Research Article

Application of Convolutional Neural Network-Based Hierarchical Teaching Method in College English Teaching and Examination Reform

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1. Introduction

In recent years, with the shift of the higher education system from elite education to mass education, college English teaching is facing new challenges. Students enter the university with varying levels of English proficiency, and such obvious differences exist not only from class to class but also within classes. If they continue to be placed in one teaching level in the traditional way, i.e., teachers use the same lesson plans and the same content and students learn the same content and achieve the same teaching objectives at the same time, the result will be that students with a good English foundation will be “underfed” and their desire to learn will be lowered, so that they cannot set up the right learning objectives; students with a poor foundation will be underfed and will not be able to learn. The result is that students with a good foundation in English will not be able to set the right learning goals because their desire for knowledge will be lowered and they will not be able to set the right learning goals; students with a poor foundation will not be able to “eat” and their self-confidence will be undermined. Although many English teachers have tried to improve teaching methods and give full play to students’ initiative, the results are not obvious. In response to the widespread problems in college English teaching, “teaching according to students’ abilities and teaching in different levels” is called for. Since 2002 [1–3], some Chinese universities have tried to implement tiered teaching. The so-called tiered English
teaching means that in classroom teaching, according to the university English syllabus, different levels of teaching objectives are determined from the actual level of students, different levels of tutoring are given to students, and different levels of tests are organized. The aim is to make all kinds of students interested in learning, gaining something, and developing fully, so as to complete the teaching tasks better. The purpose of layered teaching is to make students of different levels optimize their learning on their own English basis, to promote the improvement of classroom teaching quality, so as to improve the quality of students in all aspects, and to realize the purpose of college English teaching. In recent years, the global attention to tiered teaching has shown a year-on-year increase; as shown in Figure 1, we plotted the search heat of tiered teaching in Google.

Students learn English by gradually and continuously acquiring unknown language information on the basis of their prior knowledge. If their original knowledge is not consistent, then the difficulty they need to lose will be different. University English teaching is generally faced with the problem of students’ weak English foundation and vastly different levels. Especially, due to the influence of regional differences, urban-rural differences, and the expansion of Chinese universities since 1999 [4], students’ English learning environments and learning conditions before enrollment are very different and there is an objective disparity in English level. Some students from developed areas have better English teaching conditions in secondary school, and their language foundation is relatively solid, so they can fully adapt to the classroom activities organized by teachers in English, while other students from remote areas have a relatively poor English learning environment and some of them have never even listened to English tapes, so they cannot understand even some simple classroom phrases and cannot participate in teaching activities effectively [5]. The traditional unified teaching purpose, unified teaching method, and unified teaching content can no longer meet the learning needs of students at all levels and restrict the cultivation of students’ English application ability. The uniform teaching method has caused the top students with good English foundation to “not get enough” and frustrated their strong desire for knowledge and innovation, while the students with a poor foundation “cannot eat” and thus undermined their self-confidence. This prevalence of individual differences in natural classes has resulted in time-consuming and ineffective English teaching, which seriously affects the effectiveness of teaching. In the case of China, primary and secondary schools have been at the forefront of reform by making definite discussions on tiered teaching. In order to cultivate students’ sense of competition and create new talents who meet the requirements of the second and last centuries, many colleges and universities have also accelerated the pace of English education and examination reform, promoting English tiered teaching on a large scale and implementing a multilevel class system [6–8]. Classes are divided according to students’ English entrance exam results, which allows students with a poor foundation to be taken care of, while top students get more room for improvement. Placement changes according to students’ performance, so that students in fast classes who cannot keep up may also go into regular classes, while students in slow classes may also go into fast classes. In this way, students with good grades have a sense of crisis and students with low grades have motivation. After the adoption of “tiered teaching,” teachers feel more relaxed in teaching and students feel very happy in learning. In the survey, 46% of the students benefited from the tiered instruction, while only 12% of the students felt that they did not benefit from it, thus improving the teaching effect. This successful case provides a strong realistic possibility for further implementation of the tiered instruction theory.

