

Innovations

An Investigation into the Effects of Questioning Method on Students' Critical Thinking Skills

***Wubante Mekonnen Seyoum**

Department of English Language and Literature, Debre Markos University, Ethiopia

Abiy Yigzaw

Faculty of Humanities, Bahir Dar University, Ethiopia

Haile Kassahun Bewuketu

Department of English Language and Literature, Debre Markos University, Ethiopia

Corresponding author: Wubante Mekonnen Seyoum

Abstract

The aim of this study was to investigate the effects of using questioning method on students' critical thinking (CT) skills. To this effect, a pretest-posttest two groups quasi-experimental design was employed. Data was obtained through tests and focus group discussion. Sixty management students participated in the study. While the treatment group received questioning method, the comparison group learned through conventional method. The quantitative data was analyzed using independent sample t-test while the qualitative data was analyzed thematically. The findings revealed that there was a statistical mean difference between the comparison and the treatment groups in their argumentative essay writing CT skills. Hence, the students in the treatment group exhibited a significant improvement in their CT skills through argumentative essay writing in that they were able to use more credible evidence, address alternative positions and arguments, support conclusions, and maintain the logical flow of ideas in essays. Thus, the study recommends researchers, teachers and students to pay due attention to questioning method in their academic endeavors.

Key Words: 1.Attitudes; 2.Critical Thinking; 3.Effects; 4.Quasi-experiment; 5.Questioning

Introduction

Questioning is an important component of the teaching/learning process and is embedded in quality instruction and strategic thinking (Kellog, 2001). It is also considered as an inseparable part of a classroom teaching-learning process. Certainly, in the language classroom where language learning is a key goal, teacher questions not only serve as devices to stimulate student thinking, but also provide opportunities for students to practice the target language (Chaudron, 1998). In addition, teacher questions can allow greater quantities of target language input to become comprehensible (Hu, 2004;Awatef et al, 2019). As a result, of the many instructional practices employed in the classroom, questioning can by far be the most common (Gall, 1970; Wragg, 1984).

Universities in many circumstances are expected to train students on how to filter the information they receive daily. However, as it is practically seen, it seems to be far beyond fulfilling this goal. In a study (Ozmen, 2008) that aimed to investigate the difference between the CT of graduate and non-graduate students concluded that there is no significant difference between the two groups. This suggests that universities failed to instill CT skills in their students. Therefore, learners cannot be merely repeating or practicing the language without being critical when

writing in the target language (Cottrell, 2005; Lightbown&Spada, 2013). This implies that examining the effects of using questioning method that make up CT is a keystone.

The researchers' experiences in their teaching showed that students in DMU tend to be ineffective in sharing ideas in argumentative essay writing because of their limited use of CT skills and meaningful activities. In the same line, scholars like Lay (2011) and Awatef et al (2019) also add that writing does not only require the mastery of linguistic such as grammar, vocabulary, pronunciation, intonation, etc. but also requires the conceptual judgment and CT. In addition, Kellog (2009) claims that writing academically is a main cognitive challenge since it tests the writer's memory, language and thinking ability as well. Accordingly, Facione (2011) discusses CT in the context of perfections of thought. There is also a consensus by American Philosophical Associations in that an ideal critical thinker is someone who is inquisitive in nature, open-minded, flexible, and fair-minded, has a desire to be well-informed, understands diverse viewpoints, and is willing to both suspend judgment and to consider other perspectives. Therefore, researchers assume that the students' argumentative essay writing skill is positively influenced by their CT skills. As a result, questioning is expected as one best method in order to solve the students' CT skill problems while they write argumentative essays.

With the current educational system in Ethiopia, learners in various fields are engaged in courses that prepare them for a particular role in society. For the English language teaching, learners are prepared to integrate into universality and prepare for a future professional career. By taking the above literatures and facts into consideration, this study tried to investigate the effects of using questioning method on students' CT skills in the Ethiopian EFL context. In order to achieve this objective, an answer has been sought for the following question:

- What is the difference in critical thinking between students who learn writing through questioning method and those who learn through the conventional method?
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Hypothesis

The present study tried to verify the following hypothesis:

- There is statistically significant difference between the mean scores of the treatment group students and the mean scores of the comparison groups who were taught via without using questioning method on the pre- and post-administration of the CT skills in the favor of the treatment group.

