Application of Computer aided Collaborative Learning Model in English Virtual Electronic Teaching

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Abstract—In order to improve teaching quality, the collaborative learning model was applied to English virtual electronic teaching. A virtual e-learning platform suitable for English teaching was constructed. With the help of collaborative learning, students' English learning psychology was reshaped. The results showed that the collaborative learning model eliminated students' resistance and strangeness in English virtual electronic teaching. Students' enthusiasm for learning was stimulated and learning efficiency was improved. To sum up, this method effectively improves the effectiveness of English virtual electronic teaching.

Keywords—collaborative learning, English, virtual electronic teaching

1 Introduction

Collaborative learning is a vocabulary that is highly valued by today's society. With the advent of computer network technology, collaborative learning has a deeper meaning. It has subtly changed the students who are only children of the modern age. Due to the background of the times and the rapid development of computers, it has made collaborative learning become more and more significant. This has constantly made up for their shortcomings and nurtured their habits and personality. Its role in the junior high school students is particularly evident.

Collaborative learning is the demand for interpersonal communication and new education models, the requirements for a low-carbon life, and the unique personality traits of the new generation. In 2006, Google CEO Eric Schmidt first proposed the concept of "cloud computing" at the search engine conference. Since then, the concept of cloud computing has gradually entered people's lives and consciousness. The three-tiered industry of cloud computing is cloud software, cloud platform, and cloud equipment. The cloud computing platform's collaborative capabilities are very powerful. Its emergence has driven cloud computing-assisted education. The education model has also undergone tremendous changes and innovations, especially for the educational research of higher education institutions. Collaborative learning is an advanced product of the cloud era. It is a requirement in contemporary interpersonal communication and also provides a new place for mobile learning.

Cloud computing platform network collaboration can effectively reduce the "high carbon" caused by computer processing. In school education, "virtual electronic schoolbags" can reduce the waste of paper printing. Therefore, with the help of the virtual electronic platform, the contemporary student learning environment can be properly migrated, which has greatly changed the previous high-carbon consumption model.

Under the influence of the cultural wave, students' mastery of English and their emphasis on English have shown an upward trend compared to previous or other regions. As one of the core courses, English has become a difficult problem that students must overcome. Therefore, starting from both the students and the teachers, difficulties and confusions in English learning were found to solve the teaching bottleneck. Modern information technology tools and interdisciplinary English courses are applied. Some means of intervention are properly adopted. It can effectively change the current misunderstanding and learning status of English learning. Students no longer fear English. Finally, the acceptance and popularity of English are improved.

In this situation, English teaching in a collaborative learning environment needs to be improved. The cloud computing platform is applied to the strategies and methods of personal learning environment construction. It lays the foundation for the establishment of interdisciplinary education and personal learning environment in the future and provides a practical education and teaching program that can be used for reference.

2 State of the art

Regarding "cooperative learning", most scholars have their own understanding. In order to better understand collaborative learning, it is distinguished from the difference in cooperative learning. First of all, cooperative learning adopts heterogeneous learning groups to work together and communicate with each other for common goal group members. Collaborative learning and cooperative learning have in common. They are all ways of accomplishing tasks together. However, the evaluation targets of the two are inconsistent. Cooperative learning emphasizes teamwork, while collaborative learning emphasizes individual performance in teams. According to the new constructivist theory, cooperative learning emphasizes the traditional backward "teacher as the main body", while collaborative learning emphasizes "students as the main body". Therefore, in view of the current educational situation, in order to dis-card the traditional teaching mode of cramming teachers as the main body, the introduction of collaborative learning is necessary.

In 2013, Yazici introduced the theory of collaborative learning. He believes that: "The discipline of collaborative learning theory focuses on the study of the meaning and significance of the creation time in the common environment, and the way in which the designed artifacts are applied as intermediary by these practical activities." [1]

The theory of collaborative learning has attracted the attention of experts in the education sector. As early as in 2013, Mercier believed that collaborative activities in student learning are conducive to the development of students' individual thinking ability, and enhance the ability of individual students to communicate with each other, as well as the ability to accommodate differences among students [2].

