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## A STUDY ON TYPES AND CAUSES OF ONLINE WRITING ERRORS BASED ON IWRITE

**Annotation.** With the continuous development of technology, online writing is widely applied. iWrite Automatic Writing Evaluation System is an intelligent English writing and evaluation system, which can analyze the writing compositions in time and provide suggestions for English teaching and learning. The paper chooses 115 writing texts by non-English major students from iWrite, analyzes the types of errors and causes leading to errors and proposes corresponding methods to improve English writing, teaching and learning from both teachers' and students' perspectives.

**Keywords:** errors, causes, online writing, teaching, learning, iWrite, Automatic Writing Evaluation System, non-English major students

**Introduction.** College English writing is an important form of comprehensive language output. The purpose of college English writing teaching is to guide students to master and apply their writing skills in different genres, develop their logical and discursive abilities, and lay the foundation for their future work and study. With the continuous development of technology, English writing system has been applied in English teaching and learning.

In the past decades, scholars at home and abroad have done some research on Automated Writing Evaluation System (AWES). Pan (2019) considered that the writing level of most students is always in a state of stagnation, their writing enthusiasm and motivation is not strong. The research is to be conducted based on iWrite Automated Writing Evaluation System (iWrite AWES) and analyzes the types of errors in college students' online writing texts, causes leading to errors and proposes practical ways to improve college English writing skills are proposed in a targeted manner, which to a certain

extent makes up for the shortcomings of previous studies.

### I Literature Review.

**1.1 Studies on Automated Writing Evaluation System (AWES).** With the development of technology, AWES has been widely used in college English writing. In the 1960s, the AWES Project Essay Grader (PEG) was initially developed. Page (2003) first collected a number of compositions scored by human raters and adopted the natural language processing technology which was not so mature at that time, extracting some text features for a correlation analysis and multiple regression analysis between these features and scoring of human raters.

Another popular AWES was IEA (Intelligent Essay Assessor) developed by the scholar Landauer, which was based on a latent semantic analysis. In addition to the fundamental automated scoring function, a large number of newly-emerged AWES, such as E-rater, MY Access, Criterion, and Writing Roadmap analyzed the compositions from the

aspects of writing content, organization, wording and sentence diversity, style, grammar, format and specification, providing multidimensional feedback for formative and summative evaluation, issued by Tang and Wu (2011)<sup>1</sup>.

Originally, AWES was mainly used in testing to obtain scores for assessment. The change from human feedback to automated feedback also met the needs of educational testing institutions for large-scale testing. Stevenson and Phakiti (2014) supposed that AWES has been used to provide formative feedback in the writing in recent years, particularly in classrooms. Defined by Shermis and Burstein (2003) as a process of scoring (assigning a number to an essay) and evaluating (providing feedback on organization or language use) written products, an effective AWES is the product of many elements that must work in harmony.

Some scholars are also skeptical of computer feedback because the scoring criteria are ambiguous and run counter to the nature of human communication in writing. Shermis<sup>2</sup> (2004) tested the effectiveness of the AWES based on a random sampling principle. First, learners who received AWES feedback received higher scores. In addition, at the end of the experiment, the state unified examination showed no significant difference in writing ability between the two groups. Grimes and Warschauer (2010) conducted a multi-site case study of AWES. Students preferred the language feedback provided by AWES which was supplied by the organization. Moreover, some students are only concerned with the final score they receive, so they are reluctant to learn about AWES feedback to make further revisions. In fact, it is believed that automated computer feedback should only be used as a supplemental method of writing instruction, not as a substitute for the teacher's role in teaching.

In recent years, the research on AWES has been gradually carried out in China. Lu<sup>3</sup> (2010) conducted

an empirical study on the application of the Bingo English automatic scoring system in teaching English writing in college. Studies have shown that students are very interested in using it, especially in the early grades. Wang (2011) conducted a study on how to apply the Writing Roadmap to English writing instruction. She pointed out the strengths of Writing Roadmap, such as diversity, autonomy, speed, and inspiration. However, the system does not provide students with model texts and has an impact on the speed of writing.