Methodology of the Study

Design of the Study

The research design of the study was quasi-experimental that employed a pretest-posttest design with two group participants. The comparison group was taught using the conventional method; whereas, the treatment group was taught through using questioning method. For the purpose of this study, the participants in the two groups were given argumentative essay writing pretests before the intervention. Similarly, the two groups were given argumentative essay writing posttests.

Participants

In this study, a total of 60 two intact group management undergraduate students enrolled for Basic writing skills course were included. In the students' university stay, Basic Writing Skills Course is given to second year management students as compulsory. Before this course, the students have taken two Communicative English Skills (FLEN 1011 & 1012) Freshman Courses prepared by MoE (2018 & 2019) in which writing is one aspect of them for two semesters. Earlier to these university courses, they have learned English language subject beginning from grade one to university.

The Study Variables

In this study, the independent variable was questioning method. The experimental teaching strategy in this study was designed for the undergraduate students taking the EFL writing course for academic purposes. There was, thus, one dependent variable (to be caused by or influenced by the independent treatment), namely, the students' CT skills.

Data Gathering Instruments

The data on the students' CT skills were gathered through tests and focus group discussion (FGD).

Tests

The test that comprises both pretests and posttests was used to gather data on students' CT skills. One argumentative essay writing pretest was given to understand the students' existing CT skills. Likewise, other argumentative essay writing posttest was also given to determine the effects of the intervention, whether students' CT skills were improved. The tests were developed by the researchers considering the students' local context and their background knowledge.

The CT skills rubric was adapted from Facione (2011), "Critical Thinking: What It is and Why It Counts" incorporating common CT skills including interpretation, analysis, evaluation, inference, explanation and self-regulation. The rubric is a seventeen and sixteen point scale that refers to the students' CT skills under each common CT skills. Three experienced EFL university teachers marked students' argumentative essays independently based on the given criteria. Training on the use of the rubric was given to the raters. Inter-rater reliability was calculated with Pearson's correlations (Pearson's r), and it was 0.86 which shows the reliability of the test.

Focus Group Discussion (FGD)

The FGD was needed to gather qualitative data on students' CT skills empowerment. The students were asked to forward their views on the relevance of questioning method to enhance their skills to interpret, analyze, explain, evaluate, synthesize and self-regulate ideas. To establish credibility, the three raters and other colleagues were provided raw data and my lead analysis to corroborate findings. Focus group participant feedback was also elicited at the end of the session to confirm the accuracy of the main points. It should be noted that focus groups are conducted to provide in-depth examinations of the topic of interest and are not meant to produce generalizable results.

Procedures of the Study

In the data collection, first, a teaching guide used to teach argumentative essay writing was prepared using the literature in accordance with question-based instruction and CT skills. In other terms, the teaching was developed in the way that enable the students to make observations; pose questions; examine sources; gather, analyze, interpret, and synthesize data; propose answers, explain and predict; communicate findings through discussion and reflection; apply their findings to the real situation, and follow up new questions that arise in the process because these are the focuses of question-based learning. On the other hand, it also developed in the way that enable students to interpret, analyze, infer, evaluate, explain, and self-regulate which are the core CT skills. In sum, the teaching guide was prepared considering the components of question-based argumentative essay writing instruction, and CT skills. Then, argumentative essay writing pretest was administered to the two group students to identify their CT performance before the intervention. Following the pretest, the intervention was given.

The intervention was question-based argumentative essay writing instruction delivered for 16 weeks using the ateaching guide. In the teaching-learning process students discover their own writing topics, generate ideas, evaluate what they have and what they need, gather and evaluate information from different sources, write up drafts with evidences, discuss with colleague and subject area experts for feedback, and write up essays related to their real life situation. When the intervention was given, the student-reflection journal was collected from the students.

