The effect of Wikis and process writing on the performance of Saudi Female EFL secondary students in writing

( a dissertation for an M.A. TESOL program)

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DEDICATION

To my loving family,

My mother ... my inspiration

My father ... my role model

My caring brothers and sisters

My precious daughters, Shoug & Ghala

&

To my loving and supporting husband,

Adel
Acknowledgements

I have been blessed with so much throughout my life that has contributed to where I am now, and although I cannot express enough thanks and gratitude for them, I will try my best. All my gratitude and deep appreciation goes to my creator, Allah, whose overwhelming gifts and blessings made me who I am today. When I close my eyes and think about the journey I have been through especially in my studies, I cannot help but think about a lot of people who I will stay forever grateful for all their support and care.

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The effect of Wikis and process writing on the performance of Saudi Female EFL secondary students in writing

Abstract

Recent research has emphasized on the importance of integrating technology in educational institutes. Some of these technologies are wikis. A wiki is a web 2.0 technology that has been used in classrooms recently. It is a website that can be edited by registered members or by anyone. Research has proven many benefits of using wikis in language classrooms especially to teach writing. However, research has also emphasized on the importance of carefully choosing activities or teaching strategies that can help ensure accuracy in students' writing when using wikis. However, there is a gap in literature on what kinds of activities or teaching strategies that can solve this problem. The current study is aimed at investigating the effects of process writing through wikis on the performance of female secondary students in the American High school Diploma in a private school in Riyadh, Saudi Arabia on their writing skills. It investigated if process writing through wikis can improve the subjects' performance in writing by improving their accuracy regarding vocabulary, spelling, structure and the quality of their writing in their organization, fluency and content. To measure the subjects' performance, a pretest and a posttest were administered to two groups: a control group (n=14); that was taught traditional process writing without technology, and an experimental group (n=30); that was taught process writing through wikis. The results showed that subjects who received the treatment of process writing through wikis outperformed the control group in the posttest in a statistically significant way.
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Chapter 1: Introduction
1.1. Introduction

Recently, many teaching methodologies have focused on teaching through technology. That is because our students are becoming digital natives and we should meet their needs and make learning easier for them and interesting. A study conducted by Warsaucher, 2002 on a large U.S.-funded English language developmental program in Egypt showed that the use of technology is important in language education programs (Warsaucher, 2002). Therefore, our aim should be helping CALL, computer assisted language learning, reach the level of normalization just like pens and books which are invisible to us (Bax, 2002). One way to apply CALL in language classrooms is through Web 2.0 technologies. Web 2.0 technologies are websites that allow others to participate in writing on the site such as weblogs, wikis and others. (Barrick, Cuddihy, Maust, Spyridakis, Wei, 2005). Wikis have a special feature which is the possibility to edit what was written on the wiki space. They are websites that can be edited by any one. Wikis are excellent collaborative tools because members can participate and edit each others’ work. Recently, wikis have been used in classrooms in schools to teach writing. However, studies have shown that the quality of students’ work has not improved and their accuracy has been worsened (Coniam & Mak, 2008). Therefore, studies have suggested that teachers should choose activities and teaching strategies carefully in order to use wikis and improve the quality of the students’ writing skills (Kessler, 2009), (Lund, 2008). The purpose of this study is to investigate if process writing through wikis can help students’ performance in writing improve.

1.2. Statement of the problem

Many studies have shown the benefit of wikis in learning in general and in EFL learning. Their affect on EFL learners' writing skills has also been researched. On the other
hand, research has shown that writing through wikis may sometimes lower the accuracy and quality of the learners' writing skills. Research has emphasized the importance of choosing the appropriate activity or teaching strategy to solve this problem. However, there is a gap in literature on what kind of activities or teaching strategies would help the learners' accuracy to rise and improve the quality of their writing.

1.3. Purpose of the study

The purpose of this study is to fill the gap in literature by investigating if the process writing approach can help students’ accuracy to rise and improve the quality of their writing skills when writing with wikis. This investigation will be applied on Saudi Female secondary students, the tenth grade, in the American High school Diploma Department in a private school in Riyadh, Saudi Arabia.

1.4. Significance of the study

This study is significant for teachers, students and the CALL field for several reasons:

1- It can encourage language teachers to use new technologies in the classroom such as wikis to improve their students’ performance in writing.

2- It can make writing more interesting to both the teacher and the student and lessen the burden they both feel towards writing courses. That is because the students will work together in groups to collaborate their work step by step with their peers and feedback on every step from their teacher from the comfort of their homes.

