The Effects of Peer Feedback Based on E-portfolios on Chinese EFL Learners' Writing Performance

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Abstract

As an important link of process writing, more attention is increasingly paid to peer assessment feedback by teachers. With an aid of e-portfolios based on network and multimedia technology, the present study aimed to explore the effects of e-portfolios on peer assessment feedback and Chinese EFL Learners' Writing. Tests and interviews were used to collect data, which were analyzed quantitatively and qualitatively. The results revealed that: (1) E-portfolios could help students practice writing effectively and improve their writing performance; (2) E-portfolios could significantly enhance the quantity and quality of peer assessment feedback; (3) E-portfolios were easily accepted, used and shared with peers by students, and e-portfolios, in turn, could support the interaction and feedback between teachers and students during writing, which showed that e-portfolios significantly facilitated students' writing awareness and ability and peer feedback skills in the context of Chinese EFL Learners' writing performance. Instructional implications for portfolio implementation were offered.

Key words: E-portfolios; Peer feedback; Chinese EFL learners; Writing performance

I. Introduction

It is generally agreed that L2 writing requires both linguistic competence and thinking abilities, among which language factors are very essential for writers. In addition to writer's own language factors, writing assessment and feedback, such as self-assessment and assessment from peers and teachers, are undoubtedly important ones, which can impel students to find their own strengths and weaknesses in learning, and stir up learning enthusiasm and self-confidence so as to enhance writing performance through assessment. In the past two decades, teachers have been trying to find ways to increase students' writing performance, and help them become not only better but more motivated, reflective writers, proactive in their efforts to learn, aware of their strengths and limitations and capable of incorporating feedback to improve their work.

Electronic portfolios (E-portfolios) based on network and multimedia technology lay the foundation for learners to build a new teaching evaluation system with its unique advantages. It combines students' learning and reflection under the environment of information technology so as to enable learners to think independently and innovate learning activities. However, few studies have paid attention to how e-portfolios can be used as an effective writing strategy to promote students' writing performance. For the sake of this, the present study is carried out in the context of Chinese EFL Learners' writing and attempts to contribute to the effects of peer assessment on writing performance.

II. Literature Review

2.1 What are process e-portfolios?

With the development of science and technology, the electronic documents trying to replace or supplement paper archives has penetrated into every field in our daily life. As early as 1990s, e-portfolios emerged, which was an evolution of traditional paper-based format. A process portfolio is defined as a systematic and organized collection of evidence used by teachers and students to monitor growth of students' knowledge, skills and attitudes (Barrett, 2010). E-portfolios enable learners to review their learning processes and outcomes by self-reflection and assessments from others, and enhance learners' knowledge management ability through the way of information presented (Palmer et al., 2009). According to integrated learning, Peet et al. (2011) confirmed that e-portfolios enable learners to present and integrate knowledge from the perspective of integrated learning. In summary, using e-portfolios enables learners to acquire, integrate, store, and accumulate knowledge.

In the past, some related studies on e-portfolios mainly focused on e-portfolios verifying the personal qualities in the context of learning (Hickerson & Preston, 2006), or case studies on e-portfolios implementation in specific courses (Tochel et al., 2009). However, the current trend is moving toward implementing e-portfolios initiatives supported by the internet-based technology (Balaban et al., 2013), especially in the acquisition of foreign language skills. As a result, more attention is increasingly paid to the influence of e-portfolios by foreign language researchers.

2.2 E-portfolios and writing performance

English writing e-portfolios are created around a series of standards, learning objectives and learners' reflection, which is an integrated process, involving the reflection on the feedback information of peer or teacher assessment, the reflection on the creation and sorting of e-portfolios, and the rational reflection on English writing process. Creating e-portfolios is a record of learning performance of English writing and a objective summary of learning strategies adjustment, which can imperceptibly influence students' writing behavior and improve their writing proficiency (Gao, 2013). In addition, hyper-text links can provide students with various writing materials in time so that their writing can be well documented.

