A Study Into Effectiveness of Automated Faculty Feedback

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We explored the automated faculty feedback issue from a computer-based teaching perspective. This research demonstrated the importance of automated faculty feedback in the study of the effect of automated faculty feedback on the writing performance. Through experiment, we attempted to verify the effectiveness of the automated faculty feedback. We started with a brief introduction of the automated faculty feedback. Then we conducted an experiment to test. We ended the study with the conclusion that automated faculty feedback was superior to human faculty feedback. We identified in our study that the automated faculty feedback could have a positive effect on the students’ writing performance. Based on the results of the study, we can propose that automated faculty feedback can improve the students’ writing performance.

Keywords: writing performance, automated faculty feedback, teaching effect

Introduction

Technically speaking, automation refers to reducing the demand for human interference to a great extent to produce goods and services by using advanced information technologies and artificial control systems. Automation provides the possibility of replacing the need of the muscular labor with automated machines, artificial software, and computer programs. Also, automation contributes to reducing the demand for both human sensory and mental need. To be more exact, in the world today, computer technology and automation occupy an important position in all walks of life, such as education, research, and innovation. The rapid development of computer technology and automation has promoted the transformation of the traditional human faculty feedback to writing into automated faculty feedback, and the traditional writing into e-writing. The use of automated essay faculty feedback is gradually holding the dominant position in the new approach to evaluating writing curricula. While writing is an essential part of the educational process, many instructors find it difficult to incorporate large numbers of writing assignments in their courses due to the effort required to evaluate them (Foltz, Laham, & Landauer, 1999). Williams (2001) argued, in proceedings of the 10th Annual Teaching Learning Forum, that teaching staff around the world are faced with a perpetually recurring problem: How do they minimize the amount of time spent on the relatively monotonous tasks associated with grading their students’ essays and with the advent of large student numbers, the grading load has become both time consuming and costly, so the system that can automate the tasks is currently just a dream for most staff. The obvious advantages of using AES (automated essay scoring) tools for large-scale assessment include timely feedback, low cost, and consistency of scoring (WANG & Brown, 2008). Attali and Burstein (2004) argued that computers can function as a cognitive...
tool in a more effective way from the research on AES. With the development of computer science, programming technology, artificial intelligence, computational linguistics and cognitive science or other related disciplines, automated machine scoring assessment and e-writing gradually replace the traditional human assessment and writing on the paper for the great convenience, superb proficiency, and high accuracy.

The latest AES system examined in this paper is the computer-assisted intelligent TRP (Teaching Rescores Program), which was developed by YANG Yong-lin, at Tsinghua University. The computer-assisted TRP has functions of AES, automated essay analyzing, and automated faculty feedback on the e-writing pieces. TRP can generate the detailed report of the e-writing pieces in the respects of the marks, the total number of sentences, paragraphs, mean word length, mean paragraph length, and the positions of any given e-writing piece in a ranking of lists (YANG, LUO, & ZHANG, 2005).

Experiment

In order to testify the reliability and validity of automated faculty feedback on e-writing pieces, this part conducts an experiment by adopting the quantitative method.

Subjects

In this research, we choose 100 freshmen (50 boys and 50 girls) from Biology major at Inner Mongolia University as the subjects. Their education background, ages, and writing performance and ability are also the same. For the effect of experiment, 100 students are equally divided into two groups: One group acts as the EG (Experimental Group), and the other acts as the CG (Control Group). There are no significant differences on English writing performance between the two groups according to the data collected from the pre-test. They are taught English writing by the same teacher by using the same teaching methods and books but different faculty feedback. The EG is conducted with automated faculty feedback, and the CG follows the traditional human faculty feedback.

Research Procedures

A comparative study is conducted to display the difference between human faculty feedback and automated faculty feedback in the aspect of time used, work load, and the students’ writing performance. We adopt the instrument TRP to generate automated faculty feedback and the statistic software SPSS16.0 (Statistical Package for the Social Sciences) (see Table 1) to analyze the results. The results of the pre-test can be used to have a general understanding of the subjects’ writing performance and they prove that two groups have no significant differences in wring ability before the experiment. However, the results of the post-test show that after adopting TRP as the tool of assessment in the writing instruction and learning, the students’ writing performances have been improved a lot. The results show, in the significance level test, $p \leq 0.01$. Namely, there exists statistically significant correlation between the students’ writing performance in two groups.

As shown in Table 1, the improvement in writing scores was also obvious in the process of the study. It can be easily seen that the mean writing score of students in the EG after being trained by using TRP has been improved 1.65 over time, compared with the results of pre-test, while the changes in the mean writing score of the CG were not obvious, displaying only a slight change.
Table 1

The Comparison of Scores Between Pre-test and Post-test

<table>
<thead>
<tr>
<th></th>
<th>Mean value (EG n = 100)</th>
<th>Standard deviation EG (n = 100)</th>
<th>Mean value (CG n = 100)</th>
<th>Standard deviation CG (n = 100)</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pro-test</td>
<td>9.63</td>
<td>1.15</td>
<td>9.82</td>
<td>1.17</td>
<td>0.03</td>
<td>0.66</td>
</tr>
<tr>
<td>Post-test</td>
<td>11.28</td>
<td>1.62</td>
<td>9.90</td>
<td>1.18</td>
<td>3.52</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Research Questions

In order to testify the effectiveness of automated faculty feedback on writing pieces, this research proposes the questions: Firstly, whether can automated faculty feedback help to promote students’ scores in English writing? Secondly, whether is the application of automated faculty feedback superior to than traditional human faculty feedback?

Discussion and Results

As can be seen from Table 1, the students’ scores in the EG and the CG are almost the same in the pro-test. After training by using English Writing Teaching Resources Platform System, the EG composition score from pre-test are improved by 1.65 points. The scores of the EG in the pro-test and in the post-test have shown significant difference ($p < 0.05$). Thus, the automated faculty feedback by using English Writing Teaching Resources Platform System can improve the students’ English writing scores significantly. Automated faculty feedback decreases operation time and work handling time significantly. Automated faculty feedback have the capacity of providing assessment on the different levels in all kinds of standardized testing. Automated faculty feedback can be regarded as valuable addition and replacement provided to human raters (Phillips, 2007). With the development of instructional technology, automated faculty feedback can efficiently provide assistance, such as, timely feedback and faculty comment for teachers of writing instruction, and content feedback for students of writing class.

Conclusions

Automated faculty feedback can, on the behalf of teachers, perform tasks of analyzing, grading, and commenting on the e-writing pieces that involve hard physical or monotonous workload. With the increasing of the enrolling number of students, providing effective and timely evaluations on the ever-increasing e-writing pieces is beyond human capabilities of size, speed, and endurance. Automation in the evaluating on e-writing pieces can improve the efficiency of schools, universities, research institutions, and test service institutions (KUI, 2005; Mikulas & Kern, 2006). In a word, automated faculty feedback can provide a series of automated services for those involved with disciplines of writing instruction and assessment in the aspect of replicating human modes of judging in the scoring of e-writing pieces. Automated faculty feedback can help teachers or raters in assigning and grading a large number of writing assignments.
References


