Research Article

Artificial Intelligence-Based English Self-Learning Effect Evaluation and Adaptive Influencing Factors Analysis

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Under the background of continuous development in our country, traditional English education can no longer meet the needs of modern times. Through the evaluation of English autonomous learning effect of artificial intelligence and the analysis of the influencing factors of adaptability, the teaching effect of English class is improved and the students’ awareness of autonomous learning is cultivated. In the pilot study, students now have an overall level of adaptation (3 < M < 4) supported by English proficiency. That is, the standard deviation is 1. The overall level of self-study in English is higher than that of boys (M = 3.40 for females, M = 3.32 for males, and M = 3.32 for males). Compared with non-English majors, English majors are more suitable for self-study of artificial intelligence in English (M = 3.59 for English majors), (M = 3.36 for non-English majors), and students can improve their adaptive ability to learn AI by creating models. Transfer learning is the key to improving learners’ English proficiency, and adaptive learning is the key to achieving this goal. Self-adaptive learning ensures the quality of students’ autonomous English homework. Improper English learning not only affects students’ learning outcomes but also affects their ability to learn English.

1. Introduction

In English learning mode, teachers and students spend a lot of time learning English. Due to the lack of an effective self-learning platform, students’ self-learning ability is not strong. English language teaching is changing with the development of artificial intelligence technology. There are some practical steps to use AI tools in the input and output phases of English [1]. Many English lessons are done independently. The model of self-education, however, makes it difficult to increase the effectiveness of the quality of learning English. Poverty that arises at the level of the mind is a self-learning process. In addition, the article describes practical programs based on the characteristics of English-speaking business students, simplifies the maintenance of structured work, and considers the need for independent study to enable students to complete their assignments [2]. Artificial intelligence technology acquires knowledge in lifelong education e-learning through machine learning to enhance learning effect and application. Introducing artificial intelligence into educational learning can effectively improve learning ability [3]. Learning English requires the use of practical classroom control skills to increase the teacher’s level of classroom control as a necessary step in the development of English language learning. By analyzing smart data and analyzing student status, a student’s learning status can be understood in a timely and effective manner [4]. The level of teacher control in English classrooms needs to be increased, using the skills of teachers in school management. The use of intelligent data and analysis of student behavior can help students understand how to learn timely and effectively [4]. Teaching English in college is a good way to learn English. However, most of the institute's current English broadcast programs blindly read students’ English textbooks on computers [5]. AI is able to communicate better when guided by students' communication strategies. In addition, students were more communicative in the posttest than in the pretest.
According to interviews with students, smart devices with artificial intelligence are used to help them practice outside the classroom [6]. Online teaching methods in English are defined by the area of study and the complexity of online learning. Improve the ability of online English models to monitor and predict student health. Thanks to a combination of brilliant algorithms, a modeling system was developed, and the model performance was tested. The impact of students learning artificial intelligence has been identified in models that accept online learning [7]. The goal of artificial intelligence is to make machines that can understand language, recognize objects in a scene, act as intelligent robots, solve problems, teach students different subjects, and more. Knowledge and strategies may be taught in a content-independent form and then shown how they apply to different content areas. Either approach will help students gain an understanding of a particular knowledge area more easily [8]. Research has seen tremendous growth in AI-based decision-making, with many studies examining the impact of human decision-making using insights from the uncharted field of AI. Human AI decision-making has been shown to work well with textual information, which again constructs systems suitable for teaching human decision-making [9]. AI currently has no significant negative impact on jobs. However, the relationship between vocational training skills and specialized knowledge has a very negative impact on employment inequality [10]. It has become an important task for English educators to improve the initiative of college students in English learning. However, the interaction between vocational learning ability and artificial intelligence has a significant negative impact on job insecurity, and vocational learning ability has a significant moderating effect on job insecurity [11]. Learning motivation is not only a direct reflection of students’ learning and living conditions but also an important indicator of the quality of skill development in higher education and teaching. In order to develop effective teaching and assessment methods, the supporting aspects of teaching and assessment in university education need to be considered. Reference [12] explored the application of linear structural equation modeling in analyzing the influencing factors of course learning interest. The main factors affecting students’ interest in learning are students’ professional foundation and teachers’ teaching strategies. Good teaching effects and teaching strategies are very important to stimulate students’ interest in learning [13]. The rapid development of modern technologies has promoted the development of smart products based on modern technology. To determine the acceptability of these products, different technology acceptance guidelines were used. The results show that adoption of minimally sophisticated and useful products, such as smart products based on technical expertise, is influenced more by interest in technology than in performance aspects [14].

