



# Self-correction's Effects on EFL Writing on Web-Based Automatic Writing Evaluation Platform

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**Abstract.** Recently, automatic writing evaluation (AWE) platform has been widely used in teaching English as a foreign language (EFL). It is popular in teaching of college EFL writing for its convenience and efficiency. “Pigai.org” is such an AWE platform with functions of automatic ranking, analyzing and giving advice on users’ English writing. This study aims to explore the influence of students’ writing behaviors based on “Pigai.org” on their writing scores. Firstly, a comparative analysis was conducted between times of submitting writing assignments for self-correction and the increases on scores. The analytical result show a positive correlation between times of self-correction and grade improvement. However, with submitting times increasing, phenomenon of language fossilization in self-correction appeared, which may result from metalinguistic awareness limitation. The result show that instant feedback and self-correction function on “Pigai.org” motivate the students to correct their compositions and improve their metalinguistic awareness.

**Keywords:** English writing · Self-correction · Pigai.org · Automated writing evaluation

## 1 Introduction

With the era of big data, traditional English writing teaching model has been innovated. The new online writing model can effectively evaluate students’ compositions through the written corrective feedback, which is obviously advanced and scientific. AWE is based on corpus and cloud computing technology. The online automated writing evaluation system is to assist in the teaching of English writing and to promote students to learn and practice language knowledge independently and effectively. The well-known AWE system abroad has three main parts, including Project Essay Grade (PEG), Intelligent Essay Assessor (IEA), and E – rater. Most of them are used in native English writing, and less are applied to Chinese students’ writing. “Pigai.org” is an intelligent teaching tool for teaching independently developed by China. It has been used by most universities in English teaching since its appearance on the market in 2010. Just like AES (Automated Essay Scoring), these advanced technologies have been successfully integrated into the writing standard [1]. “Pigai.org” is not about a teaching model of traditional English teaching class, but a cloud-based online service

for students to correct a great proportion of errors of English composition with confidence [2]. Its operating principle is to calculate the distance between the student's composition and the standard language in corpus. And then, the score of the student's composition, the evaluation of every sentence and content analysis are generated in the immediate time, which facilitates the students' effective learning and self-correction. "Pigai.org" aims to stimulate students' interest and enthusiasm in learning foreign language and help students to cultivate their good metalinguistic awareness.

The English composition correction processes of "Pigai.org" are as follows: (1) The teacher assigns the new composition on the website, and sets the writing requirements, the submission time and scoring requirements; (2) Students obtain the composition writing information and finish the assignment according to the composition search number after registering accounts; (3) After receiving the submitted composition, the system will automatically give the score and a comprehensive analysis of students' language ability from four aspects of vocabulary, sentence, structure and content, which aims to test the comprehensive English ability of students' writing; (4) The system will point out some language problems sentence by sentence. Students resubmit the composition after modifications until there is no language problems or get a satisfying score. Based on "Pigai.org", students can consciously think over the language mistakes they made and the reasons for making such mistakes. Through the repeated practice, this consciousness in mind to find the language errors will become unconscious. In other words, students may learn something valuable from the mistakes in the potential learning growth and the students' meta-consciousness will be improved in the subtle. Thus, this kind of self-correction will reduce the probability of making the same or similar kind of the mistakes in language output. At present, many domestic researchers study on AWE system, such as the impact of AWE on students' writing ability, the analysis of validity and reliability based on AWE, the research on the self-efficacy of college students' writing, and so on. However, studies on the students' self-correction ability of English writing based on "Pigai.org" is rare. Therefore, from the perspective of metalinguistic awareness, this study investigates the effect of "Pigai.org" on the self-correction of college students' English writing ability in the interaction between human and computer so as to make the online correction network better serve domestic writing teaching and improve college students' English writing level and ability.

## 2 Literature Review

As an online automatic evaluation system, "Pigai.org" is widely applied into English teaching in China, so it has high research value. In recent years, many scholars have explored this online system both at home and abroad. This kind of online automated feedback belongs to the direct feedback, which means the learning software offers the explicit correction and evaluation rather than the implicit correction with underlining or circling an error [3–5]. The direct feedback can provide enough suggestions for the students' self-correction so that they can correct the easier errors in a short time firstly and then under the help of some learning tools according to the key point for the language errors. In this way, the written feedback is effective in helping students to

form good metalinguistic awareness and it is meaningful for teachers to apply it into the education of SLA (second language acquisition) [6]. Metalinguistic awareness is the potential awareness of monitoring the language errors. Similarly, it is inseparable from critical thinking, which makes use of categorization, decode, and clarify meaning to solve the problem [7]. Moreover, the students will benefit a lot from the metalinguistic awareness and the critical thinking in English writing.

