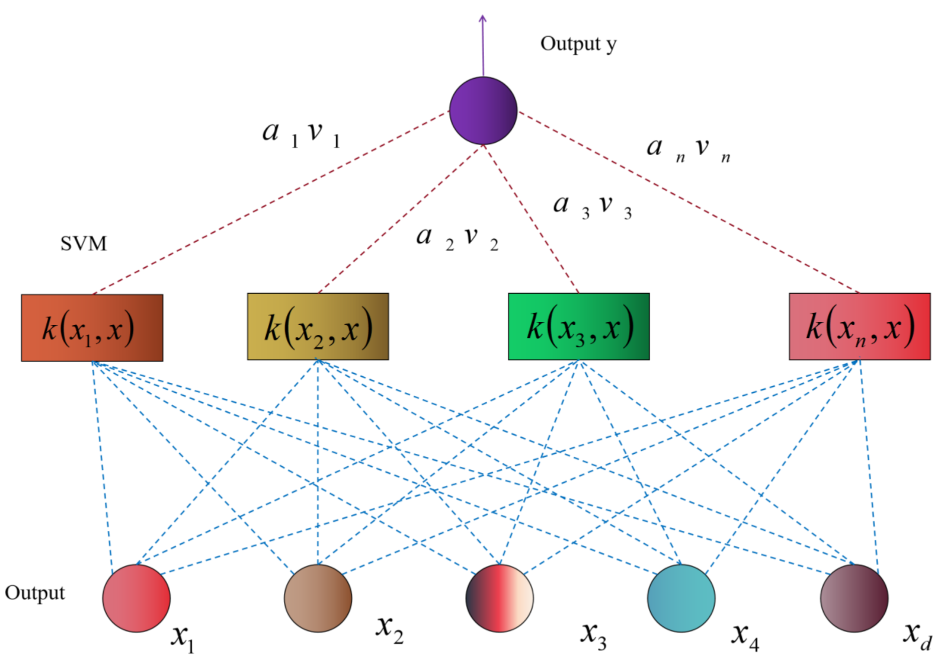
In order to achieve a certain teaching purpose or a certain teaching effect, teachers combine a variety of teaching methods or teaching strategies according to the contents of textbooks. If this application reaches a relatively stable level, a new instructional mode will be formed. Instructional mode is the sublimation of teaching methods, emphasizing the important position and dominant role of educational theories and concepts. This paper understands and grasps instructional mode from the following aspects: (a) The instructional mode and teaching method obviously do not belong to the same level concept. (b) Instructional mode often embodies certain teaching ideas and theories, but it is not a theory of designing and organizing teaching. (c) Instructional mode is not the same as teaching plan. Nowadays, in the era of science and technology, the network has become an indispensable tool for people to obtain information. It can be said that the network has become an encyclopedia for people to share resources (Schintler & McNeely, 2022). Network-based CET is not simply to use IT as a demonstration tool to assist English teachers' teaching, but to realize the "integration" of IT and English language teaching and to fundamentally change the traditional English language teaching structure and educational essence. In the process of learning mathematics, mathematics teachers with modern educational concepts should encourage and guide students to boldly enter the online world and enrich and strengthen their information knowledge connotations by selecting and downloading learning information from the internet. Apart from the traditional book resources and experimental resources, the most important information resources are thematic web pages. The theme page consists of the home page and several subpages. The webpage can cover all the research contents of a class, and the home page has the requirements of scenario creation and learning, as well as the background of the times, multimedia courseware, innovative design, discussion area, message board, practice feedback, and so on. It can also provide links to related materials directly from the internet and offer students an unlimited and open resource network through the internet. Multi-interactive teaching activities in college English refer to the English learning activities that teachers and students, as the dual subjects of CET activities, carry out through in-class and out-of-class activities, as well as in the three-dimensional environment of virtual space on the internet. Through exploration, practice, and interaction, students can internalize language knowledge and usage rules and externalize language behaviors.