Next to the completion of the teaching-learning practice, the participants were given argumentative essay writing posttest which was related with the pretest. The posttest was needed to determine whether the question-based

argumentative essay writing instruction make improvements on students' CT skills. By the completion of the posttest, the FGD was conducted.

Data Analysis Methods

The quantitative data which were gathered through pretests and posttests were analyzed using paired sample t-test, using SPSS version 20 software program. Independent sample t-test was used to examine whether there were differences on students' CT skills in writing argumentative essays before and after the intervention. On the other hand, the qualitative data which were collected through FGD were analyzed thematically.

Results

Essay Writing Tests

Independent sample t-test was used to compare the mean scores of the two groups in the pretest and the posttest. The following table shows the two groups' (i.e. treatment and comparison) pretest results on their CT skills.

Table 1: Pretest Scores

Groups	N	M	SD	DF	T-value	Significance
Treatment Group	30	47.367	3.508	29	1.264	.216
Comparison Group	30	46.490	2.974	29		

P < .05

As displayed in table 1, the students CT skills were not showing this much difference before the pre-administration of the questioning method. This implies that there is no statistically significant difference between the two group students CT skills while performing various CT tasks through the common teaching method. However, after applying the questioning method, the students in the treatment group showed radical changes on their CT skills. The result is indicated in the following table.

Table 2: Posttest Scores

Groups	N	M	SD	DF	T-value	Significance
Treatment Group	30	61.477	5.018	29	12.000	.000
Comparison Group	30	46.290	2.991	29		

P < .05

Table 2 revealed that the mean score of the treatment group students (61.48) to be higher than the mean score of the comparison group of students (46.29) on the post-administration of CT skill test. Therefore, students' progress in CT is in general due to the use of teacher's higher level questioning activities as a teaching method.

The result indicated in table 2 prove that the verification of the hypothesis which is proposed in this study. Moreover, the result in table 2 revealed that the estimated t-value (12.00) is significant at 0.000. Thus, it can be safely said that there is statistically significant difference between the treatment and the comparison group in the post CT test in the favor of the treatment group. It indicates that the effectiveness of questioning method in developing students' CT skills, so the hypothesis is acceptable. When holding a comparison between the treatment and the comparison group students' mean scores on the post-administration of the CT skills test, the estimated value of 't' (12.00) was highly significant at 0.000 level. Thus, the treatment group students who used questioning method outperformed the comparison group students on the post-administration of the CT test in spite of their being of the same level on the pre-administration of the CT skill test. As a result, questioning method proved to be better than the conventional teaching method of CT skills. It means that questioning is an effective method which helps students to acquire the CT skills.

Students' Focus Group Discussion (FGD) Results

Students who participated in FGD in the treatment group were asked to express their opinions about questioning method. The result is presented as follows.

Students' Attitude to the Usefulness of Question-based Argumentative Essay Writing Instruction

The data from the students' FGD revealed that using question-based writing instruction helped them to develop their CT skills while writing argumentative essays. The students' in their FGD also replied that they have developed their CT skills when they used the question-based writing instruction in their argumentative writing lessons. In addition, the students reported "we have written various essays before using the question-based writing instruction, but the essays were not that much convincing. However, when we used the question-based writing instruction, we became better thinkers in our academic writing due to the method we used in the learning process".

The students also viewed that question-based writing instruction helped them to understand the ways how to discover writing topics, gather relevant data on their topic, evaluate the collected data, and write up essays as it provides them opportunities to incorporate feedback from colleagues and writing experts. Thus, the results gained from the FGD revealed that using question-based writing instruction in writing classes could help students develop their CT skills. This is because the method developed the students' performance in discovering writing topics, generating ideas, gathering and evaluating information from different sources, writing up drafts with evidences, discussing with colleague and experts, and thereby writing up effective essays. They also claim that the instruction helped them to improve their CT in searching and choosing the most relevant ideas while writing argumentative essays on the given topic/issue. In other terms, the question-based group students used good diction, sentences structure, and mechanics, and they were also able to develop good topic sentences, thesis statements, and supportive ideas when they wrote essays.