2. The Current Situation and Optimization Strategies of English Autonomous Learning

2.1. The Status Quo of English Autonomous Learning. Now, many schools in our country have begun to focus on cultivating students’ English language ability, but the effect is not very satisfactory. First, learning activities often do not have adequate goals and not all learning activities are managed effectively. Although the students actively spoke in some self-directed learning tasks, most of the speeches were not related to the course content, and the students certainly did not participate in the teaching.

2.2. Problems Existing in the Teaching of English Autonomous Learning. At present, there are widespread problems in the process of English self-study. First, English teachers do not play the role of teachers because they do not have the right teaching direction. In this traditional teaching method, students do nothing and are based entirely on the teacher’s classroom activities. In practical English classes, teachers often use traditional teaching methods to organize self-study classes, which will lead to students’ anxiety and boredom in English classes and affect the effectiveness of English physical education teaching. Teachers in English classes do not provide the knowledge they want and neglect to develop students’ study skills; students rely on teachers to learn and practice English through research, but they fail to develop their own study skills, as shown in Figure 1.

2.3. Intervention Strategies in English Autonomous Learning. All teaching behaviors of teachers should be centered on students’ English learning experience, completely subverting the situation that teachers are the main language exporters in the traditional teaching model, and returning the right to speak to students, so as to achieve the return to the origin of the classroom. Let students participate in the classroom, stimulate students’ passion for learning, and promote the formation of autonomous learning ability. Teachers should not be immersed in the traditional teaching mode and only study the problem of how to teach. Strengthen the study of learning theory, constantly update the knowledge system, constantly update the learning concept, and incorporate the self-study guide for college students into the learning concept. Teachers should respect and accept the individual differences of students when teaching English and should not use a single standard to evaluate students. The use of learning platforms brings different learning challenges and needs to different students. Recognizing the strengths of each student helps develop students’ ability to learn independently, as shown in Figure 2.

(1) Teachers respect the individual differences of students and make appropriate plans for different students

(2) Teachers should not immerse themselves in the traditional way of teaching but should update the knowledge system in a timely manner so that the teaching concept can keep up with the times

(3) Teachers should focus students’ attention on learning, allow students to participate in the classroom, and promote self-reliance in learning English

2.4. Artificial Intelligence Research on English Autonomous Learning. In the era of artificial intelligence, English learners should focus on cultivating cognitive driving
force, that is, improving their interest and curiosity in English learning. On this basis, cultivate self-development awareness, work hard for certain goals, and appropriately add some benign auxiliary driving forces, such as family and teacher expectations, to play a supervising role in the learning process. In the process of English learning, to understand the characteristics of one’s own English learning, but also to strengthen the cognition of differences between individuals, to see the differences between others and their own English learning, to understand oneself objectively, and to carry out cognitive monitoring, promote strengths and avoid weaknesses, and adjust learning strategies. Online English learning should first have a good learning motivation, and second, improve learning cognition, and then adjust learning strategies accordingly to cognition. The learning behavior can vary from person to person and has no significant impact on the learning effect as shown in Figure 3.

1. Artificial intelligence improves students’ interest and curiosity in English learning
2. Artificial intelligence cultivates continuous and stable benign learning motivation
3. You can use artificial intelligence to understand your own English characteristics and strengthen the cognition of differences between individuals

3. Research on Artificial Intelligence Algorithms

3.1. Reactive Power Scheduling Optimization Model. Due to the ORPD problem, researchers have developed different optimization techniques to better suit different optimization objectives. This article focuses on reducing energy loss. The objective (objective function) is to reduce transmission losses and voltage deviations in the power system to meet energy demand. The problem can be described as a function of \( f(x, u) \), i.e.,

\[
\min \{ f(x, u) \} = \min \{ g(x, u), h(x, u) \},
\]

\[
\begin{aligned}
g(x, u) &= 0, \\
h(x, u) &\leq 0,
\end{aligned}
\]

\( g(x, u) = 0 \) is an equal form of control; \( f(x, u) \) is a function; \( h(x, u) \leq 0 \) is an unequal form of control.