Self-correction can be defined as the procedures of the learners themselves evaluating their language skills and knowledge from the perspective of some foreign researchers. In "Pigai.org", students can modify their compositions according to the online suggestions, which can also effectively reduce the burden on teachers. According to a research, students generally have a good experience of using "Pigai.org", and they believe that the warning hints and recommendation expressions provided by automated writing evaluation can help them correct the most basic mistakes in their compositions [8]. Liao's [9] study has conveyed that AWE tool can help students to enhance their grammatical performance. As for AWE, some researchers rethink the role of automated writing evaluation in ESL (English as a Second Language) writing, which reveals the effect of AWE corrective feedback on the students' writing accuracy by analyzing the number of submission [10]. There are also some researches about multiple feedback mechanism. Yu [11] explores the students' reflection on online self-correction and peer review, which verifies the self-correction can help them to correct lexical and grammatical mistakes and the peer review offers the interactive learning so as to revise the composition in a not mechanized way. However, there are some different views recently. Some scholars have conducted a survey on the richness and complexity of students' vocabulary after students using "Pigai.org", and the results show that the lexical richness of EFL (English as a Foreign Language) students' composition has not been well improved, which means that AWE makes little contribution to the modification of the words in compositions [12]. Correspondingly, it cannot deny the automated writing evaluation has improved students' self-correction ability of English writing. Yang [11], through an empirical study, finds that college students can benefit from their self-correction based on "Pigai.org", especially in the aspects of language accuracy and complexity. The study also reveals the feedback of the online system is not very helpful for students to revise the content or the structure of the essay. From this point of view, the "Pigai.org" has certain advantages for students to self-correct their writings, but it still has some limitations. The author suggests that teachers should give more opinions on the content and structure of writings rather than just let students modify the language errors of writings in the process of English writing teaching. Moreover, 76% of the students in another survey hold that the revision by the "Pigai.org" cannot totally replace teachers' feedback because the evaluation of "Pigai.org" is not as flexible and effective as the teacher's evaluation [13].

From the perspective of the current research, the research on the self-correction of college students' English writing based on the "Pigai.org" is still worthy of in-depth discussion. This study aims to analyze the improvement of college students' personal self-correcting composition ability with the instruction of AWE system, the reasons and factors of their constant revision and the relationship between the times of the revision and the final score, and the effect of "Pigai.org" on students' metalinguistic awareness. Through this study, the author hopes it can offer some reference meaning for helping

instructors to make “Pigai.org” have better effect and guidance in English teaching and serving the students, and finally making the students have a steady and constant progress in the language output.

### 3 The Theory of Metalinguistic Awareness

Metalinguistic awareness which belongs to a type of metacognition refers to the conscious understanding and manipulation of language rules. The language system is a regularized system, which includes such regular systems as phonology, lexicology, syntax, semantics and pragmatics, etc. The systematic understanding and the mastery of these rules is called metalinguistic awareness. The platform of automated writing evaluation just offers the metalinguistic awareness a helpful and effective monitoring system. The function of metalinguistic awareness is mainly to detect and remedy language defects or errors. The mechanism of language operation inside the brain benefits from the constant practice of the automated writing evaluation. The immediate feedback of “Pigai.org” can make student quickly detect the language errors so as to help students to consciously learn the inner rules of language. It is generally that the continuous conscious learning will make the knowledge potential in the mind, which will contribute to the writing or speech. A study on the metalinguistic contribution to writing competence finds that the three components of metalinguistic awareness (phonological awareness, morphological awareness and syntactic awareness) have different contribution to writing competence, as well as two groups of children (monolingual and bilingual children) [14]. In Shintani and Ellis’s [15] research, they find that this kind of direct corrective feedback is effective in helping some learners to correct certain language errors. And it may promote the development of implicit knowledge by the more intensive corrective feedback and repeated revisions. They conclude that only when learners concentrate on the understanding of language rules can the feedback have great effect on the accuracy and recreation of the new writing. This monitoring system of language rules is associated with the metalinguistic awareness.