In the past, in the process of CET, students often lacked the information reserve needed to learn new knowledge, but could only learn "standard" procedure according to the teaching information provided by textbooks or the information resources supplemented by teachers. This leads to the passivity and narrowness of students' learning (Nurjaya & Wulandari, 2023). This paper holds that students' ability to collect information for study should be cultivated. The instructional mode in the social environment of IT is actually how to use multimedia technology to integrate it with CET content. Thus, in the process of CET, teachers' dominant position can be highlighted, and students' dominant position can be highlighted, so that students can actively construct knowledge under the guidance of teachers. CET under the network environment requires it to focus on real scientific research activities. English curriculum integration drives teaching with various thematic tasks and consciously carries out horizontal and comprehensive teaching that is linked with IT and English curriculum. These tasks can be specific subject tasks or authentic problem situations, which enable students to learn in the dynamic process of asking about, thinking about, and solving problems. Using multimedia network technology to organize teaching, students can make full use of network resources to carry out independent inquiry learning activities according to their learning objectives and, finally, achieve the goal of solving problems. Multimedia is illustrated with pictures, audio, and video. Applying multimedia technology to the instructional process can create an ideal learning environment for students. In this environment, students can construct the meaning of knowledge under the guidance of teachers. Through the interactive interface of students, interactive operation learning can be carried out. Therefore, it can be said that multimedia technology is one of the important ways to cultivate students' innovative thinking. This paper integrates all kinds of media and modern educational technology into CET, optimizes CET resources and teaching environments, and changes the single classroom instructional mode, which focuses on teachers' lectures. Meaningful learning with higher-order thinking is usually characterized by initiative, intention, construction, truth, and cooperation.

SVM Algorithm

Teaching level assessment is one of the core issues of educational assessment, and it is also the focus and difficulty of current teaching research. In the previous section, this paper gives the optimization strategy of CET based on IT, and this section introduces an SVM algorithm. The quasi-SVM algorithm is used to construct the assessment model of CET optimization effect. Among them, the neural network is easy to fall into the local extremum, unable to get the global optimal value, and there will be a big error between the university teaching assessment results and the actual results, and it will take a relatively long time (G. Zhang et al., 2020). The instructional quality assessment model based on SVMs can solve the above problems to some extent. The SVM algorithm is a new machine learning algorithm based on statistical theory, which uses kernel function to map learning samples from low-dimensional space to high-dimensional Hilbert space, and then transforms nonlinear problems into linear problems (Li et al., 2022). SVMs have the advantages of global optimization, nonlinear classification, sparse solution, and strong generalization ability (Cervantes et al., 2020). When using SVMs, it is usually necessary to divide the obtained data into two categories. The details are as follows: (a) Save a class of data as comma-separated values (CSV) text data, convert CSV data into vector data, normalize dimension processing, and do data training. (b) The second set of data is usually used as instructional quality monitoring and assessment prediction data, and the assessment effect of the monitoring platform is tested by the trained assessment model of the first data. After training, the system model and parameters are formed as the parameters of the prediction model, and the data to be monitored by the second kind of instructional quality are selected as the input. The nonlinear SVMs are shown in Figure 1.

Figure 1. Nonlinear SVMs



In practical problems, most of the problems we need to solve are linearly inseparable, which is the advantage of the SVM algorithm over other algorithms (Gaye et al., 2021). For the nonlinear classification problem, we can transform it into a linear problem in a high-dimensional space through nonlinear transformation, but the transformation will be very complicated. The kernel function transformation introduced by SVM can solve this problem skillfully. The principle of structural risk minimization usually has two countermeasures when dealing with compromise experience risk and confidence risk. The details are as follows: (a) Fix the scope of confidence risk and minimize the empirical risk. (b) Fix the scope of empirical risk and minimize the confidence risk. Thanks to the algorithm advantages and excellent performance of SVMs, the related research of this method has been widely applied and verified in the fields of handwriting recognition, face recognition, system identification, fault diagnosis, model prediction, risk assessment, and credit assessment. The standard SVM can be regarded as a classification hyperplane search problem, and the semi-supervised SVM is an extension of SVMs under the semi-supervised framework. Usually, in order to solve the problem, many influencing factors are considered when forecasting or evaluating, and the information reflected by the obtained data overlaps to some extent. Use a few comprehensive indicators with low correlation to represent most of the information. The purpose of principal component analysis is to reduce the dimension of index. For nonlinear separable problems, SVM flexibly uses kernel function to avoid the nonlinear and complicated mapping calculation process, so that the optimal hyperplane can be found only in low-dimensional space. In addition, the calculation results obtained by choosing different kernel functions are different. Most classification problems use radial basis function. The typical SVM is a nonconvex optimization system, which has high performance when dealing with small-scale data sets. However, the data sets in practical application do not meet this requirement, which leads to the fact that its prediction accuracy cannot meet the actual requirements. In this paper, the typical SVM algorithm is improved to evaluate the optimization effect of CET.