Uneven control includes generator bus voltage, AC ratio, and number of static var compensators. For different control functions, \( x \) and \( u \) are the work-based and control variables, respectively. The purpose of ORPD is to minimize the overall transmission loss of the F-system, i.e.,

\[
F_1 = P_{\text{Loss}}(x, u) = \sum_{k=1}^{N_L} \sum_{j \in N_j} \left[ V_i^2 + V_j^2 - 2V_i V_j \cos (\theta_i - \theta_j) \right].
\]

(2)

\( N_L \) is the transport line number; \( G_k \) is the \( k \) line; \( V_i \) and \( V_j \) and \( j \) are full voltages. Here, \( j \) is the lines \( i; \theta \) is the lines \( i; \theta_j \) is the \( j \) end angle label.

Constrained by the equation is the power balance equation, which requires that the power of the power flow be equal; that is, the total energy loss is equal to the total energy production. The problems are

\[
P_{\text{Gi}} - P_{\text{Di}} = V_i \sum_{j \in N_j} V_j \left( G_{ij} \cos \theta_{ij} + B_{ij} \sin \theta_{ij} \right),
\]

\[
Q_{\text{Gi}} - Q_{\text{Di}} = V_i \sum_{j \in N_j} V_j \left( B_{ij} \cos \theta_{ij} - G_{ij} \sin \theta_{ij} \right).
\]

(3)
\(V_i\) is the \(i\) load; \(V_j\) is the \(j\) voltage; \(G_{ij}\) is the conductance between \(i\) and \(j\); \(B_{ij}\) is the susceptibility between \(i\) and \(j\); \(P_{Gi}\) is the \(Q_{Gi}\) active/reactive power; \(Q_{Di}\) is the actual load demand; \(Q_{Xj}\) is the reactive load demand.

In ORPD problems, unbalanced basic barriers include barriers that damage generators, transformers, and equipment. As mentioned above, ORPD is a problem related to mobility parameters and loneliness. All unbalanced obstacles are determined by their upper and lower bounds, which leads to a stable solution. The thresholds are generator active power, reactance voltage, and bus voltage, and their upper and lower limits are

\[
P_{Gi}^{\min} \leq P_{Gi} \leq P_{Gi}^{\max},
\]

\[
Q_{Gi}^{\min} \leq Q_{Gi} \leq Q_{Gi}^{\max},
\]

\[
V_{Gi}^{\min} \leq V_{Gi} \leq V_{Gi}^{\max},
\]

\(i = 1 \ldots N_G, N_G\) is the quantity.

The tap distance of the transformer

\[
\tau_{i}^{\max} \leq T_{i} \leq \tau_{i}^{\max},
\]

\(i = 1 \ldots N_T, N_T\) is the number of transformers.

The size of the reactive power compensator is limited to

\[
Q_{Gi}^{\min} \leq Q_{Gi} \leq Q_{Gi}^{\max},
\]

\(i = 1, \ldots, N_C, N\) is the number of reactive power compensators.

For obstacle development problems, ORPD handles various parameters such as generator bus voltages, transformer hub connections, and corresponding power compensation pixels, and MATPOWER can handle these changes automatically. Therefore, the bus voltage and reactive power can be limited by taking the PQ voltage amplitude of the bus and the reactive power entering the PV bus as the penalty rules for objective acts. The above problem can be stated as follows:

\[
F = F_X + \sum_{i \in N_V} \lambda_{V_i} (V_i - V_i^{\text{lim}})^2,
\]

\(F\) is a fitness function; \(F_X\) is the objective function; \(\lambda_{V_i}\) is a set of bus numbers that violate the voltage magnitude limit; \(\lambda_{V_i}\) is the penalty function factor.