E-portfolios record the whole process of students' autonomous participation in English writing. Based on the writing requirements and assessment criteria, self-assessment, peer assessment and teacher assessment are conducted, which offer all-round feedback so as to help students learn from each other to make up deficiencies. E-portfolios enable students to constantly learn about their own actual performance during English writing, which is conducive to timely summarizing learning experience and constantly making self-reflection, resulting in facing up to their learning attitude and learning methods, and improve their English writing proficiency. Meyer et al. (2010) conducted a comparative study between students using e-portfolios for writing and those who did not. Their results showed significant improvements in students' writing skills, specifically word choice, sentence structure and critical thinking, compared with those who did not use e-portfolios for writing, which were attributed to using e-portfolios. Undoubtedly, e-portfolios have a positive effect on writing performance.

2.3 Peer feedback and writing performance

There are many variants of peer assessment, but essentially it involves students providing feedback to other students on the quality of their work. Peer feedback is based on the cooperative learning theory which holds that the cooperative learning is the most effective learning model among cooperative learning, competitive learning and personal learning. By means of peer feedback, students can gradually transfer the knowledge and skills gained in the mutual assessment to their own writing. Olson (1990) conducted a study in which participants were selected from different classes, randomly paired, and then met with peer partners to respond to and revise

rough drafts each other. The results showed that peer feedback had significantly positive effects on students' narrative writing performance. Gielen et al. (2010) verified the effects of peer feedback and collective teacher feedback on personal writing performance. The results indicated that most students held an opinion that feedback from peers was in favor of facilitating writing skills, whereas less than 25% of students considered that offering feedback helped to stimulate their own writing process. The results of a similar study by Yu & Wu (2013) suggested that peer feedback could significantly contribute to the improvement of students' creative thinking in writing, and highlight the importance of cultivating students' critical thinking ability.

2.4 E-portfolios and peer feedback

When using e-portfolios, learners do not only understand their learning, but demonstrate contents of their e-portfolios (Lorenzo & Ittelson 2005). This is similar to the intention of knowledge sharing. Peer feedback in e-portfolios provides a chance for learners to give suggestions for enhancing interactions among peers. This is similar to the intention of knowledge acquisition. Learners' knowledge innovation process can be found through presentation of artifact and self-reflective learning (Metz & Albernhe Giordan, 2010). E-portfolios could attribute to exchanging thoughts and learning feedback among learners, running through the whole learning process, and e-portfolios functioned as the main tools for collecting feedback, presenting learning performance and making further discussion each other.

To further facilitate and encourage this powerful and meaningful reflective learning through e-portfolios use, learners need to be aware of its benefits, as well as the challenges that learners may face in using e-portfolios as one of the alternative assessment methods. Liu et al. (2004) applied e-portfolios of peer feedback to graduate-level computer science course to probe into the roles of E-portfolios with the results that most of graduates enjoyed the peer feedback process based on e-portfolios, and appeared to make sure that offering feedback to peers would be beneficial. Barrett (2010) explored the application of e-portfolios in secondary education, which found that e-portfolios embodied a relatively higher level of interactive feedback, especially among peers. Peet et al. (2011) took the computer application course as an example, exploring the relationship between teacher assessment, peer assessment and students' self-assessment in the context of e-portfolios based on the Internet.

As shown above, the effect of peer feedback based on e-portfolios on writing learning is an under-researched topic. To the best of the author's knowledge, there is no systematic, empirical evidence from research examining the association of e-portfolios with writing performance and peer feedback in Chinese EFL Learners. Therefore, the current study attempts to seek answers to the following research questions:

1) How does e-portfolios implementation affect Chinese EFL Learners' writing performance?

2) To what extent can e-portfolios affect peer assessment feedback?

III. Methodology

3.1 Participants

Sixty-five non-English major undergraduates from 5 intact classes in a national key university in south China participated in the current study, 34 of them male and 26 female (with 5 missing values for the gender). The present study used quota sampling to keep an approximate balance between the number of participants from the science and engineering programs and the liberal arts programs. Consequently, the 31 science and engineering students were sampled from programs of civil engineering and software, while the 29 arts students were from programs of history, politics and journalism. All of them were admitted into undergraduate programs

in 2009.

