

# Using and Improving Automated Evaluation of Writing from Students' Perspective



Keyu Zhai<sup>1,2</sup>, Simi Chen<sup>3,\*</sup>, Mingjie Li<sup>1</sup>, Dandan Zeng<sup>1</sup>

<sup>1</sup>School of Foreign Studies, China University of Mining and Technology, Xuzhou 221116, China

<sup>2</sup>Centre for Australian Studies, China University of Mining and Technology, Xuzhou 221116, China

<sup>3</sup>College of International Studies, Southwest University, Chongqing 400715, China

**Abstract:** As a newly-rising online tool, Automated Evaluation of Writing (AWE) combines multiple functions of improving the writing, playing an increasingly important role in the teaching of English writing in China. It has attracted more and more scholars to conduct the relevant research. However, rare studies noticed the students' perspective. In view of this, this study follows the guidance of metacognition, constructivism, activity theory, dynamic assessment theory and output hypothesis in order to figure out what students can utilize with AWE, which gives a boost to the actualization of the practical value of AWE and most importantly, the development of students' English writing. To obtain real feedback from students on AWE (take Correcting Network for example), this study applied the method of questionnaire and interview to collect data. In this way, we concluded the comments on AWE from the perspective of students, and found out the ideal practice to benefit students in their English writing. According to the analytical results, this study developed a student-centered model that mobilized the resources available to students in their learning. Because of the limitations of AWE for improving students' writing, help from teachers, other students or peers, and even students themselves should play an active role in the use and improvement of AWE.

**Keywords:** AWE; Feedback; Development of Students' Writing; Evaluation of Writing; Students' Perspective

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## 1 Introduction

### 1.1 Background

English teachers tend to face the overwhelming work in terms of providing writing feedback, and thus an intellectual correcting tool is of necessity to solve this problem. Meanwhile, in order to promote the efficacy of teachers' feedback, "Automatic Writing Evaluation" (AWE) is regarded as a new approach to providing writing feedback in addition to traditional feedback from teachers. And it has been gradually introduced to the field

of English writing and teaching these years. In the 1960s, the AWE system was first applied to provide feedback in Educational Testing Service (ETS) in America. In the late 1990s, a newly developed AWE system was consisted of Intelligent Essay Assessor (IEA) by Foltz with his colleagues and E-rater (Electronic Essay Rater) by Burstein [1-4]. Domestically, AWE system encompasses the automatic writing scoring system for Chinese students, teaching platforms of writing resources, and Correction Network—a software to correct an article within few

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\*Corresponding author: Simi Chen, 1193401531@qq.com

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seconds with scoring and giving feedback simultaneously. The contents of feedback include grammar and vocabulary such as correcting the misuses of vocabularies, discerning similar ones and highlighting phrases.

## 1.2 Significance of the Study

High-pitched discussion was sparked in AWE. The favorers held the views that enormous resources of human, materials and finance could be reduced by AWE compared with human scoring, which enhances both the scoring efficiency and quality of high-risk tests on a large scale. Besides, it is more stable for the devoid of credit impairment caused by Halo Effect, fatigue, strain and central tendency. Hence scores derived from computers are equipped with reliability in the sense of statistics, which are useful and explicable for distinguishing the writing standard of students. In terms of the opponents, they criticized the lack of humanistic care and subjective diversity unlike humanly reading and appraising in the procession of AWE, leading the uncertainty of gauge validity. Considered as deviation of the communication between humans, the essence of AWE is not for social interactions which is tantamount to depriving the language of its communicative purpose when the articles are only “unrelated workpieces”. The researchers who work on writing teaching think that adverse effect will be triggered, worrying that the teaching regression of the emphasis on vocabulary and complexity of sentence patterns would deaden the innovation in students’ writing. Thus, the learners and examinee are apt to accentuate the staid measures conforming with the mechanical algorithm in order to get higher scores. Therefore, the research on the universality of AWE and ferreting out the most beneficial feedback approach to boosting the writing development of students is of pivotal importance.

## 1.3 Research Aim

To research the practical value of automatic evaluation of writing for students, and figure out an ideal way to improve students’ writing ability with the assistance of AWE. This study improved the automatic evaluation of English writing from the students’ perspectives. This study conducted research from a new perspective ie. students’ perspective in order to complete the previous study. By collecting first-hand data through the questionnaire and interview method, this study increased the empirical knowledge of automatic evaluation of

English writing. Meanwhile, this study aimed to make up for the shortcomings of automatic evaluation of English writing in practical application, improve automatic evaluation of English writing with the help of students’ perspective, and establish a comprehensive and applicable evaluation model of English writing for English majors.

## 1.4 Research Questions

- (1) How would English major students view Automatic Evaluation of Writing?
- (2) How can AWE realize the maximal value from students’ perspectives?
- (3) In a writing environment, what can be mobilized to offset the weakness and make better use of the advantages of AWE to promote students’ writing ability?

## 2 Literature Review

### 2.1 Studies on Evaluation of Writing

Based on the current situation of English writing teaching in China, Huang constructed a writing feedback mode with multiple feedback on the basis of the principle of “promoting learning by feedback” and combined with the teaching practice of English writing. Huang expected to help cultivate the consciousness of college students to modify their English compositions independently and improve the effect of English writing feedback and the teaching quality. Aiming at the shortcomings of previous studies on English writing feedback, Huang took this opportunity and combined the relevant theories of English writing teaching and language testing to provide lexical feedback for students’ English writing by adopting “multiple feedback” (AWE feedback, teacher feedback and peer feedback). Teachers’ feedback helps students to use vocabulary more idiomatically and accurately, and it is easier for students to find appropriate words to express their thoughts. Peer feedback provides students with opportunities to learn from each other and share their learning, which helps to cultivate students’ sense of teamwork [5].