SVMs-Based Assessment Model of CET Optimization

For the introduction of classroom instructional quality assessment indicators, there are many factors that affect classroom teaching, so it is necessary to select the most critical factors as assessment indicators by certain methods. The construction principles of assessment indicators are as follows: 1. Guiding principle. 2. Principle of objectivity and impartiality. 3. Principle of conciseness and high efficiency. 4. Scientific principle. 5. Principle of measurability. 6. Principle of unity. The allocation of indicators at all levels refers to defining which indicators the indicator system comprises and defining the concept, connotation scope, and calculation method of each indicator. The structure of indicators is to clarify and straighten out the relationship and hierarchical structure of all indicators in the indicator system. The standard system constructed in this paper reflects the instructional process of teachers to a certain extent. By scoring the indicators, we can get the evaluators' assessment of teachers' teaching. According to the indicator data, we can call the SVM classifier of the system to automatically classify the teachers' instructional quality, so as to find out which category the teachers' instructional quality belongs to, so as to promote the improvement of instructional quality. The meanings of some indicators are shown in Table 1.

Compared with traditional machine learning methods, SVM has many advantages, such as strong learning ability of small samples, good generalization performance of models and insensitivity to dimensions. Taking two types of classification problems as the research object, for all functions in the indicator function set, between the empirical risk $R_{emp}\left(w\right)$ and the actual risk $R\left(w\right)$, at least the probability of $\left(1-\eta\right)$ satisfies the relationship shown in Equation (1):

Table 1. Meaning of Some Indicators

Index	Indicator meaning
Teaching attitude	Preparation situation
	Teaching implementation
Basic teaching ability	Teaching language
	Classroom organization
	Quality accomplishment
Content of courses	Teaching materials
	Proficiency
	The degree of connection between theory and practice
Teaching methods and means	Teaching method
	Teaching means

$$R\left(w\right) \le R_{emp}\left(w\right) + \sqrt{\left|\frac{h\left(\ln\left(2n / h\right) + 1\right) - \ln\left(\eta / 4\right)}{n}\right|} \quad (1)$$

Among them, h is the VC dimension of the function set; n is the number of samples; η is the parameter satisfying $0 \le \eta \le 1$. As shown in Equation (1), the actual risk $R\left(w\right)$ of the learning machine is composed of the empirical risk $R_{emp}\left(w\right)$ F and the confidence range. Therefore, Equation (2) can be simply expressed as:

$$R\left(w\right) \le R_{emp}\left(w\right) + \Phi\left(h / n\right) \quad (2)$$

When the SVM method solves the multi-class classification problem, it needs to convert the multi-class classification problem into several two-class problems. The multi-classification problem based on SVMs can be described as shown in Equation (3) and (4).

$$T = \left\{\left(x_1, y_1\right), \ldots, \left(x_l, y_l\right)\right\} \in \left(X \times Y\right)^l \quad (3)$$

$$x_i \in X = R^n,\ y_i \in Y = \left\{1, 2, 3, \ldots, M\right\},\ i = 1, 2, 3, \ldots, l \quad (4)$$

The following operations are performed on $\left(i, j\right) \in \left\{\left(i, j\right) \middle| i \le j, i, j = 1, 2, 3, \ldots, M\right\}$: A subset T_{i-j} of samples with $y = i$ and $y = j$ is drawn from the training set. Using the SVMs for solving two-class classification problems, the real-valued function $g^{i-j}\left(x\right)$ and the classifier for judging that $x \in X$ belongs to the i or j class are obtained, as shown in Equation (5).

$$f^{i-j}\left(x\right)=\begin{cases} i,\ g^{i-j}\left(x\right)>0 \\ j,\ otherwise \end{cases} \tag{5}$$

When a given test input x needs to be inferred which class in the M class it belongs to, the class that gets the most support is the class to which the x belongs. The method of SVM algorithm to deal with nonlinear problems is to borrow the idea of kernel function. In a high-dimensional space, only a certain kernel function needs to be found to satisfy the equation, as shown in Equation (6).

$$K\left(X,X'\right)=\varnothing\left(X\right)\cdot\varnothing\left(X'\right) \tag{6}$$

In this way, the optimal hyperplane of feature space can be obtained. In the nonlinear case, the final optimization problem is shown in Equation (7).

$$MaximizeF\left(\alpha\right)=\sum_{i=1}^{l}\alpha_i-\frac{1}{2}\sum_{i,j=1}^{l}\alpha_i\alpha_j y_i y_j\left[\varnothing\left(x_i\right)\cdot\varnothing\left(x_j\right)\right] \tag{7}$$

where $\varnothing\left(x\right)$ represents the training sample mapped to the sample in the high-dimensional space. The order is shown in Equation (8).

$$K\left(x_i,x_j\right)=\varnothing\left(x_i\right)\cdot\varnothing\left(x_j\right) \tag{8}$$

The above formula is then converted into Equation (9).

$$MaximizeF\left(\alpha\right)=\sum_{i=1}^{l}\alpha_i-\frac{1}{2}\sum_{i,j=1}^{l}\alpha_i\alpha_j y_i y_j K\left(x_i,x_j\right) \tag{9}$$

Among them, $K\left(x_i,x_j\right)$ is the kernel function. The assessment process of SVM regression prediction is shown in Figure 2.