The main contents of metalinguistic awareness include: 1. It has a deeper understanding of the language itself. 2. It is a kind of ability to distinguish between language and its referents. 3. The metalinguistic awareness can be aware of the existence of certain structures in language, and it can consciously manipulate these structures. It seems that the learning feedback from the automated correction network is beneficial to the construction of metalinguistic awareness. The self-correction of English writing in a long term can be a subtle influence on students’ metalinguistic awareness, which will make a certain contribution to the second language learning. There is no denying that cultivating students’ language metalinguistic awareness is a higher pursuing goal in the language teaching. Therefore, using the theory of metalinguistic awareness to explain the self-correction of students’ English writing is valuable and necessary. Under the guidance of this theory, this paper empirically verifies the research questions.

## 4 Research Design

### 4.1 Research Questions

English writing, as an important kind of language output, plays an indispensable role in college teaching. This new and convenient way of correcting mistakes arouse more students' interest in writing, so they revise their English compositions repeatedly until get the satisfied scores. The immediate feedback of "Pigai.org" can form an effective cognition for students to revise the mistakes. And the score is one of the factors to verify their writing performance. In order to examine whether "Pigai.org" can have a good influence on the improvement of college students' self-correction and metalinguistic awareness, this paper aims to solve the following two questions: 1. Is the times of revision positively correlated with the score? 2. How does "Pigai.org" affect the metalinguistic awareness?

### 4.2 Participants

The participants in this research consist of 41 students from a non-English major class in Harbin University of Science and Technology. The students were freshmen, and they got similar English scores in the entrance examination for college. Moreover, the students have the same English course and the same English instructor. And, it can be guaranteed that the instructor of the experimental class would not be replaced during the experimental time. The research time is from March to May in 2019. Before the experiment, the students should have been instructed how to use [www.pigai.org](http://www.pigai.org) at the same time, like registering the account, finding the assignment, writing the compositions online, and so on. During the period of the experiment, the students submitted the composition online in time and revised the composition repeatedly according to the feedback given by the automated writing evaluation system. They were required to finish the assignment with the given topic by the teacher at "Pigai.org", and revised their compositions until get a satisfying score. To ensure the validity of the research, students are not told to act as the research participants to participate in the writing training.

### 4.3 Research Method

#### Sample

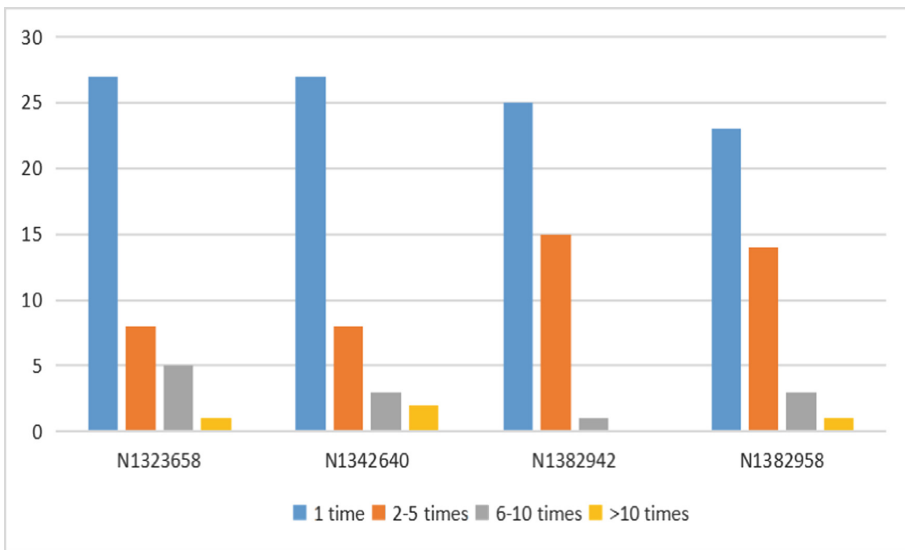
This study adopts the method of sample comparative analysis to discuss the self-correction of the students' English writing based on "Pigai.org" in college teaching with the combination of qualitative and quantitative methods, and selects 41 students from the class of software school. In the spring semester (March 2019–May 2019), the author selected compositions of four times as the study's data. The sample data analysis included statistics on the times of revisions on the "Pigai.org", the relationship between the frequency of students' revisions and scores, the correlation of online time of self-correction, the frequency of revisions and the increasing score, and the trend of average scores.

## Questionnaire

The questionnaire includes four parts. One part is the survey about the overall students' English level and their self-evaluation. One part is the investigation of the basic situation of students' self-correction on the "Pigai.org", such as the reasons for the constant revising compositions, the aspects of significant improvement in English proficiency. The next part aims to find some regular rules about students' metalinguistic awareness. The last part is to ask about students' thought about the advantages and disadvantages of the use of the automated writing evaluation based on "Pigai.org", as well as the expectations and prospects of the online system for learning English.