Teacher feedback refers to the effective information provided by teachers for the gap between students’ learning performance and teaching objectives, and the information that helps students to correct their English writings [6]. Teacher feedback, as one of the important links in the teaching process, emphasizes the information

connection between teachers and students. Through feedback, teachers and students constantly interact with each other to promote students' development. However, teachers' feedback is also easy to be ignored by students, which can not reach the expected guidance effect [7].

Peer feedback has the same or the same positive impact as teacher feedback and the two are independent of each other. Grouping students into a team and working together to read, judge, polish and revise each other's essays can not only foster teamwork but also effectively complete the writing task.

Providing comments to peers is the most effective evaluative activity and has a significant long-term impact on learning directly [8]. If students pay more attention to the content and organizational structure of articles, actively point out problems and give specific solutions, their own writing performance will be better and better [9]. Wu and Schunn [10] invited 186 high school students to analyze the mechanism of providing and receiving feedback in peer review on learning. They found that reviewing others' writings was beneficial to students' revision of their own advanced and elementary writing problems. The number of feedback comments provided was significantly positively correlated with revision and second writing performance, and providing comments promoted revision improvement and writing learning [10].

## 2.2 Studies on AWE

Foreign studies started relatively earlier to focus on AWE, and abundant achievements have been made. In earlier times, the researches were mainly focused on the benefits and efficacy on bilingual writings. These years, the users, students have become the target in exploring AWE. In a college in the Midwest America, Ranalli carried out research on 82 students who used AWE in ESL writing [11]. It turned out that the ability of using AWE was influenced by "accuracy". The result of another survey demonstrated that comparing general feedback with specific one, the effective corrections of errors were less. Affected by these elements, strategies of avoidance students might take to make some adjustments such as "re-setting or deleting the error parts and even ignoring the feedback". In Koltovskaia's esteem, students with higher English levels were more suitable in using automatic feedback for the reason that the lack of language ability would not only encumber the full apprehension of its feedback contents, but also limit the cognitive understanding if relying on automatic feedback

too much, leading the blind reception of the feedback [12]. However, the result revealed from a research conducted by Chen and Cheng differed diametrically. According to Chen and Cheng, students who are equipped with more conversant language ability did not show more necessity of the automatic feedback to promote their writing skills [13].

Domestic researches on AWE are still in the infancy stage at present, and empirical studies emerged. Bai and Hu investigated 30 Chinese sophomores who were majoring in English on their reception of AWE [14]. The result manifested that despite of their higher perceptibility of AWE, their reception to the feedback was not optimistic. Although the direct correction like spelling and spacing adjustments was smoothly proceeded, a series of obstacles students were confronted with in the correction of synonyms or words matching. Further studies are required to find out the English proficiency of non-English majors, their reaction of AWE and the methods in response to their reactions since the replacement ability and appropriate feedback could not be hypothesized. Based on the statistical analysis of two Chinese undergraduates, Zhang and Hyland put emphasis on strategies of adjusting how students use AWE [15]. According to the survey upon the interaction opinions, students with higher English ability could make use of AWE more effectively because not merely can they take advantages of online dictionary and other material resources, but also adopt more comprehensive strategies of cognition and metacognition including goals setting, learning methods, evaluation and emotion adjustment. Generally speaking, the potency of AWE imposed on the students who are English majors or not, the higher-language-level or not verifies in different dimensions.

## 3 Theoretical Framework

This study is supported by metacognitive theory, constructivism theory, activity theory, dynamic assessment theory and language output hypothesis from five aspects of writing activity including the central subject, participants, action, writing process and purpose. In this study, I theoretically discussed the value of AWE in the writing process of students. Dynamic assessment theory is used to explain how teachers can promote the sustainable development of students' writing. The focus of language output hypothesis is on the writing activity

itself, which is used to explore the role that students play in improving their English level in the process of continuous writing.

“The richness of metacognitive knowledge, the depth of metacognitive experience and the initiative of metacognitive control will directly affect the consciousness and effectiveness of the central subject's practical strategies” [16]. Metacognitive theory can effectively interpret the behavior and thinking motivation of students as the central subject of the whole writing process. “The learning method advocated by constructivism learning theory is teacher-guided and student-centered learning” [17], which provides a theoretical basis for the participants as instructors, namely teachers, in the process of writing evaluation.

Activity theory can explain the complex dynamic process of achieving goals in the social and cultural environment [18]. And AWE belongs to the intermediary tool in activity theory.

### 3.1 Metacognition Theory

The psychologist John Flavell first proposed the concept of metacognition in 1976 and defined it as “the knowledge of individuals about their own cognitive process and results or other related things” [19]. He summarized metacognition as “knowledge or cognitive activity that reflects or regulates any aspect of cognitive activity”. In other words, metacognition is an individual's cognition and monitoring of his own thinking and learning activities, as well as the cognition of cognition. In Flavell's opinion, in order to accomplish a specific goal or task, individuals will actively monitor and continuously adjust and coordinate the cognitive process according to the cognitive object. Xiao summarized Flavell's definition of metacognition in three aspects to understand it, believing that metacognition is first a cognitive activity or psychological activity [20]. Secondly, the object of this activity is thinking and learning rather than knowledge itself. Thirdly, the object of cognition is not other people's learning activities or general learning activities, but their own special and specific learning activities. Metacognition is the cognition and understanding of individual's own thinking activities, and it is a kind of self-reflection and introspective cognition.

Based on the comparison and analysis of metacognitive research results from home and abroad, more scholars have adopted a comprehensive approach to the metacognitive structure, which is summarized into three

parts. Namely, metacognitive content includes metacognitive knowledge, metacognitive experience and metacognitive monitoring [21].

First of all, metacognitive knowledge is a kind of knowledge about cognition. It refers to the knowledge and ideas stored in individual memory that are not only related to an individual's own cognitive ability, but also related to various thinking activities and experiences. It is the general knowledge of cognition formed in accumulated experience.

