Chapter 6
Assessing Foreign Language Narrative Writing Through Automated Writing Evaluation:
A Case for the Web-Based Pigai System

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ABSTRACT

Automated writing evaluation (AWE) has become increasingly popular in the assessment of writing. The study in this chapter examines the extent to which EFL learners' overall narrative writing performance improves through the AWE feedback system (i.e., Pigai). Eighteen university participants were required to write one paragraph narratives on the web-based Pigai system every week over the course of a month. Findings show a significant improvement in overall scores between the first and last writing task. The analysis of lexical profile further shows a significant improvement in lexical richness, clause density, and paragraph length between the first and last narrative task. The study also reported that the primary error types that occurred in learner narrative writing were lexical, mechanical, and syntactic errors. Results of post-writing interviews also showed a positive attitude towards Pigai. Finally, a positive correlation was observed between automated Pigai scores and human rating scores, supporting the reliability of the AWE system.

INTRODUCTION

The rapid development of the internet and intelligent technology over the past twenty years has revolutionized the learning and teaching of English as a foreign language (EFL). During this time, computer-assisted language learning tools for automated writing evaluation (AWE) have become increasingly popular in EFL writing instruction across different educational levels (Huang & Renandya, 2018; Link & Hegelheimer, 2015; Zhang & Hyland, 2017). To improve English language writing, established commercialized programs such as *Criterion* (e.g., Attali & Burstein, 2006), *MY Access* (e.g., Vantage Learning, 2007), *Project Essay Grade* (e.g., Page, 2003) and *WriteToLearn* (e.g., Liu & Kunnan, 2016) have been used by large numbers of students and teachers internationally to improve writing skills for both native English speakers and EFL learners. These programs have proven useful, allowing English language learners to independently and immediately revise and improve their written work (Chen & Cheng, 2008). AWE tools were also designed to benefit teachers by reducing heavy grading loads by providing immediate, automatically-generated quantitative assessments and qualitative diagnostic feedback on large numbers of written works (Aryadoust & Riazi, 2017; Bai & Hu, 2017; Chen & Cheng, 2008). Recent AWE tools such as *LightSide* (Mayfield & Rosé, 2013), *Writing Pal* (Roscoe et al., 2017), *CorrectEnglish* (Wang et al., 2013) and *Pigai* (Li, Lu, & Li, 2015; Lu & Li, 2016) have been developed to be innovative learning platforms that provide individualized feedback, particularly for EFL contexts.

This chapter investigates one popular AWE tool, *Pigai*, examining the influence of the writing tool on EFL learner writing development. *Pigai* is beneficial to learners because it provides real-time feedback on learner's writing in a bilingual interface which is particularly suitable for Chinese-speaking leaners (Li et al., 2015). After users submit a written piece, *Pigai* immediately gives an overall score and comments based on vocabulary, sentence, discourse and content. Sentence-by-sentence feedback for the writing task is also provided. Although some studies examining *Pigai* have found it to be effective in diagnosing (Chao & Liu, 2017) and in improving overall English language writing (Huang & Renandya, 2018; Li et al., 2015; Zhang, 2016), specific errors and linguistic features of learner writing that improve over time have not yet been reported. In addition to its effect on learner writing development, how the AWE tool compares to human raters still remains unknown. This study assesses the performance of four aspects of student writing (i.e., vocabulary, sentence, discourse, and content), and examines primary error types of writing, learner attitudes towards AWE system, and the correlation between *Pigai* and human scoring. The study is designed to answer the following research questions:

1. To what extent does the AWE feedback system (i.e. *Pigai*) improve English narrative writing? Which aspects of writing benefit most from the *Pigai*?
2. What are the primary error types in narrative writing tasks identified through *Pigai*?
3. What are learners' attitudes towards using the *Pigai* feedback system?
4. How consistent are the scores provided by *Pigai* relative to human raters?

Based on the above research questions, this study tests the hypothesis that real-time writing feedback from an AWE system, i.e. *Pigai*, is beneficial to EFL learner writing development and helpful to identify learner errors in their writing production. Furthermore, learner's attitude and the correlation of scores provided by *Pigai* and human raters is also compared and discussed.

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