THE IMPACT OF SCHEMA THEORY ON IMPROVING UNIVERSITY STUDENTS' WRITING PERFORMANCE

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Abstract:

This study aimed to investigate the impact of applying schema theory in teaching and improving the English writing skills. It adopted a quasi-experimental-control group design. The sample consisted of (40) university students who studied English as a foreign language at Al-Adel University - Yemen during the academic year (2021/2022), twenty of them were assigned as the control group and the other (20) as the experimental group. A pre-test/post-test paragraph writing was used for data collection. The students' writings were gathered and corrected, and the scores were analyzed using the Statistical Package for Social Sciences (SPSS). The results showed that there were statistical significant differences between the performance of the experimental and the control groups in the post-test in favor of the experimental group. Those results mean that schema theory has its positive effects in improving students' writing performance. The study recommended that teachers of English writing should vary their ways of teaching and encourage their students to use their prior knowledge to improve their writing skills.

Keywords: Schema theory, Schemata, Writing performance.

أثر نظرية المخطط على تحسين أداء طلاب الجامعة الكتابي

الملخص:

هدفت هذه الدراســة إلى معرفة تأثير تطبيق نظرية المخطط في التدريس وتحســين مهارات الكتابة باللغة الإنجليزية. اعتمدت الدراســة على التصــميم الشـبه تجريبية مع مجموعة تجريبية ومجموعة ضـابطة. تكونت العينة من (40) طالبًا جامعيًا درســوا اللغة الإنجليزية كلغة أجنبية في جامعة العادل - اليمن خلال العام الدراسـي (2022/2021) ، تم تعيين عشــرين منهم كمجموعة ضــابطة والعشــرون الاخرون كمجموعة تجريبية. تم جمع المعلومات عن طريق الاختبار القبلي والبعدي في كتابة الفقرة، ومن ثم تم جمع كتابات الطلاب وتصـحيحها وتحليل الدرجات باستخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS). أظهرت النتائج وجود فروق ذات دلالة إحصائية بين أداء المجموعة التجريبية والضابطة في الاختبار البعدي لصالح المجموعة التجريبية مما يعني أن استخدام نظرية المخطط كان لها تأثير ايجابي على تحسين أداء الكتابة لدى الطلاب. أوصت الدراسة بضرورة قيام معلمي الكتابة باللغة الإنجليزية بتنويع طرق التدريس التي يستخدمونها لتدريس الكتابة وتشجيع طلابهم على استخدام معرفتهم السابقة لتحسين مهاراتهم في الكتابة.

الكلمات الافتتاحية: نظرية المخطط، المخطط، الأداء الكتابي.

Introduction

Writing is a productive skill through which learners express their own ideas and communicate effectively by means of the written word. It is a significant skill in studying and successful development of the language. Communication is the primary goal of foreign language learning. Foreign language students must gain fluency and accuracy to communicate effectively in both spoken and written forms. Schema theory is a theory about knowledge and mainly relates to students' mental or cognitive processes for organizing information and comprehending texts. It is a branch of cognitive science concerned with how the brain structures knowledge. A schema is an organized unit of knowledge for a subject or event. It is based on past experience and is accessed to guide current understanding or action (Pankin, 2013, p.1). According to this theory, a schema is made up of past experiences or background knowledge. The theory emphasizes that the knowledge and knowledge structure that people already have had a vital effect on their cognitive activities. This theory added more dimensions to writing further than such concerns of style, usage, appropriateness and rhetoric. It paid a great focus on the human processes involved in composing and arranging language for the purpose of communication in both spoken and written forms. Since there is a strong relationship between reading and writing, thus there is a relationship between the two skills in the cognitive processes depending on memory. For Rumelhart (1980), schema theory states that all knowledge can be packaged into smaller units called schema which recover data from memory, organize new and old knowledge, and generally guide the processing of ideas in the mind (Rumelhart, 1980, p. 34). Schema theory does not only contain the knowledge, but also how the knowledge is to be used in memory recall in which the old knowledge is combined with the new one to express meaning about the world and things in different situations and for different purposes.

In fact, the majority of ESL/EFL learners encounter difficulties in writing coherent texts in English and producing well-structured and meaningful texts. Without receiving proper instruction, even native speakers of a language usually encounter difficulties in writing accurate, coherent and meaningful texts. Since there is a strong link between reading (receptive skill) and writing (productive skill), this indicates a strong relationship between schemata (prior knowledge) and writing ability. In education, schemas allow learners to reason about unfamiliar learning situations and interpret these situations in terms of their generalized knowledge. Thus, building a background from reading and comprehending texts helps students in structuring, composing and producing accurate written texts. This study investigated the impact of applying schema theory in improving university students' writing ability, which in turn, will help them to achieve that. The study adopted a quasi-experimental-control group design. The sample consisted of (40) university students who studied English as a foreign language (EFL) at Al-Adel University during

the second semester of the academic year (2021/2022).