3.2 Procedures

3.2.1 E-portfolios creation in English writing

The Wiki-based e-portfolios were created to record the progress of students' writing and feed information back to peers during writing. Chuang (2010) used weblog to support a learning portfolio, which were supported by current information and communication technology and used in the practical teaching. The Wiki-based e-portfolio was a learning platform specially created for writing practice, which was used as an e-portfolio tool. Students could get access to their own learning portfolios by clicking on the writing class Wiki. As Palmer et al.(2009) noted, the learning aspect of e-portfolios not only enhanced learners' knowledge management ability through the way of information presented, but enabled learners to review their learning processes and outcomes by self-reflection and peer feedback.

3.2.2 E-portfolios implementation in English writing

During writing, students shared their writing with classmates by using e-portfolios so as to gain feedback from peers and teachers, and blend these feedback in revising their writing draft. With the aid of Wiki, e-portfolios could make it possible for students to upload and share information and asynchronously offer assessments to peers. In this case, students could conduct self-assessment based on the given standards and self-reflection, and set their own writing goals. The procedure was repeatedly done for six writing additional pieces in a semester, during which students were required to offer some simple or constructive feedback to their peers. However, the present study only focused on the peer feedback based on E-portfolios.

3.3 Instruments

The quantitative and qualitative analyses were combined into the data of present study. The former consisted of pre- and post-tests of English writing performance, questionnaire on the function of e-portfolios whose results were used to understand and compare the improvement of students' writing performance and the function of e-portfolios prior to and at the end of the experiment, whereby the latter meant the interview with students, which was supplementary to the former.

3.3.1 Pre- and post-tests of English writing performance

Students were pre-tested and post-tested with regard to their writing performance prior to and at the end of e-portfolios implementation. Materials used in the pre- and post-tests of English writing were selected from the national College English Test Band 4 (CET-4) in China from 2017 to 2019. The test results of English writing were used to examine Chinese EFL Learners' writing performance prior to and post e-portfolios implementation.

3.3.2 Questionaire of e-portfolios implementation

The present study employed a questionnaire which, in addition to personal background information, consisted of five-point Likert scales from "1"(totally disagreeable) to "5" (totally agreeable) to the participants (teachers and students) respectively. There were 20 items in the questionnaire, by which data collected were used to examine teachers' and students' attitudes to e-portfolios implementation during writing.

3.3.3 Peer assessment criteria and feedback forms

A five-point scale, ranging from 1 (weak) to 5 (strong), was employed to evaluate students' writing performance. Then the score was transformed into a percentage score with maximum possible score (100) and minimum score (20). Students' writing was assessed by the following aspects: 1) paragraph structure; 2) body / conclusion; 3) subject-predicate agreement; 4) part of speech / collocation; 5) tense / voice; 6) spelling; 7) repetition / redundancy; 8) punctuation; 9) content / creativity; 10) Chinese expression.

Peer feedback could be divided into the simple feedback and the constructive feedback. The former only verified one or two minor errors in the writing draft and offering the general comments, whereas the latter often provided the positive assessment and put forward more than three suggestions for improvement.

3.3.4 Interviews

At the end of e-portfolios implementation, 8 students with different writing performance (4 with top performance and 4 with low performance) and 3 teachers were selected to make interviews face to face, each of which was done within 5 minutes. All interviews were videotaped, and then transcribed into the written version for the qualitative analysis.

IV. Results and Discussion

4.1 Differences in writing performance between pre- and post-portfolio implementation

The quantitative analysis was employed to examine the effects of e-portfolio implementation on students' English writing performance. All students were pre- and post-tested with regard to their writing performance prior to and at the end of e-portfolios implementation, as shown Table 1. A paired-samples t-test showed that there were statistically significant differences between students' pre-test (M=58.38, SD=8.76) and post-test (M=70.42,SD=12.56) on writing performance ($t=(104)=-10.28$, $p<.01$), which indicated that there was a certain positive correlation between using e-portfolios and students' writing performance over time, meaning that e-portfolios implementation contributed to effectively practicing students' writing so as to improve their writing performance.

Table 1 Students' writing scores of pre- and post-tests (n=60)

Test	M	SD
Pre-test	58.38	8.76
Post-test	70.42	12.56

4.2 Effects of e-portfolios on peer assessment feedback

4.2.1 The descriptive statistics of peer feedback

Table 2 The descriptive statistics of peer feedback

Essay	n	M	SD
E1	55	4.76	3.06
E2	124	5.08	3.88
E3	98	3.40	4.40
E4	43	6.73	2.44
E5	113	9.15	5.53
E6	71	3.91	0.20

The descriptive statistics of students' peer feedback as this was reflected in the number of their comments showed that students continued to use e-portfolios over time, offer peer feedback actively, identify errors in peer essays gradually, and provide suggestions for improvement.