3- The students will be motivated to participate in using wikis in writing because they will be involved in the learning process.
4- Significance for theory is also evident in this investigation. That is because of the gap in literature in terms of what kind of activity or teaching strategy will help the students’ writing to improve when writing with wikis. The results of this study will show if process writing can be used with wikis to improve the students’ performance in writing.

5- The study will contribute to the field of CALL. That is because it will investigate a technology, such as wikis, that can be used in a language classroom to improve a language skill such as writing.

1.5. Research Questions

The study aims at answering the following questions:

1. Will there be a significant improvement in the subjects’ performance in the post writing test in terms of accuracy, which includes fewer errors in vocabulary, spelling and structure in both groups; the control and the experimental groups?

2- Will there be a significant improvement in the subjects’ performance in the post writing test regarding the quality of their writing which includes organization, fluency and content in both groups; the control and the experimental groups?

3- Which group’s performance (the experimental group; process writing with wikis or the control group; traditional process writing) will have significantly improved the most in the post writing test regarding accuracy (vocabulary, spelling and structure), the quality of their writing (organization, fluency and content) and on the posttest as a whole?

The research questions will be investigated through error analysis in a pretest and posttest for the experimental and control groups. The study will show if process writing can raise the performance of Saudi Female students in writing through wikis.
1.6. Limitations of the study

This study will be applied in the American High school Diploma Department in a private school called Riyadh Schools in Riyadh, Saudi Arabia. In this department students are taught all subjects in English accept for Arabic and Religion. This department includes tenth, eleventh and twelfth grade students. Their English Proficiency ranges from intermediate to advance. This study will be applied on the tenth grade. All students are female students. That is due to the cultural learning conditions where girls’ education is isolated from boys. Another limitation of the study is that it will be implemented in a private school where the technical facilities are provided and students have been studying English since first grade which is different than public schools where they start learning English from sixth grade and most lack these technical facilities.

Students in this school are excellent in speaking skills but have a problem when it comes to writing. They find difficulty in writing and they do not enjoy it because of that. Teachers therefore face a big challenge when trying to motivate students to enjoy writing and write in a grade appropriate level. Teachers in this school have very busy schedules and a lot of administrative commitments. This has led to the difficulty that teachers face in tracking their students’ progress and development in writing and in correcting their mistakes.

1.7. Definition of Terms

The terms used frequently throughout this study are defined as follows:

Wiki

A Wiki means quick or fast in Hawaiian (wiki-wiki) (Lund, 2008). It is a web 2.0 technology. Web 2.0 technologies are websites that allow others to write on the website itself.
such as forums, blogs and wikis (Barrick, Cuddihy, Maust, Spyridakis, Wei, 2005). A wiki not only allows others to comment and write on the website but it also has an edit button that allows others to change or edit what has been written on the wiki in a fast and quick way. That is why it has been called wiki. The most famous wiki is Wikipedia where people around the world write information and edit each other (Webber, 2006). Unlike Wikipedia, there are many wiki websites that can be used for specific purposes and for registered members only.

The wiki used in this study is a private wiki for the group members only. It was designed by pbworks.com. The subjects in the experimental group were the only ones allowed to write and edit on the wiki. Each student had a username and a password to enter the wiki.

**Process writing**

Process writing is a teaching strategy where the focus is on the process and not the product of the students' writing. Every stage of the writing process, which is planning, drafting, revising and publishing, is explained and discussed step by step (Harmer, 2007). It involves peer editing and peer feedback in addition to the teacher's feedback on every stage (Fogelman, Harrington, Kenny, Pacheco, Panofsky, Santos, Smith, 2005).

**Collaborative writing**

Collaborative writing involves a group of students working together to produce a piece of writing. It is student centered because students build on what they already know and depend on themselves in writing and organizing their ideas (Myers 1991 cited from Augar, Raitman & Zhou, 2005).
Chapter 2: Literature Review

2. 1. Introduction

The following Literature review will revolve around the following questions; what is a wiki? How can wikis improve learning? How do they influence EFL learners and do they facilitate language learning? Can wikis improve EFL learners’ writing skills? How can we
use wikis and ensure accuracy? What are the benefits of the process writing approach so it can be used with wikis?

