THE EFFECTS OF USING COLLABORATIVE VS. INDIVIDUAL CONCEPT MAPPING ON IDEA DEVELOPMENT QUALITY OF STUDENTS' EXPOSITORY WRITING

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Abstract: Aiming at finding out whether the use of different formats of concept mapping affected the idea development quality of students' expository writing, this study was directed to answer one research question: "Does the effect of concept mapping on the idea development quality of the students' expository text depend on whether it applies collaborative or individual?" To answer the research questions, this study applied a true experimental, comparison group, posttest- only design with factorial design. Forty five sophomores majoring in the Teaching English as Foreign Language at the State University of Malang were involved in this study. They were randomly assigned into two different groups: Group 1 (24 students)applied collaborative concept mapping, and group 2 (20 students) applied individual concept mapping. The result showed that based on the output of statistical computation, the main effect of collaborative vs. individual concept mapping, F (1, 41) = 2.52, p (.12) > α (.05) did not reach statistical significance. It reveals that there was no significant effect between collaborative and individual concept mapping on idea development quality of students' expository essay. The further finding of the statistical analysis was that the quality of idea development of expository essay does not show significant difference between the students applying collaborative concept mapping and those who applying individual concept mapping.Based on the findings, this study suggested the future researchersto investigate further the effectiveness of collaborative concept mapping. Moreover, the duration time for the training on the use of concept mapping should be also considered.

Keywords: idea development, collaborative concept mapping, and individual concept mapping

INTRODUCTION

This study would investigate the effectiveness of collaborative concept mapping as the main predictor of the writing skill. In terms of how it is undertaken (collaborative and individual concept mapping), many studies find that collaborative concept mapping outperforms the individual concept mapping.This is because the socioconstructivist paradigm has become increasingly predominant in education in the last decade, where collaborative learning is considered as being beneficial to learning.Collaborative learning is heavily rooted in Vygotsky's views that there exists an inherent social nature of learning which is shown through his theory of zone of proximal development. Often, collaborative learning is used as an umbrella term for a variety of approaches in education that involve joint intellectual effort by students or students and teachers. Thus, collaborative learning is commonly illustrated when groups of students work

together to search for understanding, meaning, or solutions or to create an artifact or product of their learning (wikipedia). According to Fischer et al. (2002) processes of collaborative knowledge construction can support learners' scientific knowledge construction more effectively than individual knowledge construction. In relation to EFL writing, Kinchin and Hay (2005) reveal that the use of concept maps could form the rationale for the composition of student groups during collaborative episodes.The purpose of group work is often to allow students to share and challenge each others' ideas, and this is most likely to occur if members bring different perspectives to their deliberations. The concept mapping process provided the team with a meaning-making mechanism through which to share understandings and explore the team's potential capacities (Walker and Tyler, 2014)

However, there was some research findings which reported that the collaborative concept mapping was once found less beneficial compared to individual concept mapping. Similarly, there were also several researches which found insignificant different between the hand-drawn and computer concept mapping. Based on those research results, the present researcher finds it as discrepancy which needs to be investigated further. So, this present study would investigate the effect of concept mapping on idea development quality of students' expository writing applied in four combinations strategies: individual concept mapping and collaborative concept mapping,

Using Concept Map in the First Stage of Writing Process

The strategy of mapping the ideas (concept mapping) becomes the illuminating way to generate more and more ideas. Through mapping the ideas or concept, the learners could feel at ease to generate many more ideas starting from the general ideas to more specific ones or from the main ideas to more supporting ideas. In a concept map, concepts are represented in boxes that are linked by labeled relationships; two related concepts (including their link) form a proposition or semantic unit.

In EFL writing context, learners are required to know very well the topics that are going write. Constructing a concept map that shows relationship between one concept and the other concepts can be as their reference to develop the topic (words or phrases into sentences, sentences into a paragraph, and paragraphs into a text). This may not only reflect the learners' knowledge about how to write but also their understanding about the topic for writing. So, concept mapping can be used by the writers as their strategy to generate more ideas related to the topics that are going to be written. In this respect, Zimmaro & Cawley (1998) ellaborate that a conceptmapping as a learning strategy is a visual representation of an individual's knowledge structure on a particular topic as constructed by the individual.