Constructivist learning theory holds that knowledge is formed by the interaction between cognitive subject and objective environment. The cognitive subject is the learner, and the objective environment is the social culture and the natural environment. The development of cognition is achieved through continuous construction of the cognitive structure. The development of the construction process is spiraling. In 2014, Popescu emphasized the characteristics of Knowledge Society's construction. He believed that collaborative learning is the sharing of meaning between group members. Knowledge as the basis for learning is constructed by society. Meaning is not packaged first, then delivered to learners and stored in their memory, but is the result of mutual coordination and communication among team members. This is consistent with the orientation of the elements of constructivism [3].

Janssen pointed out in 2009 that the so-called information-based learning environment is a digital learning environment. After digital information processing, this learning environment has the characteristics of information display multimedia, information transmission network, information processing intelligence and teaching environment virtualization [4]. Therefore, the e-learning platform needs to work hard towards the multimedia features of information display, the networking and intelligence of information transmission, and the virtualization of teaching environment.

At present, e-schoolbag is a very good e-learning platform. Because of the introduction of the medium and long-term education reform and development program, the "electronic schoolbag" fever has again been set off in China by digital publishing, IT companies and educational technology. However, Ku pointed out in 2013 that the concept of e-bags development at this stage should be upgraded. The meaning of its connotation should be converted from the previous focus on "reality" to application services that focus on "virtual". The systematic functional framework of e-learning education and teaching is designed so as to realize the real burden of e-bags, that is, a spiritual burden reduction [5].

In 2015, Zheng pointed out that the electronic textbooks in e-schoolbags are centered on classroom teaching and effectively integrate and enrich interactive teaching resources. Through pictures, audio, video and mutual courseware, teaching content is vividly and visually presented from multiple dimensions. The application of new technologies is combined with classroom teaching. The teacher's lesson preparation, efficient teaching, directional evaluation, student's fun learning and personalized work are realized. The application efficiency and education quality of educational information products have been improved. The real interaction and effective learning between teachers and students are formed [6].

3 Methodology

3.1 Selection of experimental platform

There are several requirements in the selection process of virtual electronic platform.

First, the platform must be easy to understand. It does not require the teacher to create his own website without the need for rich HTML knowledge.

Second, the teacher can freely design the appearance and style of the website according to his own needs.

Third, only one account can be used to remotely log into the cloud's e-schoolbag.

Fourth, the collaboration platform must be able to provide forums, announcements, file listings, sharing, and chat tools.

Fifth, users can embed word, excel, ppt, and other files directly in the platform.

Sixth, the user can set the degree of publicity of the site, and can also specify the site's administrators, collaboration groups, and viewers.

Seventh, this cloud computing collaboration platform must be free and open. This is the most basic requirement. For the consumer group of students, the costs that may be generated by the electronic platform should be minimized.

Eighth, for the promotion of virtual electronic schoolbags in the future, when slecting a platform, an account can participate in multiple collaborative teams. This will be of great help to students obtaining more information on subjects.

If the above basic eight points are met, it is a qualified virtual electronic plat-form.

3.2 Design of platform

The Baihui platform is a one-stop collaboration platform that can be better replaced after Google left China. With the in-depth cooperation between Baihui and Zoho, Baihui is unique in China's cloud computing industry and can well meet the above conditions. Therefore, an application design plan was established based on the Baihui platform. The specific plan is as follows:

The basic goal of using the Baihui platform to design a virtual electronic schoolbag for English teaching is to change the pattern, attitude, and learning environment in which students learn English. At present, when learning English, many students presume to complete the teacher's homework, and then the conscious student will buy some extracurricular books as a supplement. Some students follow the trend to buy books, and may just enjoy the process of buying books. In addition, they have no more discussion or collaboration time. There is almost no communication between students. This approach to English learning runs counter to the English science that requires practice and communication. It does not meet the learning methods of English subjects.

The emergence of a virtual electronic platform enables students to communicate on the platform without restriction, ask questions, and provide students with a virtual reality learning environment. In addition, the meticulous design and management of teachers is also the way to urge students to correct their attitudes and change bad

habits. It is also one of the important reasons why virtual e-schoolbags can be competent as helpers.

The application design plan of the Baihui platform must be based on computer-supported collaborative learning, which makes the field more meaningful. According to Jonathan, CSCL's collaborative principles are based on constructivist theory. Therefore, seven research-based collaboration principles are summarized. The first is the nature of technology. The second is the composition of the group. The third is learning tasks. The fourth is the role of mentor. The fifth is the formation of a community. The sixth is the nature of the evaluation. The seventh is support for collaboration and knowledge building.