Researches of AWES fall into three categories: He (2013) conducted a study on the reliability of relevant system scores to examine the consistency of system scoring and artificial scoring results; Zhang et al. (2016) argue that the introduction and review of AWES abroad provides advice for the development of domestic AWES; Wang (2011), Shi<sup>4</sup> (2012), Wang and Liu<sup>5</sup> (2012), Hu<sup>6</sup> (2015) and Yang and Dai<sup>7</sup> (2015) examined the effects of domestic AWES on college students' writing skills, especially vocabulary, grammar, and syntax skills. In terms of rating reliability and validity studies, He (2013) conducted a comparative study of human-computer ratings of 30 works and concluded that "Jukuu" showed a high degree of consistency with manual ratings, but the system scored significantly higher.

Liang and Wen (2007) reviewed and commented on three representative foreign AWES (i.e., PEG, IEA, and E-rater) based on the elements of scoring essays in the field of language testing. He concludes that PEG emphasizes linguistic form, IEA emphasizes writing content, and E-rater places equal emphasis on form and content. After a brief introduction and detailed comparison of the three

<sup>1</sup> Tang Jinlan, Wu Yian, review of application research of online English writing automatic evaluation system. "Foreign Language Teaching and Research" Issue 2, 2011: 273-282.

<sup>2</sup> Shermis M. D. et al. The impact of automated essay scoring on high stakes writing assessments [R]. Paper presented at the Annual Meeting of the National Council on Measurement in Education, San Diego, CA., America, April 2004.

<sup>3</sup> Lu Yanhui et al., Empirical study of intelligent writing scoring system in college English writing. "Modern Educational Technology" Issue 6, 2010: 56-58.

<sup>4</sup> Shi Xiaoling, Research on the Application of Online Writing Automatic Assessment and Correction System in College English Writing Teaching - Taking Jukuu Correction Network as an example. "Modern Educational Technology" Issue 10, 2012: 67-71.

<sup>5</sup> Wang Ying, Liu Zhenqian, research on the role of teacher feedback on the accuracy, fluency, complexity and overall quality of English writing. "Foreign Language Teaching" Issue 6, 2012: 49-53.

<sup>6</sup> Hu Xuewen, The impact of online essay self-revision on college students' English writing results. "Foreign Language Audio-visual Teaching" Issue 3, 2015: 45-49.

<sup>7</sup> Yang Xiaoqiong and Dai Yuncai, practical research on the independent writing teaching model of college English based on the correction network. "Foreign Language Audio-visual Teaching" Issue 2, 2015: 17-23.

systems, problems with the scoring systems in terms of training, manual scoring methods, and machine scoring validity were identified. The analysis of the advantages and problems in the existing foreign automated scoring systems provided referential significance for domestic research on the development and application of independent automated scoring systems for compositions and offered suggestions on the improvement of reliability and validity of AWES.

Tang and Wu (2011) also summarized the relevant studies on AWES at home and abroad and concluded that there are technical difficulties in the process of introducing educational technology, and that there is a need to transform and update concepts, methods, and behaviors according to the application of AWES. This study also confirms the importance of focusing more on the process of applying the system rather than the outcome of the system. While obtaining application results, educational technology research can also reveal key factors that may affect the effectiveness of educational technology applications, providing further research directions for the development of AWES.