## 4.4 The Results and Analysis

### Sample



**Fig. 1.** Statistics of the relation between the submission times and the number of students in 4 tests

From the Fig. 1, the result reflects that the number of people which is about more than half of the whole class for submitting the composition only 1 time is the most, and the number of the students for submitting 2–5 times is the second. The students of submitting composition for more than 10 times is the least. This sample data shows that not all the students have the consciousness or motivation to revise the composition for multiple times. This means that the students don't make full use of the learning mode of "Pigai.org" for self-correction. If students try to self-correct the composition for multiple times according to the feedback given by "Pigai.org", they will master more new knowledge and improve their metalinguistic awareness by the repeated practice.

Therefore, how to make students more interested in self-correcting their compositions on “Pigai.org” is the key point of English writing teaching. In order to take advantage of the automated system, the students need to train it well (Figs. 2, 4 and 5).

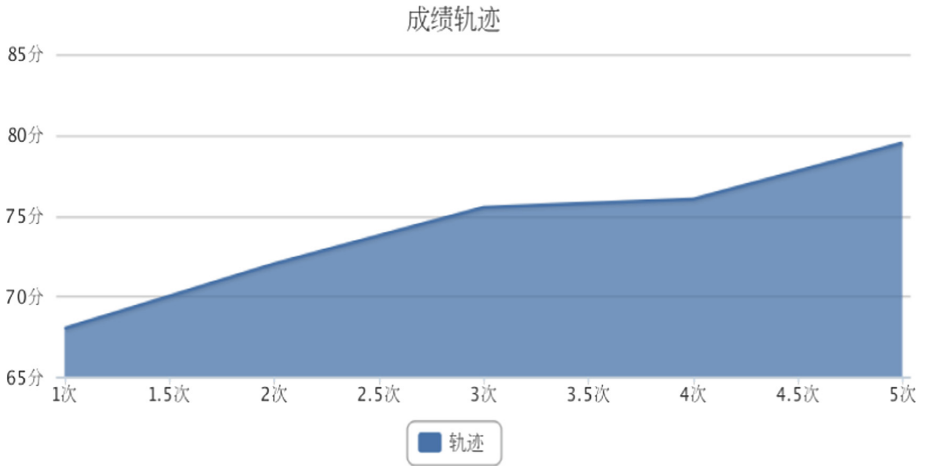


Fig. 2. .

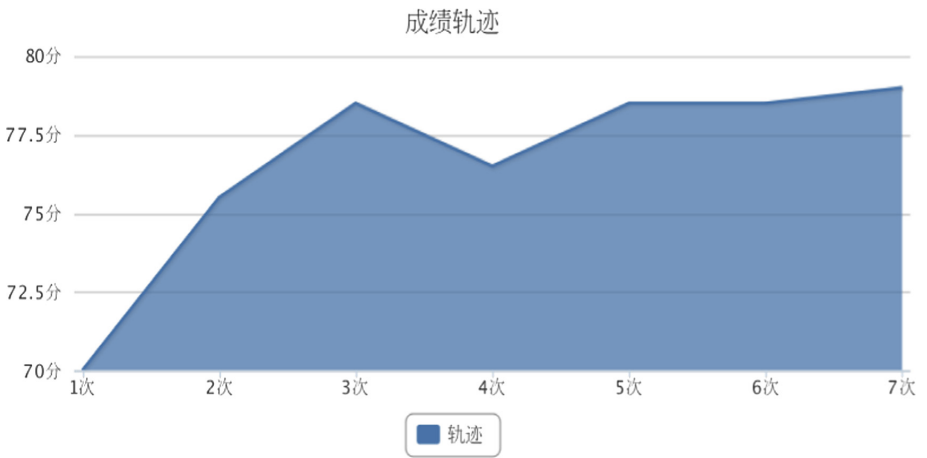


Fig. 3. .