2.1.1. What is a Wiki?

A Wiki means quick or fast in Hawaiian (wiki-wiki) (Lund, 2008). It is a 2.0 Web-based software tool that has its name because of the feature of speeding up the work flow (Barrick, Cuddihy, Maust, Spyridakis & Wei, 2005). It is simply a website that can be edited and changed by anyone by only pressing an edit button. Its features make it easy for everyone to use. Deakin University in Australia mentioned that the wiki they used was very easy to use, had quick access, has the benefit of a one page layout, and was a new and interesting way of communication. They also mentioned that the benefit wikis have over other online data bases is the possibility of collaboration on the same document with the benefit of changing what someone else wrote and editing it (Augar, Raitman & Zhou, 2005). The most common example of a wiki is Wikipedia. It is an online encyclopedia (www.wikipedia.org) that is available in many different languages. Wikipedia has over a million authoritative articles and the open publication came close to matching the Encyclopedia Britannica (Webber, 2006). However, the concern in this study is not using Wikipedia itself but instead using a personalized and private wiki for the use of the teacher and her students only. It facilitates internet skills and online collaboration. This personalized wiki helps students engage in learning by communicating and collaborating their work within a collaborative environment (Chao & Parker, 2007). Unlike Wikipedia, only authorized members can edit and use this personalized wiki. There are many wikis online that can be personalized and used. Some are free of charge and others with high features are not. For example, some of the most popular wikis are UseMod (http://www.usemod.com/), OddMuse (http://www.oddmuse.org/), MediaWiki (http://www.mediawiki.org/), and TWiki
The wiki that will be used for this study is PBworks which is widely used for companies and schools across the U.S. and Britain (http://pbworks.com).

2.1.2. Wikis and Learning

*How can wikis improve learning?* Recently, wikis have been implemented in educational institutes. They are considered to be very valuable collaborative tools. According to (Packalén, Patokorpi, Tétard, 2008) wikis have encouraged peer-to-peer collaboration world-wide. Packalén, Patokorpi, Tétard, 2008 argued that wikis and other collaboration technologies should be integrated in the educational system in order to cope with the changes in the world today (Packalén, Patokorpi, Tétard, 2008). In addition, Chao & Parker, 2007 argue that students should be introduced to technologies that help them work collaboratively and be familiar with them. They also argue that introducing technology should be the aim of educational institutes because of the great benefit students can get from learning future skills which can be done through wikis which enables students to use these collaborative software tools in a novel way (Chao & Parker, 2007).

Moreover, Wikis can also help teachers provide an autonomous environment for the students where teachers step aside and allow students to work collaboratively and independently (Kessler, 2009). Wikis give students a chance to work together and collaborate their work independently without the strong presence of the teacher which makes teaching student-centered. As a result students will develop as learners (Kessler, 2009).

Furthermore, wikis can facilitate interaction between learners (Cowan, Herring, Rich & Wilkes, 2009). Students interact with their peers to collaborate their work which gives them a
chance to comment on each others’ work and discuss new ideas or discuss the changes they made when they edit each other (Reo, 2006).

As for wikis’ benefits in group work, Cowan, Herring, Rich, & Wilkes, 2009, investigated the use of wikis to support group project work on online undergraduate courses in business and education at Athens State University. The findings were successful even though faculty experiences were limited. Wikis also allow individual and group responsibility. They prevent students to rely on their group members to do their work for them. Each student has a role and responsibilities and will be assessed individually. Both the teacher and students can see the contributions and changes each student makes through the feature of “Playback” which facilitates fair assessment to all members of the group (Elgort, Smith & Toland, 2008). Therefore, wikis have solved the problem of “free riding” in group work where one person controls the project and does all the work (Wicks, 2006). Wicks also mentioned that team documents can be accessible to all members of the group which made students more comfortable with group work (Wicks, 2006).

In addition, acknowledging the fact that students’ have different learning styles and choosing activities or teaching strategies that would serve these differences are very important for teachers to consider (Andreou, E., Andreou, G., Vlachos, 2008). These differences in learning styles are important factors in second language learning (Lightbown & Spada, 2006). Wikis have shown the ability to support different learning styles and different instruction (Glogoff, 2006). In his study, Glogoff, 2006 found out that using wikis made classes learner centered, community centered and knowledge centered (Glogoff, 2006).

Learning through wikis helped students improve in many ways. A case study on wikis was conducted by Davis, 2006 and applied on the ninth, tenth and eleventh grade classes with some introduction to the eighth grade class. Students did some homework on the wiki and
created their own wikis and chose a subject matter to collaborate their work on it. The results were that students participated more in class and gained more knowledge of the subject matter which made their grades on tests improve as a result. Wikis in this study also benefited the teacher in grading the students’ work because wikis recorded every attempt of every student (Davis, 2006).