Furthermore, Mintzes, et al. (1997) explain that concept maps have been described as "metacognitive tools. Concept mapping makes the flow of information easier to understand. By choosing concepts and linking words carefully, learners can use concept maps as a learning tool to catch every nuances of meaning, and summarize their knowledge (Ahangri and Behzani, 2012). Concept maps represent a person's understanding of a topic by mapping concepts and their relationships in a hierarchical way, where more general concepts are placed higher in the map and concepts at the same level of generalization are grouped together (Villalon and Calvo, 2011). In conclusion, constructing concept maps prior to actual writing assignments helps writers in generating ideas, relating the ideas or contents to each other, and also using it as a visual

representation of what is going to be written. It helps them focus on their topic and helps sequencing the flow of writing.

As an instructional tool, concept maps can be used to organize instructional materials for individual courses or entire curricula. In this respect, Canas and Novak (2003) reveal that concept maps have been used to serve as navigational aids for hypermedia, as a scaffold for understanding, for consolidation of educational experiences, to improve affective conditions for learning, as an aid in writing, and to teach critical thinking. As an assessment tool, concept mapping is used to assess what a learner knows about what they have learned. As a learning tool, concept map is a type of graphic organizer used to help students organize and represent knowledge of a subject.

Meanwhile,Villalon and Calvo (2011) conducted a study of using concept mapping for enhancing writing skill. They presented Concept Map Miner (CMM), a tool that automatically generates Concept Maps from students' compositions, and discuss its design and implementation, its integration to a writing support environment and its evaluation on manually annotated corpora of university essays.

Collaborative vs. Individual Concept Mapping

There have been many researchers investigate the combination of the effective use of concept mapping when it is applied collaboratively. For example, Lee and Cho (2010) investigated the effect of using collaborative concept mapping strategy in Korean writing classes on engaging the students in communicative and acculturative interaction. The results indicated that collaborative concept mapping strategy developed not only the students' overall writing skill, but also their ability in organization, language use, and vocabulary choice. Furthermore, some other researchers have declared the potential of collaborative concept mapping for writing (e.g. De Simon et al, 2001; Kwon and Cifuentes, 2007;Orpana and Ahlberg, 2010). The underlying assumption was that collaborative concept mapping would be supportive of generating discussions beneficial to learning. Through constructing a concept map, group members explain their views and knowledge to one another about a topic. The group members also negotiate and develop collaboratively the meanings they would add to their concept maps.

Nevertheless, there is a study which was against the effectiveness of collaborative works in applying concept mapping as the prewriting strategy in L2 learning context. Lee (2013) found that because of the limited time for collaborative planning, the peer interactions may not have been sufficient to allow students to have joint responsibility for completing the concept mapping task. Students seem to spend more time on individually constructing concept maps and writing their text. For successful collaboration in writing classes, she confirms that the challenge is how to promote peer interactions that build group responsibility to complete writing tasks. For the sake of more valid result, Lee recommended a further investigation to explore whether the kinds of collaborative concept mapping activities may be appropriate for the planning process in L2 writing which is able to help the writers to develop their skill for the next stages of the writing process. Another study comparing the effect of collaborative and individual concept mapping was conducted by Liu et al (2013) reporting that individual concept mapping was more effective than cooperative mapping for the high-level learners.

Research Questions

The formulation of the following research problems will be as the starting points for the present researcher in her investigation. Based on the concepts related to variables (collaborative vs. individual concept mapping as independent variable and idea development quality of expository writing text as dependent variable), the present study proposes to empirically investigate the effectiveness of using concept mapping as writing strategy on students' expository writing especially in the quality of idea development. Hence, the research question is formulated as follows.

"Does the effect of concept mapping on the idea development quality of the students' expository text depend on whether they use individual or collaborative concept mapping?"

Method

This study employed ANOVA design as it has two independent variables and one dependent variable. In the process of analyzing the data obtained, this study compared the effects of two different formats of the strategy applied by the participants on the quality of idea development of writing expository essay. Pertaining to the experimentation strategy of random assignment applied in this study, the data obtained were classified into two types: individual concept mapping and collaborative concept mapping.

The first step the researcher did in the process of analyzing data was analyzing the result of scoring the students' essay done by the two raters. The measure employed is coefficient alpha which provides an estimate of the internal consistency of the final scores based upon two raters and the coefficient alpha. Everything related to the process of computation, this study used a means of the statistical software namely SPSS Statistics Release 18.0.0. To answer the problems statements formulated in chapter one, this study required the means of inferential statistics for analyzing the data.