\(V_i^{\text{lim}}\) is calculated according to the following formula:

\[
V_i^{\text{lim}} = \begin{cases} 
V_i^{\max} & V_i > V_i^{\max} \\
V_i^{\min} & V_i < V_i^{\min}
\end{cases}
\]

3.2. MOTH-FIRE Model. By updating the BORN-FIRE algorithm, a natural AI update algorithm has several advantages over other incentive algorithms. The MFO algorithm is based on a special night rhythm mechanism. In the MFO model, the location of the problem in the river within the search area is variable. The MFO algorithm is a swarm intelligence algorithm, and an important component is a group of populations displayed in an array. Populations are shown in the array, i.e.,

\[
M = \begin{bmatrix}
m_{1,1} & m_{1,2} & \cdots & m_{1,d} \\
m_{2,1} & \vdots & \cdots & \vdots \\
\vdots & \vdots & \ddots & \vdots \\
m_{n,1} & m_{n,2} & \cdots & m_{n,d}
\end{bmatrix}
\]

\(n\) is a numerical value; \(d\) is change researcher. The second most important feature of an MFO is the light matrix.

\[
F = \begin{bmatrix}
F_{1,1} & F_{1,2} & \cdots & F_{1,d} \\
\vdots & \vdots & \ddots & \vdots \\
F_{n,1} & F_{n,2} & \cdots & F_{n,d}
\end{bmatrix}
\]

During optimization, the taint must update its spatial position according to this matrix. Therefore, in the numerical scheme, the lower edge of the worm is defined based on the fire in the matrix \(F\). Since the formulas of (9) and (10) are the same, we can assume that there exists a system of conservation of energy values for flight and fire, i.e.,

\[
O_M = \begin{bmatrix}
O_{M_1} \\
\vdots \\
O_{M_n}
\end{bmatrix}
\]

\[
O_F = \begin{bmatrix}
O_{F_1} \\
\vdots \\
O_{F_n}
\end{bmatrix}
\]

\(O_M\) is the stored value; \(O_{Mj}\) is the fitness of the flame. Fitness is the value of the target work or output assigned to each flame.

Mots or flames can be used to solve the problem, but they work and adapt differently. The fire coordinator in the MFO is the ideal site for a kit below the level of current solutions and is the actual inspector of the required area. So, during the discovery process, a fire may appear as a signal for the spider to fall, and each insect turns the flame and adjusts its position to improve the results. This process helps eliminate optimal solutions from the search process. The above problem can be illustrated by

\[
M_j = S(M_i, F_j).
\]

\(M_i\) are \(i\) moths, \(F_j\) are \(j\) fires; \(S\) is a function. \(M_i\) are \(i\) moths, \(F_j\) are \(j\) fires; \(S\) is a function.

\[
S(M_i, F_j) = D_1 \cdot e^{b_i} \cdot \cos(2 \pi t) + F_j
\]

\(b\) is logarithmic spiral shape as always; the interval \([-1,1]\) contains a random number; \(i\) is followed by the distance between the fly and the flame. Moths can only change
position using an equalizer flame to keep the solution out of the atmosphere (13). $D_i$ represents the distance between the $j$ th flame and the $i$ th moth, i.e.,

$$D_i = |F_j - M_i|.$$  

\hspace{1cm} (14)

$F_j$ is the $j$ th flame; $M_i$ is the $i$ th moth.

Since (13) allows the butterfly to hover around the flame without actually flying between the butterflies, this equation provides an automatic solution process. When the next throttle position is outside the area between the flame and the throttle, the algorithm automatically searches for the throttle position within the space between the fire and the throttle.

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**Table 1:** The way students use artificial intelligence to learn English.

<table>
<thead>
<tr>
<th>Educational products</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to strengthen the country</td>
<td>111</td>
<td>55</td>
</tr>
<tr>
<td>Smart work</td>
<td>18</td>
<td>8.9</td>
</tr>
<tr>
<td>Homework help</td>
<td>22</td>
<td>10.9</td>
</tr>
<tr>
<td>Speak English fluently</td>
<td>31</td>
<td>15.3</td>
</tr>
<tr>
<td>Tencent translator</td>
<td>131</td>
<td>64.9</td>
</tr>
<tr>
<td>Little ape search questions</td>
<td>55</td>
<td>27.2</td>
</tr>
<tr>
<td>Learning pass</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Xueersi online school</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Xiaodu AI robot</td>
<td>21</td>
<td>10.4</td>
</tr>
<tr>
<td>Schoolbaglang robot</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Baidu AI platform</td>
<td>32</td>
<td>30.7</td>
</tr>
<tr>
<td>Tencent cloud platform</td>
<td>21</td>
<td>10.4</td>
</tr>
</tbody>
</table>

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**Table 2:** Basic ways of integrating artificial intelligence into education.