2.1.3. Wikis and EFL Learning

It is clear from what has been mentioned above the benefits of wikis in learning in general. However, how do they influence EFL learners and do they facilitate language learning?

Since wikis facilitate group work as mentioned previously, a study conducted by Chang, 2010 showed the benefits of group work in EFL courses. The results of the study were that group work helped students’ social interaction to improve and motivated them to work together to develop their language and complete tasks (Chang, 2010). Moreover, Bubas, Kovacic & Zlatovic, 2007 investigated in their study the potential uses of a wiki in ESP, English for specific purposes, courses on two groups. The results were that Wikis helped in creating an innovative learning environment where students were interested and engaged in the learning process. This led to their improvement of their language skills. Wikis also made students engage in ESP topics and issues. It encouraged students to learn more about these issues by reading about them to contribute and collaborate in the activity. It has also developed their vocabulary when they searched for meanings of new words and when their peers edited their work. In addition, it gave the students the opportunity to learn from each other and assist each other which improved their grammar (Bubas, Kovacic & Zlatovic, 2007). However, can wikis improve EFL learners’ writing skills? The following will discuss this issue.
2.1.4. Wikis and writing skills

When students use a wiki for a project, they get a chance to work collaboratively in groups, assist each other and benefit from peer correction. Wikis can motivate students to write and express their selves because of the fact that what they write will be seen by their peers and the whole world through the internet. Students can experience writing as a social process where everybody contributes knowledge and ideas through writing (Richardson, 2006).

Moreover, in Higdon’s study, 2006, using wikis in writing helped students engage and produce more writing than anticipated. That was because students were engaged and interested in writing with wikis. They were also able to see teachers’ comments and other changes made by their peers from their homes without having to wait for the next class. In addition, in Higden’s study, 2006, teachers were able to spend the time they want on writing without wasting class time on following up and checking students’ work because they were able to do that out of class (Higdon, 2006).

According to Coniam & Mac 2008, wikis can help develop ESL students’ writing skills in many ways but some of the students’ accuracy worsened. Their study involved year seven students in a Hong Kong secondary school. The project was to develop a school brochure which will be sent to parents. The project was produced after going through various collaborative drafts. The study investigated the effects of using wikis on the quantity and quality, regarding accuracy and coherence, of students’ writing. The findings were that as for quantity, students produced more words than expected. Students’ coherence has also improved. Instead of adding words to reach the word limit as they usually do, they actually, corrected, reorganized and expanded their work. As for the students’ motivation, using wikis has enhanced their creativity and increased their attention and interest in English writing.
classes. However, some students’ accuracy rose while others worsened (Coniam & Mac 2008). This leads us to the question; how can we use wikis and ensure accuracy?

2.1.5. Wikis and accuracy

Teachers have to work on improving the quality of their students’ writing. That is because students are expected to be able to write a grade appropriate piece of writing that is accurate and well organized. Kessler, 2009 argues that tasks are important in order to achieve accuracy through wikis. He mentioned that students would benefit more if there were some management in using wikis. According to Kessler, this can be done if the tasks were familiar to the students and practice was implemented before (Kessler, 2009). Lund, 2008 also emphasized on the importance of tasks when dealing with wikis. In his study a couple of activities were implanted through a wiki which led to collective production, networked structures and shared spaces (Lund, 2008). However, he argues that an activity or teaching strategy is what makes the difference and not only the technical tool (Lund, 2008).

Furthermore, in a study conducted by Lee, 2010, Wikis improved students’ accuracy through collaborative writing and peer correction where students corrected each other on language accuracy and organized the content of their writing. However, the results indicate the importance of guiding students to corrective feedback and helping them in the revision process so they can be more accurate (Lee, 2010).

That is why more investigations should be done to find a teaching strategies that can be used with wikis to help students plan their response, revise and provide corrective feedback for their peers in order to develop their writing skills. And since Prewriting activities and revision are crucial parts of the process writing approach, this study will investigate the effectiveness of the process writing approach combined with wikis on the performance of students in writing.
2.1.6. Process writing

Process writing involves going with the students step by step through the different stages of the writing process which are planning, drafting, revising and publishing and students might go back and forth through these stages (Harmer, 2007). Students will support their arguments by searching and gathering knowledge from different sources and critiquing writing by peer editing (Fogelman, Harrington, Kenny, Pacheco, Panofsky, Santos, Smith, 2005). It allows both peer correction and feedback from the teacher in every step before proceeding to the next. This way process writing can ensure accuracy in students writing not only semantically but also by focusing on meaning (O’Brien, 2004). It can help students clarify their ideas in a logical and coherent way (Kang, 2006). According to a study conducted by Ho, 2006, process writing helped build students’ confidence and improved their writing skills. Process writing has also helped students in making writing an approachable task to students of different proficiency levels (Ho, 2006). In her study Ho investigated 200 students in six primary schools at Hong Kong in a two month period. All classes showed positive progress in their writing abilities and their attitudes towards writing (Ho, 2006).