At the technical level, Baihui collaboration platform has certain advantages. The composition of the group is the natural group of the class, and each group has different grades of students. The learning task is the sublimation of theoretical knowledge and values corresponding to the current learning curriculum. The teacher's role is played by the teacher and the author. The assessment is no longer a single screening and selection. It considers the learning process. With these theories as a basis, these seven points must be carefully considered.

The originator of virtual e-schoolbags is e-bookbags, and e-bookbags originate from the students' original bag. On the one hand, it caters to the transformation of information and digital education models; on the other hand, it aims to reduce student's' burdens. Therefore, the design of a virtual electronic schoolbag must be based on a schoolbag. First of all, the examination technique is to provide the problem-solving skills when the exam meets the individual questions. It has certain tactics. The curriculum resources are digitized with the subject and grammar of the learning. They are expressed in the form of ppt. It can also provide students with timely corrections. Learning feedback is a learning feedback form written by students after they have studied a unit. This can not only be viewed after each other, but also can be discussed with each other. It can also provide reference for later learners. The selective reading and extra-curricular development of the article is in line with the principle of selectivity. It does not require everyone to read it. After the teacher arranges preparations, review, etc., the students submit the assignments in electronic form. Finally, the instruction manual of the e-book package mainly provides methods for uploading assignments, forum discussion, and group collaboration, and provides beginners with methods for using new products.

3.3 Experimental background

The main textbooks used in high school in Qingpu District of Shanghai are Oxford English. The content of this textbook is close to life, with diverse themes and rich vocabulary. Each unit is mainly divided into two parts: Reading and More Reading. As to the organization of curriculum contents, the principles of sequence are proceeding from the simple to the more complex. Students' understanding of life is gradually broadened. It is a good textbook.

The experiment began in September 2011 and ended in December 2011.

The main purpose of this experiment is to promote virtual electronic schoolbags during the high school study period, and to observe whether the product can help students' English teaching, so as to improve their performance and lay a foundation for future learning. The learning environment for virtual e-schoolbags should meet the student's taste. They have a higher level of understanding of the profound meaning of the teaching materials. The attitude of positive life and the correct view of the world are gradually cultivated.

The subjects were mainly two classes from grade one and grade two in Qingpu, Shanghai. There are 18 boys and 22 girls. The selection of experimental objects is purely random, which also accords with the randomness principle of experiment and the universality condition of experimental objects.

The experiment is based on brainstorming, group cooperation, classroom interaction and online discussion after class. The whole process of experiment goes through every aspect of student life. Pre-class - in-class - after-school knowledge intensifies students' curiosity. It has also sent a catalyst for learning to students who are less knowledgeable. Through two questionnaires for pretesting, students' knowledge of the English learning model, attitudes, expectations, requirements for English teachers, and awareness of collaborative learning and virtual e-schoolbags were analyzed. Then, the design of the virtual electronic schoolbag, the popularization of the concept, and the operation and familiarity of the virtual electronic schoolbag platform are performed for the front side result. Finally, the post-test was performed to analyze the impact of the virtual e-schoolbag on the experimental subjects, their effects, and their adoption.

3.4 The process of teaching implementation

Pre-learning session is a headache for many course teachers. For students, their magic weapon is to make sure that the teacher's examination is impossible. Even some students with good reading performances cannot guarantee that they complete the preparatory work completely. This also creates an embarrassing situation in which the teachers' preparatory work can be dispensable.

Since there is an online virtual e-book package, teachers can monitor their students' learning situation without any scruples. The online supervision function of the virtual e-schoolbag is undoubtedly the student's nemesis. Teachers can arrange preparatory work in various forms. Students can log in to e-books online.

Interdisciplinary pedagogy is used in English classes to take advantage of the fact that computer-based English classes are used. Some students frankly stated that once the English language was integrated into the "bilingual teaching" model of other courses, students were very disgusted with English. However, current computer interdisciplinary education can completely dismiss students' interest. It can be seen that such an attempt has a positive effect on students' confidence, curiosity, and seeking compassion.

