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Assessment Differences between Teachers and Students in the Context of Peer Response: A Cognitive Style Approach

Pei-Chun HUNG, Song-Yu MEI, Sherry Y. Chen & Mu-Chun SU
Graduate Institute of Network Learning Technology National Central University, Jhongli Taiwan
* sherry@cl.ncu.edu.tw

Abstract: Peer assessment is useful for the improvement of English writing. However, individual differences exist between students and might affect how they assess peers' works. Hence, individual differences need to be considered in peer assessment. Among various individual differences, cognitive styles have essential impacts on student learning. Thus, this research investigated assessment differences between teachers and students in the context of peer response from a cognitive style perspective. The results suggest that there were no assessment differences in the first draft but assessment differences did exist in the revised drafts. This might be because students might feel difficult to identify improvement due to their insufficient experience. On the other hand, Holists usually paid more attention to the content at a superficial level while Serialists had difficulties in the connection between topics and the content. In brief, the findings from this study demonstrated that each student took a unique way to do assessment. Furthermore, such findings can guide instructors to deliver effective peer assessment in the future.

Keywords: Peer assessment, peer response, cognitive styles, assessment differences

1. Introduction

In the past decade, peer assessment is considered as an effective strategy to improve student learning (Dochy, Segers and Sluijsmans, 1999; Ballantyne, Hughes and Mylonas, 2002). In particular, it is useful for the improvement of English writing (Rollinson, 2005, Hyland and Hyland, 2006). Due to such advantages, researchers attempted to incorporate peer assessment into technology-based learning (Shih, 2011; Woo, Chu and Li, 2013; Wichadee, 2013; Chwo, 2015) in recent years and they found that such online peer assessment had positive effects on English writing. For example, Shih (2011) investigated the effect of incorporating peer assessment and Facebook on English writing and the results indicated that the peer assessment continuously enabled students to self-examine, review, observe, and make comments on each other's work. Furthermore, they also gained more detailed knowledge from other works. By doing so, students' abilities could be improved, in terms of organization, grammar and structure, content, vocabulary, and spelling. Similar results were found in Woo, Chu and Li (2013), who used the Wiki to support collaborative writing in a Chinese primary school in Hong Kong and the results indicated that the more comments posted, the more revisions made. Additionally, the more revisions made, the better the quality of students' writing. Likewise, Wichadee (2013) also found that the students paid more attention to their written works when they realized that such work would be reviewed or read by their peers. Consequently, students' writing performance was significantly improved.

However, some studies indicated that peer assessment had negative effects (Nicolaidou, 2013; Hoogeveen and Gelderen, 2013; Wang, 2014; Ruegg, 2015). For instance, Hoogeveen and Gelderen(2013) argued that students with limited mastery of writing so it is difficult for them to pay attention to revising the works and to giving constructive comments simultaneously. Additionally, they might emphasize on rule-based comments (e.g. subject/verb agreement and pronoun agreement), and ignored non-rule based suggestions (e.g. inappropriate word choices and awkward sentence structure) due to limited English proficiency. Hence, the authors might not be able to perceive usefulness of peer feedback (Wang, 2014). Furthermore, the peers' feedback was not always correct and sometimes it was repetitive in the sense that more than one person identified the same mistake (Nicolaidou, 2013). For

instance, Ruegg(2015) found that the surface-level grammar feedbacks given by peers were highly inaccurate and were ineffective in improving grammatical accuracy even though the students gave more surface-level grammar feedbacks than the teachers.