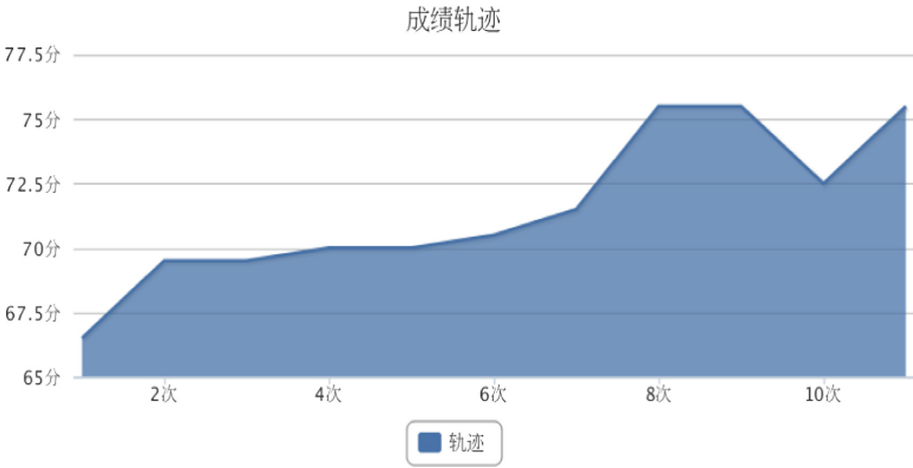


Fig. 4.



Fig. 5. The track of the grade growth

From the growth trajectories of the four groups of students, it is not difficult to find that the score of students' compositions is positively correlated with the times of revisions to some extent, which means the score of compositions increases as the times of self-corrections increase. The research objects selected in this study are typical representatives of the four groups in sample 1. From the track of student 1's scores, it can be seen that the student's scores in the first three revisions show a steady upward trend. The fourth revision shows a slow growth, and the fifth revision shows a significant improvement. From the track of student 2's score, it can be seen that the score of student 2 increases from 70 to 78 in the first three modifications. But after the fourth



modification, the score decreases, and then changes back to 78 in the fifth modification. And, the score remains almost unchanged in the last two revisions. From the track of the scores of student 3, it shows that the scores of student 3 increase from 65 to 75.5 after several self-corrections. The scores of the first two self-corrections increase significantly, the scores from the second revision to the seventh revision increase slowly, the scores of the eighth self-correction increase strikingly, but the scores of the tenth revision decrease again. From the score track of student 4, it is found that the scores of the student in the first four revisions shows a downward trend. In the subsequent revisions, the score keeps changing in twists and turns, and then tends to be stable. Finally, the scores rise from 89 to 90.

From the analysis of the results of the four typical student representatives above, it can be preliminarily concluded that students' scores are positively correlated with the times of revisions in most cases, especially in the first three self-corrections. This is because of explicit online teaching, where students can modify their compositions based on online writing corrective feedback. The learning model of "Pigai.org" is a kind of purposeful learning, providing accurate feedback for learners to study grammar rules and analyze sentence elements effectively. After such repeated practice, learners' metalinguistic awareness will also be improved. The fossilization in writing occurs when the score barely changes as the times of subsequent revisions increases. The so-called phenomenon of fossilization refers to that learners have no significant improvement in language rules or language systems during the learning of the second language. In other words, students' English writing level has reached its limit, and metalinguistic awareness cannot help them subconsciously analyze the grammar or semantic knowledge. The main reasons for the fossilization are as follows: 1. Striking language transfer occurs in English writing. Because of the interference of the mother tongue, the grammar rules of the target language are unclear and students often make errors of Chinglish. 2. Students' language input ability is insufficient. Due to the lack of students' own language ability, it is hard for them to carry out some difficult tasks of writing revision. 3. Less feedback in writing. In traditional English writing teaching, teachers are unable to give students comprehensive writing feedback, so it is difficult for students to timely recognize the shortcomings in writing. It can be explained that metalinguistic awareness cannot be developed in time. From the four trajectories, it is not difficult to find that students' scores may drop sometimes, which means they do not have enough language ability to correct the errors. In other words, the mistake is beyond the level of students' metalinguistic awareness, or the original language system has problems. Some relevant rules of grammar itself is wrong in mind. While students don't realize it in their daily writing, the drop in scores helps them recognize the loopholes in the language system. When writing becomes fossilized and regressive, instructors are called upon to help. The explicit teaching of instructors can directly point out the problems of learners in the writing process and give accurate and effective feedback to promote the students' written language output ability. Through students' self-correction on "Pigai.org" and the reference of scores' changes, it shows that appropriate explicit teaching can help students to strengthen language knowledge and improve metalinguistic awareness. To sum up, the times of correction are positively correlated with the scores, but not the more, the better. Therefore, it is suggested that students should pay more attention to the quality of self-correction not the times of revisions.