Teaching people according to their abilities is a principle that has been advocated throughout the history of Chinese education [1]. Confucius, more than two thousand years ago, was the first great Chinese educator to consciously practice this principle. Confucius proposed that education should be “deep in its depth, shallow in its shallowness, beneficial in its benefit, and respectful in its dignity,” and he advocated “teaching according to the material, varying from person to person.” Zhu Xi once said in “The Four Books” “Confucius taught people according to their talents, small to become small, big to become big, without abandoning them.” College English teachers should arrange different teaching methods according to students’ different basic levels [9–12], strengths, and interests, so that they can eventually achieve different requirements and goals. To teach students according to their abilities, attitudes, language abilities, cognitive characteristics, and personalities is to divide them into different levels, set different teaching requirements, and implement different teaching methods and teaching modes. Stephen D. Krashen, a famous American linguist, introduced the concept of “+ i,” which states that the only way for people to learn a language is through comprehensible language input. If the input is far above the learner’s current level, i.e., “i + 2, i + 3,” the student will lose confidence and feel anxious. If the input is close to or even below the learner’s current level, i.e., “i + 0,” students will feel too easy or even get bored, and only input slightly above the learner’s current level is “comprehensible input.” If students with different levels of English proficiency are placed in the same class according to the old teaching model, it is difficult for teachers to determine the appropriate level of language input for all students because different levels of students have different levels of language input, while tiered teaching can determine the appropriate level of language input for different levels of students [13].

China’s Ministry of Education has launched a call for reform in college English teaching, and universities across the country have responded with an unprecedented change sweeping the nation. With the rapid changes in multimedia and Internet technology, universities have basically made drastic reforms and innovations in the curriculum, teaching mode, assessment system, teaching methods and means and the achievements are obvious to all. All along, the assessment system of university English courses has overemphasized the summative evaluation of students and neglected the formative evaluation of students’ learning process, emphasized the test of students’ English language knowledge level, and
neglected the test of students’ English language skill level, and at the same time, there are problems of backward question types and low evaluation validity in the final examination paper, which has a large weight in the assessment system. On the whole, the assessment system of college English courses lags behind the development of college English teaching reform and cannot play a guiding role in teaching, which has affected the improvement of college English course teaching quality. In this paper, through extensive research and careful study, we combine diagnostic evaluation, formative evaluation, and summative evaluation and align with the content of the Chinese English IV and VI national examinations to establish a standardized and scientific course assessment system with high reliability and validity that meets the actual situation of students in our university, so as to play the role of course assessment in evaluating students’ learning effectiveness and guiding teachers’ teaching and promoting the college English course to have the best possible learning experience. 

With the reform of English courses in colleges and universities, the course hours are greatly compressed and it makes sense to quickly stratify students in the class so as to teach them according to their abilities; this paper proposes the application of a convolutional neural network algorithm based on a convolutional neural network algorithm to the stratification teaching method in the reform of college English teaching and examination. In the process of English teaching, the information of students’ submitted assignments is mined and analyzed and the relationship between the time of submission and the quality of submitted assignments is mined based on the adaptive learning characteristics of convolutional neural networks. The effectiveness and accuracy of the proposed method were demonstrated in relevant experiments, and it can be used in the current university English tiered teaching and examination reform.

The organization of the paper is as follows: Section 2 explains all the work related to our research and helps to improve the results. Section 3 talks about the methodologies used to strengthen our paper. Section 4 elaborates on all the experiments to verify our results and discuss them in a better way. Section 5 gives the conclusion.

2. Related Work

This section completely describes the all the previous work that is used in this paper to modify the results. It discussed the hierarchical approach to college English teaching. Furthermore, it discusses English tiered teaching and test reform. Also, it elaborates on the convolutional neural network in English teaching.