On the other hand, individual differences exist between students so they have distinctive strengths and weaknesses, which might affect how they assessed the peers' works. Among various individual differences, cognitive styles have essential impacts on student learning (Chen and Liu, 2011). In particular, Pask (1979) Holism/Serialism is considered as an influential cognitive style in student learning (Chen and Chang, 2014; Huang, Hwang and Chen, 2014). In general, learners with a holistic style prefer tened to take a global learning approach while those with a serialistic style prefer to use a local learning approach. Additionally, Jonassen and Grabowski (2012) claimed the Holists prefer to a "whole-to-part" approach to process information whereas the Serialists prefer to take a "part-to-whole" sequence to process information. Due to such differences, recent studies attempted to put effort to investigate how Holists and Serialists reacted differently to technology-based learning. For instance, Chan, Hsieh and Chen (2014) investigated how Holists and Serialists used electronic journals via mobile devices, and found that Holists favored to use the Basic Search that can obtain an overall picture while Serialists preferred to use Boolean operators to obtain specific details via the Expert Search. In brief, great differences exist between Holists and Serialists. Nevertheless, paucity of research examined their differences in the context of peer assessment. Thus, this study attempts to address this issue. To this end, the aims of are two-folded. One is to examine assessment differences between students and teachers while the other is investigate how Holists and Serialists assess peers' works differently. By doing so, this study can not only identify differences between students and teachers in the context of peer assessment but also fill the gap where cognitive style was ignored in peer assessment by past research.

2. Methodology

2.1 The Peer Assessment of Writing System

The design features of the Peer Assessment of Writing System (PAWS) included Convenience, Flexibility and Helpfulness. The details are described in subsections below.

(A) Convenience: The PAWS was implemented on the Internet Information Services (IIS). Thus, both authors and assessors can access the PAWS via the browsers with convenience. By doing so, the authors can write academic papers conveniently and the assessors can easily give comments as well. Moreover, the PAWS provided favorable functionalities for authors and assessors. More specifically, the authors could not only re-examine the suggestions obtained from students and teachers but also reviewed their previous drafts anytime when they did the revision. On the other hand, the assessors can re-check their previous comments to do the assessment correctly.

(B) Flexibility: The PAWS provided two approaches to deliver comments, such as Comments with the tags and Comments within the content. Regarding the former, assessors could tag the mistakes or flaws based on three aspects, i.e., Logic, Grammar and Vocabulary. Regarding the latter, they could also compose the comments or revise the errors within the content of articles. By doing so, the students could not only follow the criteria of three aspects (Logic, Grammar and Vocabulary) to give precise comments, but also they could give additional comments within the content. Thus, the assessors could deliver comments based on their own preferences and the authors could receive various advices, with which they can do comprehensive revision.

(C) Assistance: In order to facilitate Learning by Doing, the PAWS provide various resources to help students to evaluate the academic papers, including Writing Guidance, English Grammar and Marking scheme.

- Writing Guidance: to help reviewers to identify the quality of the drafts, including Writing skill (i.e., to describe what a high-quality paper is), Contents presentation (i.e., to describe how to structure a paper) and Logical relationships (i.e., to describe how to make a logical link between each sentence and between each paragraph). .
- English Grammar: to help students to improve their understandings of English grammar, such as preposition, basic English grammar, the rules of speech, ambiguous vocabularies, as well as the use of relative pronouns and relative adverb.
- Marking scheme: to provide marking criteria so that the students can know how to assess each work.

In brief, all of the above resources can not only be applied to help students give precise comments, but also to be employed to improve their writing abilities.

2.2 Study Preferences Questionnaire(SPQ)

To compare the assessment of Holists and Serialists, this study used the Chinese version of the Study Preferences Questionnaire (SPQ) to identify students' cognitive styles. This is due to the fact that the SPQ has been used in several studies (Clewley, Chen and Liu, 2010; Mampadi et al., 2011) in past research. The original version of the SPQ was produced by Ford (1985), who created 17 item-inventory and each inventory comprise two statements. The students were asked indicate their degree of agreement with either statement. If half of their statements are related to Holists, they are identified as Holists. Conversely, if half of their statements are related to Holists, they are identified as Serialists.