<table>
<thead>
<tr>
<th>Conduct artificial intelligence courses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using artificial intelligence to assist classroom learning</td>
<td>63</td>
<td>31.2</td>
</tr>
<tr>
<td>Using artificial intelligence to assist extracurricular learning</td>
<td>133</td>
<td>65.8</td>
</tr>
<tr>
<td>Total</td>
<td>202</td>
<td>100</td>
</tr>
</tbody>
</table>

---

**Figure 4:** The self-learning effect of students using artificial intelligence in English.

**Figure 5:** Students’ evaluation of AI learning and education.

After updating the list, the algorithm ranks the rockets according to their suitability for each iteration. And the butterfly will update its position according to the corresponding flashlight, assuming that there are $n$ flames in the
first stage of the iteration, but the number of flames gradually decreases during the iteration. So, in the last iterative step, the butterfly only updates its position based on its ability to find the optimal position solution. Reducing the number of fires helps to cover the estimated cost of the search area, and the number of fires describing this process can be summed up as

\[ N_{\text{flame}} = N - I \times \frac{N - 1}{T} \]  

(15)

\( N \) is the maximum number of flames, \( I \) is the current number of repetitions, and \( T \) is the maximum number of repetitions.


4.1. Evaluation of English Self-Learning Effect and Adaptive Impact Research Supported by Artificial Intelligence. The teaching of English has long been flawed, but the method of teaching English is unique. At present, English learning has a complete and mature software and hardware equipment, and human-machine learning is more interactive. The artificial intelligence learning model improves learner autonomy and teaching performance in English courses, and enhances students’ understanding of creativity and independent learning as well as lifelong learning. The ways for AI to learn English are shown in Table 1.

It can be seen from Table 1 that most people choose Tencent translator to learn English, of which 131 people use it, accounting for 64.9%; the use of the schoolbaglang robot is the lowest, and the number of users is 3, which is 1.5%. It shows that in the era of artificial intelligence, students are more inclined to learn independently in learning English, and the channels of seeking help in the learning process have increased, which is more convenient for students to manage time and environment as shown in Table 2.

As shown in Table 2, six students believed their school offered an AI course. It is 3%. 63 students think schools are using artificial intelligence to help them learn in the classroom. Among the 133 students, 31.2% and 65.8%, respectively, think that artificial intelligence has its place for additional training. Better present and understand the latest artificial intelligence and its applications to students, in order to apply them more effectively in the teaching of English courses as shown in Figure 4.

It can be seen from Figure 5 that the learning of artificial intelligence is conducive to after-school English review, preview before English class, improve the effect of English classroom learning, and impact assessment and self-reflection, and the mean size is 3.58, 3.41, 3.39, 3.11, and 2.92 as shown in Figure 5.

52% and 33% of students believe that artificial intelligence has a good effect on self-learning English, 8% believe that the learning effect is average, and 5% and 2% believe that the artificial intelligence is not good for self-learning English.

It can be seen in Figure 5 that students have a high evaluation of teaching AI, which also proves that AI played a good role in students’ self-learning English. In the era of artificial intelligence, it is very convenient to repeatedly watch lecture videos or learning materials, and students can also shorten the distance through videos and other forms and adopt peer learning strategies and achieve more communication.
Personalized AI is achieved by creating personalized learning plans based on educational goals, self-monitoring, final evaluation of the learning process, and teaching methods and strategies related to students' learning problems, as shown in Table 3.

Learning by artificial intelligence is collaborative learning between humans and machines, which requires a certain intellectual culture to adapt to student learning and the challenges of the future intelligent society. The experiment uses a score of “5 points.” Based on the scores, we were able to distinguish between low fitness levels (1 ≤ moderate fitness < 2), normal fitness levels (2 ≤ moderate fitness < 3), and moderate levels. According to the score, we can distinguish four levels: low level of adaptability (1 ≤ fitness value < 2), normal level of adaptability (2 ≤ fitness value < 3), medium level of adaptability level (3 ≤ fitness value less than 4), and high adaptability level (4 ≤ fitness value < 5). Students use artificial intelligence to score the adaptive grade of English autonomous learning. The general level of student adaptation to learning English and the various aspects of adaptation in support of AI are shown in Figure 6.