2.1. Hierarchical Approach to College English Teaching. In today’s university education, students often face the situation of negativity and slowness and it is difficult for them to take interest in learning English and they lack the spirit of research. Tiered teaching means that teachers divide students into classes according to their level, and through scientific class placement, they can differentiate between classes of different levels. By doing so, they can make up for the students’ weaknesses and improve their strengths according to their individual characteristics and those of the
class. While we often talk about tiered instruction, which is based on students’ individual learning abilities and differentiates according to their overall strengths and interests, deeper levels of instruction emphasize tiered instruction based on students’ existing knowledge and ability to apply that knowledge, thus allowing students to improve their knowledge and language application skills. Teaching at different levels has been advocated since the time of Confucius. Respect the differences, understand the differences, and teach differently for the differences, so that each student can make use of his or her strengths and avoid his or her weaknesses, and learn something [14]. Class B students have a weaker foundation and can attend classes seriously, but their learning ability is average. Although they are also more attentive in learning, they hover around the middle stream for a long time. Class C students have a relatively poor foundation and are not strong in accepting knowledge; at the same time, their learning motivation is relatively poor and there are some problems in their learning habits and learning attitudes. Through the students’ respective characteristics, the students were divided into classes. Teachers can avoid sensitive vocabulary that may frustrate students’ self-esteem. The focus of stratification is on teaching students’ differences, not on classifying individuals. Schools can hold an English proficiency test when students enter the school and divide them into classes according to their performance so that the students in each class are closer to each other and the tiered teaching method can be better implemented. The structure of tiered teaching is shown in Figure 2.

In Figure 2, the tiered teaching model is explained with a pyramid in three steps. The first layer explains the optimization of whole class teaching. The second layer is about small group tutorials, and the third layer is about giving instructions to each individual. Task-based language teaching is not a new language teaching model, but it is a way to apply the language content students learn every day to social communication. Through these activities, students develop the ability to communicate in the language, improve their knowledge and understanding, and solidify their foundation through the continuous use of knowledge. In the course of the activities, students develop and improve their listening, speaking, reading, and writing skills and improve their overall proficiency. First, in large classes, students have different learning abilities and knowledge reserves, which makes it difficult to implement task-based teaching because of individual differences. Many teachers do not pay enough attention to this teaching mode and do not understand it deeply enough, so there are many misunderstandings in task-based teaching; for example, teachers design too many tasks and the task process will lead to students’ distraction, and they cannot study the tasks deeply enough and only pursue the quantity of tasks completed without paying attention to the quality. The teacher’s tasks are so numerous that it is difficult for the teacher to spend time commenting on the students’ level of completion of each task. In such a noisy environment, it is difficult for students to learn. In order for students to be more engaged in the activity, teachers often design tasks that are suitable for all students. In this case, the tasks are often not in line with or even contradict the curriculum objectives and there is often a gap between what is learned through the activities and the curriculum objectives [11].

Teachers need to make flexible changes in the way they teach according to students’ differences, and they have different goals for different classes, focusing on improving the basic skills of students in Class C, indirectly improving the thinking skills of students in Class B, and giving full play to the imagination and personal strengths of students in Class A. Teachers teach in different layers. The difficulty of the questions asked in the class changes from class to class, so that students’ self-confidence and enthusiasm in learning can be upgraded, students at all levels can be promoted, and their interest in learning can be stimulated. Different levels of students in different classes can be assigned different tasks, so that students can complete the tasks and improve their learning ability at the same time. In the process of teaching, students are given the opportunity to lower the threshold of learning and stimulate their interest by affirming their fear of not being able to answer the questions well. Based on the students’ answers, the teacher corrects the students’ learning methods and proposes more scientific learning methods, so that the students’ learning efficiency can be greatly increased and their ability to apply basic knowledge and knowledge can be improved. The assignment of tasks to students after class also needs to pay attention to the characteristics of stratification [10]. Different levels of students correspond to different homework tasks and teachers can design different homework tasks according to different classes so that students with slightly poorer fundamentals can complete simpler learning tasks and complete their tasks without the help of other reference materials. The tasks at this stage are often easier and test the students’ knowledge base, while the Class B and A students can, in contrast, set some challenging tasks and focus on developing the students’ divergent thinking skills. Each class can extend the task to a different extent, giving students some freedom to design their own tasks, while Class C students can extend the task according to their actual situation and Class B and Class A students can increase the breadth and depth of the extension. This takes into account the students’ solid foundation and also raises their learning goals at different levels. The assignment and solution of the task need the teacher’s guidance, and the teacher also needs to make a consideration of the students’ task completion when they finish the task after class. The teachers of Class B and Class A students only need to provide appropriate advice and opinions and point out the direction to students, giving them some freedom and space to play under the premise that the basic direction remains unchanged.