2.3 Marking Sheet

The marking sheet was divided into two parts: (1) Personal information (2) Marking scheme. The first part contains students' registration numbers and names. The second part was adopted from the IELTS, which is a worldwide mechanism to assess the English language proficiency and is widely applied in various schools or universities in English-speaking countries. In particular, the IELTS was applied in the EAP (English for academic purposes), which is a professional organization in English training (Green, 2005, Morton, Storch and Thompson, 2015). Hence, the IELTS criteria were applied in the second part of the marking sheet, including Task achievement, Coherence and cohesion, Lexical resource and Grammatical range and accuracy. Task achievement is about whether the writers fully address all parts of the academic papers. Coherence and cohesion are concerned whether the authors can make clear links between sentences and paragraphs skillfully. Lexical resource is to appraise whether the authors use a wide range of vocabulary and seldom make minor errors. Finally, the Grammatical range and accuracy is to evaluate whether the writers uses a wide extent of grammar structures with flexibility and accuracy. Each of the aforementioned aspects is out of 25 marks so the full mark is 100.

2.4 Experiment Procedures

A total of 16 individuals participated in this study. These participants were students at the northern university in Taiwan, and they had basic computing and Internet skills to use the PAWS. At the initial stage of the experiment, the SPQ was applied to identify their cognitive styles. The results of the SPQ indicated that there were eight Holists and eight Serialists. In order to help the participants know how to act as assessors, they were provided a series of three-hour training courses at the second stage. The training courses lasted for ten weeks, each of which was three hours long, including English grammar, English paper reading, and the assessment of English academic works. In the end of the training courses, the participants were instructed how to use the PAWS to do assessments. After completing the training courses, the participants started to do the assessment at the third stage. The assessment included four activities, the details of which are described in Table 1.

To enhance the reliability of the results from this study, the assessment activities described in Table 1 took place twice. Accordingly, the students and teachers need to assess eight papers, including four first drafts and four revised drafts. Thus, the assessment differences between the students and those from the teachers were discovered via these four first drafts and four revised drafts.

Table 1. Four activities at the third stage

1	To write the first draft	The authors needed to compose the first draft, which introduced their own research topics.
2	To assess the first draft	Both of the students and teachers gave comments via the PAWS and filled out the marking sheet for the two first drafts that the teachers randomly chose.
3	To do the revision	Authors had to revise the first drafts according to the comments from the students and the teachers.
4	To assess the revised draft	Both of the students and teachers gave comments via the PAWS and filled out the marking sheet for the two revised drafts.

2.5 Data Analysis

To examine the reliability and validity of peer assessment, the assessment differences between teachers and students were examined. Data analyses included two parts: (1) quantitative measurement, and (2) qualitative evaluation. The first part, which was collected from scores of the students and the teachers that were assigned for the four first drafts and four revised drafts, was administered with the Independent T-test so that the significant difference between scores from the students and those from the teachers could be identified. This is due to the fact that the Independent T-test was suitable to compare the means of two Independent samples (Stephen and Hornby, 1997). The second part was collected from comments collected via the PAWS and such comments were categorized into Task achievement, Coherence and cohesion, Lexical resource as well as Grammatical range and accuracy. By doing so, such comments can be applied to support the results of quantitative measurement so that the comprehensive information could be obtained to clarify the assessment differences between the students and teachers.

3. Results and Discussion

This section describes the results of this study, which are divided into two parts: (1) Overall Scores and (2) Detailed Scores (Task achievement, Coherence and cohesion, Lexical resource, Grammatical range and accuracy). Each part includes differences between all students' scores and teachers' scores, between Holists' scores and teachers' scores, as well as between Serialists' scores and teachers' scores.

3.1 Overall Score

Table 2 and Table 3 display scores differences in the first draft and those in the revised draft, respectively. Both of them covered the scores given by the students and those obtained from the teachers. No significant difference was found between the scores from the teachers in the first draft while there was a significant difference in the revised draft. This might be due to the fact that the author lacked sufficient understandings of how to write academic papers so both students and teachers gave low scores for their first draft. However, authors' understandings could be enhanced after they received the peers and the teachers' feedbacks, which could help them make improvement in their revised works.