**Table 1.** The statistics analysis of 4 compositions

Descriptive statistic					
	N	Minimum	Maximum	Mean	Standard Deviation
Revision frequency	62	2	32	4.98	4.921
Online time	62	1	50	11.11	11.604
Increasing score	62	-1.0	22.5	3.556	4.5782

Correlation 1			
		Revision frequency	increasing score
Revision frequency	Pearson Correlation	1	.220
	Sig		.086
	N	62	62
Increasing score	Pearson Correlation	.220	1
	Sig	.086	
	N	62	62

Correlation 2			
		Revision frequency	Online time
Revision frequency	Pearson Correlation	1	.428**
	Sig		.001
	N	62	62
Online time	Pearson Correlation	.428**	1
	Sig	.001	
	N	62	62

Correlation 3			
		Online time	increasing score
Online time	Pearson Correlation	1	.389**
	Sig		.002
	N	62	62
increasing score	Pearson Correlation	.389**	1
	Sig	.002	
	N	62	62

The above four groups of data are based on SPSS20.0. The data are from students who have corrected their English compositions more than once for four compositions in the experimental class. In this group of data, descriptive statistic reflects the basic information, Correlation 1 is the correlation data of the revision frequency and the increasing score, Correlation 2 is the correlation data of the revision frequency and online time of self-correction, and Correlation 3 is about the correlation data of the online time of revision and the increasing score. It can be seen that there are total 62 compositions in data analysis. The average of the revision frequency is 4.98, with a minimum 2 and a maximum 32. The online time of self-correction ranges from 1 min to 50 min, with an average of 11 min. The students' average increasing score is 3.556, but score drops by one point because of the wrong correction. And, the highest increasing score is still as high as 22.5 points. In Correlation 1, Sig = 0.086 > 0.05, which indicates that there is no correlation between the revision frequency and increasing score, which means there is no statistical significance. In Correlation 2, Sig = 0.001 < 0.05, indicating that there is a striking correlation between the revision frequency and increasing score, and the two are positively correlated according to the statistics. In Table 1, Sig = 0.002 < 0.05, which points out that there is also a striking correlation between online time of revision and increasing score. According to the data, there is a positive correlation between the two either.

The results of sample 3 exactly confirms the conclusion drawn in sample 2, that is, the times of revisions are not positively correlated with the increasing score. This does not mean the more times students submit compositions online, the better. After all, multiple revisions do not mean high-quality revisions. However, from another perspective, the times of revisions can reflect students' attitude towards learning. Submitting a composition repeatedly represents that the student constantly tries to correct mistakes, which is also a process of constantly finding mistakes and making progress. Due to the limited language ability of students, it is normal to see language fossilization or regression. That is also the main reason why the times of revisions are not

**Table 2.** The statistics of 1382942 composition's score

People of revision multiple times	of for the final composition	The mean score of the final composition	The mean increasing score	The maximum of the increasing score
16		93.06	3.07	22.5

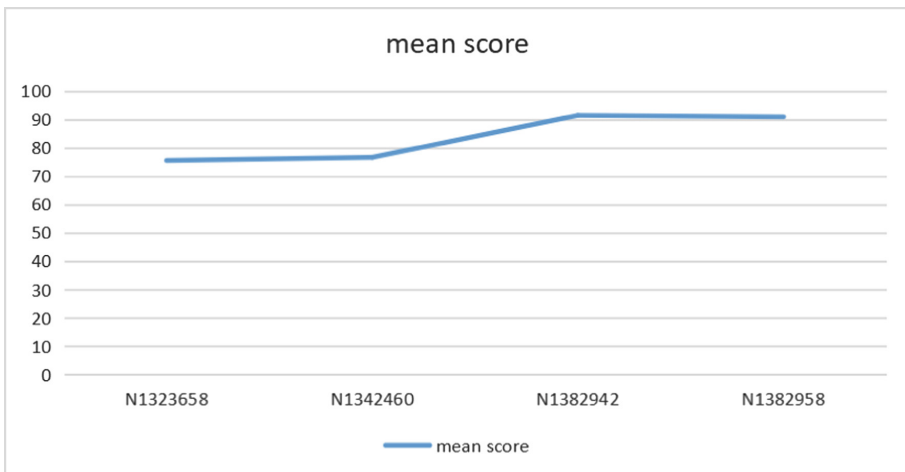
  

People of the composition once	submitting for the composition	The mean score of the composition	The mean increasing score
25		90.39	0

proportional to the score. However, in sample 3, Correlation 2 and Correlation 3 show that the online time of revision can promote the growth of scores. And, the more times of revisions, the longer the online time of revision will be. In other words, the student takes more time to revise a composition, their score will increase more, and the times of revisions may increase. This suggests that if students take enough time to revise their compositions, their written output ability of language will be greatly improved. And metalinguistic awareness is also developed in the continuous self-learning.