2.2. English Tiered Teaching and Test Reform. With the development of big data technology, the demand for big data in education evaluation is becoming stronger. Chinese educational evaluation has relatively narrow objectives; the relative purpose of tiered university English examinations is to change the basic function of the university examination
mechanism, to transform the examination into a means of motivating learners’ interests, to respect each student, to strive to create equal opportunities for students to gain successful learning experiences, to stimulate learners’ interests, motivation, and desire to learn, and thus to effectively promote and improve their English learning performance. With limited teaching resources and objective conditions not suitable for tiered English teaching, the study and practice of English tiered tests are of practical significance to a certain extent. The purpose of English tier test is to establish different test objectives according to different test needs and to set different requirements for students with different learning abilities and at different learning levels in order to promote the development of all students. In this process, all students, as long as they put in the effort and play properly, can receive different levels of achievement and ability exercise. Students who have the ability to learn have the opportunity to show their skills, and students who are more advanced can also experience the joy of success, which is conducive to the development of students’ self-confidence and personality [9]. By having a comprehensive understanding of teaching and learning information, college English teachers can accurately regulate teaching and improve teaching methods to avoid the disadvantages of using scores as a criterion for proficiency. For university students, tiered examinations can reduce their learning and psychological burdens and facilitate the overall improvement of their English proficiency.

Through the research and practice of English tiered examinations several times, and after deep thinking, the useful experience of teaching reform is summarized as follows: (1) The implementation of the tiered test must be based on the characteristics of English as a subject, the different qualities of each skill, the development of relatively uniform measurement standards, and the maintenance of the objectivity and consistency of the standards. The essence of the tiered test is to test knowledge and stimulate interest, so that the test can achieve the purpose of cultivating students’ independent learning ability, improving their learning methods, and enhancing the effectiveness of English learning [12]. (2) Relatively uniform test steps must be set for the test itself, determining the difficulty level of each level and a reasonable distribution between the levels. It is necessary to create a reasonable and scientific learning environment with a concise and open test environment. If the given test conditions are different and the difficulty system and test format are too variable, it will not only fail to stimulate students’ interest in learning and bring them a successful experience but also may put them under huge learning pressure for a long time and make them easily develop a strong rebellious mentality and give up learning English. Simple and open-tiered test concept and environment are the prerequisites to make English tiered tests run smoothly and obtain objective and realistic results. (3) It encourages students to value knowledge mastery and be unafraid of challenges. The target audience and beneficiaries of English tiered tests are all English learners. For college students, knowledge of English is a tool that can be mastered and used to broaden their professional horizons and supplement their professional learning, thus enabling them to grow into competent and productive members of society. English educators should pay attention to and think about students’ learning anxiety and fears and their teaching practices in order to help them sound their minds, clear their learning anxieties, and become successful learners [15]. (4) It forms a process assessment system. The creation of a harmonious and cooperative learning and testing atmosphere requires the tacit cooperation and persistence of teachers and students in the teaching process. The whole process of students’ progress and development must be emphasized, and the development and cultivation of learners’ multiple intelligences can be reflected and sublimated in all aspects and stages of English teaching.