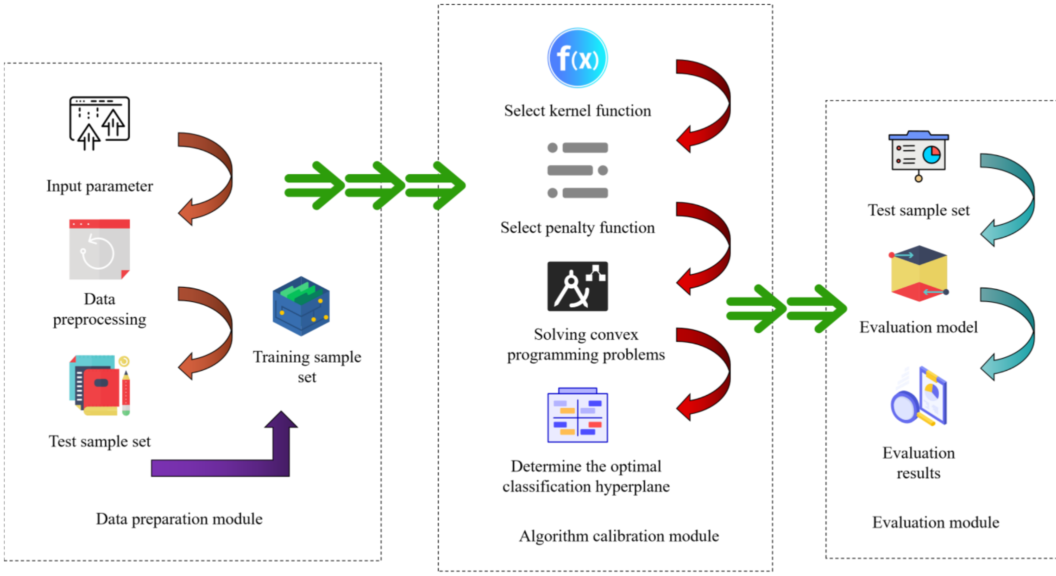
Assuming that the probability that the current SVM belongs to the categories C_1 and C_2 for the unknown sample x is $P_1\left(x\right)$ and $P_2\left(x\right)$ respectively; then the uncertainty of the unknown sample x is shown in Equations (10) and (11).

$$H_x=-P_1\left(x\right)\log_2 P_1\left(x\right)-P_2\left(x\right)\log_2 P_2\left(x\right) \tag{10}$$

$$P_1\left(x\right)-P_2\left(x\right)=1 \tag{11}$$

According to the above active learning process, the LOSS of the prediction model should be the largest, that is, the uncertainty H_x of the sample to the classification model should be the largest. The decision surface is a hyperplane that is only concerned with Systemverilog. This paper sets the

Figure 2. SVM Regression Prediction Assessment Process



distance from the sample point x to the decision surface q as $d\left(x,q\right)$, and the selection method of the new sample is shown in Equation (12).

$$d\left(x_k,q\right)=\min\left(d\left(x,q\right)\right)\qquad x\in S \tag{12}$$

Considering the actual situation, this paper divides the whole assessment subject into two parts when designing data collection: (a) Student assessment. (b) Evaluation by leaders, experts, and peers. In this model, the combination of each part determines the overall function. Whether teaching assessment can play its role well depends on whether the overall function of the system is optimized. Therefore, the teaching assessment in this paper emphasizes the organic combination between each link and the internal requirements of each link and opposes the local concept of conventional educational assessment. A deeper analysis of the assessment results and rational use of the assessment data will not only provide a powerful reference for teachers, schools, and education management departments to evaluate the quality of classroom teaching, but will also have a certain long-term impact in society.

