

**Title of Project:**

The Effects of Concept-Maps-Based Planning on Linguistic Performance in College English Writing

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**TIRF Research Topic Investigated:**

Content-Based Instruction

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**Final Report**

**Motivation for the Research**

Planning is an important phase of task completion and has increasingly attracted researchers' attention since the 1980s (Ellis, 2009; Ojima, 2006; Ong & Zhang, 2010; Sangarun, 2005; Wendel, 1997). Nevertheless, most of the studies concerning planning have primarily focused on the impact of planning in terms of the length of planning time on learners' language production, while a few studies examined what learners actually do during the planning time and explained the relationship between the specific planning behaviors and learners' language performances (Ellis & Yuan, 2004; Geng & Ferguson, 2013; Rahimpour & Safarie, 2011). This study, starting with the training learners on the use of concept mapping and attempted to investigate the influence of concept-maps-based planning on students' linguistic performances for writing about content and use of organizational and language features in college English writing.

**Research Questions**

The following research questions guided this study:

1. What effects do concept-maps-based planning have on L2 learners' writing performances in terms of the writing content?
2. What effects do concept-maps-based planning have on L2 learners' writing performance in terms of the writing organization?

3. What effects do concept-maps-based planning have on L2 learners' writing performance in terms of the language features?

### **Research Methodology**

Sixty-four Chinese non-English majors in the first year of college from Nanjing University of Aeronautics and Astronautics were selected as the participants who had similar English proficiency and science background from two classes. One class was the experimental group, which needed first to be trained on using concept mapping and finish two writing tasks under the individual and collaborative concept mapping conditions respectively. The other class was the control group, which was without such training and needed to fulfill the two tasks after examining the writing topic during the same time. Students' writing texts were analyzed and typed into SPSS for further exploration. Combining the global scoring method with text analysis, the linguistic performance was measured by three basic dimensions, which are namely writing content in terms of the content score, which includes relevance and sufficiency; organization of the essay in terms of an organization score, paragraph organization, and text coherence; and language features in terms of linguistic complexity and accuracy.

### **Summary of Findings**

The purpose of the present study was to examine the effects of concept-map-based planning on L2 learners' writing performance, consisting of writing content, organization, and language features. By comparing the control group that did not use concept mapping and the experimental group that did, the differential effects of individual and collaborative concept mapping on students' writing performance were analyzed. After reviewing the related theoretical and empirical studies and analyzing the data collected from the writing test and questionnaire, the main findings, which answered the research questions were as follows.

First of all, concept-map-based planning exerted an advantageous effect on promoting the holistic quality of students' writing in terms of content, especially in the aspect of relevance and sufficiency. Compared with the control group, the experimental group had a significantly higher scores for writing content. To be more specific, with the help of concept mapping, most of the learners were able to demonstrate a clear understanding of the writing task so that none of their essays was irrelevant to the assigned topic and the proportion of relevance was 95.3125%, while that of the control group was 81.25%. In addition, the experimental group put more emphasis on the elaboration of main ideas with more proper and specific supporting examples, resulting in the statistically remarkable improvement relative to the sufficiency of writing content.

Secondly, as for writing organization, there was a great impact on learners' writing organization score and text coherence except for paragraph organization between the control group and the experimental group. It was clearly seen that compared with the control group; the experimental group had a significantly better organization score. Additionally, learners who employed the concept mapping planning could utilize more correct connectives and various cohesive types than those of the control group so as to make their compositions more logical and coherent, which strengthened the text coherence at last. However, concept-map-based planning did not exert a significant effect on learners' paragraph organization because more than 90% of subjects in the two groups had sufficient knowledge to divide the essay into introductory, supporting and concluding paragraphs and the disparity was little.

Thirdly, with regard to language features, concept-map-based planning did not have an influence on lexical complexity and linguistic accuracy, whereas it played an important role in

increasing participants' syntactic complexity in terms of the mean length of the clause. According to the data analysis, the value of lexical diversity and the percentage of errors in each essay was approximate and there was no statistical difference between the control group and the experimental group. Nevertheless, students who drew the concept map during pre-writing planning had a relatively high performance in the measure of the mean length of the clause than that of the control group.