The second part is about metacognitive experience. It refers to the conscious cognitive experience or affective experience produced by metacognitive activities. Metacognitive experience is closely related to the environment. Some environments are more likely to produce metacognitive experiences than others. Metacognitive experiences “may be above the level of consciousness or subconscious; It can be an experience of the known, or it can be an experience of the unknown; It can occur at any time of cognitive activity” [16].

The third meaning of metacognition is cognitive regulation, which is also known as metacognitive strategy, namely the management and regulation of cognitive behavior. It is the adjustment mechanism used by an active learner in the process of trying to solve problems, and it is the continuous active and conscious monitoring and management of cognitive activities.

Metacognitive knowledge is the basis of metacognitive control. Only with metacognitive knowledge can individuals conduct self-monitoring, evaluate results, select, modify or give up cognitive tasks or strategies. Second, metacognitive experience can stimulate and guide metacognitive adjustment. Each strategy and step of cognitive regulation will cause the cognitive subject to produce new metacognitive experience. At the same time, it will enrich and develop the subject's metacognitive knowledge.

### 3.2 Constructivism Theory

Constructivism originated from The Swiss psychologist Piaget. The theory of “generative cognition”, which better reveals the cognitive rules of human learning process. The law of “generative cognition” illustrates how learning occurs, how meaning is constructed, how concepts are formed, and what the ideal learning environment needs to form the main elements that it contains [17].

The learning method advocated by constructivism learning theory is teacher-guided and student-centered



learning. Constructivism learning environment includes four elements: situation, collaboration, dialogue and meaning construction. Corresponding to constructivism learning environment of the teaching mode, it can be summarized as: "take the student as the center, in the whole process of teaching, the teacher takes the role of organizer, instructor, helper and promoter. The use of the learning environment elements such as situation, cooperation and conversation bring out the best of the students' initiative, positivity and pioneering spirit.

Scaffolding Instruction is a kind of teaching method supported by constructivism theory. With the help of the term "scaffold" in the construction industry, the scaffold theory vividly points out that the learning process of students is a continuous and active process of constructing themselves. And the teacher's teaching is seen as a scaffold, providing assistance for students, so that students can effectively master and internalize the knowledge and learned skills.

### 3.3 Activity Theory

Activity theory is an important branch of social and cultural theory. As an important part of social and cultural theory, AT (Activity Theory) provides a perspective to explore the activities of second-level learners using learning tools.

The core of activity theory is "What does a person acquire through what process?" It is defined as "the process by which one adopts teaching and learning tools". Through this process, the way of thinking is internalized into the unique way of thinking in specific cultural practices [22]. It refers to the process of transformation by which inter-psychological functions are turned inward and transformed into intra-psychological functions in social interaction with socially constructed artifacts [23]. This internalization process may include sub-processes, such as imitation, attention, goal setting, selection, evaluation and adaptation. When transforming resources from external media into psychological artifacts to mediate higher mental functions, it is applied to writing and language learning [24]. In these goal-oriented processes. Vygotsky's concept of mediation is the key point, while artifacts (i.e., physical tools, symbols) are emphasized as important resources for learners.

The development of activity theory goes through three stages. The first stage is based on Vygotsky's social and cultural theory. Mediation theory is the most basic and important theory in social and cultural theories [23]. The

so-called intermediary refers to the process of "adjusting the social and mental activities of the material world or personal world and each other" [25]. Sociocultural theory holds that the interaction between individuals and society is not direct, but by means of regulatory tools. Regulating tools are created by human beings and they establish an indirect and intermediary relationship with the world through these regulating tools. The second stage is activity regulation theory [26]. Leontiev acknowledges the importance of cultural adjustment, but emphasizes that it is activities that link external social material activities with individual development. He divided activities into three levels: activity, action and operation. Activity is always linked to motivation. And Action is derived from activity but goal-oriented, because a series of activities can be served by a single goal-oriented action. Operation is the means to implement the action, through the operation, the action can be realized, and then complete the goal. However, this level of activity only focuses on the individual of cultural intermediary, believing that human beings only carry out plans, orders and standards imposed on them by the outside world, ignoring the communicative and collective practices of individuals and society. The third stage is Engestrom's collective activity system [27]. On the basis of Vygotsky and Leontiev's theory, Engestrom added layers of collective activities into the triangle model of human activities and formed a collective activity system model.

### 3.4 Dynamic Assessment

The concept of Dynamic assessment (DA) was first proposed by Luria, a colleague of Vygotsky, and later promoted by Feuerstein, a psychologist. Now it has become a hot topic in the field of western psychology and educational measurement research and application [28].

Rooted in Vygotsky's social and cultural theory, teachers are encouraged to observe the progress and change of learners and evaluate their potential abilities through intervention or interaction with learners in the evaluation process. Dynamic evaluation, which aims at evaluating learners' developmental ability, has been introduced into the field of foreign language education in recent years and has become a new theory of evaluating language competence. Dynamic evaluation pays more attention to the process of learning new knowledge and gives feedback to students' behavior. From the evaluation results, the dynamic evaluation is more concerned with what level the learners can achieve, after overcoming

disabilities with the help of the experienced interveners. The core idea is the concept of the zone of proximal development concept. DA holds that person's ability is not stable and inherent in the zone of proximal development, but is the product of individual and social interaction. And it is dynamic [29]. Therefore, to pay attention to the development of a person's ability, we should not only pay attention to the actual level of development, but also pay attention to the area of recent development, that is, to see what he can form and become tomorrow [28]. The concept of zone of proximal development aims to explore and discover learners' learning potential [30] and learning effectiveness, including implicit learning effectiveness [19], through the intermediary intervention and interaction of evaluators with learners.

### 3.5 Language Output Hypothesis

In terms of Krashen's input hypothesis and Swain's output hypothesis, the former was introduced into China in the 1980s and once became a hot topic in foreign language teaching and research. The latter began to be introduced to China in the mid-1990s, but did not get real attention until the beginning of this century.