RESULTS ANALYSIS AND DISCUSSION

The collected experimental data set contains 500 data samples, of which 150 are used as training samples, and the other 350 are used as test samples. Each sample contains 15 characteristic attributes, that is, one characteristic attribute corresponds to an assessment factor in the assessment index system, and the value range of each attribute is [0,100]. According to the setting of assessment result set, this teaching level assessment system is divided into three categories. One-to-one method, one-to-many method, minimum output coding method, and error-correcting output coding method are used to classify SVMs. Then, 1vs1, 1vsA, error correcting output codes (ECOC), and meta-object compiler (MOC) methods are applied separately, and 10 cross-validation tests are adopted for multi-classification research. The results are shown in Table 2.

Table 2. Fitting Effect of Teaching Assessment Method Based on Support Vector Machines

Serial number	1vs1		1vsA		ECOC		MOC	
	Precision	Time	Precision	Time	Precision	Time	Precision	Time
2	0.99	0.0081	0.81	0.0088	0.91	0.0189	0.81	0.0070
3	0.92	0.0084	0.85	0.0081	0.85	0.0152	0.76	0.0067
4	0.97	0.0083	0.80	0.0089	0.86	0.0098	0.82	0.0069
5	0.90	0.0085	0.86	0.0085	0.89	0.0089	0.89	0.0073

Up to now, there is no specific method to determine the parameters of the SVM multi-class classification algorithm. In order to find the relatively reasonable parameters, several experiments were conducted in a certain numerical range, and the relatively superior group was finally determined. After training, the model exists as a text file. The data to be tested after data preprocessing can be in the form of text file, CSV or Excel file. Select the generated model file or system default model file to verify the instructional quality monitoring and assessment data. Figure 3 shows the precision results of 1vs1, 1vsA, error correcting output codes, and meta-object compiler. Figure 4 shows the time results of 1vs1, 1vsA, error correcting output codes, and meta-object compiler.

It can be seen that the four multi-classification methods have achieved good fitting results, among which 1vs1 method has the highest accuracy. At the same time, the algorithm has excellent running efficiency, which can basically meet the application of instructional quality assessment without algorithm optimization.

In order to test the performance of the improved algorithm, six data sets in University of California Irvine (UCI) database are used for simulation experiments.

Figure 3. Accuracy Experimental Results of Four Methods

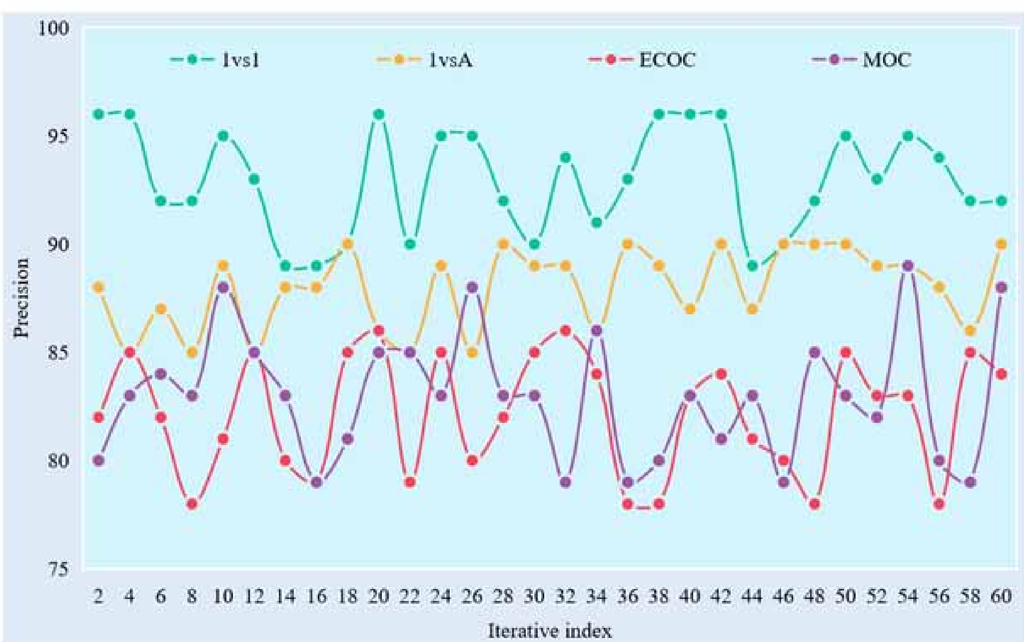
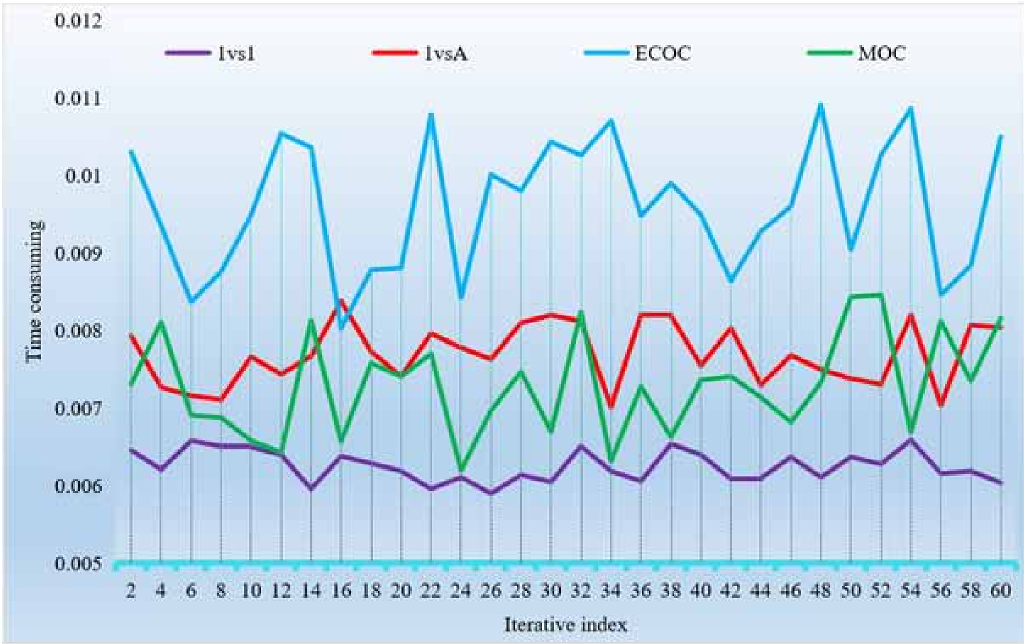