The second step taken by the researcher in the process of analyzing the data was arranging the obtained data (the scores of the students essay) in the tabulation or tables. There are four tables presented as the data obtained from the participants. Each table depicted the record of students' scores based on the type or format of the strategy applied when they were assigned to write the essays.

Findimg and Discussion

This present study is conducted to empirically investigate the effect of different formats of concept mapping on the students' idea development quality in expository writing. Referring to the aims of this study, this chapter presents the findings and verification of the hypothesis of the research. They were based on the result of analyzing the data after the experimentation.

Students' Writing Test Applying Two Different Formats of Concept Mapping.

The result the students' writing tests (essay) were scored by two raters independently. The scoring was based on using Primary Trait Scoring Guide especially in idea development component. The result of scoring all the students' essay from the two raters can be seen in Appendix 5.

Since this study involved two raters for scoring, the measurement of inter-rater reliability is performed. The measure utilized is Cronbach coefficient alphas. The result of the measurement of the reliability coeficient is .533. This indicates that the level of the internal consistency of the final scores is adequate based upon two raters per essay.

As the next step, the descriptive analysis data of posttest gained by four groups of participants was conducted. The result of descriptive statistics analysis is presented in Table 3.2.

Table 3.2 Descriptive Statistics on the Students Posttest

Concept Mapping Applications	Mean	Std.Deviation	
Collaborative Concept Mapping	83.2727	3.35681	
	88.86	4.09933	
	82.7083	4.69884	2
Individual Concept Mapping	82.7083	4.69884	
	84.5	6.80808	
	86.68	5.92120	3
Total	83.5652	6.22733	3
	86.0682	4.64270	2
	84.7889	5.59270	5

Table 3.2 shows that among the four groups of the experimental, the group applying collaborative concept mapping performs the higher mean score (88.86) compared to another group. Regarding to standard deviation, the group applying individual concept mapping performs lower (84.5).

Effect of Individual vs. Collaborative Concept Mapping

Since the result of the analysis of the interaction was not significant, the next analysis comes to check the effect of the main independent variable which has been manipulated into collaborative and individual concept mapping on idea development quality of the writing. The result showed that the difference between collaborative and the individual concept mapping was not significant based on the output presented in Appendix 7. The main effect for collaborative vs. individual concept mapping, F (1, 41) = 2.52, p = .12, η_p^2= .06, power = .34,where$p$(.12) > α (.05).

did not reach statistical significance (see appendix 7). The result of analysis indicates that the *p*-value turns out to be higher than .05 level of significance. Statistically, there was no significant main effect ofcollaborative/individual concept mapping on writing performance. The findings reveals that the quality of the idea development of students applying collaborative concept mapping and the sudents applying individual concept mapping as the strategy for pre writing are equal. In this case, the analysis only compared the difference between the use of collaborative and individual concept mapping in affecting the idea development quality of students' writing expository.

The discussion mainly focuses on the effects of collaborative vs. individual concept mapping. The main purpose of this study was to show that collaborative and individual concept mapping interplay a relationship in affecting the idea development quality of the students' expository text. The result of statiatical analysis of this study showed that there was no interaction effect between collaborativeand individual concept mapping.The data showed that there was no significant effect of the concept mapping whether it is applied individually or collaboratively on idea development quality of writing expository text. .

As a result of the non-significant interaction, the concern is on the comparison between the application of collaborative and individual concept mapping in affecting the idea development quality of the students' expository text. There is no significant difference in the effect on the idea development quality between the students who apply collaborative concept mapping and those who apply individual concept mapping in writing expository essay. It means that whether they work collaboratively or individually, the result is the same. Both the groups of students who apply collaborative and who apply individual concept mapping in the pre-writing stage have the same performance.

Conclusion

As a result of the non-significant effect, the following concern is on the comparison between the application of collaborative and individual concept mapping in affecting the idea development quality of the students' expository text. There is no significant difference in the effect on the idea development quality between the students who apply collaborative concept mapping and those who apply individual concept mapping in writing expository essay. It means that whether they work collaboratively or individually the result is same. Both the groups of students who apply collaborative and the groups of students who apply individual concept mapping in the pre-writing stage have the same performance. Based on the findings of this study, the implications for the future practice are addressed to the writing teachers, writing researchers, and the concept mapping developers per se.

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