

# Computer Scaffolding Peer Response to Enhance Elementary Students' Writing Performance: a Case Study of a Summer School

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**Abstract:** The present study investigated the effects of scaffolding peer response on Tomorrow's Writing Platform (TWP) to enhance writing performance of elementary students. The program were conducted in a summer school in the period of three weeks, 15 days. The participants included 28 three to fourth-grade students recruited from neighbor 7 elementary schools in Taoyuan, Taiwan. The preliminary results showed that the participants could increase the length of writing article as the writing lesson. Peer response analysis showed the affective response were used the most and the editing response were the least. Writing performance would be affected by writing structure and participants' writing experience.

**Keywords:** Writing performance, scaffolding peer response, Tomorrow's Writing Platform

## 1. Introduction

Previous studies have noted revision is commonly regarded as a central and important part of writing (e.g., Fitzgerald & Markham, 1987; Fitzgerald, 1987). There are vast studies to explore the effect of peer response to enhance students' writing quality and writing performance (e.g., Paulus, 1999; Strijbos, Narciss, & Dünnebier, 2010). Moreover, most studies instructed students how to give their comments to their peers' writing products. However, we thought elementary school students need more direct assistance to response other writing products so we proposed "scaffolding peer response" which were three kinds of peer response with incomplete sentence. When students response to other students' writing article, they could use scaffolding peer response to present their thoughts more clearly and detail. Therefore, the purpose of this study is to investigate the effects of scaffolding peer response on Tomorrow's Writing Platform (TWP) to enhance writing performance of elementary students.

## 2. Case Study

### 2.1 Participants and Experimental Environment

The participants included 28 three to fourth grade students who joined to a summer school. The summer school hold a serial of writing instructions in the period of three weeks, continuing 15 days, on August in 2014. The writing instruction was applied a writing model with an online writing system, TWP. The participants were recruited from neighbor 7 elementary schools and the instructors of the summer school were the principals of the 7 elementary school. All participants have learned basic computer skills at least one year but all of them do not have the experience about writing on an online writing system. Therefore, at the beginning of summer school, we conducted an instruction to teach students how to use the writing system and writing model. The writing instructions were conducted in a computer classroom so every participant could use one computer. Every instructor taught a lesson in turn which the participants complete a writing article through the writing model.

### 2.2 Writing Model and System Design

The writing model was entitled "Tomorrow's Writing" and all writing activities were happened on the online writing system. The writing model includes four main steps: 1) syntopical reading: the system

presents three or four texts relevant to a writing topic for participants to read and learn how to write through different viewpoints. The texts were selected by the instructor. The system provides marking function which participants use to highlight beautiful words or sentences and learned how to use these words or sentences. 2) Free writing: the system provides idea notes function which participants could freely generate a lot of ideas and organize those ideas to produce a draft. 3) Peer response: the system provides scaffolding peer response function which participants could use the incomplete sentence to present their thoughts and to response a writing draft of the same group. Scaffolding peer response includes three categories: affective response, suggesting response and editing response. 4) Paper revising: the participants could according to peer responses to revise their draft and further to give their feedback to the responses. The participants could re-revise their draft. In the final, the participants could publish their draft to be an article and share to other group participants.



Figure 1. The screen of scaffolding peer response.

### 2.3 Procedure

This study was divided into three phases: baseline, intervention, and evaluation phases. 1) Baseline phase: In order to evaluate the participants' typing skill, reading comprehension ability and writing performance, Chinese text typing test, reading comprehension test and pre-sentences combining test were conducted for all participants before the summer school started. 2) Intervention phase: In these three weeks, the participants received 5 instructions on using the writing model and practice writing 5 articles. To complete one instruction need 2.5 days, per 1.5 hours a day. The system recorded the participants' all version of writing drafts, and the comments from their peers. The writing topics and syntopical reading materials were selected by the instructions and were ensured grade-appropriate to the participants. 3) Evaluation phase: Post-sentences combining test and one questionnaire were conducted in order to determine the effectiveness of the instruction on students' writing performance in the end of summer school. We also interviewed ten students selected by their grade to understand their thoughts about the writing model and the writing system.

## 3. The preliminary results

### 3.1 Writing Performance

We analyzed the participants' writing performance until the third lesson because the writing instructions are still continuing. This study analyzed and examined the two indicator of students' writing performance: number of Chinese character and number of type token. Both these two analysis indicator showed the higher the number, the better the writing performance.

Table 1. Students' writing performance.

| Writing topic   | Number of characters | Number of type token |
|---|----------------------|----------------------|
| 1. The experience of joyful traveling (n=18)          | 240.36               | 74.03                |
| 2. The convenience of technology (n=20)               | 184.03               | 61.41                |
| 3. the first time of A special life experience (n=22) | 245.80               | 73.50                |

When a participant absent in one lesson, his/her writing article in that lesson were excluded from the analysis. Moreover, the incomplete writing article was also excluded from the analysis. The preliminary results showed that comparing to the other two topic articles, the participants wrote less Chinese characters and used less type token in the topic, the convenience of technology. We speculate that the explanations for the results could be the writing structure and writing experience. The first and the third topic articles were narrative and the second was expository. Elementary school students usually write narrative in school and lack of experience to write an expository. Further, to compare the two narrative articles and find the participants' write more Chinese characters in the second narrative article.

### 3.2 Scaffolding Peer Response

The category of scaffolding peer response was analyzed in order to know how the participants use the scaffolding peer response. First, we analyzed whether the participants would give comment to their own group's participants. The results showed that one article would be gave comments by average eight participants. The participants gave their comments not only to their own group, but also cross to other group participants. Second, this study analyzed the using ratio of three kinds of scaffolding peer response in the three articles. The results showed as Table 2. The findings showed that the affective response were used the most and the editing response were the least in three writing topic articles. We speculated the reason is to present the emotional comment is easier for the participants. For example, they usually commented the writing article as "You wrote well," "You wrote a great article because you described very clear" and so on. The editing response need participants to check the correctness of Chinese character and punctuation, the length of a writing article, grammar, and so on. The participant may lack of experience to make the judgment. Regarding the quality of response, we found the participants still described unclearly and just used a part of scaffolding peer response sentence.

Table 2: The using ratio of three scaffolding peer response.

| Writing topic                                  | Affective response | Suggesting response | Editing response |
|--|--------------------|---------------------|------------------|
| 1. The experience of joyful traveling          | 52.70%             | 29.73%              | 17.57%           |
| 2. The convenience of technology               | 41.30%             | 32.61%              | 26.09%           |
| 3. the first time of a special life experience | 52.17%             | 30.43%              | 17.39%           |

The further work of this study is to investigate the effect of writing instruction and the progress of writing performance after the end of summer school. Comparing the writing performance of participants' before and after peer response to know the benefit of scaffolding peer response.

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