Finally, the study revealed that the types of individual and collaborative concept mapping did not have an effect on the participants' writing content score, including the aspect of relevance and sufficiency; neither did it exert an effect on the writing organization score involving paragraph organization, and language features in terms of linguistic accuracy. However, there was a statistical difference in the aspect of text coherence and linguistic complexity. More specifically, the individual concept mapping exerted a positive effect on improving writers' syntactic complexity in terms of dependent clauses of T-unit while the collaborative concept mapping facilitated learners' usage of connectives effectively, promoting students' text coherence.

In summary, it should be noted that concept-map-based planning played a significant part in promoting learners' writing content representing a higher content score and the improvement of the relevance and sufficiency, improving the writing organization score and text coherence in terms of logical connectors, and strengthening the linguistic complexity whereas there was no difference in the aspect of paragraph organization and linguistic accuracy. Additionally, there was no differentiated influence of individual and collaborative concept mapping on participants' writing performance, with the exception of some measurements of text coherence and linguistic complexity.

### **Implications**

Based on the above-mentioned findings, this study provides some implications for L2 writing instruction and students' learning, thereby improving the learners' writing performance effectively.

For L2 writing instruction, the evidence from this study suggests that concept-maps-based planning has a positive effect on learners' writing performance such as writing content and writing organization. In considering such findings, instructional designers should provide the strategy of concept mapping for specific stages of writing and monitor how students use it in practice. In particular, teachers should realize its great importance and apply it to the writing classes, thereby enabling students to concretely and logically think up different concepts with the support of the hierarchal structure and specific examples and promote the writing quality simultaneously. However, not all the writing performance measurements can be improved so that the instructors ought to design various activities and employ some mediation methods according to the practical situation. For example, in order to acquire the remarkable improvement of linguistic accuracy, the teachers should emphasize the common mistakes that students make in their daily writing and arouse their enthusiasm to check the errors again after writing. Moreover, the study indicates that L2 writing teachers need to facilitate students' comprehension of task requirements and develop their sensitiveness to the standards that are beneficial for essays with high quality.

In addition, the concept mapping strategy can facilitate learners' thinking patterns to help them reconstruct relevant knowledge. Most Chinese college students have trouble in systematically developing their compositions because they don't have an appropriate schema to



express different ideas, despite the fact that they may have a large number of opinions when given a new topic. Therefore, students can use concept-map-based planning to concretely present their main ideas and the process of elaboration, thereby improving their logical competence. Nevertheless, some students lack the ability to elaborate the arguments from various perspectives, so teachers' additional guidance is needed to organize information, such as using the structured concept map with meaningful linking words. Concept mapping can be employed as a scaffolding aid so as to effectively stimulate students' further thinking, especially for those who brainstormed various concepts or examples. When learners realize the importance of group discussion, they can take joint responsibility for using concept mapping collaboratively and further develop their writing performances. Therefore, writing instructors should create suitable opportunities to stimulate students' enthusiasm for working collaboratively and observe its process.

With regard to English learning, in view of process-oriented writing instruction, students should take planning and concept mapping into consideration and fully consider its advantages in English writing to improve their writing performances. It is commonly acknowledged that college students have great trouble in planning and developing their essays because they do not know what to write when meeting a writing task and how to present the main and supporting ideas logically during the composition process. Once students begin to employ the strategy of concept-maps-based planning, writing content can be enriched, passage organization can become more logical, and some language production will become more complex, resulting in the promotion of linguistic performance in college English writing. Additionally, sometimes the kind of concept mapping, either individual or collaborative, also plays a differentiated role in developing learners' writing performance. Students should discuss with others actively, absorb the positive effect of peer interaction in the collaborative concept mapping process, and learn something creative and useful from other group members.

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