Consolidation after class is the last crucial step in the teaching process. If students do not review, knowledge is not solid. The reason why teachers arrange assignments

daily is the consolidation of knowledge in the classroom. Therefore, how to consolidate after school is also a key link in the success of teaching.

For after-school consolidation, forums, file uploads, and collaboration features on the virtual e-schoolbag platform are utilized. The forum discussion can not only cultivate students' equal conversations, but also establish the advantages and bene-fits of all things and maintain their own opinions. In addition, from the perspective of English teaching, the forum's full English-style answering method can help students develop their translation and composition skills. Moreover, each question's relevance to the text also allows students to better understand the text and become familiar with the phrase. The teacher can receive the student's reply via the email associated with the platform. All information is instantaneous. Therefore, the teacher can under-stand the student's response and learning progress well.

The summer and winter vacations are a long period of time. The emphasis on English learning is perseverance. Recycling can be used to back up the flow and put it in the battle.

As the administrator of virtual e-schoolbags, teachers must not relax on vacations. They must establish a good habit of students to pay attention to the forums every week so that they can establish a good English learning atmosphere.

PPT is used to make digital stories or lesson summaries and previews. The evaluation looks very difficult. However, students should be strict with themselves while constantly taking into account their roles within the group. It not only benefits the team members, but also provides other group members and even later learners with better learning opportunities.

In addition, every time, in the form of a group, each person takes turns in giving speeches and reports, the first place is selected, and awards are given to the group. In order to prevent some students from making up their minds, everyone who works as a speaker in each group must take turns to take part. Finally, at the end of the period, the group with the most awards was awarded a certain material reward. Although gifts are limited, they can inspire students to learn English with a positive attitude. The key is that everyone's collective sense of honor has also been elevated.

4 Result analysis and discussion

Before the experiment, the author made an understanding of the students' English situation and their understanding of collaborative learning and e-schoolbags. First of all, 40 questionnaires were issued on “Investigation on High School Students' English Teaching Models”, 39 were recovered, and the recovery rate was 97.5%. Subsequently, 44 questionnaires on the “Study on the Characteristics of Students' Communication and Communication in the Network Collaborative Learning Enviroment” were issued, 44 were collected, and the recovery rate was 100%. In the process of teaching, 40 questionnaires on “Investigation of Electronic Schoolbags” were is-sued. 40 parts were recovered and the recovery rate was 100%. The following are data analysis of several typical cases that reflect the situation in the three questionnaires.

Question 1: Under the contemporary model of new education, if you implement interdisciplinary education in English teaching, what discipline do you think will benefit English learning? The result is shown in Figure 1.

Nearly 90% of students believe that the application and teaching of computer network technology can better play a role in interdisciplinary teaching. This is also a curriculum combination mode that students yearn for. As the saying goes: "Interest is the best teacher." Therefore, under the premise of learning quality assurance, students' interest is the essence of the discipline spirit.

Question 2: Why is it that you are not very serious about completing non-script assignments? The result is shown in Figure 2.

The result of this question was unexpected. Most students actually did not do homework because they did not have time. If the teacher does not get homework when checking, the students answer in unison “The teacher can't basically check whether it's done.”

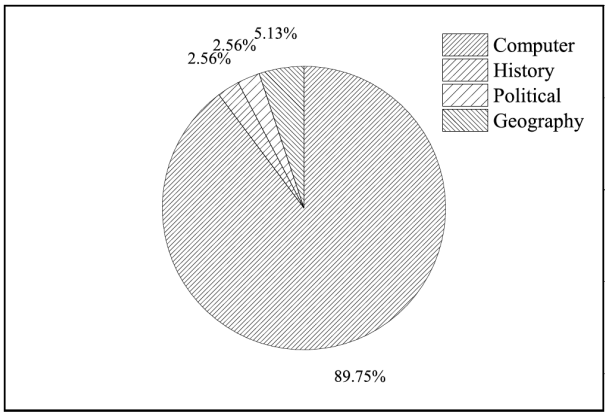

Fig. 1. The result of question 1

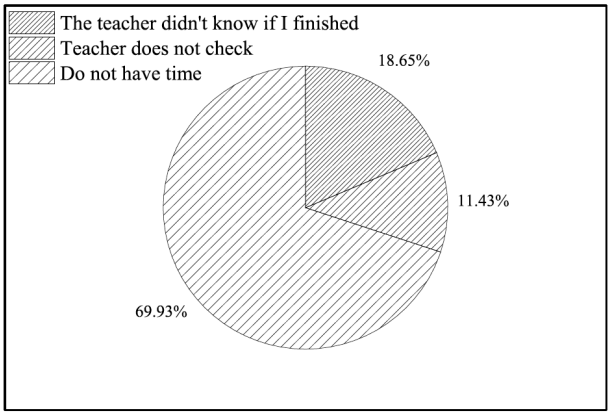

Fig. 2. The result of question 2

Question 3: During the summer and winter vacations, how much time do you study English every day? The result is shown in Figure 3.