4.2.2 The quantitative analysis of peer feedback

The quantitative analysis of peer feedback assessment showed that the contents of peer feedback had gradually been improved, especially in the first four weeks of implementation. In the first two weeks, 85% of

peer feedback were defined as the simple feedback. After eight-week implementation, this percentage was dropped into 31%, whereas the percentage of assessment based on the constructive feedback climbed to 59%. In addition, during the middle period of implementation (6-12 weeks), the constructive feedback exceeded the simple feedback.

The above analysis showed that students could better provide the constructive feedback and suggestions to their peers during implementation. However, during the last four weeks of the semester (13-16 weeks), the constructive feedback assessment was decreased, while the simple feedback was increased. One possible explanation might be that approaching to the end of the semester, students were less enthusiastic with peer feedback and unwilling to spend time in providing positively constructive feedback. However, the positive effect of peer feedback assessment became increasingly significant over time because students would actively spend time in identifying errors and communicating with their peers, and be simultaneously concerned the expression of feedback assessment.

4.2.3 Findings from students' interview on e-portfolios and peer feedback

The students' interview on e-portfolios and peer feedback analyzed qualitatively indicated that students laid great value on peer feedback during writing practice. Haughton & Dickinson (1989) found "a relatively high level of agreement between the peer assessments and the marks given by the lecturers (p128)" in their study of a collaborative post-writing assessment. Fulcher & Davidson (2007) verified that peer feedback might improve students' critical thinking ability. A similar study conducted by Shute (2008) indicated that peer assessment had a more positive effect on students' writing performance than feedback from teachers. The findings from students' interviews in this study showed that peer feedback could contribute to motivating students to revise their essays during writing practice, and create more opportunities for interaction and cooperation, which were key factors to improve students' autonomous learning. At the same time, peer feedback can also improve learners' reader awareness, strengthen learners' self-awareness and identity in the writing process, make it easier to find their own mistakes in writing, and be willing to accept peer evaluation and modification so as to improve the quality of writing.

The collaborative learning theory holds that the cooperative learning is the most effective learning model among the three learning models: cooperation, competition and individual, while peer assessment feedback is a form of cooperative learning model. Feedback collation was the most effective link, and often neglected by students in the context of English writing, which further facilitated and encouraged students to conduct the powerful and meaningful reflective learning from the multiple perspectives. In general, students believed that e-portfolios helped record the whole process of their participation in English writing, which encouraged students to participate in the whole process of language learning, and to be aware of individual progress. In addition, by means of e-portfolios, students could learn from each other, which was conducive to summarizing experience in time, constantly self reflection, facing up to their learning attitude, learning methods, and improving their enthusiasm in writing learning practice so that they could gradually transfer the knowledge and skills achieved to their own writing practice. Although some students complained that feedback received from peers was not always helpful during writing practice, meaning that peers would often ask them to correct the spelling of words in cases when it was not ungrammatical at all, and feedback was sometimes repeatedly presented, which undoubtedly showed some shortness of peer assessment feedback, it is not problematic that peer assessment is a more effective learning tool than self-assessment when used appropriately.

The study result revealed that e-portfolios had a significantly positive effect on students' writing

performance, which reminds teachers that e-portfolios can be integrated into their instructions and enhance students' writing abilities. Students had more significantly positive attitude toward their writing after using e-portfolios than before, which was consistent with some studies stating that portfolios are a facilitator for writing behavior (Bozhko & Heinrich, 2011; Palmer et al., 2009; etc.). According to the reflection contents from the students, they expressed that Wiki-based portfolios with a function of knowledge accumulation were beneficial to their writing knowledge acquisition and integration. However, there were students mentioning the problem of Wikis posted on the Internet. The results can inform teachers and students focusing on knowledge storage and accumulation when using Wiki-based portfolios in the future can enhance students' knowledge assessment. Moreover, teachers should enhance activities of knowledge integration in order to facilitate the effect of e-portfolios on writing performance.