### 1.2 Studies on iWrite Automated Writing Evaluation System

In the early 1960s, the AWES, an application software developed in the United States, used computers and the Internet to evaluate and grade written compositions and make suggestions for improvement. Incorporating the latest research in natural language processing, artificial intelligence and statistics, AWES has flourished since 1999, providing a new direction for computer-assisted instruction, put forward by He (2013). The software has gone through three stages of development. The first stage is the embryonic and initial development stage in the 1960s, the second stage is the development stage in the 1990s, and the third stage is the deepening development stage at the beginning of this century. In recent years, in the highly developed environment of big data, network and information technology, domestic experts and scholars are exploring the research of AWES. Zhang and Sheng (2015), for example, argued that the emergence and application of Jukuu (online writing website) and iWrite AWES, of which the most widely studied and used is Jukuu. Jointly developed

by Foreign Language Teaching and Research Press and National Research Center of Foreign Language Education. iWrite AWES meets the writing standards of major domestic and international exams and is designed to help students improve their writing ability. iWrite AWES was designed based on an in-depth study of the college English writing teaching process, thereby providing students with a full range of machine-intelligent assessments in four areas: language, content, discourse structure, and technical specifications.

The appearance of iWrite AWES not only frees teachers from the pressure of correcting a large number of students' essays, but also gives students more opportunities for writing practice and more timely feedback. More importantly, learners can decide when and where to practice and learn independently according to their needs, which will better utilize students' cognitive subjectivity. This human-computer interaction is conducive to improving students' independent learning ability, identifying problems in their writing, and ultimately improving their writing ability. By providing learners with correct feedback from teachers, peers or machines, an interactive communication situation is formed in which learners can identify problems and difficulties in writing in the target language and recognize gaps between their output and the target language, which helps learners correct existing language errors and reconstruct language to build writing knowledge.

### 1.3 Error Classification of iWrite AWES

The British linguist Corder classified linguistic errors into four categories: errors of omission, errors of addition, errors of selection and errors of order. The errors of omission is when an element that should be present is omitted; the errors of addition is when an element that should not be present is present; the errors of selection is when the wrong element is chosen; and the errors of order is when the correct element is used, but it is in the wrong order. Corder<sup>8</sup> (1981) argues that these four categories of errors are superficial errors that need to be further subdivided in practical applications, such as into tense, number, tone, etc.

<sup>8</sup> Corder S.P. *Error Analysis and Interlanguage*. London: Oxford University Press, 1981.

Richard<sup>9</sup> (1974) classified errors into three categories: interlanguage errors, intralingual errors, and developmental errors. Interlingual errors are errors caused by interference from the learner's native language; intralingual errors are caused by the influence of the linguistic structure of the target language and by the learner's over-promotion of rules, neglect of rule restrictions, and incomplete application of rules; and developmental errors are errors caused by the learner's attempt to form hypotheses using his or her limited experience of the target language. Modern linguist Brown<sup>10</sup> (2001) classifies errors in foreign language learning into three categories: native language interference errors (also called interlingual errors), intra-lingual errors (also called intralingual errors), and errors caused by other factors. Native interfering errors are errors caused by learners who are influenced by their native language habits and bring them into the target language for use. Intrinsic errors in the target language are errors caused by the learner's poor or incomplete knowledge of the meaning and usage of words and grammar rules of the target language. Other factors include the learning environment, communicative strategies, cultural factors, and personal factors. Chinese scholars Cai and Dai<sup>11</sup> (2001) supplemented the error classification by proposing three major errors: cognitive errors, linguistic errors, and behavioral errors. Among them, cognitive errors include transitional errors, intra-linguistic errors, interlinguistic errors, overextension errors, and transfer errors. Linguistic errors include compositional errors and discourse errors. Behavioral errors are easily neglected.

iWrite AWES is designed based on the in-depth study of college English writing teaching and can realize the intelligent machine review of four dimensions: language, content, structure, and mechanics. It can also deeply combine machine scoring and human scoring, promote feedback with machine scoring, focus on teacher-student interaction

in the teaching process, and comprehensively help teachers improve the teaching effect of writing and help students really improve their writing ability.

