A study on computer-aided English reading teaching system

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Abstract

In this paper, the author researches on the computer-aided English reading teaching system. The author adopted one group pre/post-test methods to compare these variables: student’s goal setting, their learning material, their learning strategies and evaluation. After processing these findings from 8-week action research the author was able to obtain the quantitative data; then he went on to operate several interviews where data seemed extreme or implausible, which combined with the analysis of field journals and teacher’s diaries will form the qualitative data. The experiment result shows the proposed system can improve the overall performance for English reading teaching.

Keywords: Computer-aided; English reading teaching; system

1. INTRODUCTION

As one of the most important means of acquiring information and understanding the world and the important foundation of improving language behavior and language competence, reading has always been a significant part in the process of the human society development. In addition, English reading is not only the principal source of language input, but also is the important foundation of the development of listening, speaking, writing and translating. Reading also plays the dominant role in the English teaching in China’s universities and colleges (Gottardo et al., 2001). English reading theories and English reading teaching methodology under their influence have been in continuous development. English reading theories can provide the corresponding theoretical basis for teachers to select the appropriate teaching methods. However, although large quantities of trainings and drills are adopted for students, little improvement has been made in current English reading teaching. It can be suggested that it should be urgent and important to study the English reading theories. Admittedly, previous studies about English reading theories so far have not offered a whole picture of the development tendency of English reading theories. Hence, the primary purpose of the present study is to globally investigate the development tendency of English reading theories and also to provide some suggestions for English reading teaching in China’s universities.

A reflective review of China’s foreign-language teaching and learning in recent history reveals that English-language teaching in many parts of the country has featured an attention to the development of low-level cognitive skills that involve grammar and exam-oriented practice. In the field of foreign-language reading, the author’s years of teaching and research have found that there are three distinct difficulties confronting foreign-language learners: namely 1) lack of attention to the application of appropriate strategies; 2) inadequate attention to the hierarchical construction of meaning; and, 3) a disregard for the reconstruction of the writer’s intended message. Traditional approaches to both foreign-language learning and foreign-language reading seem inadequate in addressing such difficulties.

Too much attention to discrete grammatical items also runs against the long-term goal of most (if not all) educational endeavors— the development of independent and autonomous individuals. On the part of the teachers, traditional approaches to classroom management are not contributive to the development of their autonomy, which consequently results in learners’ lack of autonomy. Given the gap between the reality of teaching and learning and the expected goal of education, this research contends that the adoption of a post method approach to foreign-language reading pedagogy can overcome or at least reduce the above-mentioned difficulties and facilitate innovation and creativity in China’s foreign-language classrooms. In a nutshell, the post method condition, proposed by Kumaravadivelu and depicted in this research, denotes three important features (García, 1991; Proctor and August, 2006; Liu et al., 2010). First and foremost, it signifies a search for an alternative to method rather than an alternative method. Second, the post method condition suggests teacher autonomy. The
last but not the least characteristic of post method pedagogy is principled pragmatism. These three characteristics are the foundations on which a strategic pedagogic framework can be constructed. Such a framework incorporates both macro- and micro strategies, the former of which are universal tactics derived from theoretical, empirical and experiential knowledge grounded in classroom-oriented research, and the latter of which are the situation-specific, context-sensitive, and need-based micro strategies or classroom techniques generated from the former. In short, the macro strategies are realized by means of the micro strategies in a specific educational setting.

Such a framework should encourage the participants of classroom pedagogy—both the teachers and the learners—to have active and creative participations in the act of teaching and learning by using their own experience and expertise to tackle the problems encountered and achieve an optimized educational outcome that aims at upgrading all individuals. With the reinforcing interactions of macro- and micro strategies within the framework, the learner can be guided to become more autonomous and independent, thus achieving the long-term goal of education (Nagy et al., 1993).