Considering the input hypothesis proposed by Krashen, Swain proposed the output hypothesis. She believes that it is not enough for learners to achieve a high level of foreign language only with comprehensible input. Writing must urge learners to make full use of existing language resources to think about the language to be output, so that the output language can be more appropriate, accurate and easy to understand.

Swain pointed out that when learners begin to use the target language to express meaning, they will notice the problems existing in their target language, thus activating the cognitive process to pay attention to new information. Attention to language form is the key to language acquisition. Learners constantly make assumptions about language form, and constantly verify, analyze and revise their assumptions to make them fully conform to the target language. Metalinguistic function means that learners think through the target language and connect its form, function and meaning. In the words of Izumi, the output process of language forms the learner's internal promotion mechanism. Language input provides the knowledge foundation, and language output integrates the input content on the basis of understanding and absorption, so as to rebuild a new knowledge system.

## 4 Method

### 4.1 Questionnaire

The research participants were randomly selected from different grades and different English levels to ensure more general results. Finally, 108 valid questionnaires were collected and were completed by students who are majoring at English in China University of Mining and Technology. From questionnaire data, I discussed how AWE plays a role in the writing tasks of students, and how well students made use of it.

Since the previous study by Huang and Zhang, they have got how AWE made a difference on students' writing problems of vocabulary [31]. And on this basis, in order to explore a more comprehensive influence posed by AWE, this questionnaire set 29 questions in total with 26 choice-questions and 3 open-ended questions. The content includes what and how AWE's advantage work in the development of students writing, what and how the weakness hampers, how to improve AWE from students' perspective and what other resources can be put into practice. In the end 108 students submitted the questionnaire.

### 4.2 Interview

In order to realize the value of AWE on the maximal level, what can be mobilized to offset its weakness and make better use of the advantages to promote students' writing ability is of great importance. In this part, the study focused on the practical approaches under the better use of AWE (to take Correcting Network as an example) in order to promote the realization of its value at the maximal level.

I interviewed more students who are majoring in English with different English levels from 4 grades. Then, the results on several dimensions could be concluded.

## 5 Results

### 5.1 Result from Questionnaire

According to Figure 1, Students believe that grammatical errors are most frequently corrected, accounting for 75.93% of all possible error correction components, followed by improper words, accounting for 62.04%. In terms of writing structure, punctuation marks, formatting problems, and misjudgment, they account for

34.26%, 30.56%, 26.85, and 20.37%, respectively. The proportion of weak relevance to the topic was the lowest, only 12.96%.

It is universal for college students who are majoring in English regardless of different genders, grades and proficiency in English that most of them were caught errors in grammatical mistakes and vocabulary mismatches. However, in terms of the connection with the topic, the feedback of AWE belongs to the least frequent group. Thus, AWE is applied to accentuate the basic errors.

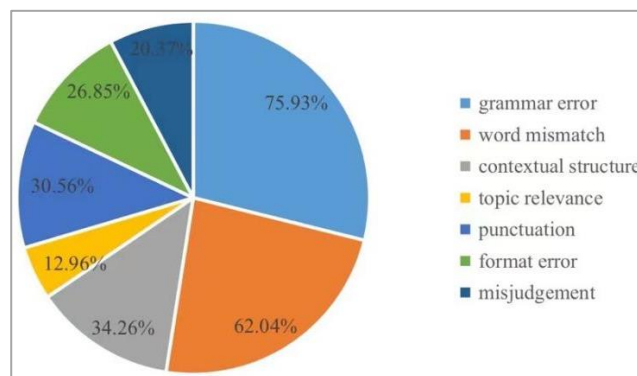


Figure 1 Statistics about the frequent error feedback when students use AWE

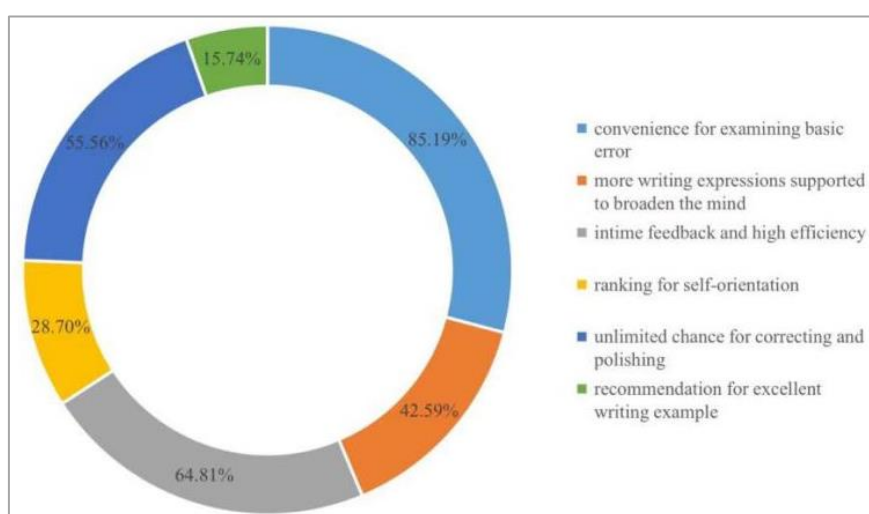


Figure 2 The advantage of AWE

According to Figure 2, among all the advantages that AWE contains, the convenience of examining the basic errors is regarded as the most striking one, which accounts for 85.19%. And the second recognized one is the high efficiency because of its timely feedback. What ranks the third is the support of unlimited revision with the changing of marks in order to polish the writings. Besides, the support of various expressions to broaden the ideas of students accounts for 42.59% is worth mentioning. And the function of ranking among the users takes 28.7%, the last one is the excellent model essay which takes 15.74%.