Figure 4. Time Experiment Results of Four Methods



In addition, through the classification accuracy and efficiency, the improved algorithm proposed in this paper is compared with one-versus-the-rest (OVR) algorithm and binary tree-support vector machines (BT-SVM) algorithm. Figure 5 shows the classification accuracy results of different algorithms. Figure 6 shows the classification efficiency results of different algorithms.

As can be seen in Figure 5, the classification accuracy of the algorithm proposed in this paper is higher than that of OVR algorithm. Compared with the BT-SVM algorithm, the overall accuracy is higher than the BT-SVM algorithm. Although some of them are lower than the BT-SVM algorithm, the BT-SVM algorithm is highly volatile, and the improved algorithm is stabler. As can be seen in Figure 6, the improved algorithm in this paper is superior to the other two algorithms in classification efficiency, and its classification time is obviously shorter than the other two algorithms. Therefore, the improved algorithm proposed in this paper is superior to the OVR algorithm and BT-SVM algorithm in classification accuracy and efficiency.

Use the improved algorithm to train excellent and good sample data. In the sample data, collect the excellent and good data, and obtain half of them, respectively. According to these two kinds of samples, excellent and good classifiers are called for training. The classification results of the algorithm in this paper on different data sets are shown in Table 3.

The results further prove the feasibility of the improved algorithm. It can be seen that the classification accuracy of this algorithm can reach 96.21% on Zoo data set and 94.36% on Iris data set. The classification time of this algorithm can reach 0.01s in Wine data set and 0.03S in Iris data set. The results show that the algorithm not only improves the accuracy of classification results, but also shortens the testing time of unknown samples, so the improved algorithm proposed in this paper is feasible. The accuracy rates on Wine data set and Backup data set are 86.52% and 88.64%, which are lower than the other three data sets. The reason may be that these two data sets may be quite different from the other three data sets, which may be another direction in how to improve the algorithm in this paper.