STATEMENT OF THE PROBLEM

My long experience as a university lecturer and a teacher of English in schools and university shown me that there are many difficulties encounter university students of English in writing which badly affect their writing performance and their marks in tests and examinations. Teachers of English always complain of students' weakness in writing and ask about the solutions to overcome such problem. The researcher will investigate the impact of applying schema theory in teaching English writing and how it will help in improving students' writing performance and solving such problems of weakness in writing.

RESEARCH HYPOTHESES

The present study depends on the following two hypotheses.

1. There is no significant difference between the control and the experimental groups' writing performance in their writing performance in the pre-test or before treatment. (null hypothesis)

2. There are significant differences between the control and the experimental groups' writing performance in the post-test after using schema theory in teaching writing for the experimental group or after treatment. (alternative hypothesis)

AIMS OF THE STUDY

The present study aims to investigate the impact of applying schema theory for teaching English writing in improving university students' writing performance.
It aims to achieve the following two objectives:

1. Investigating the effects of using schema theory for teaching English writing in improving the EFL university students' writing performance.

2. Investigating the extent of development in students' writing performance after treatment.

RESEARCH QUESTIONS

This study tries to answer the following two questions:

1. What are the effects, if any, of applying schema theory on improving the EFL university students' writing ability?

2. To what extent does schema theory help in improving university students' writing performance?

SINIFICANCE OF THE STUDY

This study is significant in its nature and tendency as it focuses on the impact of using schema theory in teaching writing and explores the positive effects for using prior or background knowledge in developing university students' writing ability. It is

significant as it relates schema theory to improve students' writing ability. The majority of studies on schema theory were conducted using the relationship between schema theory and reading skills. Again, since the paragraph is the basic building unit for writing any piece of writing, the study will pay a special attention to the structure of a paragraph, the elements of writing, the relationships between the various constituents of a paragraph and the way of achieving unity and coherence in writing. In fact, the ability to write a well-organized, unified and coherent paragraph means that a learner is able to write any piece of writing of several paragraphs. This will help both students and teachers to overcome the difficulties of writing and participate in improving students' writing ability and writing production.

LIMITATIONS OF THE STUDY

The present study is limited to analyze written paragraphs for the purpose of investigating the impact of applying schema theory in teaching writing. It is limited to analyze the development of writing in relation to elements related to content, organization, vocabulary, language, and mechanics for a group of EFL university students in the second level of the B.A at Al-Adel University - Yemen. The analysis will also be related to unity and coherence as important elements in a written text.

LITERATURE REVIEW

This section includes the literature reviews related to the topic of the study in terms of the significance of writing, schema theory and the previous studies. According to Sun (2014), in teaching writing, schema theory is the one paying much attention to students' writing cognitive process. Writing begins with observation, which means the writer notices something and is willing to write about it. It also involves description in terms of presenting concrete details with the students' own words. (Sun, 2014, p. 181). Writing is assumed to be a successful productive skill through which writers weave their creative ideas and thoughts for expressing meaning in a written form. The majority of researches on schema theory were done in relation to reading comprehension, few researches were carried out in relation to the impact of schemata on the composing process, writing ability and writing development. Anson and Deuser (1983) stated that several characteristics of schema theory make it appropriate too for writing teacher as it focuses on how the structures of thought are incorporated the structures of language. Tasks of writing help students be conscious of the way they organize knowledge in their mind can also make them conscious of the role others play in the communication process (Anson and Deuser, 1983, p. 139/140). Since schema relates the students' prior or background knowledge to the new knowledge, it means that schema enrich students with new information received from various sources which encourage them create their own written production.

According to Carrel et al., (1988), schema is classified into three types:

linguistic, content, and formal schemata all of which refer to the students' prior or background knowledge about the language in terms of phonics, grammar, vocabulary, content, and organization of different types of texts. Content schema refers to the background knowledge regarding a particular content including prior knowledge about a certain topic, people, culture, and experiences. Formal schema refers to the background knowledge of the structure of the language existing in someone's mind including knowledge of styles of writing and using cohesive devices and connectors. Linguistic schema refers to a student's language and linguistic competence, including background knowledge of vocabulary, grammar, and phonetics (Carrell et al., 1988, p. 560). Since schema guides the students from sensory thinking to imaginative thinking, which encourages students to think, imagine and be active in understanding and interpreting the text, this will activate their prior knowledge to connect and comprehend a text, and then create their own written texts. It is assumed that the students' prior knowledge will help in developing their writing ability in terms of producing well-structured and meaningful piece of writing on various topics.