The statistical analysis testifies that AWE helps a lot in

the examinations of basic errors which was also testified in Figure 1. and the timely feedback with the changing marks which encourages students to further polish their writings also benefits them a lot. For broadening students' thoughts of writing, AWE could be served as a tool to provide many kinds of expression. Thus, AWE could be regarded as the basic error checker and a motivation mechanism.

To further ferret out how students made use of AWE, the author questioned in specific way and made quantification for how students develop their writing skills though the advantage respectively.

Table 1 How Students Feel about the Advantages of AWE

Advantage/Work Extent	Not at all	Not really	A little bit	Half-and-half	Large
Convenience for examining basic error	4	5	31	35	33
More writing expressions supported to broaden the mind	4	20	40	29	15
Intime feedback and high efficiency	5	3	27	31	42
Ranking for self-orientation	5	16	28	38	21
Unlimited chance for correcting and polishing	2	6	26	32	42
Recommendation for excellent writing example	2	16	29	40	21

According to Table 1, for “the convenience of examining the basic errors” and “the ranking function to self-orient their writing skills at once”, students tend to hold a relatively neutral opinion about it. Among the students, the number of them who gave an average evaluation was the largest, but there were also many who said they were very helpful or only a little helpful. For “the support of various expressions to broaden the thoughts of writing”, most of students do not regard it as a good function to improve their writing (with 40 students feeling it is a little bit work, and 25 feel no support).

According to the chart, what benefits the students most in developing their writing skills is the “high efficiency through the timely feedback” and “support of re-writing with the marks changing”. And most of the students do not think highly of “the excellent model essay”.

What most helps students to improve their writing skills when using AWE is its efficient and timely feedback and unlimited opportunities to modify their writing with the changing marks, which could be regarded as the conversion of evaluation from exterior to interior.

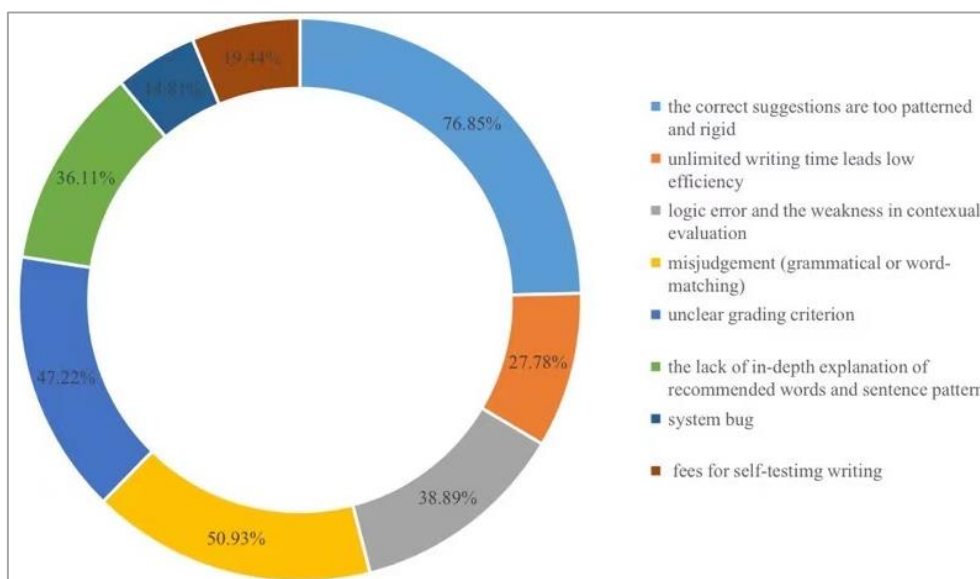


Figure 3 The weakness of AWE

According to Figure 3, of all the weakness in AWE, the most notable one is the overly rigid modification proposals, which accounts for 76.85% of the total, followed by the “misjudge”, which takes 47.22%. Unclear grading criteria and the lack of feedback on logic and structure of writing can also affect students' use of AWE, which accounts for 47.22% and 38.89% respectively. 36.11% of students hold the view that, as for the word or sentence-pattern recommendation, the students think that there is no in-depth explanation so that they have only a

half-understanding.

Restricted by the procedure, if there is no manual participation, the rigid modification and the misjudgment including accentuating the mere dimension of grammar rather than context have a great impact on exerting the role of AWE in the development of students' writing.

To explore how the weakness of AWE hampers the development of writing, the author questioned in specific ways and made quantification respectively:

Table 2 How Students Feel about the Weakness

Weakness/Influence extent	Not at all	Not really	A little bit	Half-and-half	Large
The correct suggestions are too patterned and rigid	4	13	40	30	21
Unlimited writing time leads low efficiency	11	27	33	28	9
Logic error and the weakness in contextual evaluation	3	19	40	37	9
Misjudgement (grammatical or word-matching)	3	15	39	37	14
Unclear grading criterion	3	19	36	36	14
The lack of in-depth explanation of recommended words and	3	18	32	37	18



Weakness/Influence extent	Not at all	Not really	A little bit	Half-and-half	Large
sentence pattern					
System bug	8	28	32	27	13
Fees for self-testing writing	9	27	29	28	15

According to Table 2, the statistical result is generally parallel with that of Chart 4. According to the data, In the use of AWE, 21 students thought that the patterned correct proposal put a great influence on the development of writing, which is regarded as the most prominent one compared with other flaws. What ranks second is the lack of in-deep explanation for the recommended sentence pattern (which 18 students agree with). And the “weak evaluation ability of logic and structure”, “misjudgment” and “unclear criteria of evaluation” also influence students' writing development to a certain extent.

Although there are different ways that AWE could function in the development of students' writing ability, the weakness can not be ignored.