On the other hand, the comparison group students were clear about how to write academic texts, but not effective to produce sound texts. This was because the students did not engage to discover their own writing topics and explore related data to their topics. They also received limited peer feedback and produced texts based on the given model texts, rather than collecting and synthesizing information. The comparison group students, in their post-intervention essays, were unable to use good diction, sentences structure, and mechanics, and they were also incapable to develop good topic sentences, thesis statements, and supportive ideas.

As part of the question-based writing instruction, the students have continuously assessed their learning and reflected on it in the classroom. In the learning process, the teacher provided scaffolding by observing, questioning, and guiding. In addition, the teacher also introduced relevant concepts, principles, and theories to help students develop deeper understanding on their CT skills through questioning method. Hence, the continuous support of EFL teachers through questioning method while teaching argumentative essays could help students improve their CT skills.

Students' Experiences towards Questioning Method

The students during FGD were asked to express their past and present experiences towards their CT through question-based instruction. They explained:

Our CT was poor in that we could not produce good essays. We could not generate new ideas. In addition, we could not support our essay with relevant and logical information. Even if we generate ideas, those ideas were not convincing for our argumentative essays. Simply it is better to say we did not have any experiences towards using question-based instruction while writing argumentative essays.

The students who participated in FGD also added:

Before this, our English teachers simply give us some highlight about writing tasks and simply pass to other language items. However, the way is already changed after we came to the university. Now it is possible to say our CT skills is becoming better as a result of the instruction.

From the above responses, it is possible to understand that students had poor CT throughout their secondary and preparatory writing classrooms. However, after students were coming to university, they had got good exposures about the positive impacts of question-based instruction on their CT skills.

The students' FGD result also revealed that the use of question-based instruction in argumentative essay writing classes can enhance their CT skills. Most of the FGD participants reported that they had not wrote effective argumentative essays before they use questioning method. However, after using this method of learning, they have

developed their CT skills including interpretation, analysis, evaluation, inference, explanation, and self-regulation. For instance, one of the participants reported that his CT skills have been enhanced after learning argumentative essay writing through questioning method because he has developed the way to interpret, analyze, and evaluate information. He can generate logical ideas which are better to persuade his audiences, and write essays without emotional feelings.

The other FGD participant voiced that the learning method empowers her CT skills because before using question-based instruction her writings were not appropriate for audience. However, after taking the writing lessons in the intervention, she knows what to write considering her purpose and audience, how to analyze information, and how to produce reasonable argumentative essays.

The other student also mentioned his performance as follows:

My CT skills such as interpretation, analysis, evaluation, inference, explanation, and self-regulation are very good now. Especially, when I pick two points from these points, analysis and evaluation, I can analyze and evaluate written arguments because of the inquiry-based essay writing instruction. So now, I can easily interpret, analyze, and evaluate data, and even regulate myself to write my argumentative essay to persuade my audience.

In a similar manner, another participant also reported that in question-based writing instruction, he discovered his writing topic, searched for information, and evaluated, criticized and analyzed the collected data, and wrote drafts, incorporated necessary feedbacks, and produced effective essays in contrast to the previous methods. He further explained that during this process, his CT skills were enhanced due to the instruction given through question-based writing instruction. Similarly, another respondent also said that after learning through question-based writing instruction, his CT skills were enhanced. As he further elaborated, he could become to analyze and evaluate information in writing argumentative essays while using this method.

In addition, the students reported that the CT skills that they enhanced in the teaching learning process were relevant to their real life situations. One of them stated:

Every manager and CT towards writing dependently go together. I am going to do two things in the future as an graduate man. These are critically writing texts and critically evaluating what another person has written. So, I think, the CT skills that I developed through question-based writing instruction are helpful to the rest of my life”.