Along with the topic of this study, Al Yousef (2020) carried out a study on the effects of applying schema theory on teaching English writing. The results of the study showed that there was a statistical significant difference between the experimental and the control groups' performance in favor of the experimental group, which means that schema theory has its positive effects in developing students' writing ability. Since writing involves interacting schemas, we should expect to find cases among inexperienced writers in which one level of schema influenced another (Anson & Deuser, 1983, p. 195). Accordingly, this implies that the three types of schema integrate with each other and complete one another in helping students to write accurate, coherent and meaningful pieces of writing. Sun (2014) also asserted that schema theory is important in improving students' writing ability. For him, "schema theory points out that prior knowledge is packaged into organized structure but it is not only a storage unit for data, it is also a dynamic, flexible, and ever-changing resource of prior knowledge and experiences" (Sun, 2014, p.1480). Yunianti (2018) also carried out a study to find students' response in a writing class applied schema theory in foreign language learning and concluded that "students' response applied schema were found effectively in making writing task easily" Yunianti (2018, p.5). Fushan (2014) carried out another study on using schema theory in teaching college English writing, which proved that schema theory is effective in improving Chinese students' English writing competence. Thus, applying schema theory in teaching writing has its positive effects in developing university students' writing ability.

Research Methodology

This study adopted a quasi-experimental-control group design to investigate the impact of using schema theory in improving the university students' writing performance. The rating standards used in this study were Jacobs' ESL Composition Profile (1981).

The population and sample of this study was the second-level students of English in the faculty of arts at Al-Adel University during the second semester of the academic year (2021/2022). The sample of this study were (40) students of the second-level who studied English as a foreign language (EFL) in the faculty of arts at Al-Adel University during the second semester of the academic year (2020/2021). The sample was randomly chosen in which twenty of the students were assigned as the control group and the other twenty were assigned as the experimental group.

For data collection and data analysis procedures, the required data for this study were gathered by means of a writing tasks in terms of a pre-test, treatment and post-test for (40) minutes for each. Before the treatment and at the beginning of the second semester, the students of the two groups were requested to write a coherent paragraph on the topic of education to identify their level in writing and obtain scores for the students before any treatment was given (pre-test). The treatment took 6 weeks, three hours for each, while the control group were taught using the traditional way of teaching. At the end of the second semester and after the treatment, the students of the two groups were requested to write a coherent paragraph on the same topic of the pre-test "education".

FINDINGS AND DISCUSSION

This section explains the results of analyzing students' writings and a full discussion for such results. The findings will explain the results of analyzing the samples of students' writings about the topic of education as it will be shown below. After collecting the required data from writing tasks, the samples of students' writings for both groups in the pre-test and the post-test were corrected and rated according to Jacobs' ESL Composition Profile (1981) with the help of another rater to guarantee the objectivity of rating. An analytic scoring rubric was used because it offers more detailed information about the learners' writing proficiency than does the single score of a holistic scoring rubric. Then the students' scores for both pre-test and post-test were analyzed using the Statistical Package for Social Sciences (SPSS) as will be shown below.

Data Analysis of the Pre-test and the Post-test Scores

Table (1) below represents the analysis of the students' scores in both the pre-test and the post-test for the purpose of finding out if there were any statistical significant differences between the controlled and the experimental groups before and after implementing the schema theory in teaching writing for the experimental group. The

table shows the Mean, the Standard Deviation, and the Standard Error Mean for both groups in the pre-test and the post-test.

Table (1) Students' scores in the pre-tests and the Post-tests

		Mean	N	Std. Deviation	Std. Error Mean
(Paired Samples Statistics)					
Pair 1	var1	56.90	20	14.330	3.204
	var3	55.85	20	11.047	2.470
Pair 2	var2	62.00	20	13.030	2.914
	var4	68.30	20	9.734	2.177

From the data in table (1) above and according to the statistics, it can be seen that the mean scores for the controlled and the experimental groups in the pre-tests are (56.90) and (55.85) respectively, which means that the two means are nearly exact for both groups before treatment. Again, the data also show that the standard deviations for the controlled and the experimental groups in the pre-tests are (14.33) and (11.047), which means that there are no significant differences between the two groups. The data in table (1) also show that the standard error means for the controlled and the experimental groups before treatment are (3.204) and (2.470) respectively, which means that there is no statistical significant difference between the two groups in the pre-tests and that the two groups are nearly similar in their writing performance before treatment.

