Brainstorming in scientific writing in elementary school

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Abstract. Brainstorming as a strategy in scientific writing in elementary school writing instruction was successfully proven by this study. There is a relationship between brainstorming as a strategy to writing instruction and students scientific writing ability. Improved learning outcomes of students’ expository writing as scientific writing in a straightforward, logical, systematic and functional manner of items, or events in chronological was achieved after brainstorming is implemented to grade five elementary school. Based on the research and development approach, the data obtained in trail 1 (13 males and 15 females participants) was 13,50 and trail 2 was 14,07. This means that brainstorming as a strategy has the opportunity for language teachers to teach students writing skills. The instruction of brainstorming strategy had a positive effect on students scientific writing improvement and also make them more active.

1. Introduction
The writing process is a way of looking at writing instruction in which the emphasis is shifted from student’s finished products to what students think and do as they write it means that the writing process can be used as an approach to writing instruction is based on how real writers writes; the foundation for teaching children to write, product consideration are also important [1]. The writing process can be divided into prewriting, composing and post writing. In prewriting, writers choose topics and gather ideas for writing, in composing stage, they write the composition, and in the post writing stage, they share their writing [2]. Then, Tompkins states in the prewriting, (1) students choose a topic, (2) students gather and organize ideas, (3) students identify the audience to whom they will write, (4) students identify the purpose of the writing activity, and (5) students choose an appropriate from their compositions based on audience and purpose, prewriting is the first phase of writing which is recognized as a source of composing [1,3]. Many investigators begin to insist that students are use different ways in order to explore a topic before writing a draft, such as making use of mediation, journals, analogies, brainstorming, clustering, grouping and free writing [1,4-9].

According to Mogahed, for many people, especially young writers, starting writing to write is a problem. Tompkins believed that pre-writing is the most ignored stage [10]. Pre writing has probably been the most neglected stage, however, it is a crucial to writer as a warm-up is to athletes. Murray states that 70% or more of writing time should be spent in prewriting [11]. Thorne discussed that the most important skill to emphasize and practice extensively in fundamental writing classes is pre writing [12]. The very beginning of writing for many writers is a difficult part of writing. Prewriting engages organizing student participation in thinking, talking, group interaction, and skeletal writing activities that parts of writing tasks [13]. Prewriting activities assist learners to both acquire the target language
more efficiently and make interpersonal, thinking and planning skill that can be applied in other fields [14]. Mogahed believed that whenever and whatever we want, we could use of prewriting activities because what occurs in prewriting is handling and arranging [10]. The first stage of writing is prewriting in which the writer begins to think, find and make the ideas to be use in the next stage [15].

Brainstorming was popularized in 1953 by Osbon in his book. He claimed that learners can enhance their creative output by the help of brainstorming. It can assist the learners to transfer their ideas from the brain to tongue or to the numbers that related to skill specificaly to writing. Brainstorming can help students use their pior knowledge in their writing activity and recognized what skills and information they have and they need to know. A number of rules should be considered during the brainstorming session: no criticism of ideas, building on what others have suggested, strange and wild idea are accepted. Welcoming the large Quantities of ideas [16]. One of the most important features of brainstorming is that it does not need any preparation and it can be used at any circumstance [5].

2. Review of empirical studies
There are many empirical studies relating to the writing process and brainstorming in writing. Frank smith reflected that “the first” explored in detail how children learn to write, I was tempted to conclude taht it was, like the bumblebees, a theoretical impossibility [17]. Students show that just as bumblebees really do fly elementary students really do write, even though it may seem improbable the second and third graders who are just becoming literate can be fluent and expressive writers. Graves examined young children’s writing and documented that 7-year-olds, like high school students, used a variaty or strategies as they wrote [2]. According to Dunn “Young children cannot be thought of only in cronological terms; personael development and cultural back ground play an important role in the readiness of a child to learn [18].

Fawzi and Hussein conducted a comparative study on enchancing student’s motivation to write essays through brainstorming. Instruments of the study were free brainstorming sheet instruction and guided journalistic brainstorming sheet instruction [19]. After classifying students into (3-4) groups two sheets were given to each group and asked them to select a topic and complete the brainstorming as a study proved both types of brainstorming were motivating the students but participants preferred guided brainstorming.

Conducted a study on the effects of brainstorming strategy instruction on learners writing performance and perception. The study’s findings shed light on the significant effects of explicit instruction of brainstorming strategy on writing performance and question-naries indicated the positive attitudes of learners toward brainstorming strategy. According to Osbron, brainstorming can assist the learners to transfer their ideas from the brain to tongue or to the numbers that related to skill specifically to writing. In writing process as a means to increase learners motivation to write essay [20]. Shorafat study on the effect of using brainstorming and “synectic” in developing creative writing skills [21]. Results indicated that applying brainstorming and “synectic” were effective in improving students crative writing skills in terms of content, organization, style and mechanics of writing. Maghsoudi and Haririan carried out a study on the impact of brainstorming strategy [22]. Results of the study proved that the instruction of brainstorming strategy had a positive effect on EFL learners writing improvement and also make them more active.