Figure 5. Classification Accuracy Results of Different Algorithms

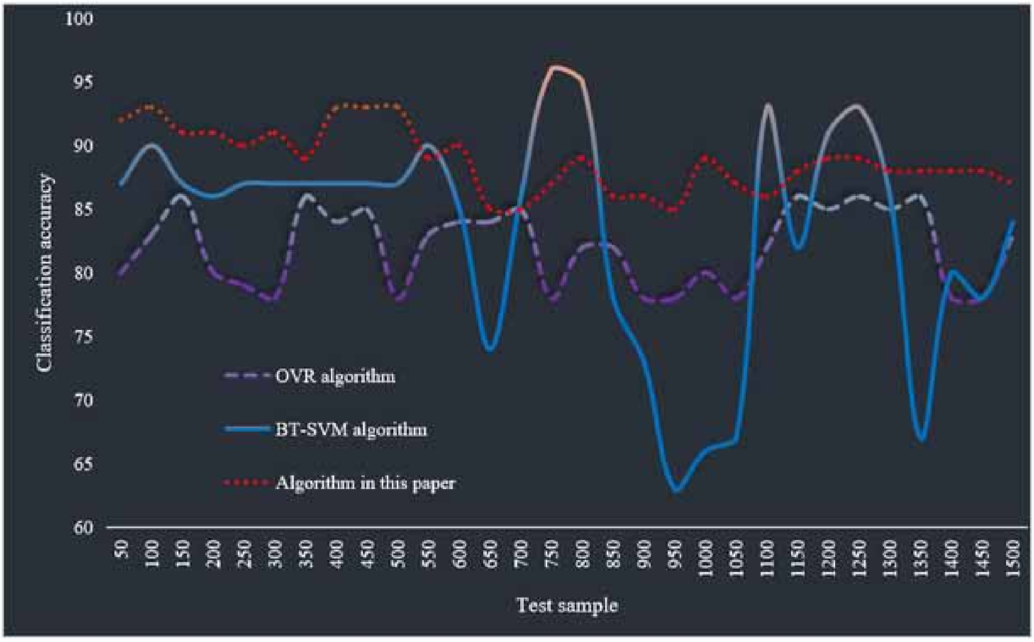


Figure 6. Classification Efficiency Results of Different Algorithms

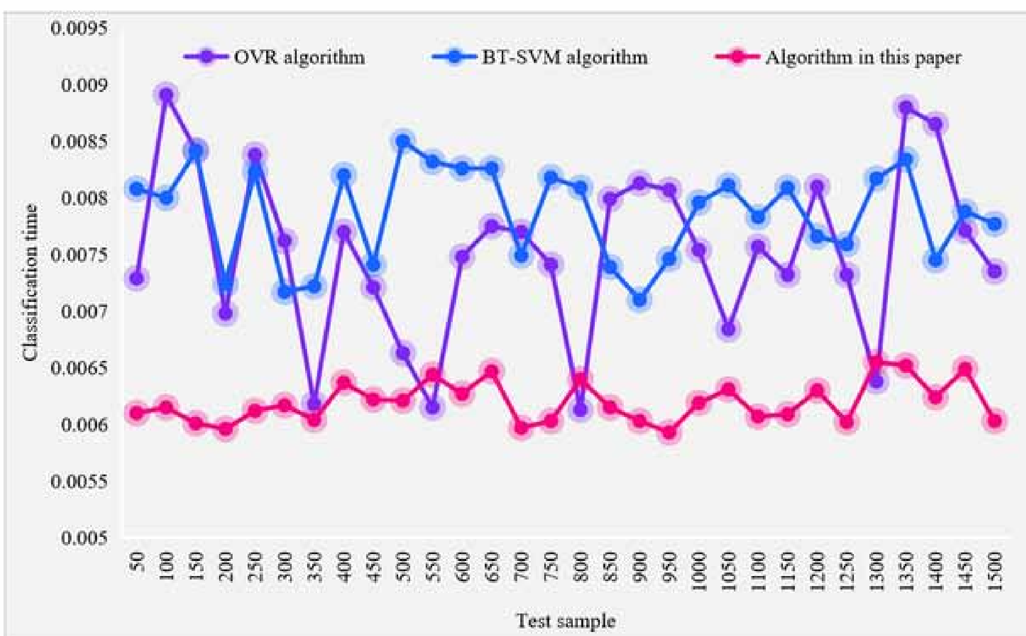


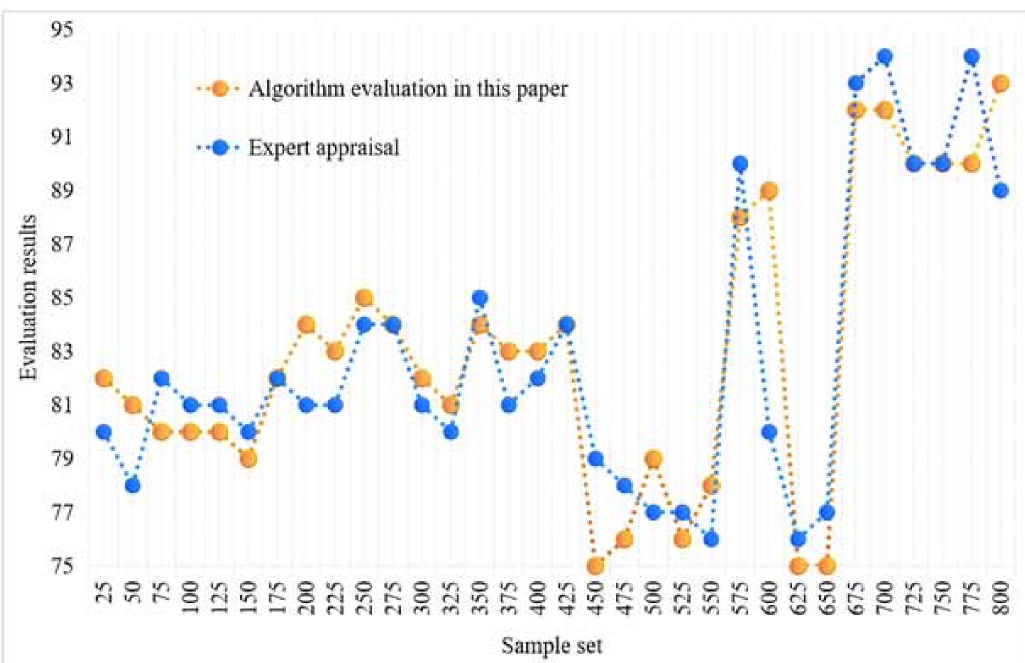
Table 3. Classification Results of This Algorithm on Different Data Sets

Data set	Accuracy rate %	Time /s
Iris	94.36	0.03
Zoo	96.21	0.05
Wine	86.52	0.01
Back up	88.64	0.51
Glass	92.31	0.11

Lou (2022) used some BT-SVM algorithms and improved BT-SVM algorithms in his research. The experimental results show that the classification accuracy of some BT-SVM algorithms fluctuates greatly, which is lower than that of the improved BT-SVM, that is, the algorithms are unstable. This is consistent with the poor stability of the BT-SVM algorithm obtained in this paper. Z. Zhang et al. (2022) used the OVR method, OVO method, and improved BT-SVM algorithm in their research and conducted 10 experiments in five selected data sets, respectively. The accuracy of the improved algorithm is two percentage points higher than that of the OVR and OVO algorithms in the best case. The experimental results of this paper also prove that the improved algorithm is better than the OVR algorithm, which is consistent with its results.

In the program, the process of users' assessment of newly entered data is as follows: First, evaluators enter new assessment data according to the index system, which can be stored in the corresponding data table in the database first, or evaluated directly. This algorithm is used to classify the experimental data. The comparison between the assessment obtained by the algorithm and the expert assessment results is shown in Figure 7.

Figure 7. Comparison Between the Assessment Obtained by This Algorithm and the Expert Assessment Results



As shown in Figure 7, the evaluation results obtained by the improved algorithm are basically consistent with the expert evaluation results, and the improved algorithm has high accuracy. The assessment results show that the data shows multi-classification. Compared with the traditional classification methods such as artificial fitting and neural network, this method makes full use of the characteristics of small sample and efficient learning of SVMs and achieves efficient learning effects.