However, despite the benefits that process writing possess and despite the fact that this approach has been introduces around three decades ago, writing teachers are still using the traditional way in teaching writing which focuses on the final product instead of the process. That is due to the fact that process writing takes a lot of class time because of teacher-conferences and peer correction. However this problem can be solved if process writing is applied to small groups and if computers were used (Harmer, 2007). That is because if activities were well planned, technology can help process writing work at its best level. (Ferris and Hedgcock, 2005).

Suzuki, 2008 investigated intermediate proficiency students’ revision of their English writing composition. The results were that revision of written tasks helped students develop
their language more than oral interactions. Suzuki, cited that Swain and Lapkin, 2001 also mentioned that students can focus on form from collaborative writing tasks (Suzuki, 2008).

From what has been mentioned, process writing can ensure accuracy in form and meaning in students writing. Therefore, this study will investigate if small group process writing through wikis can help students’ accuracy to rise and therefore develop their writing skills.

### 2.1.7. Conclusion

Finally, from what has been mentioned above, it is clear that a Wiki is a successful software tool that can facilitate language learning and help students engage in the learning process. Wikis have also proven their great ability to help group work perform at its finest level. It solved the problems associated with students’ laziness and reliance and made assessing group work fair to all members. Having this advantage teachers now can follow up on students’ contributions and improvement in English and observe the new vocabulary or structure they learned from peer correction or editing. However, teachers should implement this new technical tool in EFL classrooms with carefully choosing activities or teaching strategies that can help students’ accuracy to rise. In addition, since process writing can ensure accuracy in form and meaning in students writing, this study will investigate if small group process writing through wikis can do that.
Chapter 3: Methodology and Procedures

3.1. Introduction

This Chapter reveals all aspects relating to the design and implementation of the main study. It starts by describing the population from which the sample of the study was drawn. Then it shows the research approach of the study and its design. Next it lists and describes the material and the treatment applied. Finally, the scoring criteria are presented.

3.2. The subjects of the study

The following section describes the population of the study and the sampling processes used in the selection of the subjects for the current study.

3.2.1. The Population

The population of this study is female secondary students in the American high school diploma Department in a private school called Riyadh Schools in Riyadh, Saudi Arabia. In this department students are taught all subjects in English accept for Arabic and Religion. However, their English Proficiency is in the intermediate level. That is because this department starts from the tenth grade to the twelfth. Therefore, this is the tenth grade’s first year in this department. Before enrolling in this department, students studied all English skills as one course since first grade. They all are female students living in Riyadh. That is due to the cultural learning conditions where girls’ education is isolated from boys.

Students in this school are excellent in speaking skills but have a problem with writing. They find difficulty in writing and they do not enjoy it because of that. Teachers therefore face a big challenge when trying to motivate students to enjoy writing and write in a grade
appropriate level. Teachers in this school have very busy schedules and a lot of administrative commitments. This has led to the difficulty that teachers face in tracking their students’ progress and development in writing and in correcting their mistakes.

3.2.2. The Sampling Process and Subjects

The subjects used in this study are all the tenth grade students in this department. It was decided that the focus will be on this level because this is their first year in the department and they are struggling in writing in English for the writing course and all the other courses. This made it significant for the study to be applied on them.

The subjects were 44 students in three classes. Two classes with 30 students were the experimental groups and one class with 14 students was the control group. All three classes were used for a total of 12 classes over a six week period.