iWrite AWES scores writings in four areas: technical specifications, chapter structure, language, and content. The types of errors include spelling errors, capitalization errors, misuse of commas, misuse of prepositions, misuse of verbs, misuse of qualifiers, misuse of periods, wrong number of nouns, redundancy of qualifiers, run-on sentences, subject-verb agreement errors, missing prepositions, wrong verb tense, grammatical errors, missing qualifiers, verbs missing, preposition redundancy, pronoun missing, noun misuse, pronoun misuse, pronoun redundancy, comma redundancy, verb redundancy, adjective misuse, punctuation missing, period missing, noun possessive error, comma missing, etc. However, the above specific types of errors were not matched with the four marking dimensions, and there was a fragmentation between the overall scoring and error statistics.

## II Research and Analysis

The writing task is that students complete an argumentation essay with a word limit of 120 – 180 in one week. Students can make revisions based on suggestions given by iWrite before the deadline. The study analyzes the types of errors in 115 English writing essays, divides the errors into different types and analyzes causes leading to errors to propose some suggestions on how to improve writing teaching and learning.

### 2.1 Distribution of Common Error Types in Writing

Based on the error classification of iWrite AWES and Corder, this study categorized the online writing errors of college students into four categories: technical errors, discourse errors, lexical errors, and grammatical errors, including spelling errors, noun counting errors, subject-verb agreement errors, redundant or missing qualifiers, verb misuse, verb tense errors, case errors, misuse of pronouns, preposition misuse, run-on sentences, grammatical errors, and other grammatical errors. A total of 115 essays of students in one class were selected as samples, and the collected sample essays were corrected for errors using quantitative statistics and text analysis. iWrite AWES was used to categorize, integrate, and count the types of errors. The specific data are listed in the following table.

<sup>9</sup> Yang Xiaoqiong and Dai Yuncai, practical research on the independent writing teaching model of college English based on the correction network. "Foreign Language Audio-visual Teaching" Issue 2, 2015: 17-23.

<sup>10</sup> Brown H.D. Principles of Language Learning and Teaching. Beijing: Foreign Language Teaching and Research Press, 2002.

<sup>11</sup> Cai Longquan, Dai Weidong, integration of error classification. "Foreign Language World" Issue 4, 2001: 52-57.



Table 1.

Distribution of Common Error Types in Writing<sup>12</sup>

	Error Type	Quantity	Percentage	Total Percentage
technical errors	case errors	37	6.03%	6.03%
discourse errors	run-on sentences	30	4.89%	4.89%
lexical errors	spelling errors	94	15.31%	15.31%
grammatical errors	noun counting errors	70	11.40%	73.77%
	verb tense errors	45	7.33%	
	subject-verb agreement errors	59	9.61%	
	other grammatical errors	37	6.03%	
	redundant and missing qualifiers	71	11.56%	
	verb misuse	47	7.65%	
	verb tense errors	45	7.33%	
	misuse of pronouns	20	3.26%	
	preposition misuse	31	5.05%	
	grammatical errors	28	4.55%	

<sup>12</sup> Author's analysis.

## 2.2 Analysis of Common Errors in Writing

In order to further analyze the common errors in college students' online writing, this study selects the more typical errors in students' essays for each type of error and divide into different types.

### 2.2.1 Technical Errors

Word case errors are more common in students' compositions, mostly due to the formation of a certain misconception.

(1) *All in all, with the internet and modern technology's development, the power of e-books is growing more and more considerably*

(2) *To Summarize my perspective, the possibility of e-books in place of paper books is bigger than paper books in place of e-books.*

As is shown in example sentence (1), "Internet" means "network" in Chinese, in which the letter "i" needs to be capitalized. Students have a misconception of the case rule of this proper noun, thus causing the error here. In example sentence (2), the word "summarize" is not at the beginning of the sentence, so the "s" should not be capitalized.