As we all know, the essence of English learning lies in continuous dictation and reading. Then, for the blind areas where the teacher can't be taught during the winter and summer vacations, how can we urge students to make better use of it? First, through surveys, about 46% of students will use 30 minutes to complete their vacation operations. What about the remaining students? They will finish their assignments on the last day of the holiday. This is all but harmless. Therefore, virtual e-schoolbags can provide students with a rich pool of questions and tests of different types so that students can maintain their learning atmosphere even when they are not on vacation.

Question 4: Do you think that English class can greatly improve English learning? The result is shown in Figure 4.

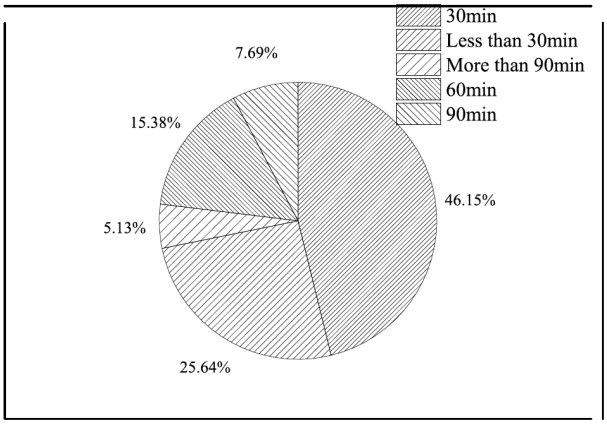

Fig. 3. The result of question 3

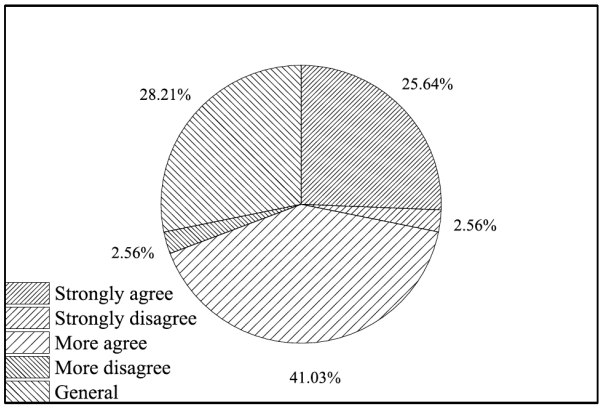

Fig. 4. The result of question 4

Surprisingly, 28% of the students thought that the English class helped improve English learning. Thus, after further understanding, the student's answer is as follows. English teachers are more likely to use words only when they are in class, but they are not really applied to practice. In addition, the acceleration of class progress has made it impossible for middle school students to keep up, resulting in more pronounced dichotomy. They believe that the timely remedy after each class is one of the ways to improve performance. Therefore, as teachers, it is necessary to ensure that every student has equal opportunities for education. The permanent storage and uploading of updated content in virtual electronic school bags can solve the learning problems of these groups.

Question 5: Will you maintain your own position and independent thinking skills in conducting collaborative learning on the Internet? The result is shown in Figure 5.

From Figure 5, most of the students in the network environment can better maintain their own position and independent thinking ability. Compared with traditional classrooms, the network environment is quiet. It can provide enough thinking time. Collaborative learners can better balance the answers of other students and their own. All these contribute to the cultivation of students' ability of independent thinking. Therefore, it is favored by most students.

Question 6: Do you think your value is reflected in the environment of virtual e-schoolbags? The result is shown in Figure 6.

77.5% of the students experienced the charm of virtual e-schoolbags and considered their value to be reflected. This is also the realm that traditional teaching can-not achieve.