I discussed the necessity of teachers' work during the use of AWE, results are as follows:

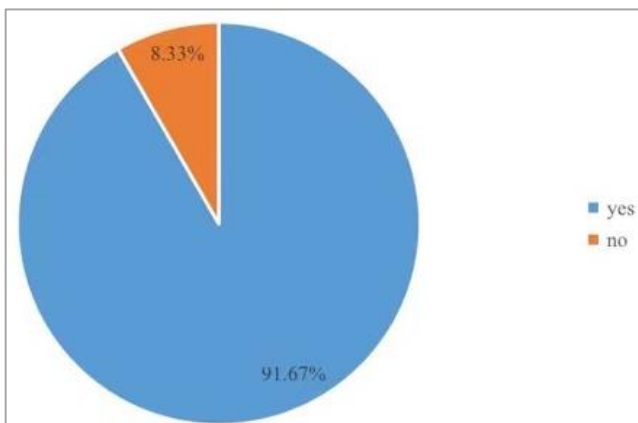


Figure 4 Students opinions on whether teachers should be involved

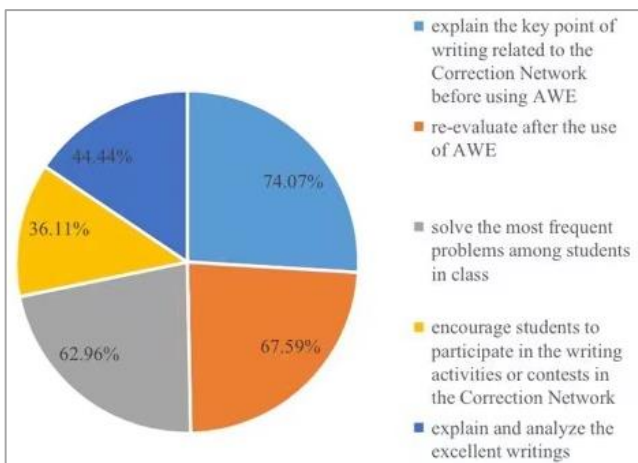


Figure 5 How teachers assist with AWE

According to Figure 4 and Figure 5, 91.67% of students show their need for the involvement of teachers when they use AWE in several ways, including “pre-use”, “during-use” and “pro-use”. In an interview among the students, the study explored how AWE is able to actualize its value. (In the interview, some statistics from the questionnaire also helps).

## 5.2 Results from Interview

### 5.2.1 The Function of Teachers

**pre-use:** Following the writing assignment, the teacher should explain the title or requirement of the task immediately to ensure the student's writing is related and correct (by Han, sophomore). If possible, the teacher can help the students to clarify the context and framework of the writing (by Zhang, sophomore). If necessary, teachers should focus on reminding students of the main points and difficulties of writing in advance. In addition, for the content of the article, brainstorming activities can be carried out to expand students' thinking, so as to achieve rich and detailed content of the article (by Tang, freshman). Due to the evaluation of the Correcting Network procedure, teachers should ask students for critical use of the AWE tool in advance (by Yang, Junior).

**During-use:** In the process of students using Correction Network, teachers should always pay attention to students' feelings and needs. As for the typical AWE tool in China, Correcting Network often provides some writing contests on its website, where teachers can appropriately mobilize students to participate and give guidance to the participating articles. In addition, as the correction network system does not limit the chance and time of modification, teachers can limit the chances of students' modification according to the actual situation (teachers can see it in the background programme). (By Nuo, sophomore).

**Pro-use:** After the evaluation of students' writing on the Correcting Network system, the majority of students believe that teachers should collect students' writings first for second evaluation to avoid the misjudgment of the Correcting Network (by Guo, senior). Secondly, teachers should explain and emphasize the common problems of students, and provide some suggestions for the

modification of writings, such as the replacement of words and sentence patterns (by Tang, freshman). Third, teachers can follow the writing suggestions provided by the Correcting Network, such as sentence patterns and word recommendation, to expand and explain in depth (by Zhao, freshman). Fourthly, teachers can praise and show the excellent writings to students (by Mu, freshman).

### 5.2.2 The Improvement of AWE

In terms of the improvement, students gave the feedback both in the questionnaire and interview.

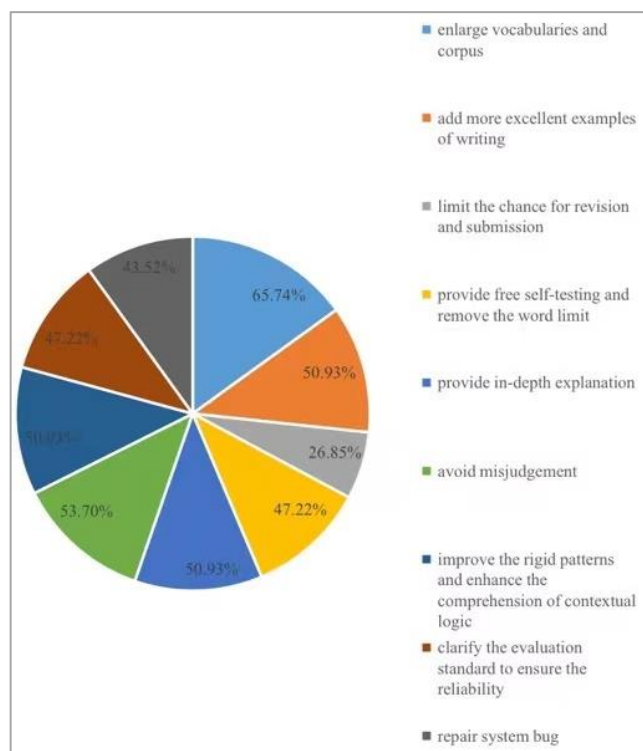


Figure 6 Results from Method I

**Supplement:** Provide an in-depth explanation of recommended sentence patterns, famous quotes, words and so on as a reference for students to improve their ability. In this way students are able to learn the subtle vocabulary sentence patterns and western logical thinking from the recommended, giving a boost to the improvement of English learning ability (by Tang, sophomore). In addition to the suggestions on the modification of words and phrases, the correction and revision of sentence patterns can be added, and the recommended expressions can be flexibly changed according to the context (by Liu, Junior).