Table 2 reflects the statistics of 1382942 composition's score. The results show there are 16 students self-correcting their compositions for multiple times. And their mean score of the final composition is 93.06, which is higher than those who do not self-correct their compositions. The mean increasing score of 16 students is 3.07 and the maximum of the increasing score is 22.5. Obviously, the mean increasing score is 0 for those who submit for only once.

It can be concluded that the final composition's score is increasing of those who revise their compositions for multiple times. It shows that the students' self-correction has a certain influence on the final score. On the contrary, for those students who only submit their composition for only 1 time, their mean score is lower than that of those who revise the composition for multiple times. They do not have the process of self-correction, which makes them have no increasing score. It also indicates that they do not have the process of rethinking the internal rules of grammar. In such a way, their language skill or metalinguistic awareness can not be improved in a long term. Instead, the repeated self-correction is a good means for students to improve their language output ability, including grammar judgment, language analysis, sentence correction, and the rules of interpretation. Correspondingly, through the repeated self-correction, the metalinguistic awareness of students will also be enhanced, which is directly related to the writing ability (Fig. 6).



**Fig. 6.** The mean score of 4 compositions

As can be seen from Fig. 3, the average score of students shows an upward trend during the practice of 4 times on "Pigai.org", which indicates that students' self-correcting ability is gradually improved. It can be implied that the corrective writing feedback have a good effect on students' learning, whether they make many self-corrections online or not. All the four compositions belong to CET4, and CET has its own scoring standards with requirements on vocabulary, grammar, content, etc. Therefore, the increase of students' overall scores also shows that their metalinguistic awareness is improving.

According to the author's observation and analysis, students do well in the correction of vocabulary and some language grammar. But, the writing structure and the writing content have less relation with self-correction. That is where the "Pigai.org" needs to improve and develop. Since feedback of these two aspects of the structure and content is not direct, it is difficult for students to understand and modify the new composition. And that is one of the reasons of some students to choose to give up revising, and thus, they will make the same mistakes on semantics when facing a new composition. Because of technical problems of the automated writing evaluation, "Pigai.org" can not mark some difficult grammar and some fixed collocations. So, the author suggests the students should use more reference books and listen to the advice of the peer and instructor rather than rely on the feedback online too much when students self-correct their compositions. Moreover, students should think the central idea and the structure of the composition carefully. It is beneficial for them to exercise logical thinking so that they will have a good understanding of any topics.

### Questionnaire

The questionnaire consists of 10 multiple-choice questions, which are used to investigate the basic information of students' self-correction of using "Pigai.org", which can also help us to well analyze the sample from a more comprehensive perspective. 41 questionnaires were issued, and 41 questionnaires were recovered. The valid rate is 100%.

According to the results of the questionnaire, 64.2% of the students think their current level of English writing is general and 31.6% of the students believe that their English writing is not good. From the result, it can be concluded that most students do not have a very high level in English writing. For the next question, 97.2% of the students choose "No", which means that most college students do not have some habits to learn some extracurricular knowledge of English. Moreover, 96.9% of the students didn't participate in any other English tutoring classes. Above the results of these three questions and the requirement of only one teacher, it can be easily verified that the students of the experimental class almost have the same level before the research, which excludes the effect of other variable factors. From this point of view, this study is reasonable and accurate. As for the forth question, 44% of the students would like to constantly revise the composition is because of the desire for a satisfying score. 56% of the students hold that they can learn something from the process of revising, which can help them to improve their writing ability. And none of the students choose it because of the teacher's request. It can be understood that the online writing is totally a kind of self-leaning and self-correction mode. 86% of the students agree that they have made great progress in the vocabulary, such spelling or words' collocation. 90% of the