2.3. Convolutional Neural Network. Since the convolutional neural network (CNN) won the image classification competition at ImageNet in 2012, the focus of researchers has gradually shifted to improving the CNN and new improvements are constantly being proposed [16–18]. The convolutional layer, the first layer after the input layer, is designed to learn the feature representation of the input. The convolutional layer consists of multiple filters for computing different feature mappings. Specifically, each neuron of the feature mapping is connected to a region of neighboring neurons in the previous layer. Such a neighborhood is called the neuron’s receptive field in the previous layer. The new feature mappings can be obtained by first convolving the input with the learned filter and then applying a nonlinear activation function to the convolution result. To generate each feature mapping, the filter is shared by all the spatial locations of the input. The filters in the lower convolutional layers are designed to detect low-level features such as edges and curves, while the filters in the higher layers are designed to learn to encode more abstract features. By stacking multiple convolutional layers, the network model can progressively extract higher-level feature representations. The complete feature mapping is obtained by using several different filters [19].
Convolutional layers are an integral part of the convolutional neural network architecture, which is mainly used to learn the feature representation of the input image. Therefore, researchers are constantly trying to improve the convolutional layer in CNN architectures to enhance the performance of the network, and some key innovations in this regard are described below. A standard convolutional neural network is generally a network connected by a linear convolutional layer, a pooling layer, and a fully connected layer. The convolutional layer performs a linear convolution operation through a linear filter, and then, the convolved result is processed with a nonlinear activation function to finally generate a feature map [20]. Taking the ReLU activation function as an example, the feature map is calculated by

\[ f_{i,j,k} = \max\left( w^T_{i,j} x_{i,j}, 0 \right), \]

where \((i, j)\) denotes the index of the location of the pixel points in the feature map, \(x_i\) denotes the block of images in the convolution window, and \(k\) denotes the index of the feature map to be extracted. Because the convolutional layer uses linear filters, it is more suitable for learning linearly differentiable latent features; however, the features it has to extract are generally highly nonlinear. The main idea is to replace the traditional convolutional layer with a multilayer perceptron layer (mlpconv layer) consisting of multiple fully connected layers with nonlinear activation functions, as shown in Figure 3, thus replacing the linear filters with nonlinear neural networks, which makes it able to approximate more abstract representations of potential features with better generalization ability.

One of the mlpconv layers can be seen as a combination of traditional linear convolution and nonlinear multilayer perceptron (MLP) [21]. The activation function, also known as the “nonlinear mapping function,” is a key module in deep convolutional neural networks, which simulates the characteristics of biological neurons and accepts a set of inputs. The activation function, also known as the “nonlinear mapping function,” is a key module in deep convolutional neural networks [22].

3. Method

In this section, we discussed the method of building a process or technique for convenience. It is important to reduce errors and confusion during work. It consists of different layers, and each layer plays its own role. Secondly, the method is designed in a model-like shape and some steps are formed. Then, the work is done by following the steps.

3.1. Method Architecture. A reasonable network model structure plays a very important role in reducing the number of training sessions and improving the learning accuracy of the network. Theoretically, a three-layer convolutional neural network can complete an arbitrary \(n\)-dimensional to \(m\)-dimensional mapping. It is generally believed that increasing the number of hidden layers can reduce the network error rate and improve the accuracy, but it also complicates the network, which increases the training time and the tendency of "overfitting." Generally, it is easier to obtain a lower number of errors by increasing the number of nodes in the hidden layer than by increasing the number of hidden layers. Therefore, a three-layer convolutional neural network with only one hidden layer is chosen in this paper. The model architecture is shown in Figure 4.

3.2. Model Design. The number of nodes in the implicit layer is not only related to the number of nodes in the input/output layer but also to the complexity of the problem to be solved, the type of conversion function, the characteristics of the sample data, and other factors. In general, the number of neurons in the hidden layer is determined according to the convergence performance of the network, and there is no scientific and universal method to determine the number of neurons in the hidden layer. After testing, this paper determines the number of neurons in the hidden layer \(s = 5\). The activation function of the neurons in the hidden layer is chosen as a hyperbolic tangent function, and the function form is

\[ f(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}}. \]

The activation function of the output layer uses the Sigmoid excitation function, with a function of the form

\[ f(x) = \frac{1}{1 + e^{-x}}. \]

The learning rate determines the amount of change in synaptic weights caused by each training; a large learning rate may lead to system instability, while a small learning rate may lead to a long training time and slow convergence, but it can ensure that the weight trajectory is smooth without jumping out of the trough of the error surface and eventually converges to the minimal point of the error surface. So in order to ensure the stability of the system, the learning rate is chosen between 0.01 and 0.1, and this paper takes 0.55. In order to reduce the tendency of oscillation in the learning process and improve the convergence performance, the system introduces a momentum term equivalent to the damping term, and the momentum factor of this term is taken as \(0 < a < 1\), where \(a = 0.5\) in this paper. In view of the learning rate being not easy to choose, too large or too small is not good. In order to solve this problem, this paper adopts the variable step length method, and the specific mathematical description is described in the learning algorithm part of this paper. In summary, the structure of the BP neural network model in this paper can be determined as shown in Figure 5.