**Refinement:** Reduce errors of judgment and system such as submission failure, submission waiting intervals,

and text blanking (by Han, sophomore). Diversified expansion of corpus, such as English CET-4 and CET-6, TEM-4 and TEM-8, as well as postgraduate English IELTS and TOEFL English. Other words and sentence patterns are needed to constantly be added in order to improve the authority of Correcting Network (by He, junior); Learn about the verbal logic of Chinese speakers and give criticism or feedback to correct students' Chinglish (by Tang, sophomore); Make use of the western thinking structure appropriately to avoid the rigid thinking (by Shu, sophomore); Continuously enhance the ability of the scoring system, Improve the evaluation function of the ideological content of the composition. By giving a more objective evaluation mechanism, the objectivity, reliability and integrity of the scoring can be ensured. Procedures can provide the topic analysis, classification of the composition style, types, genres and other aspects to improve the score evaluation standard system, which can also measure the student's ability to write English (by Tang sophomore); Increase students' productivity by limiting the number and time of revision according to the situation, especially by reducing the chances or times for students to submit (by Nuo, sophomore).

**Discard:** Delete writing self-payment function (since in Correcting Network, self-test asks for fees if writing more than 300 words) to motivate students to write more (by Han, sophomore).

### 5.2.3 The Activity of Students (Results from Open-Ended Questions at the End of Questionnaire)

**On their own:** It is particularly important for students to evaluate themselves and judge whether to use AWE feedback. As the main part in the writing process, students should summarize their frequent mistakes (like basic grammar mistakes), keep a record of mistakes and suggestions so that they can improve them in the next writing; Polish and modify an article many times, improving English writing ability by promoting the proficiency of English language; Critically think about the correction feedback provided by AWE, avoiding paying too much attention to score changes; Expand the mind and absorb appropriate correction suggestions; Get used to accumulate various expressions to enrich the knowledge.

**Among the users:** In a group, peers can form healthy competition, positioning their own level according to the ranking within the AWE system; Appreciate the excellent

writing of peers and learn from the excellent sentence patterns and structures of them; Communicate with each other and improve writing ability together by the second evaluation among them. They can discuss the feedback of the Correcting Network, which is conducive to the cultivation of team spirit and collective cooperation while jointly improving English writing ability.

## 6 Discussions

Based on the feedback of questionnaires and interviews with students, the author established an interactive model of students, writing activities, AWE, teachers, and peers. Through this multi-in-one model, we can well understand how to use AWE with multiple roles to promote the development of students' writing ability.

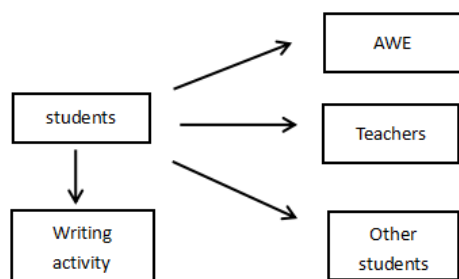


Figure 7 Model of Resources to be Mobilized in Students' Writing

### (1) To Take Students as the Center

As the main body of writing activities, students play a major role in the whole process of writing and receiving feedback. After receiving the writing task, students should clarify their own writing goals and motivation. Whether students modify according to the feedback depends on their learning motivation and needs.

After receiving AWE feedback, students noticed the language errors in their writings, and focused on the lexical warnings and words which corresponds to the concept of metacognitive theory. Students' cognition and monitoring of their own thinking activities and learning activities have penetrated all aspects of the writing process. This process is "the cognition of cognition" [32]. According to the shortcomings of their own writing, students followed AWE's feedback to decide whether to absorb the correction suggestions provided by AWE. Specific practices related to metacognition are as follows:

#### a) Judgment of feedback -- metacognitive knowledge

Under the guidance of the years of accumulated knowledge of English, students have their own judgment for the feedback. As metacognitive knowledge is stored in

the students' memory and students themselves for their cognitive ability, and associated with thinking activities, experience, knowledge and ideas, it is in the accumulation of experience in the formation of the general knowledge of cognition [32]. So students should take a critical attitude towards to AWE.

#### b) The understanding of knowledge -- metacognitive experience

In the process of writing and thinking, students consciously want to have a deeper understanding of the recommended feedback provided by AWE for their own use, "they may be above the level of consciousness or subconscious; It can be an experience of the known, or it can be an experience of the unknown [16].

#### c) Error Modification -- metacognitive regulation/metacognitive strategy

After errors are recognised by students in their writing (such as syntax errors or other basic errors), as active learners, they conduct self- management and regulation of cognitive behavior. The regulating mechanism that trying to solve the problem in the process is to actively, consciously and continuously monitor and manage in terms of cognitive activity [32]. How students find mistakes, accept mistakes, and correct mistakes is part of this process.

### (2) Writing Activities

The strategies, procedures and decisions students use in writing testify that the writing process itself is a process of social interaction and communication. Writing activity is a kind of language output behavior (Swain) with students as the main body, which requires students to make full use of existing language resources to think about the language to be output in order to make the output language more appropriate, accurate, and easy to understand. Through the accumulation of English knowledge, the help of teachers and the cooperation of partners, students can reduce their "output language" errors as much as possible. After writing, due to the limitation of their own level, students noticed the problems in their target language through AWE, so as to re-activate their language knowledge, updated the cognition and received feedback. Students modify their output language during the writing process, which is considered to be the key to improving language ability [33]. The effects of language output on students' writing are as follows:

Frequent use of the target language (English) -- Students modify it repeatedly based on AWE feedback to

enhance the proficiency of the language.

From focusing on writing content to focusing on the form of target language (English) -- Language output forces students to shift from the theoretical process of dynamic evaluation of semantic elements to the process of syntactic elements.

