College students perceptions of using an online automated essay scoring system

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Abstract

Aim: This research aimed to examine how students felt about and responded to using the PIGAI system in their English composition courses. Students' impressions and responses to AES initiatives were also investigated.

Method: Twenty-five undergraduates enrolled in an English Writing Course participated in this quantitative and qualitative study. This study utilized a survey created in 2016 by Professor He, Huaqing of China West Normal University for its quantitative approach. After the survey was completed, interviews with a total of 6 participants were conducted to collect data using the qualitative approach.

Findings: Positive attitudes were shown toward the PIGAI system, particularly in vocabulary and grammar, among the students. Interestingly, those students who already had a high level of English proficiency complained that the system gave them inaccurate information and lower scores than expected. They also noted the importance of the instructor's comments to their development as writers. On the other hand, students with a lower command of English saw it as a useful tool that could help them feel more comfortable with the written word before turning in an essay.

Implications/Novel Contribution: Our data shows that instructors and academics need to design writing courses with a healthy respect for the AES system and the instructor's comments in mind. The findings could provide useful insight into fundamental facets of integrating the AES and instructor feedback into writing lessons.

Keywords: AES, PIGAI System, College English Writing

INTRODUCTION

One of the most challenging aspects of learning a new language is developing proficient writing skills. English teachers have spent considerable time and energy encouraging their students to write, but their students need more motivation and are intimidated by the process. Many students' essays in a traditional English writing classroom must be corrected for grammatical errors, sentence structure, vocabulary use, spelling, punctuation, organization, etc. Following teacher feedback, students may revise their essays to better express their ideas. They tend to repeat the same mistakes repeatedly, requiring endless repetitions of teacher corrections. As a result, students lose confidence in their writing abilities, and teachers' time could be better spent (Hilao, 2016; Wu, 2017).

Computer technology's meteoric rise has ushered in a brand new era for humanity. Teachers and researchers worldwide respond to this situation by incorporating technological tools into their classrooms. Teachers from various nations have created MOOCs (massive open online courses) for their students to take advantage of. For instance, Stanford University offers more than 181 massive open online courses (MOOCs) across a wide range of disciplines, allowing students from all over the world to enrol in and study at their own convenience and without cost. In recent years, the South Korean government has also prioritized an e-Learning initiative known as "U-learning." A digital learning environment is created by schools' widespread use of technology. Group work, rather than individual lectures, is facilitated by the classroom's set-up. This software facilitates regular online communication between educators and their students. At the same time, it helps students develop their capacities for autonomous learning.

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The use of technology in the language classroom opens up exciting new avenues for teaching writing in target languages (Hashim, Salam, & Mahfuzah Mohamad, 2017; Smart & Cappel, 2006). Educators and students can choose from various online AES systems, such as Project Essay Grade, Intelligent Essay Assessor, PaperRater, Bayesian Essay Test Scoring System, and Pigaiwang. The AES makes use of electronic grading and commenting systems for student writing. More than 4 billion essays have been improved by the AES tool Pigaiwang. Chinese language educators, scientists, and technologists created it. Many studies have indicated that it enhances students' writing abilities and sense of competence (Fang, 2010; He, 2016; Taher, Shrestha, Rahman, & Khalid, 2016; Tang & Wu, 2011; Tan, 2019). However, there is a need for educators and AES creators to learn more about how students experience and think about the program's features. Examining how college students view and respond to AES was the focus of this study. The findings may provide useful insight into critical facets of integrating the AES and instructor comments into writing lessons.

LITERATURE REVIEW

A Brief Overview of AES-Pigaiwang

In a learning context, the automatic essay scoring system (engine) can be used as a formative assessment in the writing classroom. The engine is to generate comments and the sole score for every single students writing essay. While on a standard English proficiency exam, it is used by learners as a practice tool to improve their score on TOEFL iBT and IELTS tests. Pigaiwang is one of the most commonly used AES engines in China, which is based on corpuses and big data. According to its criterion, abundant researches have indicated the system is reliable, valid, and fast in writing quality (Boonyarattanasoontorn, 2017; Yang & Dai, 2015; Zhang, 2017). The system can ease teachers loading by providing immediate feedback on grammar errors, vocabulary usage, mechanics, sentence structure, spelling, discourse structure, and source use. In addition to the features, peer review, sample article reading, plagiarism checking, and some administrative settings can be used depending on the teachers different task requirements.