Effective strategy supportd writing instruction on students science learning and science writing is need at grade five in elementary school especially for the pre-writing stage it is effective for language teachers to teach students writing skills that organize contents and guide students to present scientific themes through brainstorming. Therefore, treating rich infomration as a source of scientific learning materials and support for writing teachers writing instructions can also be use ful for science learning and students writing. Brainstorming is used to generate ideas for writing. One good way to generate
ideas is through brainstorming, a strategy that includes the following steps: (1) choose a topic, (2) quickly list all words and phrases that come to mind in response to the topic and (3) make no value judgments about items in the list; instead, look for unusual relationships among the items [1]. As to the purpose of the study, the research question were proposed: (1) is there any relationship between brainstorming and writing instruction? And (2) is there any relationship between brainstorming and students writing in grade five of elementary school?

Hand phone and computers are modern technology tools, especially in communicating information in our life. Brainstorming as the strategy in communicating information through writing needs a tool, so hand phone and computers can be used by one as a writer. It means that hand phone and computers can be used by the students in the class room to note the information through brainstorming. The teachers can ask the students to use the hand phone and computer along the writing instructional.

3. Method
Design of this study was mix method means that in present study the researcher, used of both, quantitative and qualitave instrumenst to collect data. In the frist part of the study a present and post test used as a qualitative instrument, and the data in the scond part collected through a questionnair which considered as a quantitative tool for data collection. The participants who look part in this study consisted of 13 males and 15 famales of grade five elementary school in Tasikmalaya regional.

The instrumen which applied in the present study were procedure texts as a pretest and post test. Procedure text from the point of the writer, the main purpose of text is to tell the readers about the steps of how to accomplish a job to tell how a job is complished. From the point of the readers, after reading the text, they will get information about the steps or ways of doing a job. In this study, the instruction focused to sequance expository text. The students as the writers list items or items in numerical or chrononlogical order. Clue words include first, second, third, next, then and finally. Direction for completing a topic in numerical or chrononlogical order was used for students scientific writing.

The text of students scientific writing (pretest and posttest) were corrected according to writing band description. The writing were rated based on four aspect of writing task response, Coherence snd cohesion, lexical and grammatical range and accuracy.

4. Result and discussion
Result shows that brainstorming is a strategy for the student to use prior knowledge in pre-writing activity and recognize what skills and information need to know into readable text. Brainstorming is the automatic act note taking of ideas in preparation for different steps of writing. The important points about brainstorming is that there is different of students ability in scientifc writing before and ofter the writing instruction used brainstorming (13,50 > 14,07) the students writing abitily of grade fifth elementary is better than before brainstorming is presented in writing instruction.

This is basic principle of writing instruction. During writing instruction, students are involved in three activities.

Minilessons. During this 5 to is 15 minutes period, teache introduce the student goals, procedure, literacy concept or writing strategy or skill. In this case, students use expository writing to learn and shore information or direction how to use a tool. The students as a writer should list items or events in numerical or chrononlogical order. They should use the clue words, such as: first, secod third, next, then or finally in listing items or events.

After that, teacher share the jumbled sentences to be arranged by the students in expository writing. The followings are the jumbled sentences:
- Put three glasses of rice into a bowl
- Connect the plug to the power outlet
- Push the cook bottom
- Add some water into pan
- Wash the rice in a bowl
- The cooker light will turn on
- Put the pan into the rice cooker
- Put the washed rice in the cooker pan
- The switch turns to warming mode
- The rice is done

Independent writing. Students spend 30 to 45 minutes working on writing process. The students use brainstorming (1) choose a topic, (2) gather and organize ideas from the jumbled sentences, (3) identify the audience to whom they will write, (4) identify the purpose of writing activity, and (5) choose an appropriate form for their expository writing [1]. Sharing, for the last 10 to 15 minutes, students share their writing to the whole class the students organize expository writing using sequence patterns in this writing, cue words are often used to signal this pattern; such as:

_Frist, put three glasses of rice into a bowl and wash the rice in a bowl. Second, put the washed rice in the cooker pan and put the pan into the rice cooker after that add some water into pan. The third, connect the plug to the power outlet and the cooker light will turn on. When the rice is done the switch turns to warming mode._

The texts were corrected based on four aspects of writing: the students task response coherence, and cohesion, lexical resource and grammatical range and accuracy. According to the data, the students had enough ideas, information and knowledge about the topic in order to develop scientific expository writing it means there is correlation between brainstorming strategy use in writing instruction and students ability in scientific writing. There is significant relationship between the brainstorming, writing instructionand students writing ability.

5. **Conclusion**

Brainstorming was proven successfully to help the students use their prior knowledge in their writing activity and recognize what skills and information they have and what need to know brainstorming can help the students in pre writing activities; (1) they can choose a topic, (2) students gather and organize ideas, (3) students identify the audience to whom they will write, (4) students identify the purpose of the writing activity, (5) students choose an appropriate form for their composition based on audience and purpose. Students organize different kinds of writing in different ways. When they write to share information, they use expository patterns or text structures. They lists items or events in numerical or chronological order. Cue words include first, second, third, next then and finally. The writing instruction of brainstorming strategy had a positive effect on students scientific writing improvement and also make them more active.

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