4.2.4 Findings from teachers' interview on e-portfolios and peer feedback

Findings from the qualitative analysis of the teacher's interview revealed that e-portfolio implementation made peer assessment feedback during English writing more operational. E-portfolios could cover the disadvantages of storage in traditional paper-based portfolios, enable students to review their writing processes and outcomes by self-reflection and assessments from others, and enhance their writing ability through the way of information presented. While using e-portfolios, students could further organize and systematize information in order to produce useful knowledge and improve writing behavior by collecting and presenting information with goals.

However, it seemed that students with high writing ability could really benefit from e-portfolios implementation rather than those with low writing ability because those with low writing ability often needed the extensive support from teachers to effectively participate in peer feedback groups. Moreover, as the teacher stressed, it was difficult for students with low writing ability to verify out problems from peer feedback and correct their writing errors, and it was, in return, not easy for them to assess peers' writing draft when offering feedback to their peers. Additionally, when students with low writing ability corrected the first draft once again, they had an inclination to make the same mistakes. Therefore, teachers were more concerned about how students with low writing ability dealt with feedback from peers, teachers, as a result, would spend much time in helping them deal with feedback from peers efficiently and provide correct feedback to their peers, whereas for students with high writing ability, teachers believed that they could find common mistakes in peers' writing draft and provide peers with the constructive comments. In conclusion, teachers stood by the ease of use of the e-portfolio tool and e-portfolios' affordances of peer feedback.

V. Conclusion and implication

The present study explored the effects of peer feedback based on e-portfolios on Chinese EFL learners' writing performance. First of all, there was a positive relationship between e-portfolios implementation and students' changes of English writing abilities by comparing writing performance prior to and at the end of e-portfolios implementation. Secondly, analyzing peer assessment qualitatively showed that students' writing performance was improved over time, which suggested that peer feedback could contribute to students' English writing learning. In addition, e-portfolios could promote peer feedback, gradually verify peers' writing errors and appropriately offer the constructive feedback over time. Finally, as previous research has shown that students who received constructive peer feedback derived more learning benefits from peer assessment than those who receive low-quality feedback (Gennip et al., 2009).

As the analysis of the teacher interview showed, some students, especially those with low English writing ability, often repeated the same mistakes in their subsequent writing practice after receiving peer assessment feedback. Students agreed that e-portfolios could help improve their writing performance, and they had a more positive attitude towards peer feedback and objectively corrected errors in their own writing draft. More importantly, students' feedback skills to peers were improving over time, which showed that e-portfolios implementation was beneficial. A problem that students identified in their interviews was that feedback from peers was not always constructive, and in some cases it was repetitive, meaning that more than one student pointed out the same mistake, which might arise given the social context of peer assessment, such as a lack of trust in others as assessors. In short, e-portfolios were easily to be accepted and used by students during writing practice, and e-portfolios could, in return, promote interaction and feedback between teachers and students, which demonstrated the feasibility and effectiveness of e-portfolios implementation. This finding is in line with a study by Ash (2000), meaning that integrating technology into the learning process stimulates students to reach their full potential. In addition, teachers who were interested in promoting peer feedback might invest more time on e-portfolio implementation. In this study, the application of e-portfolio with Wiki as the carrier is greatly effective, but its usability and functionality in practice need to be improved. Peer assessment feedback is a revolutionary change in the actual educational practice, which can improve students' critical thinking ability in writing learning. However, how do different forms of feedback affect students' writing ability? How does peer feedback promote learners with low abilities to use feedback to modify their writing? These issues are worthy of being further investigated in the future research.

Undoubtedly, the present study also has some limitations. Students in the study used Wiki to create e-portfolios. However, there are many other types of tools for creating e-portfolios, such as FrontPage, Face-book, Twitter, and Web-log. Therefore, one of the limitations is that the study results may not be generalized to other types of e-portfolios. The differences in writing performance among different types of e-portfolios can be compared in future studies. In general, the larger the sample is, the more convincing the results of data analysis are. Another limitation was the small sample size (n=60), which affected the credibility of the research results to a certain extent. It was, therefore, not possible to assess whether learning gains would be attained for students who face severe learning difficulties. The findings cannot be generalized as they only apply for students and teachers who have similar characteristics as the ones who participated in the study.

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