Sampling in research means taking a portion of the population and considering it to be representative of that population (Kerlinger & Lee, 2000). There are many kinds of sampling that can be used but the most frequently used in quasi experimental designs in educational researches is the sampling of the subjects which is based on their class sections (Ary, Jacobs & Razavieh, 2002). According to Kerlinger & Lee, 2000, this kind of sampling is called accidental sampling. It has to be used with reasonable knowledge and care in analysis and interpretation of data (Kerlinger & Lee, 2000). That is due to its lack of the benefits of random sampling where variables other than the experimental variables can be somehow controlled and have an equal affect in the different treatments (Kerlinger & Lee, 2000). Therefore, it was important to ensure that the subjects in this study were at the same proficiency level in writing in terms of their accuracy demonstrated in their vocabulary, spelling and structure and the quality of their writing demonstrated in their organization,
fluency and content. To do that, a writing pretest was assigned to both groups; the experimental and control groups. The results of the pretest show that the mean average of the subjects’ grades on the pretest was very similar (in Table 3-1). In addition, there were no statistically significant differences among the two groups’ results in the pretest measuring their accuracy, organization, content and fluency in their writing skills. These statistically results were computed through Independent Samples Test (t-test) and revealed at the p<.05 level in scores for the two groups [t = .071, p= .944].

Table 3 - 1: Mean averages of subjects’ pretest scores out of 10

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>8.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>

3.3. Research Approach and Design

3.3.1. The Research Approach

The research approach used in this study is a quantitative approach. That is because in this study objective measures and statistically analysis of numerical data have been used which are the main characteristics of this approach (Ary, Jacobs, Razavieh, 2002).

The main aim of this study is to explore the effects of process writing and wikis on the students’ performance in writing in terms of accuracy; vocabulary, spelling and structure and the quality of their writing; organization, fluency and content. The students’ performance can be identified in their scores in the final posttest in both the experimental and
control groups compared with their scores in the pretest which was applied before implementing the experiment. Then the experimental group’s scores on the posttest are compared with the control group’s scores on the same posttest. The pretest of the control and the experimental group were compared as well before implementing the study to ensure that any differences between the groups will be due to the treatment and not due to preexisting differences.

3.3.2. The Design of the Study

The design of this study follows a quasi-experimental design. That is because subjects were not assigned randomly to treatments but there still was a control group (Kerlinger & Lee, 2000). This design was used because it is the most common design used in educational research due to the fact that in schools classes cannot be organized for research purposes which makes it necessary to use groups as they are (Ary, Jacobs & Razavieh, 2002). The diagram below shows the design of the study.

**Diagram showing the design of the study**

- Experimental Group: O₁ X O₂
- Control Group: O₁ O₂

O₁ refers to the students’ scores on the pretest

O₂ refers to the students’ scores on the posttest

X refers to the process writing and Wiki treatment (Experimental Group B)
In this study students were randomly assigned to two groups. Then they were given the writing pretest for two reasons; (a) First, to assure that the students in the experimental and control groups were at the same proficiency level in writing. (b) Second, to assure that any differences in their results will not be due to preexisting differences which will help in attaining internal validity (Ary, Jacobs & Razavieh, 2002).

In addition, in order to see if different treatments resulted in different performances of students in writing, one group was treated with process writing through wikis and the other group was taught process writing traditionally with no treatment.

In this study 12 sessions were applied in a six-week period. The first session was the pretest, 10 sessions were for the experiment and the last session was the posttest.

3.4. Material

The material and instruments used in this study is described and how it was used is explained in the following section.

3.4.1. The Wiki database

The wiki used in this study was designed by the researcher through the wiki website "Pbworks.com". This site allows free use for education and classroom use with only basic features. More advanced features are not free of charge. The wiki used for this study was free. That is because the researcher found that the basic features were significant for the students especially because they were all beginners in using wikis and do not need the extra
features that the website can provide. The researcher designed the wiki and included
everything the students would need for this experiment which is explained in the following.

The first page on the class wiki had a link to the assignments that the students should
do to make it easier for them to navigate through the wiki instead of looking for new pages on
the sidebar.

A page on the wiki had all the assignments that the students will be doing throughout
this experiment. They were also asked to finish all the required assignments before class time
according to the assignment schedule. (See Appendix C). Students also were provided with
the direct links to the pages they had to do.

In the introductory session, students were asked to navigate and explore the wiki.
Then during the experiment sessions, the students were asked to watch the TV animated
production of the story they will analyze. After watching the movie, they were asked to fill in
a table collaboratively with literary analysis of the story and they had to search for more
information to complete the table. After that, the class was divided randomly into groups and
worked on their group page to brainstorm their ideas to write a critical review of the story.
Then the groups had to write their first draft by adding all the information they want to write.
In the revision stage, the students had to edit their own work in addition to peer correction to
produce an error free piece of writing. The students were asked to correct each others'
vocabulary, spelling, structure, organization, fluency as well as content. Finally, the students'
published their work by writing their final draft and organized the layout by adding pictures
or links on their group's wiki and presented their work to the class.
3.4.2. Instruments

The aim of this study was to examine the effect of process writing through wikis, the independent variable, on the students' performance in the writing posttest, the dependent variable. Accordingly, a pretest and a posttest were used for data collection and will be explained in the following section.