The analysis of teaching achievement is mainly based on the comparison be-tween the English learning process and the examination results before and after the students use the virtual E-Book Package. From the experimental process, the tacit agreement and communication between students increased. It also conforms to some of the advantages of collaborative learning.

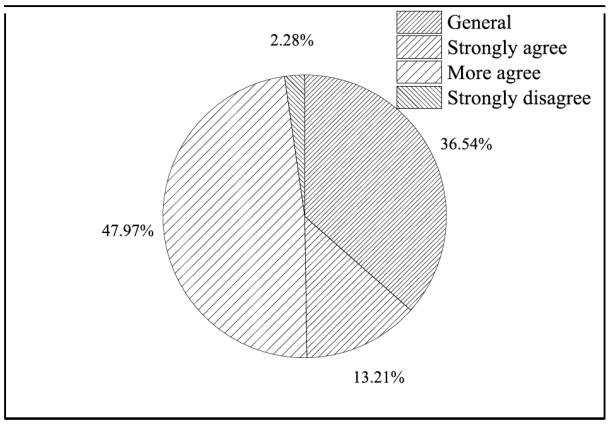

Fig. 5. The result of question 5

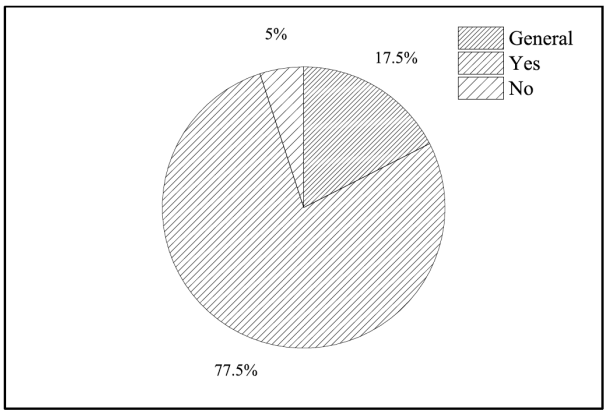

Fig. 6. The result of question 6

By comparing students' final scores in the last semester, the scores of the major questions were compared with those obtained by using the virtual E-Book Package. The specific results are shown in Table 1.

It is not difficult to find that the average score increased by nearly 13 points. If the grade and knowledge difficulty are not considered, the total score rate is increased by 24.2% percentage points. In particular, translation, listening and finishing are closely related to the knowledge base in the e-book package, the hard supervision of teachers and the efforts of students themselves.

Table 1. Comparison of scoring rate

	Listening	**Vocabulary**	**Cloze**	**Reading**	**Translation**	**Average score**
Score(Before)	53.8	52.6	52.5	60.1	47.3	53.3
Score(After)	66.3	73.0	65.8	62.1	64.0	66.2

5 Conclusions

Collaborative learning environment can not only solve the weaknesses and shortcomings of the contemporary only child students in character, cosmic view, world outlook and so on, but also can better make every member of the learning community get the opportunity to receive education. The concept of virtual E-Book Package is introduced into high school English teaching, which creates a good personal learning environment for students. Students cannot forget English in their spare time, this practice makes perfect. It is a subject that needs to be accumulated.

This experiment can be called a leap attempt. For the first time, the digitalized English teaching mode was introduced into the school for the first time, or it can be called interdisciplinary teaching. The elements of information technology are truly integrated into English teaching. This is not only a requirement for students' skills in the 21st century, but also a direction for future teaching reforms.

To a certain extent, collaborative learning in online virtual e-schoolbags is positive for most of the students. However, it is unavoidable for students to use the computer to supervise the case. In addition, because collaborative learning requires the equality of students and teachers, teachers must also strengthen education in the offline market. Teachers should also pay attention to the communication with the parents of students and establish a harmonious teacher-student-parent relationship, so as to effectively avoid some bad influences. It makes the benefits of virtual e-schoolbags to students greater than negative.

This experiment is only a study of the design of virtual electronic schoolbags in English teaching, and it is a separate study on a subject. The success and popularity of the experiment can allow teachers in other disciplines to follow and design a virtual e-schoolbag that suits their subject.

In summary, the emergence of virtual electronic schoolbags undoubtedly bears the role of pioneers in educational reform. Schools should form a discipline design team to properly plan it. It must be able to affirm and support the promotion of virtual e-schoolbags.

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