Without any need for installing any software, both teachers and students can access the system by registering for their accounts with an email address. On the teachers webpage, he/she can assign writing tasks with the requirement. The students submit their writing to the system from the students webpage. Pigaiwang generates feedback and scores instantaneously. Based on the feedback, students can correct their writing essays as many times as they desire until they obtain a satisfactory score. Then the teacher receives students writing data like students writing portfolios.

Today, it usually takes weeks for students to modify and complete a writing essay. As a result of immediate feedback, students can then make an improvement in their writing efficiently and complete the writing assessment sooner than before.

METHODOLOGY

Research Subjects

In the spring semester of the academic year 2018, 30 students took the writing course as a requirement of the interdisciplinary program. Five students out of 30 never showed up or dropped the class in three weeks. Students levels of English proficiency varied due to the fact that there were no prerequisites or any other limitations on taking this course. In the first month of the class, the instructor required students to complete two writing essays by using Pigaiwang. Students were asked to fill in a questionnaire after experiencing the system. Some follow-up qualitative questions would be used to interview students with different English proficiency.

Research Questions

The main purpose of this study was to investigate students perceptions and writing performances after using the PIGAI system in their English writing class. The mix research methodology was applied in this research in order to answer the following research questions:
1. What do the students think about college English Writing?
2. Will the students English proficiency levels affect their perceptions of Pigaiwang?
3. How do students perceive the pros and cons of Pigaiwang after using it?

The Research Instrument

For the quantitative method, this research adopted a questionnaire developed by Professor He, Huaqing at China West Normal University in 2016. The questionnaire consisted of three parts, including the subjects background information, learners perception of college English writing, and learners satisfaction in using Pigaiwang. Eighteen Likert scale questions (1 for strongly disagree, 2 for disagree, 3 for not sure, 4 for agree, and 5 for strongly agree) were given in the last two parts. For the qualitative method, interviews with a total of 6 participants selected randomly from the different English proficiency groups in this study took place following the completion of the survey.

RESULTS AND DISCUSSION

Subject Background Information

There were 8 male and 17 female students participating in the current research. Nine students were majors in English, six in Business, four in Journalism, three in Education, two in Russian, and one from the Art Department. Eighty-eight percent of the students had never used the AES engine regarding their writing process, while only 3 students from China did use the AES for at least 2 years. Based on the subjects TOEIC English Proficiency scores, the students were divided into three different English levels: 6 students at the Advanced level, 9 students Intermediate level, and 10 students Upper-beginning level.

Research Question I

What do the students think about college English Writing?

Table 1 makes clear students perceptions of aspects of English writing. On the whole, most of the students considered English writing as difficult (Mean = 4.48). In respect of all the writing elements, our data suggested that students found grammar was the most difficult element (Mean = 4.44), with organization coming next (Mean = 4.40), followed by vocabulary usage (Mean = 4.24). Finally, it also reports on other elements, namely spelling (Mean = 4.04), sentence structure (Mean = 4.00), as well as content (Mean = 3.96), respectively.

Table 1: Students Perceptions of English Writing

	Means	SD
Writing important	4.44	.583
Writing difficult	4.48	.653
Vocab. difficult	4.24	.970
Grammar difficult	4.44	.768
Content difficult	3.96	1.020
Organization difficult	4.40	.577
Spelling difficult	4.04	1.098
Sentence Structure difficult	4.00	1.000

N = 25

Research Question II

Will the students English proficiency levels affect their perceptions of Pigaiwang?

Table 2 shows students perceptions of the use of Pigaiwang. It is clear to note that the organization obtained the lowest score, while vocabulary and grammar correction had the highest scores regarding their satisfaction with Pigaiwang.

Table 3 indicates that students with advanced English proficiency had lower satisfaction than students with upper beginning English proficiency. It is interesting to note that students across different English proficiency levels considered grammar correction to be the most useful feature of Pigaiwang. Students did not feel confident about this AES engine being able to help them with essay organization, though.