For the post-tests, the data in table (1) above show that the mean scores for the controlled and the experimental groups in the post-tests are (62.00) and (68.30), which indicate that the mean score for the experimental group is higher than that of the controlled group. This difference in the mean scores means that the students in the experimental group had achieved higher results in the post-tests better than their beers in the controlled group. The data in table (1) above also showed that the standard deviations for the controlled and the experimental groups are (13.3) and (9.734) respectively, which means that the students in the experimental group had achieved higher than their peers in the controlled group. The data also showed that the standard error deviations for the controlled and the experimental groups in the post-tests are (2.914) and (2.177) respectively, which means that the students in the experimental group had achieved better results than their beers in the controlled group. Those results rejected the null hypothesis and accepted the alternative hypothesis in that there were statistical significant differences between the two groups in the post-tests in favor of the experimental group.

According to the above analysis, it can be said that the two groups were nearly similar in their writing performance before the treatment and that there were no statistical significant differences between the two groups in the pre-test, which rejects

the null hypothesis and accept the alternative hypothesis. After applying schema theory in teaching writing for the experimental group and according to the data in table (1) above, there were statistical significant differences in the students' performance in the post-tests in favor of the experimental group. These results mean that using schema theory for teaching writing has its positive effects on improving the experimental group students' writing performance as it can be seen in table (2) below. These results also answer the first research question of the study in terms of that using schema theory in teaching university students' writing improves their writing performance.

Table (2) Paired Samples Correlations

Paired Samples Correlations		N	Correlation	Sig.
Pair 1	var1 & var3	20	.590	0.006
Pair 2	var2 & var4	20	.541	0.014

The data in table (2) above showed that the correlations in the pre-tests and the post-tests were (0.590) and (0.541) respectively. The significance in the post-tests for the two groups was (0.006) which is lower than (0.05). These results mean that there were no statistical significant differences between the controlled and the experimental groups in the pre-tests or before treatment. For the post-tests, the data in table (2) above showed that the significance was (0.014) which is higher than (0.006) and lower than (0.05), which means that there were statistical significant differences between the two groups in the post-tests in favor of the experimental group. These results reject the null hypothesis and accept the alternative hypothesis in that there are statistical significant differences between the two groups in the post-tests in favor of the experimental group. These differences between the two groups in the post-tests were attributed to the effects of using schema theory for teaching writing for the experimental group. Thus, using the schema theory in teaching writing for the experimental group has its positive effects on improving the students' writing performance, which answers the first research question of the study. The previously mentioned results also answer the first research question of the study in terms of the existence of statistical significant differences between the experimental and the control groups in their writing performance in favor of the experimental group. This means that applying schema theory in teaching English writing has its positive effects in developing university students' writing ability.

Table (3) Paired Samples Test for the two groups in pre-tests and post-tests.

Table (3) Paired Samples Test								
Paired Differences								
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 var1 - var3	1.050	11.856	2.651	-4.499-	6.599	.396	19	0.696
Pair 2 var2 - var4	-6.300-	11.286	2.524	-11.582-	-1.018-	-2.496-	19	0.022

In comparing the two groups writing performance in both the pre-tests and the post-tests using Paired Sample Test, the data in table (3) above showed that the significance in the pre-test was (0.696) higher than (0.05) which means that there were no significant differences between the two groups in the pre-test and that the two groups were similar in their writing performance before the implementation of schema theory. These results reject the null hypothesis and accept the alternative hypothesis. Again, the data in table (3) above also showed that the significance in the post-test was (0.022) which means that there were statistical significant differences between the control and the experimental groups in their writing performance after treatment. These results mean that applying schema theory in teaching the experimental group has its positive effects on the experimental groups' writing performance. These results also mean that the experimental group students had achieved better than their peers in the controlled group as a result of applying schema theory in teaching writing for them. Thus, the researcher reject the null hypothesis and accept the alternative hypothesis in terms of the existence of statistical significant differences between the two groups after treatment in favor of the experimental group, which answer the second research question of the study.