Table 2: The independent t-test of first draft of overall score.

Capacity	Mean	SD	t	Sig.
Students vs. Teachers				
Students	67.596	10.513	-0.477	0.635
Teachers	69.469	9.790		
Holists vs. Teachers				
Holists	66.258	11.289	-0.733	0.469
Teachers	69.469	9.790		
Serialists vs. Teachers				
Serialists	68.933	9.681	-0.139	0.890
Teachers	69.469	9.790		

Table 3: The independent t-test of revised draft of overall score.

Capacity	Mean	SD	t	Sig.
Students vs. Teachers				
Students	69.796	10.527	-2.301	0.025*
Teachers	78.594	6.233		
Holists vs. Teachers				
Holists	69.208	11.271	-2.250	0.031*
Teachers	78.594	6.233		
Serialists vs. Teachers				
Serialists	70.383	9.885	-2.222	0.033*
Teachers	78.594	6.233		

On the other hand, teachers and students had different levels of experience in reviewing authors' revised works. Teacher had a high level of experience whereas students had a low level of experience. Accordingly, it was easy for teachers to identify the improvement that authors made but students might feel difficult to identify such improvement. This might be the reason why a significant difference was found in their revised works. More specifically, the score of the revised draft from the Serialists was higher than those from the Holists. This might be due to the fact that Serialists were used to focusing on procedural details so that they paid more attention on the micro level of academic papers. Conversely, Holists emphasized the macro level. Hence, Serialists could more easily identify the improvements that the authors made in the revised works than Holists did. This is reason why the Serialists gave higher scores than Holists.

3.2 Detailed Scores

3.2.1 Teachers vs. Students

Table 4 and Table 5 display the difference between scores from teachers and those from the students in each part of the marking scheme, including Task achievement, Coherence and cohesion, Lexical resource and Grammatical range and accuracy. The results appeared similar to those of the overall scores presented in Section 3.1, where the significant difference between the students and the teachers did not exist in the first draft while the significant difference were found in the revised work. As mentioned above, the authors lacked adequate experience of writing academic papers so that both students and teachers gave low scores for their first drafts. In most of the parts, the scores from the students were lower than those from the teachers in the first draft. However, an exception was found in the part of grammatical range and accuracy, where the scores from the students were higher than those from the teachers. , This might be owing to the fact that teachers possessed a higher level understanding of English grammar so that they could identify most of grammar errors while students could not discover certain grammar errors due to poor understandings of English grammar.

Table 4: The independent t-test of first draft of detailed score by students and teachers.

Aspects	Capacity	Mean	SD	t	Sig.
Students vs. Teachers					
Task Achievement	Students	17.368	3.300	-1.724	0.089
	Teachers	19.436	2.060		
Coherence and Cohesion	Students	16.520	3.745	-0.053	0.958
	Teachers	16.594	3.105		
Lexical Resource	Students	16.846	2.252	-0.430	0.647
	Teachers	17.219	2.707		
Grammatical Range and Accuracy	Students	16.862	2.582	0.640	0.524
	Teachers	16.219	3.331		

Table 5: The independent t-test of revised draft of detailed score by students and teachers.

Aspects	Capacity	Mean	SD	t	Sig.
Students vs. Teachers					
Task Achievement	Students	17.983	3.126	-2.545	0.013*
	Teachers	20.875	1.885		
Coherence and Cohesion	Students	17.358	3.312	-1.800	0.076
	Teachers	19.531	2.140		
Lexical Resource	Students	17.333	2.534	-2.205	0.031*
	Teachers	19.375	1.711		
Grammatical Range and Accuracy	Students	17.120	2.758	-1.677	0.098
	Teachers	18.812	1.898		

Regarding the revised draft, significant differences were found in the Task achievement and the Lexical resource parts. Regarding the Task achievement part, the scores from students were lower than those from the teachers. On the other hand, the results from qualitative data indicated that the students gave very few comments related to the Task achievement. In particular, the number of comments for the Task achievement was lower than that of the Coherence and cohesion though these two parts are concerned with the logic relationships of academic papers. These findings suggested that students could not do what teachers did because they could not precisely identify the connection between the topic and the content presented in the revised works. In brief, the students seemed to struggle for giving scores in the part of the Task achievement so a significant difference existed between the scores from teachers and those from students.