The results in Figure 6 show that the standard deviation is low and the data that can be analyzed are consistent. At present, the overall learning adaptability level of college students using AI to learn English is 3 to 4, the standard deviation is less than 1, and the sample dispersion is relatively low. The data are relatively small. This suggests that AI supports learning English. The overall level is relatively stable as shown in Figure 7.

The experimental results show that the students’ learning goals have the lowest score, indicating that the English goals of AI students are not clear enough, and the learning goals let students know what to do or what to do. If students do not set learning goals before participating in AI learning, it is easy to reduce learning efficiency and even generate learning anxiety. It can be seen in Figure 7 that the “learning goal” score is the lowest, which indicates that the students’ goal of learning English using artificial intelligence is not enough. Setting learning goals can help people get a clear idea of what to do next. Teaching English using artificial intelligence offers students a wealth of English learning resources. If students do not set clear learning goals before they start learning English with AI, they will not have valuable information to learn, and learning will become easier. It can be distracting, reduce learning efficiency, and cause anxiety when learning English as shown in Figure 8.

Figure 8 shows that girls are significantly better at adapting to AI learning English than boys (M = 3.54 for women > M = 3.39 for men). However, on the parameter...
Learning adaptability level

First grade (n=224) Year two (n=129) Grade 3 (n=121) Fourth grade (n=78)

Figure 9: The self-learning adaptability of artificial intelligence for students in different grades.

Figure 10: English/non-English major students’ self-learning adaptability of artificial intelligence in English.

Figure 11: Comparison results of the model’s adaptability to artificial intelligence English self-learning.

Figure 12: The performance of the model on different tests.
"self-learning ability," men performed better than women as shown in Figure 9.

Figure 9 shows that when using artificial intelligence for teaching English, there is no big difference in the adaptability of learning English in different grades, but there are significant differences in "learning interaction" and "learning environment." The fitness value of grade four is 3.44, grade one is 3.42, grade two is 3.39, and grade three is 3.28, but the learning adaptability of grade three students is significantly lower than that of other grades (Figure 10).

According to Figure 10, the English/non-English characteristics vary significantly in the level of adaptability to learning English self-taught AI, English majors (M = 3.59), and non-English majors (M = 3, 39). The adaptability of English majors in AI English self-study is significantly higher than that of non-English majors. In order to reflect the practicability and accuracy of this model, we compare the MOTH-FLAME model used in this model with the GA and PSO model, two traditional machine learning algorithms, as shown in Figure 11.

From the comparison in Figure 11, it can be found that the average adaptability to self-learning English of the model established by MOTH-FLAME is 87.83%, while the average adaptability to self-learning of English of the model established by PSO is 84.83%, respectively. The average fitness values were 85.66%. Figure 12.

Comparing the experimental results, it can be known that the accuracy rate of using the MOTH-FLAME model reached 96.15%, while the recall rate and F1 also reached 96.53 and 96.3, while the accuracy rates of using the GA and PSO models were 93.41% and 92.60%, respectively. The recall rate was 95.12% and 93.415, respectively, and F1 was 93.11% and 92.21%, respectively. The prediction effect of the model established using MOTH-FLAME is generally much better than that of the model established using GA and PSO. This evaluation result fully demonstrates the innovation and practicability of the artificial intelligence optimization algorithm selected in this article.

5. Conclusion

Many schools in our country emphasize the culture of self-learning English, but this is not enough. I do not think so. First, there are not enough teachers in the schools, and the teachers are not responsible enough. The perfect teaching method is monotonous and retrograde, and students find English lessons interesting. Direct instruction gives poor results; students are too dependent on teachers, which prevent them from cultivating and developing their capacity for independent learning. Artificial intelligence can be used to cultivate students' stable and good mobility and improve the purpose and comprehensiveness of cognitive learning. By integrating AI into English teaching, students can improve and analyze data more effectively to facilitate learning.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

References