2. MATERIALS AND METHODS

2.1 Overview

In recent years, learner autonomy has become a prominent topic in the educational circles and also a new trend of foreign language teaching. The term “learner autonomy” was first put forward in 1981 by Henri Holec in his book Autonomy and Foreign Language Learning (Reese et al., 2000; Osaka and Osaka, 1992; Baker and Good, 1995). According to Holec, learner autonomy is “the ability to take charge of one’s own learning”. A learner is considered computer-aided when he or she is able to set the learning objectives; select the contents, the materials and methods to be used; determine the time, place and progressions and evaluate what has been acquired. Ever since the birth of the concept, many linguists and researchers have paid great attention to it and substantial researches and exploration on it have been carried out. A great deal of research concerning learner autonomy has been carried out in the western countries, focusing not only on the rationale of learner autonomy from pedagogical and philosophical point of view, but also on the means of facilitating the development of learner autonomy (Denton et al., 2004).

The rapid development of world economic integration, cultural diversity, and the establishment of English’s status of becoming the world’s universal language has advanced new requirements for college English teaching in China toward cultivating high-quality talents with intercultural communicative competence. But our current college English teaching practice is a long-term extension of the traditional system of a linguistic knowledge-centered teaching mode, focusing primarily on the cultivation of students’ language ability. Because this teaching style has generally overlooked or only given lip-service to the importance of culture teaching and learning, it has impeded the effective cultivation of students’ intercultural communicative competence. As a result, there are many examples of students who have been learning English for many years being unable to communicate in English, not to mention communicate intercultural (Lan et al., 2009; Kieffer and Lesaux, 2012).

In order to present an authentic picture of China’s college English intercultural teaching, find out the specific problems as well as their causes, this research synthesizes the research results of intercultural communication, foreign language teaching and applied cultural linguistics as references to propose strategies and encourage reforms in university English teaching and improve students’ intercultural communicative competence. It confirms the tripartite mode of intercultural communication competence (cognitive, affective, and behavioral) as the leading theoretical framework of this study (Lin, 2014; Mei et al., 2015), and applies qualitative and quantitative research methods to carry out an empirical research project. The research expounds the relationships among language (Chaka and Booi-Ncetani, 2015; Ma and Lin, 2015), culture, and communication of the trinity, explicitly points out that college English teaching should be based on the development of students’ intercultural communication competence as the goal of intercultural foreign language teaching, and suggests that the cultivation of intercultural communicative ability can be achieved only by intercultural teaching. The study utilized questionnaires to survey students and then interviewed teaching staff to analyze problems and their causes in cognitive, emotional and behavioral aspects in intercultural foreign language teaching. The result of the statistical analysis shows that students’ cultural learning and application are not ideal. There is a serious Chinese culture “Aphasia” phenomenon, and students’ intercultural communicative competence is very low.

Particular concern is given to those teaching strategies, which would enable the students to participate actively in English study and become real computer-aided learners (Wu et al., 2014). Li’s paper (Li and Kirby, 2015;
Phantharakphong and Pothitha, 2014; Wan and Zhang, 2010) explains the current English reading teaching situation in senior high schools and the necessity and feasibility of computer-aided learning, analyzes the factors that affect computer-aided learning and inductive the English reading teaching strategy for computer-aided learning. On the base of the previous theories, we suppose the computer-aided learning teaching model in senior high schools. It also explains the experiment of practicing the computer-aided learning teaching model in senior high schools. We chose two classes which are of the same level. Class 1 acted as the experiment class, and Class 2 is the control class. After one school year’s computer-aided learning training, the students in the Experiment Class were improved to have their computer-aided learning ability. Their grades were much higher than those of the ones in the Control Class.

The realization of computer-aided learning does not only depend on the change of the teaching ideas, but also the development of the education and the quality of the learners. For us teachers, that is a chance as well as a challenge. Computer-aided learning theory offers us teachers a new range of vision to deepen our understanding of quality education and English education reform. As we all know, no educational theory is a master key to all doors. How to stimulate the students’ computer-aided learning interest, how to motivate us teachers to change ideas and explore new teaching methods and how to create an equal and free study environment for the students are what we teachers expect to consider and study. How to conduct our daily teaching with the theory of computer-aided learning as a guide and get more and more teachers inspired by the theory and put it into teaching practice will still be a problem to be further studied in the future.