The network parameters include the weight \(w_{ij}\) from the unit \(i\) of the input layer to the unit \(j\) of the hidden layer, the weight \(w_{jk}\) from the unit \(j\) of the hidden layer to the unit \(k\) of the output layer, the activation threshold \(j\) of the unit \(j\) of the hidden layer, and the activation threshold \(m_k\) of the unit \(k\) of the output layer. The above weights and thresholds are set as the smallest random numbers, and in this paper, the above initial values are taken as random numbers between \(-1/12\)
and 1/12 before the network training. The training samples are randomly sorted, and a pair of sample training data, \( x(p) = [x_{p1}, \ldots, x_{p12}] \), is selected in the order of priority as the input data of the input layer, \( y_p \) is the desired output, and \( p \) is the order number of the samples. The induced local domain of a neuron \( j \) in the hidden layer is as follows:

\[
v_j(p) = \sum_{i=1}^{n} w_{ij}x_i - \theta_j. \tag{4}
\]

The induced local domain of a neuron \( k \) in the output layer is

\[
v_k(p) = \sum_{j=1}^{s} w_{jk}v_j(p) - \theta_k. \tag{5}
\]

where \( n \) and \( s \) are the number of neurons in the input and hidden layers, respectively. Then, the output of neuron \( j \) at time \( p \) is

\[
y_j(p) = \frac{e^{v_j(p)} - e^{-v_j(p)}}{e^{v_j(p)} + e^{-v_j(p)}}. \tag{6}
\]

The output of the output layer neuron \( k \) is
4. Experimentation and Evaluation

Here, all the above-described methods are practically applied and some experiment are performed. The data are collected from a university, and the English language tiered education is evaluated by defining some features to make the experiment more valid and efficient. Evaluation is applied to different students with different types of tests, like written test and extension tests. At the end, the scores are compared and results are verified.

4.1. Dataset. After experimenting with the algorithm proposed in this paper, we conducted a more in-depth analysis and study of the English language tiered education and examination for nursing students in the class of 2020 and 2021 at a university after conducting a tiered pilot education and examination for nursing students in the class of 2020. Based on the analysis and summary of the pilot test, the content and item design of the tiered test were further considered and revised, with the features of “compulsory questions, optional questions, and interesting questions,” where compulsory questions accounted for 60% of the test score, optional questions accounted for 20%, and interesting questions accounted for 20%. Under the guidance of this unified model and concept, the extension study was divided into 2 parts: 1:3 language extension test and a written extension test. In the subsequent research and practice, the unified examination model was adhered to. A total of 542 nursing students in the class of 2020 participated in this extension experiment. The process of conducting the extension experiment and the problems and experiences identified during the process are summarized.

4.2. English Tiered Instruction and Written Examinations. The tiered model of the written test can take into account the needs of students at all levels of the test (see Table 1). The compulsory questions cover most of the daily teaching content and are in the form of the most common single-choice, linking, completion, and reading comprehension questions; the optional questions are actually questions that transfer the test points, such as single-choice questions originally for a word, a tense, or a structure. The design of the questions will take into account the training of students’ language ability, spatial ability, logical and mathematical ability, interpersonal communication ability, and even natural knowledgeable. The format of the questions is variable, with at least two questions of equal difficulty available for the same type of question, and students are free to choose according to their abilities.