CONCLUSION

According to the actual situation of CET reform practice, this paper discusses the multi-interaction instructional mode of college English in an IT environment and strives to improve the level of CET in an IT ecological environment. Through research on the integration of IT and CET, this paper explores some methods that can promote the effective teaching of English teachers and the effective learning of students and then finds the strategies to promote the effective integration of IT and CET. Based on this, this paper constructs an assessment model of English classroom teaching optimization effect based on an SVM algorithm. In this paper, the SVM method is used to replace complex function representation in traditional statistical methods, which can reduce the influence of subjective factors on teaching level assessment, mine the association of potential factors in the assessment process, and provide algorithmic support for establishing a more scientific and objective teaching level assessment system. The experimental results show that the classification accuracy of this algorithm can reach 96.21% on Zoo data set and 94.36% on Iris data set. Compared with other methods, this method not only has the characteristics of high assessment accuracy and fast implementation, but also has the ability to approximate any nonlinear input-output relationship.

This study is of great theoretical and practical value for improving the level of CET in the IT ecological environment, and it has reference value and significance for establishing the evaluation of CET quality. In the next practical work, we are going to try to get more experimental data to test and further verify the effectiveness of the model and, on this basis, optimize the model in order to fully solve practical application problems and put forward reference strategies for strategic management in the future.

DATA AVAILABILITY

The figures and tables used to support the findings of this study are included in the article.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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