Assessment of their own writing ability -- Writing in the target language (English) allows learners to test their own assumptions about learning.

Students' feedback on self-weakness -- Language output can obtain corresponding feedback. Swain and Lapkin found that output not only made learners aware of their interlanguage deficiencies, but also activated the internal cognitive processes that contribute to second language acquisition, thus facilitating language acquisition.

### (3) AWE

The process of learners using AWE to get feedback on English writing is parallel to the core of activity theory "what a person obtains through what process" and "the process of a person using teaching and learning tools" [29].

According to sociocultural theory, the interaction

between individuals and society is not direct, but with the help of regulatory tools. AWE, as a regulating tool, is created for human beings to establish an indirect and intermediary relationship with the world. Through AWE, students internalize their way of thinking in writing into the unique way of thinking in specific cultural practice, and improve their writing level in this transformation process. In the writing process, students imitate, pay attention, select and evaluate according to the feedback provided by AWE. These "sub-processes" are all aimed at improving the activity level, that is, students' writing level. Writing activities link external material activities with personal development [34]. As Leontiev theorized, activity is always linked to motivation, and action is derived from goal-oriented activity. Students use AWE as an action derived from writing and the general goal is to advance writing. And other tools can also be used within a series of activities by a single goal-oriented action. Operation of AWE is the means to implement the writing activity, through which the activity can be realized, and then complete the goal. Moreover, AWE feedback on the operation behavior helps students really become the center in learning process.

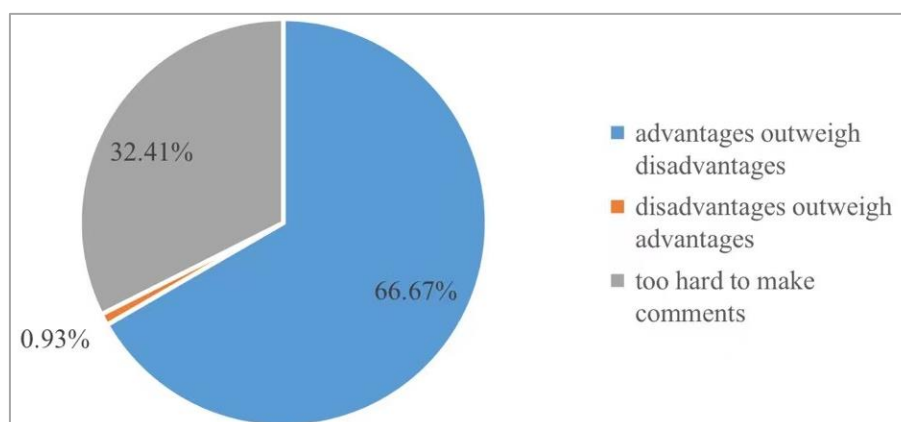


Figure 8 Students' General Comment on AWE through Method I

### (5) The Help of Teachers

Teachers' feedback and help are crucial for students to learn and improve their writing in the theoretical dimension. The learning method advocated by constructivist learning theory is teacher-guided and student-centered learning. Teachers give student-centered guidance before students use AWE, pay attention to the process, and give in-depth explanations after using AWE, so that the whole teaching mode is influenced by constructivism. In the whole teaching process, teachers play the role of organizer, instructor, helper and promoter.

Students' initiative, enthusiasm and pioneering spirit can be fully brought out through the learning environment elements such as classroom "situation", students "cooperation" and communication "conversation" between teachers and students. The process of students' writing and using AWE itself is a process of constantly and actively constructing themselves, while the help of teachers is like a scaffold to provide assistance for students and enable them to effectively master and internalize the knowledge and skills they have learned, which is also a teaching method supported by



constructivist theory.

After the use of AWE, the second review of teachers gives a boost to the understanding of students' writing which can be used on the theory of dynamic assessment. Teachers in the process of evaluation and feedback can better notice the learners' progress and track their change in order to assess their potential ability. It is advantageous for the clear cognition of students' writing levels. After teacher guidance and AWE's error correction feedback, students' writing level will be further improved.

According to the zone of Proximal Development Theory, attention to the development of students' writing should not only be paid on the current actual writing level, but also to the zone of proximal development [28]. To see what writing standard or English proficiency students can achieve in the future. Under the guidance of the Zone of proximal development theory, teachers can guide and interact with students' writing activities. So as to further explore and discover the learning potential of learners and learning effectiveness [30].

#### Other Students (Peers)

Socio-cultural theory is the theoretical basis for students' interaction with their peers in the writing process. Under Leontiev's activity theory, the way students received AWE's feedback and teachers' suggestions seems like they only implement the plans, orders and standards imposed on them by the outside world, ignoring the communication and collective practice between individuals. The mutual learning between students and their peers reflects Engestrom's collective activity system. Peer cooperation can be regarded as a beneficial supplement to teacher guidance and AWE feedback. Students can learn the words and sentences in their peers' writings. Students provide feedback to give mutual motivation.

Peer feedback provided by students after using AWE can stimulate students to perform at a higher level in writing and enhance their awareness of readers and article quality. It significantly improves the content and language quality of students' writings, and cultivates teamwork spirit. In this process, students not only improve their English writing skills, but also deepen the communication between classmates.

## 7 Conclusion

In order to figure out the practical value of AWE and the approach to promoting the English writing ability of students, the study built a model concluding the resources

that students can utilize in a study environment, with students as its center. Since the limitations of AWE for the improvement of students' writing, the assistance of teachers, other students or peers and even students themselves are supposed to play an active role in the utilization of AWE.

This study aims to improve AWE from the perspective of students. In terms of academic value, this study is conducted from a new perspective, ie. the perspective of students. By collecting first-hand data through interviews, the empirical knowledge of AWE is analyzed. In the practical value, the author managed to make up for the weakness of AWE in the realistic situations from the perspective of students. In the end, a more comprehensive writing evaluation model was built which applies to students who are majoring in English.

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