4.3. English Speaking Tiered Extension Test. The features of this model in the oral tiered promotional test are distinctly presented in the following design (see Table 2). Compulsory test (word recognition (60 points)): proficient and correct recognition of 30 randomly selected words within the specified range. If there is any mistake or omission, 2 points will be deducted from each word until the end. Elective questions: in any one of the 2 articles, carry out a dialogue between two people, with fluent and smooth conversation and no obvious grammatical and communicative errors (20 points for completing this level, with extra 5 points for exceptional performance on top of the full starting score). Interesting questions: (1) doctor-patient dialogue: read and understand the hospital subfloor plan, select one of the five designated routes, and complete the asking for and giving directions dialogue as required. (2) Daily conversation: read and understand the map and complete the conversation of asking for directions and giving directions, with fluency and smooth conversation and no obvious grammatical and communicative errors. This question is worth 20 points, and those who perform exceptionally well will receive additional 5 points on top of the full score. The total individual score for this promotional exam is the sum of the scores for the mandatory, optional, and fun questions, with an expected individual score range of 0 to 110 points. If the score exceeds 100, it will be counted as 100 points.

4.4. Comparative Analysis of Tiered Education Test Scores. According to the assessment methods and principles of English test ology, the extension examinations conducted over the years were studied and analyzed (see Table 3), and it can be seen that in the English speaking tiered pilot examinations and the extension examinations, the excellent rates of students’ test scores were 7.8% and 2.6% each, the rates of good levels were 31.4% and 23.6%, the average levels were 3.9% and 11.4%, respectively, and the overall passing rates were 95.1% and 88.6%, respectively. Although the proportions of each item in the two exams were different, the overall trend and direction of the tier distribution and weighting were basically the same. This indicates that the standards and requirements of the two examinations are basically the same in the core, and the tiered examinations conducted are meaningful and reflect the true and objective level of students. The results of the pilot test and the extension test are very similar and have tectological significance despite the differences in the target population, test methods, and environments. From the results of the comparison, the current tiered test model is operable and applicable after modification and improvement.

In the extension test, 2 different testing methods, oral and written, are included. Comparing the results of the current English speaking tiered test and the written tiered test (see Table 4), it can be seen that the profiles of the speaking promotional test and the written promotional test are basically convergent and the tiered distribution of the results is similar. The results of this data analysis suggest that the tiered test model established by the current Extension Test Institute is a test logically meaningful for the same study population across testing environments and time periods. The test results of the first and second extension exams had continuity and uniformity despite the different focus on
knowledge and skills, the different modes of selection, and the different emphasis on student ability. Compared with the pilot exams, the overall pass and pass-excellence rates of the extension exams were roughly the same. With normal test question difficulty settings and increased distance between test difficulty levels, the test results showed that students’ overall performance level was not high and their individual levels in the four basic skills of listening, speaking, reading, and writing English were uneven and showed great variability. Data analysis showed that the total number of excellent and average levels in the written tiered test was less than 10%, proving that although more than 90% of the students had a certain foundation in English reading and writing and played at a normal level in the test, their overall English skills and knowledge still needed to be improved. Less than 30% of the candidates were able to achieve good and excellent levels in this promotional test, but still about 70% of the candidates’ English speaking level is still at the lower to middle level.

In the extension test, the pass rate of the written English tiered extension test was slightly better than that of the spoken English tiered extension test. On the one hand, the results suggest that primary learning activities such as cognition, memorization, and imitation are still commonly used by the test subjects in their daily English learning and that the excessive focus on reading and writing skills in daily English teaching and insufficient attention to oral teaching and communicative practice also contribute to the low oral proficiency of the test takers. The unrealized or ineffective demand for English language applications has resulted in students performing slightly worse on the Speaking Placement Test than on the Written Placement Test. For candidates, speaking exams are among the most difficult levels in the language discipline. Purely intellectual and memorized solidified information is not the real focus of the test; the main test points are the examination and development of students’ linguistic, spatial, self-awareness, logical, and interpersonal skills. On the other hand, the results also reveal the weaknesses of English learning of secondary school students, i.e., overemphasizing the learning results and neglecting the learning process. Not enough attention was paid to the accumulation of language, vocabulary, and grammar rules, and there was insufficient practice of language output.