### 2.2.2 Discourse Errors

Discourse errors account for a relatively small proportion of the four types of errors, mainly because the writing topic has been limited to the genre, and the specific discourse type (invitation letter, suggestion letter, cover letter, etc.) can also be judged according to the stem, plus the main points of the article content have been provided, which is easier for students to grasp. Discourse

errors specifically include run-on sentences, stylistic inconsistencies, and unreasonable structure, among which run-on sentences account for the majority, mainly manifested as lack of conjunctions, long sentences, etc.

(3) *First of all, reading e-books for a long time will do harm to our eyes. In the long run, your eyesight will become worse, when you are old, you will lose sight of things even earlier.*

(4) *Paper books are a culture that has existed for a long time, it won't be replaced by e-books.*

As shown in example sentence (3), "when" should be modified to "When", and then change the preceding comma to a period. Commas do not have the function of connecting sentences and can be modified to break sentences with periods, connect sentences with semicolons, or add conjunctions as appropriate. In example sentence (4), it is recommended to insert the conjunction "and" before the word "it".

### 2.2.3 Lexical Errors

Lexical errors are also common in students' writing, and as the focus of English writing is also a difficult point, vocabulary needs to be paid enough attention. Lexical errors include word misspellings and misuse, absence, or redundancy of words. Word spelling errors are more common in students' English writing, mostly due to students forming some kind of wrong concept and lacking mastery of words.

(5) *More importantly, when we read e-books, we are always disturbed by informations and ads, which are not good for our studies.*

(6) *First of all, with the development of science and technology, a crowd of people are accustomed to use e-books to download and read books.*

As shown in example sentence (5), students do not have a deep understanding of the rules for countable and uncountable nouns in English, as well as some nouns singular and plural homomorphs, resulting in the miswriting of “information” as “informations”. For example, in example sentence (6), students mistakenly understand the English concept of “double writing rule (i.e., the last syllable is a consonant letter that double-writes the end of the word when stressing a closed syllable)”, thinking that “custom” needs to be double-written to become an adjective and then add “ed”, so “accustomed” is mistakenly written as “accustommed”.

#### 2.2.4 Grammatical Errors

The main grammatical errors include verb tense errors, noun number errors, subject-verb agreement errors, missing or redundant qualifiers, and other grammatical errors. The most common of them is the missing or redundant qualifiers.

(7) E-books make it possible to gain knowledge everywhere at any time through a information equipment.

(8) With the society developing rapidly, the lifestyle of human beings is changing by intelligent technologies, so do the topic we talk about followed.

(9) Reading paper books can give us a kind of special feelings, which is couldn't provided by reading e-books.

As shown in the example sentences (7) and (8), students know that they need to use qualifiers such as “a” or “the” to modify nouns in their writing, and in the case of prepositions plus nouns, there is no need to add a qualifier before the noun. However, students often ignore or forget this rule in their writing, and thus the phenomenon of qualifier redundancy often occurs. Secondly, the number of nouns in the collected students' compositions is also relatively common. As shown in example sentence (9), what students want to express in this sentence is that reading paper books can give people a special feeling, but “feeling” is an uncountable noun and there is no plural form, so “feelings” should be replaced by “feeling”.

### III Suggestions on Improving College Student's English Writing Ability

Errors are an essential part of the foreign language acquisition process for learners. In the students' online writing texts, technical specification errors, discourse errors, vocabulary errors, and grammatical errors are classified, and the reasons to the various types of errors are mainly due to the students' own incompetence and the teachers' lack of teaching process. Based on analysis, the research proposes the following suggestions to improve the accuracy and effectiveness of writing teaching instruction.

#### 3.1 From the Teachers' Perspective

##### 3.1.1 Adding instruction of Language and Thinking

Students often use Chinese thinking to create English. When writing in English, students first think of Chinese expressions and then transform them into English. In the process of transformation, Chinese thinking keeps influencing and interfering with English writing. English is very different from Chinese in terms of sentence expressions. In the process of teaching the language, teachers put English teaching into a specific cultural environment context, so that students can experience the differences between the two languages and thinking, which enables them to understand and master the foreign language faster. Therefore, it is important to increase the contrast between Chinese and English language and thinking in the teaching process to deepen students' understanding of the differences between the two languages and gradually help them form English thinking.