Table 2: Students Perceptions Pigaiwang

	Means	*SD*
Satisfaction with AES	3.16	.926
Satisfaction with scoring	4.15	.943
Satisfaction with vocab.	4.60	.645
Satisfaction with grammar	4.60	.500
Satisfaction with content	3.60	1.291
Satisfaction with organization	3.36	1.254
Satisfaction with spelling	4.64	.569
Satisfaction with sentence structure	3.88	1.130

N = 25

Table 3: Students Perceptions Pigaiwang

	Students at Advanced level	Students at Intermediate level	Students at Upper-beginning level
Satisfaction with AES tool	2.83	3.83	4.7
Satisfaction with scoring feature	3.00	4.11	4.5
Satisfaction with vocab. feature	3.83	4.00	4.8
Satisfaction with grammar feature	4.00	4.67	4.9
Satisfaction with content feature	2.83	3.56	4.2
Satisfaction with organization feature	2.67	3.42	4.0
Satisfaction with spelling feature	4.00	4.67	5.0
Satisfaction with sentence structure feature	3.00	3.87	4.4

N = 25

Research Question III

How do students perceive the pros and cons of Pigaiwang after using it?

In the interview, I selected two students from each different English level. Two students from the advanced level were decoded as AESA1 and AESA2, and two from the intermediate level were decoded as AESI1 and AESI2, while the other two from the upper-beginning level were decoded as AESUB1 and AESUB2.

When asked about the pros and cons of Pigaiwang, all students in the interview hold positive views on the immediate feedback and scoring function of it. Moreover, they think the lexical comment is helpful.

AESA1 said, " I really like this program. I can procure my score right on the bat and knowing my writing is above the average."

AESI2 replied, "sometimes I dont know the phrases or the words, Pigaiwang gave me a suggestion. I dont need to waste time to check on the dictionary. Also, it corrects my grammar errors so I dont have to worry about my poor grammar."

AESUB1 answered, "my English really good; I write not thinking too much because I know it can help me to correct like word system. But Pigaiwang is better than a word. I can get a more higher score than I think I can get. I just need to follow the comment and correct it so many times."

However, both students with advanced proficiency have negative perceptions related to the system.

AESA1 mentioned, "When I need the structure comment, Pigaiwang cannot satisfy me. It always gave me weird sentences. If I didn't follow the comment, I might get a lower score. Instead, In order to gain a higher score, I have to follow the weird suggestion. I saw my peer with a higher score than mine but their writing is not as good as mine. This made me really angry." " The word usage is also weird; for example, I tried to find a word which means paying by the hour. The program gave me the word "salary", but I know this is not the right one because I have heard the word once before...so I asked my teacher for help. She gave me the word "wage"., and I know this is the right one."

AESA2 said, "the program cannot provide good writing ideas for me. I know how to write the thesis statement and topic sentences when I am planning my writing. However, when I need some suggestion about the

supporting information or details, the system is kind of dumb and keep repeating the same and unrelated suggestions that it had provided before. I think I need my teachers guidance at this point."

CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

As indicated in Bransford, Brown, and Cocking (2000), learning is promoted when students are actively involved in their learning process. Meanwhile, it is remarkable that students can cultivate their critical thinking skills through reflective activities (Sarason & Banbury, 2004). In other words, if a student can think about what they are doing in their learning process, it will result in a positive and long-term learning outcome. Pigaiwang creates an interactive learning environment in which students engage in reflective activities and construct new knowledge. According to the results of this study, Pigaiwang has a positive influence on the students writing process. For example, students with intermediate and lower English proficiency exhibited more confidence in English writing before submitting their final draft, given that they could rely on the comments provided by the system.

Nonetheless, there are some downsides to the system, such as a lack of credibility in linguistic analysis and the imperfection of providing lexical usage. The higher-level students in the investigation have pointed out that some incorrect suggestions may have led to confusion as they wrote. The system did reduce the teachers burden in grading students writing essays. However, this does not amount to saying that teachers have no responsibilities for students writing. Fundamentally, educators should appreciate that a computer device cannot provide comments in precisely the same way as a teacher does. The problems with modularization and mechanization still exist. They should have insight about when, where, and how to apply or combine teacher feedback when using the AES system in a writing class. Complementary research should focus on a comparative study dealing with teacher feedback, peer feedback, as well as AES feedback. Additionally, frequent misuse of collocations, lexical items, and linguistic structures can be further explored and analyzed for future reference in the context of teaching writing.

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