The results of this study provide a vivid and powerful basis for university English teachers to reform tiered teaching and testing, which is beneficial for giving full play to students’ enthusiasm and initiative in language application, improving students’ language communication ability and learning efficiency, and taking into account the accumulation of knowledge and culture of language.

5. Conclusion

There are many misunderstandings and problems in task-based teaching, and the shortcomings of task-based teaching that are difficult to implement can be solved well through layered teaching. In lesson preparation, teachers can analyze students’ tasks at each level through stratification, propose different tasks according to the different characteristics of different levels, so that students can better complete the tasks and improve their own literacy, teach students according to their abilities, correct students’ learning attitudes, stimulate students’ learning enthusiasm through stratified learning, and provide students with a targeted learning approach. The classroom atmosphere is enlivened by the completion of tasks, and students’ listening, speaking, reading, and writing

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**Table 1: Written test tiered model.**

<table>
<thead>
<tr>
<th>Levels</th>
<th>Exam type</th>
<th>Form</th>
<th>Difficulty</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compulsory questions</td>
<td>Single-choice, connected, completion, and reading comprehension questions</td>
<td>Easy</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>Optional questions</td>
<td>Correction and judgment questions</td>
<td>Difficult</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Fun questions</td>
<td>Variety of formats, flexible and variable</td>
<td>Hard</td>
<td>20</td>
</tr>
</tbody>
</table>

**Table 2: English oral exam tiered model.**

<table>
<thead>
<tr>
<th>Levels</th>
<th>Exam type</th>
<th>Form</th>
<th>Score</th>
<th>Estimated score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compulsory questions</td>
<td>Word recognition</td>
<td>60</td>
<td>0–60</td>
</tr>
<tr>
<td>2</td>
<td>Optional questions</td>
<td>Chapter selection 1</td>
<td>20</td>
<td>0–25</td>
</tr>
<tr>
<td>3</td>
<td>Fun questions</td>
<td>Doctor-patient conversation</td>
<td>20</td>
<td>0–25</td>
</tr>
</tbody>
</table>

**Table 3: A comparative analysis of English tiered teaching oral examinations.**

<table>
<thead>
<tr>
<th>Levels</th>
<th>Pilot exam</th>
<th>Extension exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>8 (7.8)</td>
<td>14 (2.6)</td>
</tr>
<tr>
<td>Good</td>
<td>32 (31.4)</td>
<td>128 (23.6)</td>
</tr>
<tr>
<td>Fine</td>
<td>58 (56.9)</td>
<td>338 (62.4)</td>
</tr>
<tr>
<td>General</td>
<td>4 (3.9)</td>
<td>62 (11.4)</td>
</tr>
</tbody>
</table>

**Table 4: Comparative analysis of the promotional exams.**

<table>
<thead>
<tr>
<th>Levels</th>
<th>Oral tiered exams</th>
<th>Written tiered exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>14 (2.6)</td>
<td>4 (0.7)</td>
</tr>
<tr>
<td>Good</td>
<td>128 (23.6)</td>
<td>156 (28.8)</td>
</tr>
<tr>
<td>Fine</td>
<td>338 (62.4)</td>
<td>333 (61.4)</td>
</tr>
<tr>
<td>General</td>
<td>62 (11.4)</td>
<td>49 (9.1)</td>
</tr>
</tbody>
</table>
skills are improved through task-based teaching. By using the convolutional neural network proposed in this paper to carry out experiments on stratified education and examination reform, learning is carried out to obtain grades in terms of the quality of the assignment handed in and the threshold between the time of handing in the assignment, the information of a certain assignment is used to predict the students’ grades for this assignment, the predicted results are compared with the students’ final grades, and the predicted results are found to be very close to the grades. In this paper, convolutional neural network is introduced into the study of graded education and test reform experiments, the adaptive learning rate momentum gradient descent backpropagation algorithm of the convolutional neural network is used, and the predicted value fits well with the actual value and achieves the expected result.

**Data Availability**

The datasets used during the current study are available from the corresponding author on reasonable request.

**Conflicts of Interest**

The authors declare no conflicts of interest.

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**References**


[20] Please provide complete details for this reference.