##### 3.1.2 Increasing the Training of Online English Writing Skills and Methods

Online writing is a new way of English writing that has emerged in college English teaching in recent years. Both teachers and students have relatively little exposure to it, and there is relatively little research on online English writing for college students. As a result, some errors are easily neglected when writing online. In addition, some students are not highly motivated to write, and they are careless in writing, and they just want to finish their homework without paying attention to the quality of their compositions. In daily teaching, teachers should increase the training of online

English writing skills and methods and explain the importance of writing so that students can pay attention to it psychologically and avoid unnecessary mistakes. Teachers can increase input training and ask students to pay attention to some small errors, such as punctuation, spaces, and word case.

### 3.2 From the Students' Perspective

#### 3.2.1 Reading more materials

Chinese students learn textbook knowledge mainly by doing exercises, listening to lectures and reciting, and do not read much in English. Students know many grammar rules when writing, but they still make mistakes. This is ultimately because they do not read enough in general, do not develop an absolute sense of language, and are not skilled in using the rules of the language. Reading is an important part of language learning. Only through extensive reading can a sense of language be developed. Sense of language is acquired by learners through long-term language perception and use and is an intuitive ability to understand language. A lot of reading helps students learn vocabulary and grammar in context and use them accurately. In addition to learning textbooks, students should also read a lot of English originals. After a long period of persistence and accumulation, students' writing ability and level will be greatly improved with a large amount of input from the original English text.

#### 3.2.2 Increasing language practice

Words and sentences are the basic units that make up an essay. Without rich knowledge of vocabulary and the ability to compose sentences, writing becomes more difficult. Therefore, students should focus on words and sentences in the text and analyze the usage of words and compound sentences as the supplement and use some effective methods to overcome vocabulary difficulties step by step. Pay attention to the conditions of use and usage of each meaning of English words, collocation relationships, singular and plural nouns, and the difference between synonyms and near-synonyms; mime important phrases and sentence patterns, which can be better mastered by using sentence-making; train in sentence conversion and try to use multiple sentence patterns to express the same meaning.

There are various forms of English composition, such as letters, narrative essays, argumentative essays, etc. It would be a big mistake to blindly write

all compositions in one form. The various English writing templates are also of great importance, and college students have acquired many templates during their middle-school learning. If students just copy the templates, they will never improve your English writing ability and level. Students can practice writing of different genres with different templates and be skillful in writing.

**Conclusion.** iWrite AWES not only provides stable and reliable scores, but also can effectively assist in teaching college English writing and make up for some shortcomings in college English writing instruction. However, iWrite AWES still needs further supplementation from teachers in terms of text structure, content logic and language expression. Therefore, the combination of teachers' feedback and iWrite AWES can play a complementary role and thus receive better results. The detailed classification of writing errors provided by iWrite AWES is based on five major error categories and three error correction methods. It does provide students with comprehensive and detailed feedback about their English writing errors. In particular, iWrite AWES provides more effective feedback on punctuation and spelling than that provided by teachers.

Though corresponding findings have been obtained by analyzing the types of errors in college students' online writing, some limitations in this study still exist. There are not enough samples from different levels. The duration of this study is limited. To facilitate future research on more effective models of college English writing teaching, some suggestions are provided. First, researchers should expand the volume and diversity of the samples. The study could include more texts from English majors and non-English majors or students of different writing levels in terms of the number and frequency of different error types that occur. Moreover, writing assignments should include a variety of stylistic genres, such as narration, description, and expository, to enrich research findings so that the types of errors that occur in different stylistic genres and their frequency of occurrence can be studied in a broader context.

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