The students mentioned that CT helps in their work life as university graduate students because it has a lot of things for them. According to their speech, they should be competitive enough to become successful in their work life. So, being a good critical thinker helps to think differently, and to be successful. They further voiced that CT skills can also help them to make good decisions in their real life situations apart from their working environment.

In sum, the students' FGD results indicated that the students' CT skills including interpretation, analysis, evaluation, inference, explanation, and self-regulation were enhanced due to the question-based writing instruction. Therefore, it is worth mentioning that there should be opportunities for students to have enough exposure to question-based writing instruction. Moreover, question-based writing instruction could be used to improve students' CT skills since using the method enables students to discover new ideas beyond the classroom, and makes them be active, problem solver, autonomous, and lifelong learners.

Discussion

In light of the questions and hypothesis of the present research, the results are presented and discussed in this section. It is worth mentioning that the previous results of the study (table 2) are in line with those of the findings confirmed by other studies (Lightbown&Spada, 2013; Awatef et al, 2019) as they all stated that questioning method is effective in developing students' CT skills. In addition, in the language classroom where language learning is a key goal, teacher questions serve as a device to stimulate student thinking (Chaudron, 1998).

The data found from the students' FGD also revealed that their CT skills in EFL classrooms were improved through questioning method. Writing is basically a system of communication that indicates students' thinking and reasoning skill. Therefore, questioning is one basic clue or stimuli for improving students' thinking systems while writing essays. Questioning also encourages students to produce a response which is unique to their thinking and

interpretation of the text (Bassham et al. 2011). This implies that higher level questions help students to give the opportunity to produce the expected outcome and with the high requirement to perform CT skills in a better way. In other words, to practice CT skills successfully in the class, students need to acquire questioning as a prerequisite. The quantitative and qualitative data analysis has revealed that questioning method proved to be effective in developing the treatment group students' CT skills. This was clear in verifying the hypothesis of the research. In short, the result of this study proved the positive effects of questioning method for developing students' CT skills. In sum, though the findings of this study are in line with previous studies, most of them have examined the enhancement of CT skills through using questioning method in writing classes in general rather than showing the effects of the method in argumentative essay writing classes in particular. Thus, the present study exclusively revealed the effects of using question-based argumentative essay writing instruction on EFL students' CT skills. In other terms, it contributed to the existing literature in disclosing the effects of using question-based argumentative writing instruction on EFL students' CT skills. Besides, the present study can contribute to the field of English as a foreign language education by showing the effects of using questioning method on students' CT skills in the local context where this study has been conducted. This is because, in the study area, question-based argumentative essay writing instruction seems to have been a missing feature of English as foreign language learning.

Concluding Remarks

The data in this study revealed that the students' CT skills improved through question-based instruction. The instruction provided students with an active role to discover their own writing topics, investigate necessary information, and produce sound texts based on appropriate feedback. The results obtained from the study also revealed that question-based argumentative essay writing instruction in teaching writing had good effects on students' CT skills. Moreover, the results of the study showed that students developed positive attitudes towards their CT skills through the questioning method at DMU. Thus, questioning was taken as a facilitative and important strategy in developing students' CT skills in EFL classrooms.

Finally, the researchers would like to recommend that scholars define CT in a variety of ways, which makes it a difficult concept to study. The assessment tools presented in the study would not be good measures for a definition focusing mostly on logic or on developing arguments. It would be worthwhile to conduct further studies on this topic using other definitions in order to procure a greater understanding of the issue.

Abbreviations

CT: Critical Thinking

DMU: DebreMarkos University

(E) FL: (English) as a Foreign Language

FGD: Focus Group Discussion

MoE: Ministry of Education

SPSS: Statistical Package for Social Sciences

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Declarations

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Authors' Contributions

Mr. Wubante Mekonnen has initiated and drafted the research and conducted the data collection, analysis and final write-up.

Professor Abiy Yigizaw supervised the whole process of the research by approving the validity of instruments and edited the method and the content of the article.

Dr. Haile Kassahun (associate professor) supervised the whole process of the research by approving the validity of instruments and edited the language.

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Corresponding author Email: wubantemekonnen6@gmail.com