2.2 Computer-aided virtual technology model and algorithm

With the development of the environment of globalization, the contacts between China and other countries are more frequent than ever before, and the intercultural communication becomes the realistic demand. English instruction in middle school also puts forward higher requirements for cultural instruction because of the change of curriculum environment. With the theory of general communication as its central theory, the theory of intercultural communication was established in the 1970s and it developed by adopting the achievement of other subjects concerned. Springing up from America in the 1930s and the 1940s, intercultural communication became popular in the research of foreign language education. Nowadays it has been accepted that the final aim of foreign language education is to develop students’ competence of intercultural communication. Taking the theory of intercultural communication as the theory base, and English Course Criteria for China Elemental Education and English Course Criteria for University Teaching as most important references, the suitable English teaching method in China is very important.

The theory of cultural identity has exerted a far-flung influence on the studies of society, history, politics and culture, according to Ericson, a renowned American psychoanalyst. Culture and identity are shaped in different paradigms of time and space. The problem of “identity” arises first in intercultural encounters, which requires a construction process. Intercultural communication refers to communication of people between different cultures. The identity among people is the key logo of cross-cultural communication, and intercultural communication is defined as the process in which people of different cultures identify and advocate their respective cultures in cross-cultural encounters.

To this end, the United States and the European Union are used as two cases to illustrate the indispensable relationship between cultural identity and intercultural communication. Cultural value is a necessity in guiding the intercultural communicative process. Multi-ethnic, multi-ethnic, various groups encounter on the American soil, an intercultural communicative process, gradually forming the Protestant culture that emphasizes property rights, equal opportunity, and individualism, and shaping the cultural identity that stresses the republicanism including democracy and freedom, all of which constitute the American values. The American social and cultural identity has been a research focus for a longtime. The term “cultural pluralism” was coined by Horace Karen who maintains that “tolerance of difference itself is part of the ‘American ideas’, and should always be a ‘different ethnic federal’”.

The action research method in teaching refers to the process in which the teacher follows the instruction of researcher and investigates the problems from teaching in his or her own class, finds solutions to these problems and improves the teaching methods to achieve better teaching effects. It is one that encourages teachers to find more research questions and participate in research throughout teaching practice; it is one that is undertaken by both teachers and researchers for the purpose of better understanding the problems and putting their findings directly into use. It increases the possibility of solving these problems quickly and efficiently and correcting students’ wrong study behaviors.
It is noteworthy that the focus of action research in teaching practice is not on the theories concerned by scholars; instead, action research is designed to find and solve the actual problems most urgently concerned by educators and teachers. As a result, action research is not just confined by existing theories. When doing action research, one should actively adopt advice and references from any useful past experiences, knowledge, methods, technologies and theories which can help solve practical problems and improve the quality of implementation of plans.

The expectation of characteristic function \( f_i \) is:

\[
E_p f_i = \sum_{x,y} \overline{p(x)} p(y/x) f_i(x,y).
\] (1)

\( \overline{p(x)} \) represents experience marginal distribution of \( x \) in the training sample. The expectation value calculated by model should be consistent with experience expectation value.

\[
C = \{ p / E_p f_i = E_{\overline{p}} f_i, i \in \{1, 2, \ldots, K\} \} (2)
\]

\( C \) represents a series of probability distribution. The core idea of maximum entropy is to choose the model with largest entropy in these models. In all probability distribution, \( p^* \) is selected, which meets the following equation.

\[
H(p) = - \sum_{x,y} \overline{p(x)} p(y/x) \log p(y/x) \] (3)

The equation is as follows:

\[
\partial_j (C_{ijkl} \partial_k u_i + e_{ijkl} \partial_k \varphi) - \rho \ddot{u}_i = 0 \] (4)

\[
T(\nabla) = \begin{bmatrix} T_{ik}(\nabla) & t_i(\nabla) \\ t_i^T(\nabla) & -\tau(\nabla) \end{bmatrix}, \quad J = \begin{bmatrix} \delta_{ik} & 0 \\ 0 & 0 \end{bmatrix} \] (5)