Regarding Lexical resource, the scores from students were also lower than those from the teachers. The authors modified the first draft according to comments from the students and the teachers so plentiful vocabularies were displayed in the revised draft. On the other hand, teachers, who were familiar with diverse vocabularies, could precisely evaluate academic papers. However, students were short of competence to identify such vocabularies so that they had an obstacle to assign the scores. Thus, they could not uncover the improvement that the authors made, which resulted in a significant difference between the scores from teachers and those from students.

3.2.2 Holists vs. Serialists

Table 6 and Table 7 display the difference of scores between Holists and teachers and between Serialists and teachers in the first draft and the revised draft, in terms of Task achievement, Coherence and cohesion, Lexical resource and Grammatical range and accuracy. The results was also similar to those presented in Section 3.1, where significant differences between Holists and teachers and between Serialists and teachers did not exist in the first draft, but significant differences were found in the revised draft. Although there was no significant difference in the first draft, there was an interesting finding. More specifically, the scores from Holists and Serialists were lower than those teachers but two exceptions were found. One was the Serialists gave higher scores than the teachers in the part of Coherence and cohesion while the other was the Serialists assigned higher scores than the teachers in the part of Grammatical range and accuracy. Regarding the former, Serialists tended to take an depth-first approach where the assessment of Coherence and cohesion emphasized on an breadth-first framework. Thus, they were not good at the evaluation of Coherence and cohesion. This is reason why the Serialists gave higher scores than the teachers. Regarding the latter, Serialists usually used a local approach to learning so they may merely focused on the grammar error in a single sentence, instead of the grammatical correctness in the whole draft. Conversely, teachers were able to consider both conditions so that they could identify almost all grammar errors. Thus, the teachers would give lower scores than the Serialists.

Table 6: The independent t-test of first draft of detailed score by Holists, Serialists and teachers.

Aspects	Capacity	Mean	SD	t	Sig.
Holists vs. Teachers					
Task Achievement	Holists	17.318	3.372	-1.687	0.100
	Teachers	19.436	2.060		
Coherence and Cohesion	Holists	16.175	3.636	-0.297	0.768
	Teachers	16.594	3.105		
Lexical Resource	Holists	16.717	2.532	-0.491	0.626
	Teachers	17.219	2.707		
Grammatical Range and Accuracy	Holists	16.050	2.802	-0.146	0.885
	Teachers	16.219	3.331		
Serialists vs. Teachers					
Task Achievement	Serialists	17.417	3.283	-1.647	0.108
	Teachers	19.436	2.060		
Coherence and Cohesion	Serialists	16.867	3.881	0.183	0.108
	Teachers	16.594	3.105		
Lexical Resource	Serialists	16.975	1.967	-0.287	0.775
	Teachers	17.219	2.707		
Grammatical Range and Accuracy	Serialists	17.675	2.086	1.176	0.271
	Teachers	16.219	3.331		

Table 7: The independent t-test of revised draft of detailed score by Holists, Serialists and teachers.