3.4.2.1. Pretest and Posttest

Tests are considered to be “valuable measuring instruments for educational research” (Ary, Jacobs, Razavieh, 2002: 216). A Pretest was used to document the initial differences in the subjects’ writing skills before the treatment. That would ensure that any differences in the subjects’ performance was due to the experiment and not preexisting differences which will help in attaining internal validity (Ary, Jacobs, Razavieh, 2002). In addition, the pretest would ensure that the students in both groups were at the same proficiency level. The posttest was used to compare the subjects’ performance in both groups after the treatment and to compare their scores in the posttest with the pretest.

The pretest and posttest were designed to have the same and appropriate level of difficulty, the same format, the same content but different topics to make it reliable (Ary, Jacobs, Razavieh, 2002). The following section will discuss the test type, format, content and test validity & reliability.

3.4.2.1.1. Test Type

The test type used in the pretest and posttest in this study is classified as criterion – referenced. That is because the test evaluated each subject’s performance according to certain criteria and not according to other individuals in the experiment such as norm-referenced tests (Ary, Jacobs, Razavieh, 2002). The aim of a criterion referenced test is to classify if the
subjects were able to perform satisfactorily what is intended to measure (Hughes, 2003). The criteria used to measure the outcome of subjects’ performances have to be based on test specifications constructed in advance (Hughes, 2003).

Therefore, since the aim of this study was to see whether process writing through wikis can improve students’ performance when being tested in writing, the criterion-referenced test has been used and a set of specifications were considered. The specifications were:

- Accuracy (Vocabulary, spelling and structure).
- Organization (paragraphing and length of sentences, the logical flow of ideas between sentences and between paragraphs. In addition to spacing at the beginning of paragraphs.)
- Fluency (the number of paragraphs provided and the number of sentences in each paragraph (five to eight sentences) in a 40 minutes class time.)
- Content (the main idea, supporting ideas, reasoning and examples provided)

3.4.2.1.2. Test Format

The tests administered to both the control and experimental groups were essay questions. It followed the format of the essay questions in the SAT tests. The pretest was reproduced from the website (http://www.majortests.com/sat/essay-topics.php) after gaining their permission for reproduction by email (see Appendix E). The posttest was self designed based on the same format. This format includes a short introduction and a quotation. Then the essay question is addressed and instructions are given (see Appendixes A & B). The total score of the test was out of 10. The instructions written included the following:

- Writing a thesis of statement in the introduction
• Including examples and supporting ideas.

• The length should be four paragraphs and five to eight sentences per paragraph.

• Writing more than one sentence in the conclusion

• Writing accurately by paying attention to their spelling and structure.

3.4.2.1.3. Test Content

In the pretest and posttest, the students were required to write their opinion regarding the topic and write an essay about it and supporting their answers with examples.

The test had clear direction on what the subjects had to do. Every specification and criterion measured was mentioned in the questions for students to consider. For example, students were given a small introduction on the topic and a quote to help the students understand the main idea and the content of what they are supposed to write. In addition, the number of paragraphs and the sentences in each paragraph was clearly stated. The students were also asked clearly to write accurately by paying attention to their spelling and structure. In addition supporting their ideas with examples and reasoning.

The two tests, the pretest and the posttest were chosen and designed to have an appropriate level of difficulty. This will make the test more reliable. That is because difficult exams may cause students to guess the answers and easy exams will result in correct
responses among all students which in both cases lower the reliability coefficient of a test (Ary, Jacobs, Razavieh, 2002).

To ensure that the tests in this study were at an appropriate level of difficulty two measures were taken. First, piloting the test on a different sample helped the researcher assure that the two tests were at an appropriate level of difficulty. Secondly, four teachers and the AHD, American High school diploma, departments’ coordinator reviewed the tests and took a close look on whether the two tests were at an appropriate level of difficulty and at the same level of difficulty. Three of those teachers were native speakers in the same department, two Irish teachers and one American teacher. The fourth was a non-native secondary English teacher in the same school. The fifth was the department coordinator who had a Masters degree in English phonology.