To obtain the inverse local fractional Hilbert transform, write again Eq. (4) as

\[
\hat{f}_{\alpha}(x) = \frac{1}{\Gamma(1+\alpha)} \int_{-\infty}^{\infty} f(t) \frac{\Gamma(\alpha)}{(t-x)^\alpha} (dt)^\alpha
\]

\[
= \frac{1}{\Gamma(1+\alpha)} \int_{-\infty}^{\infty} f(t) g(x-t)(dt)^\alpha
\]

\[
= f(x) * g(x), \] (6)

The equation of motion is as follows:

\[
\partial_j (C_{ijkl} \partial_k u_i + e_{ijkl} \partial_k \varphi) - \rho \ddot{u}_i = 0 \] (7)

Under the linear theory, that is:

\[
\partial_j (\epsilon_{ijkl} \partial_k u_i - \eta_{ijkl} \partial_k \varphi) = 0 \] (8)
The linear equation can be expressed into the following simplified forms:

\[ L(\nabla, \omega) f(x, \omega) = 0, \quad L(\nabla, \omega) = T(\nabla) + \omega^2 J \quad (9) \]

Consider the Lagrangian expression for the equality constrained problem depicted in (9), In which,

\[ f(x, \omega) = \frac{\mu_i(x, \omega)}{\varphi(x, \omega)} \quad (10) \]

To some degree, action research relies on the personal opinions and experiences of the practitioners. Three main characteristics of action research can be concluded about action research in teaching practice:

1) The goal of action research is to improve the quality of actions and solve practical problems;

2) The form of action research is a combination of research process and action process;

3) The method of action research is the teacher's repeated reflection on the effect of his or her actual implementation of the plan.

3. RESULTS AND DISCUSSION

In this conducting research in this article, it selected a university from all the national universities, with the purpose of examining the students' English test scores of class, the number of the sample be selected is 80.

3.1 Methodology

According to the scores of the students as sequence, a sequence of the students from the first batch undergraduate university, a sequence of the students from the second batch undergraduate universities and a sequence of the students from the third batch undergraduate colleges, formed as 3 levels. The proportions of the sample accounted of the total number of respective batch are: 25%, 50%, and 25%. As result, we can draw 9 different types of universities. The symbol L indicates the first batch undergraduate universities, and L1-L3, respectively; represent the 3 different levels (Upper, middle and lower) of the first batch universities. L4-L6 represent the 3 different levels of the second batch undergraduate universities, L7-L9 represent 3 different levels of colleges, by this process, this research made the cluster analysis on college English assessment.

Calculated the average score of the students from the 206 universities, formulate i a gradual process of clustering analysis on the assessment of the college English achievement.

3.2 The result of the original 9 types of universities

From the data in Table 1, there are 6 levels in the 9 types of universities, the best scores are mainly witnessed the best universities of the first batch undergraduate universities. Then the best of the second batch universities and the middle ones of the second batch universities followed as the second level. And the middle ones of the second batch universities and the colleges are belongs to the third level.

There are 9 levels of the 206 universities, and the result of the sub-items was as followed Table 2 and 3. The worst ones of the first batch universities are the forth level. The middle ones of the colleges and the worst of the second batch universities are the level five, and the rest are the level six.

The college English test mainly reflects the eight sub-items, including a big question, total 8, the specific content of the test was illustrated by Table 4.