students think “Pigai.org” offers them a lot of help in the grammar. 8% of the students choose the online feedback can help them with the structure and none of them choose the content. It can be seen that the automated feedback can give students great help in terms of vocabulary and grammar, and the system still need to be strengthened in content and structure. To some extent, the learning mode of self-correction is not completely effective, so the teacher’s teaching can not be totally replaced by the automated writing evaluation at present. 92% of the students agree that it is helpful for them to revise the composition. Therefore, the application of “Pigai.org” is effective and meaningful for students’ self-correction of their English writing. For the seventh question, 30% of the students will pay attention to the learning of vocabulary and grammar, and 50% of the students will remember some of them. And 20% of the students choose ignorance. What’s more, as for the next question, most of the students choose B. That means students won’t make the same mistake through the repeated practice. In other words, the results of Question 7 and Question 8 show the learning mode on “Pigai.org” promotes students’ metalinguistic awareness. As for the limitations for the online self-correction based on “Pigai.org”, 78.9% of the students think the evaluation criteria are too mechanized, 58.6% of the students think the suggestions are not detailed, 39% of the students agree that some grammar mistakes are not recognized, and 70.5% of the students agree that the system has little help for the writing’s structure and content. So, the students should pay more attention to get teacher’s feedback or the peer feedback about the overall logic content and structure when self-correcting the composition. For the last question, most students hold the view that it would be better to have the combination of the teacher’s feedback and “Pigai.org”. Some students hope that the online system will update the language corpus so as to make the evaluation more detailed and accurate. And others hope the system will share the wonderful composition for students to learn after they finishing the writing self-correction of their writings.

## 5 Conclusion

This paper mainly focuses on the self-correction process of students based on feedback from “Pigai.org”. The feedback at the language level of AWE system is very referential for the learning of self-correction. The analysis of the sample and questionnaire show that the automated writing evaluation is an effective and helpful tool for college students to study English writing. The online mode of self-correction in language promotes the construction of metalinguistic awareness. This kind of enhancement of metalinguistic awareness is of great help to English language learning. With the help of the online feedback, students’ ability of language output can be improved constantly, especially in vocabulary and grammar. At the online writing platform, it is convenient for students to self-correct their writings. In that way, students can have a good understanding of language points, which is positively associated with the metalinguistic awareness. As for the relationship between the number of revisions and the scores, the study finds the accuracy rate of correcting errors is relatively high in the students’ first several self-corrections. In the later revision process, different phenomena will appear according to the differences of students’ language ability or

metalinguistic consciousness. But the real purpose of students' self-correction is refinement, not quantity. Students will also benefit a lot from the combination of explicit learning and implicit learning. For the college teachers, the platform of "Pigai.org" provides them more extensive ideas of English teaching and it helps them lessen the burden of correcting the similar mistakes to some extent.

However, the research points out that the application of "Pigai.org" still exists some limitations. The feedback of "Pigai.org" does a little contribution on students' writing structure and content. Therefore, the combination of the instructor's teaching and the writing mode of "Pigai.org" is very necessary. As the rapid development of artificial intelligent, it is worth waiting for making up for the lack of comprehensive feedback. AWE system is of great significance for the improvement of students' self-correcting writing ability and English teaching study. The number of samples adopted in this study research is not very enough and the research scope is limited. Undoubtedly, the research on AWE of more extensive aspects still has a long way to go. From the perspective of metalinguistic awareness, a more flexible evaluation mode like the combination of automated evaluation and artificial evaluation will become a popular trend.

## Appendix

### Questionnaire

Thank you so much for taking the time to participate in this survey. All the results of the questionnaire are only for the research and they are strictly confidential, so please fill it in the truth.

1. What do you think about the current English writing level?  
A. Good B. General C. Not good
2. Do you usually read some English magazines or English news to study English?  
A. Yes B. No
3. Have you participated in other English tutoring classes besides the English class of college in 2019?  
A. Yes B. No
4. What are the reasons for constantly revising the composition?  
A. The desire for a satisfying score  
B. The desire for the improvement of English writing  
C. The instructor's request
5. Which aspect do you think that you've made great progress after using "Pigai.org"?  
A. Vocabulary B. Grammar C. Structure D. Content
6. Do you think it is helpful for you to revise your writing for multiple times?  
A. Yes B. No
7. When you revise a composition based on feedback, do you consciously memorize vocabulary or grammar knowledge?  
A. Yes B. A little C. No

8. Will you make the same mistakes in writing after your repeated self-corrections on “Pigai.org”?
  - A. Always will
  - B. Will make the same mistakes for a few times, and then won't
  - C. Always won't
9. What limitations for the self-correction online on “Pigai.org”?
  - A. The evaluation criteria are too mechanized
  - B. Suggestions are not detailed
  - C. Some grammar mistakes are not recognized
  - D. Little help for the structure and content
10. What are your expectations for the future of “Pigai.org”?

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