Aspects	Capacity	Mean	SD	t	Sig.
Holists vs. Teachers					
Task Achievement	Holists	17.867	3.011	-2.674	0.011*
	Teachers	20.875	1.885		
Coherence and Cohesion	Holists	17.125	3.340	-1.924	0.062
	Teachers	19.531	2.140		
Lexical Resource	Holists	17.425	2.751	-1.898	0.066
	Teachers	19.375	1.711		
Grammatical Range and Accuracy	Holists	16.792	3.015	-1.793	0.081
	Teachers	18.812	1.898		
Serialists vs. Teachers					
Task Achievement	Serialists	18.100	3.284	-2.277	0.029*
	Teachers	20.875	1.885		
Coherence and Cohesion	Serialists	17.125	3.340	-1.924	0.062
	Teachers	19.531	2.140		
Lexical Resource	Serialists	17.242	2.342	-2.401	0.022*
	Teachers	19.375	1.711		
Grammatical Range and Accuracy	Serialists	17.450	2.482	-1.439	0.159
	Teachers	18.812	1.898		

Regarding the revised draft, the significant differenced were found in Task achievement and Lexical resource parts. Regarding Task achievement part, both scores from the Holists and the Serialists were higher than those from the teacher. As mentioned above, Serialists usually focused on a local aspect. However, the assessment of Task achievement needs to be conducted with a global approach. Furthermore, the results from qualitative data revealed that the Serialists did not give any comments of Task achievement in an academic work. These findings suggest that Serialists might meet difficulties in the assessment of Task achievement so they also could not identify the improvement that authors made, which resulted in the scores from Serialists were lower than those from teachers.

After examining the comments from Holists, we found that they usually paid more attention to the content at a superficial level so the comments are not deep enough in the revised draft. These findings revealed that the Holists could not identify in-depth improvement that authors made. This may be the reason why the scores from the Holists were lower than those from the teachers. In addition, the diversity existed between the score from the Holists and those from the Serialists, where the Holists gave lower scores than the Serialists. This might be due to the fact that the assessment of the Task achievement, which emphasized on whether the content of the academic papers was relevant to the topic, needed to have an overall picture of the subject content. Thus, Holists, who utilize global approach to learning, are more suitable to evaluate the part of Task achievement than Serialists presumably. Therefore, Holists were able to identify the mistakes in the part of Task achievement so they assigned the lower scores than the Serialists.

Regarding Lexical resource, only one significant difference was found between the Serialists and the teachers. More specifically, the scores from the Serialists were lower than those from the teachers. According to results obtained from the qualitative data, Serialists seemed to misunderstand the definition of Lexical resource, which emphasized on the use of vocabularies. However, they considered all vocabulary changes as lexical resources. For example, tense and singular and plural nouns should be regarded as grammatical errors, instead of lexical resources. Hence, they found more errors in the part of Lexical resource so that the scores from them were significantly lower than those from the teachers.

4. Conclusions

This research aims to investigate assessment differences between teachers and students in the context of peer response from a cognitive style perspective. Among various cognitive style dimensions, we focused on Holism/Serialism. Our results indicated that there were no assessment differences in the first draft but assessment differences did exist in the revised drafts. This might be due to the fact that the students did not have sufficient experience so they were not able to identify the improvement that authors made in the revised drafts.

Regarding the revised draft, assessment differences were found in the Task achievement and the Lexical resource parts. Regarding the Task achievement, the students could not precisely identify the connection between the topic and the content presented in the revised works. Furthermore, Holists and Serialists met different difficulties in this aspect because of their different characteristics. Regarding Lexical resource part, the students were short of competence to identify vocabularies used in peers' works. Thus, they could not uncover the improvement that the authors made and could not assign the scores precisely. Moreover, Serialists seemed to misunderstand the definition of Lexical resource so they considered all vocabulary changes as Lexical resources. Accordingly, they found more errors in the Lexical resource and their scores were significantly lower than the teachers'.

Such results might help instructors understand students' difficulties in peer assessment. Subsequently, instructors can know how to provide students additional support based on their cognitive styles. However, this research has several limitations. Firstly, the sample is small so further works need to use a bigger sample to verify the findings presented in this research. Additionally, only one cognitive style was identified so future works should consider other cognitive styles to obtain more comprehensive results.

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