As we can be seen from the above data, in the first stage of a total number of eight schools, although this stage are placed at the front of the undergraduate group, in all the universities of the second batch of universities, and includes a middle ones of the first batch universities, Then the best of the second batch universities and the
middle ones of the second batch universities followed as the second level. And the middle ones of the second batch universities and the colleges are belongs to the third level, the number of this level is 15, individually is 5 and 9. However, there are totally 21 of the fourth level of universities. This level stage is a mostly middle reaches of the schools, the number is 18. Among the rest four distributions of levels of universities, the seventh is more complicated, it has a different analogy among each level. There are 27 universities in level fifth, mainly are the middle one of the second batch universities and best ones of the colleges, number is 10 and 13. And there are 31 universities in the sixth level, which involves a number of various categories of undergraduate, and also the first 2 categories of the colleges, the number was 1, 8, 13, 2 and 7. With regard to the seventh and eighth level, mainly are colleges, a total number of institutions in the seventh level is 44, while the former two categories, respectively, colleges occupy 11 and 24. Among eighth level universities involved a total of 31, which are mainly from the middle and lower class of the colleges, number is 15 and 8 respectively.

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<th>Table 1. The result of the original 9 types of universities</th>
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<td><strong>Original 9 types</strong></td>
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<tr>
<td><strong>Number of the universities</strong></td>
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<td><strong>Average score</strong></td>
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<td><strong>Rate of the scores</strong></td>
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<th>Table 2. The eight test item</th>
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<td><strong>Item 1</strong></td>
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<th>Table 3. The 9 levels of sub-items</th>
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<td><strong>Type of the university</strong></td>
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<td><strong>category</strong></td>
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<td>3rd level</td>
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<td>4th level</td>
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<td>8th level</td>
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<td>9th level</td>
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<th>Table 4. School clusters survey data</th>
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<td>The original 9 types</td>
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<td><strong>University types</strong></td>
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<td>Nine</td>
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<td>Total</td>
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As can be seen from Table 4, the process of a university ranked in the forefront of the school during the school clustering mainly distributed over the third level, and this proportion has been reached 86.6%, however, the
middle ones during clustering process mainly distributed between the second level to the sixth grade in school and nearly half of these universities are in the fourth level. The universities came in a thick cluster of schools in the process mainly distributed between the sixth level to ninth level, and in this part, there 85.7 percent were divided to the sixth to eighth level of universities. However, there are 50 percent forefront of the universities can be included in the second level during the clustering process, and the one third of these universities are placed as seventh level. The middle ones are mainly distributed in the fifth level, while the rest of the schools were all in the second to the seventh level. Among which there are schools, mainly are in between the sixth to ninth grade, and proportions of the fifth level and seventh level has reached 79.69 percent, but the rest universities are mainly distributed in the last two levels, in which the last level accounted two-thirds of the total.

3.3 Discussion

These learners are typical intermediate, upper-intermediate, and advanced L2 adult learners, who are proficient readers in their first language and have had many years of foreign-language learning experience. Their unique educational background and language learning experience make them good examples with which to illustrate the impact of various teaching approaches on learners' foreign-language performance. Furthermore, research conducted in the background of such a group of learners is also a new area of exploration. Regarding the above-mentioned context, this research, which adopted a quantitative research methodology, acquired its findings based on two questionnaires. Questionnaire 1 aimed to elucidate learners' overall attitudes and interests in terms of reading in English before they undertook training in the OTC at SHISU. The objective of Questionnaire 2 is to investigate their changes in attitudes and interests in the same area after their participation in the language training. It is found in the research that the implemented post method reading framework has been positively recognized by the students and the students' performance, as well as their motivation in English reading, has seen a definite growth after their short-term training. Thus, the findings justify that the adoption of the post method reading framework can help adult L2 learners develop effective reading and learning strategies within a short space of time, and thus overcome a distinct difficulty— that is, a failure to employ appropriate strategies to comprehend and reconstruct meaning on a multi-dimensional scale— that confronts Chinese adult L2 learners. The findings also justify that the adopted framework can provide the teachers with substantial room for further exploration and application of personal expertise so that the outcomes of teaching and learning can be maximized, thus moving a step further towards learner and teacher autonomy.