Table (4) Descriptive Statistics for pre-tests & post-tests for the two groups

Table (3) Paired Samples Test								
Paired Differences								
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 var1 - var3	1.050	11.856	2.651	-4.499-	6.599	.396	19	0.696
Pair 2 var2 - var4	-6.300-	11.286	2.524	-11.582-	-1.018-	-2.496-	19	0.022

Table (4) above represents descriptive statistics for the two groups in the pre-tests and the post-tests. From the data in table (4) above, it can be noticed that the minimum scores for the controlled group are (35 & 43) and the maximum scores are (81 & 84) in both tests. In comparison, the minimum scores for the experimental group are (40 & 54) and the maximum scores are (83 & 90)

respectively. These results indicate that the students in the experimental group had achieved better than their beers in the post-test, which means that applying schema theory in teaching writing has its positive effects in improving the experimental group's writing performance. The data in table (4) also showed that both the controlled and the experimental groups' writing was improved but more improvement was for the experimental group students.

Data Analysis for the control and experimental groups in the pre-test and the post-test

For the analysis, the researcher compared the two groups before applying the teaching mechanism to ensure that they were similar in level and that there were no statistical significant differences between them. The comparison was done using a statistical test based on the level of significance ($\alpha=0.05$).

Table (5) Two-Sample T-Test of Controlled and Experimental groups' Scores Pre-tests

	Estimate for difference Cont-Exp.	T test value	DF	P-value
Total	1.05	0.26	38	0.797
Content	0.15	0.14	38	0.888
Organization	-0.6	-0.51	38	0.614
Voc.	0.4	0.41	38	0.686
Lang.	0.6	0.57	38	0.574
Mechanics	0.6	1.89	38	0.067

Under the same condition of homogeneity and normality distributed of the samples, and based on the values of the level of significance P-values at $\alpha=0.05$, the data in table (5) above showed that there were no statistical significant differences between the mean scores of students in the pre-tests of the controlled and experimental groups. From the table above, all P-values were greater than ($\alpha=0.05$), which indicate that there was no statistical significant difference in their levels before applying the schema theory in teaching writing for the experimental group. This result reassure that the two groups in each case were similar in level before applying the schema theory, and any differences in their post-tests' scores could be attributed to the teaching method used as will be shown below.

Table (6) Paired Samples T-Test of Controlled and Experimental groups' Scores Post-tests

	Mean	Standard Deviation	P-value
Content	-1.900	3.386	0.021
Organization	-2.400-	4.109	0.017
Vocabulary	-1.250-	3.041	0.08
Language	-1.000-	1.974	0.035
Mechanics	.350	1.182	0.201

Table (6) above represents the correlations of the controlled and the experimental groups' scores in the Post-tests. Under the same conditions of homogeneity and normality distributed of the samples and based on the values of the

level of significance P-values, the data in table (6) above showed that there were statistical significant differences between the mean scores of students in the post-tests of both the controlled and the experimental groups. These differences were observed at the variables of (Content, Organization, and Language.) and all P-values were less than $\alpha=0.05$. These significant differences were in favor of the experimental group, which indicated that the schema theory used in teaching writing for the experimental group had better results in improving the students' writing performance than the traditional method. The P-values in table (6) above indicated that they were less than 0.05 in relation to content, organization and language, which means that applying schema theory for teaching writing has its positive effects in improving university students' writing ability, which answers the second research question of the study.

However, the data showed that there were no statistical significant differences in the mean scores of students in the post-tests of both groups in relation to vocabulary and mechanics, where the P-values were 0.08 and 0.201, which were greater than (0.05). This suggested that using the schema theory did not have a clear effect on developing vocabulary and mechanics. These results assure that using schema theory in teaching writing has its positive effects on improving students' writing performance, which meet the second hypothesis and answer the second research question of the study. The results also indicated that using schema theory did not have a clear effect on developing the skill of vocabulary and mechanics. All the previously mentioned results assure that using schema theory in teaching writing has its positive effects in improving students' writing performance, which answer the second research question of the study.

CONCLUSION

The above findings and the results of the study indicated that there were statistical significant differences between the students' writing performance in favor of the experimental group who achieved better results in the post-test (see table 6 above). This development was clear in relation to content, organization, vocabulary, language use and mechanics can be attributed to apply schema theory in teaching writing. Accordingly, it can be concluded that using schema theory in teaching English writing for university students had its positive effects in improving students' writing performance. Therefore, the researcher suggests that teaching English writing should focus on varying ways of teaching in the first place. Teachers should apply schema theory in teaching writing because it helps students to build their own schemata in processing information and using their prior or background knowledge in their own writing production. More researches are needed to investigate the effects of schema theory on developing the mechanics in students' writing production. Again, exposing students to various topics and tasks of writing help them to develop their cognitive abilities in processing information and producing more accurate written production. It

is important also to expose students to various content materials from various sources before asking students to write. This will help them to enrich their content, linguistic and formal schemata, which will enable them to improve their competence in vocabulary, language use and structures.

Declarations

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