The latter context of this research is placed in some senior high schools where the New Century Senior English (NCSE) is used as the course book. The NCSE is the senior high school part of “New Century English”, a series of course books catering to the needs of students from the primary school year-one level to the senior high school year-three level (encompassing 12 years) in economically developed areas of China. The TEXT component of the NCSE follows the post method reading framework presented by this research. Analysis of data derived from the study that adopts both quantitative and qualitative methodologies justifies that the post method reading framework implemented has achieved the goal of upgrading learners' English reading and overall language performance. Also, the framework, which features the authentic process of reading and incorporates strategy building and meaning construction, leaves much room for practitioners to make further explorations and generate their own unique outlooks and theories regarding the activity of teaching of reading; thus, it helps promote teacher autonomy by equipping teaching practitioners with a new and dynamic perspective towards foreign-language reading. The findings from both studies justify that the objectives of the research— to eradicate the difficulties confronting Chinese foreign-language reading pedagogy and to enable both teachers and learners to become more autonomous and independent— have been met. With foreign-language reading placed within a situation-specific, context-sensitive, and need-based post method framework, this research has been proved to be helpful to participants of foreign-language education to learn how to achieve a dynamic interplay and growth of knowledge through the contribution of both teachers and learners.

Based on the cluster analysis on the nine original classification, the results show an upper, middle and upper schools in two of the first two levels of the hierarchy, the ability of the students' learning English is higher. Only students from the upper levels reached average eligibility requirements in the colleges, which reflected that the general level of English learning is relatively low.

Table 4 shows the various ability levels of students, in which, the third, eighth items are relatively low, while it has many reasons for the poor performance of the item three, one important reason is that the understanding of English essay instructions, especially the lack of deeper understanding on the structure. The eighth item is aiming at testing English writing skills, in which students should integrate English knowledge and express
themselves in a proper way; however, it is the disadvantages of college English learning, so it is not surprising that they got lower scores in this item.

Table 4 shows that, although a school students’ English learning levels are relatively high, the phenomenon of the visibility of distribution various in multiple levels, so this kind of imbalance balance needs to be improved, and some relatively good universities have poor performance of English learning achievements. It is one that encourages teachers to find more research questions and participate in research throughout teaching practice; it is one that is undertaken by both teachers and researchers for the purpose of better understanding the problems and putting their findings directly into use. It increases the possibility of solving these problems quickly and efficiently and correcting students' wrong study behaviors. There are 13 universities did not meet the eligibility requirements of English learning, thus enhancing the English reading teaching in these universities is a priority; the performance of the upper level colleges English reading teaching also showed greater variability, which distributed in different hierarchical levels.

4. CONCLUSION

The author adopted one group pre/posttest methods to compare these variables: student’s goal setting, their learning material, their learning strategies and evaluation. After processing these findings from 8-week action research the author was able to obtain the quantitative data; then he went on to operate several interviews where data seemed extreme or implausible, which combined with the analysis of field journals and teacher’s diaries will form the qualitative data. In the end, the author reached the conclusion:

1. After 8 weeks, the results of research shows no significant change in students’ beliefs regarding goal setting, independent action and evaluation, however their strategies regarding these aspects have been greatly improved. The overall tendency of changes of the learner autonomy development is heading to the expected direction, which proves that students’ learner autonomy can be improved by using internet resource.

2. Internet stores large amount of information, rich in contents and various in forms, which can provide students an ideal platform for language learning and communication. Besides, the knowledge that students learn from internet will make up to the narrowness of teaching materials in the classroom’. In the long run, students’ motivation and interests in learning English will be increased.

3. Many factors inhibit the development of learner autonomy and these are the most common ones: the lack of motivation and appropriate goals; wrong learning materials and strategies; the constraints from teacher-centered teaching and achievement-oriented testing.

4. Teachers play an indispensable part in fostering students’ learner autonomy while using internet resources: they provide training on learner autonomy; they help students set proper goals and adopt better learning strategies; they coordinate between students’ classroom study and after-class learning. It is hoped that the findings of this study can shed some light on the study of computer ‘assisted language teaching and students computer-aided learning, and also help college teachers and students better adapt to the new changes and new environment, and improve college students English computer-aided learning abilities.

REFERENCES