3.4.2.1.4. Test Validity & Reliability

Every test should be valid and reliable to truly judge students’ performance and achievement. For a test to be valid, it has to measure what is intended to measure (Ary, Jacobs, Razavieh, 2002), (Hughes, 2003), (Kerlinger & Lee, 2000). A test should also measure accurately and consistently the students’ performance to be reliable (Ary, Jacobs, Razavieh, 2002), (Hughes, 2003), (Kerlinger & Lee, 2000).

Construct Validity is a term used to refer to the general notion of validity because in language tests theoretical constructs are tested (Hughes, 2003). Construct validity involves content and criterion based validity in addition to other forms such as face validity. In this study, content validity and face validity were considered in order to ensure that all tests and the assumptions based on the scores of the students on these tests are valid. As for content validity, both the pretest and the posttest measured exactly what was intended to measure.
That was obvious in that the tests included all the test specifications constructed which involved accuracy, organization, fluency and content.

To judge face validity, students in this department are used to the SAT essay questions which is the same format used in both tests. Therefore, to students these tests look like they are going to evaluate what they are supposed to measure. In addition, both the pretest and the posttest were shown to the same people who evaluated the tests for content difficulty which were three native—speaker secondary English teachers in the same department, one nonnative secondary English teacher and the department coordinator.

As for reliability, to ensure that the two tests if administrated in different conditions obtain the same scores, the pretest and the posttest were piloted with a sample (n=21) who were not involved in the experiment in any way. The students were of grade ten secondary students in the Arabic department in Riyadh Schools and not in the ADH department. The Pretest was administered to the students and the posttest was administered to the same students the next day. To judge the reliability of a test a reliability coefficient has to be calculated on the students’ scores on both tests and has to be between 0 and 1 for the test to be reliable (Hughes, 2003). The reliability coefficient that was calculated on the scores of the same group on the two tests was 0.846. This indicates that that the participants’ responses to both tests were generally reliable.

3.5. The Experimental Period

The following section discusses the different stages of the wiki experiment and how each stage was implemented with the participants.
3.5.1. The Pretest (Session 1)

In the first session, the researcher who is also the teacher met the students and explained that they will participate in an experiment for an MA dissertation. The teacher emphasized on the importance of attending all classes and doing the homework that they will be asked to do. Then the pretest designed for this study was administered to the subjects in all groups; the experimental and the control groups. They were asked to finish the pretest in one period which is 40 minutes.

The purpose of the pretest was to check the students’ proficiency level in writing in English so that any significant improvement will be due to the experiment and not preexisting differences to insure internal validity (Ary, Jacobs, Razavieh, 2002). In addition, the pretest was important to check if all the students in both groups were at the same proficiency level in writing in terms of accuracy, organization, content and fluency. The pretest was corrected and analyzed before the treatment.

The results of the statistically analysis which were computed through an Independent Samples Test (t-test) and revealed at the p<.05 level in scores for the two groups, which were discussed earlier, show that there were no significant differences in the students’ scores on their performance in writing regarding accuracy, organization, content and fluency. The results of the pretest also show that the mean average of the subjects’ grades on the pretest were very similar (in Table 3-1).

3.5.2. Description and Treatment (Sessions 2-11)

The experiment started at session 2 after the pretest. The control and experimental group took 12 sessions in a 6 week period. Every session lasted 40 minutes. Both the experimental and control group had the same instructions and the same activities per session
but the only difference was the wiki. The control and experimental group were taught process writing and were asked to write a critical review of a children's story called "Alexander and the terrible, horrible, no good, very bad day" by Judith Viorst. Both groups read the story, watched an animated movie of the story, searched for information, did literary analysis of the story and wrote their opinion of the story and a critical review of it. The students in both groups worked in groups of three and went through the four stages of process writing; planning, drafting, revising and publishing. The teacher taught the students what to do in every step and the students benefited from peer correction in addition to teacher feedback. The control group was taught traditional process writing using paper and pencil. However, the experimental group was taught process writing through wikis. In addition, the control group worked in class only and the students in the experimental group worked in the computer lab at school and at home through the wiki.

3.5.2.1. The Wiki training Session (Session 2)

Most students were familiar in using computers in learning and in their leisure time. However, they were unfamiliar with wikis and how they were used. Therefore, it was important to introduce the wiki to the students before starting to work on it. Students were given their usernames and passwords prepared by the teacher earlier and they were asked to log in and navigate the wiki and explore without doing the assignments.

The experimental group was divided into two classes according to their school. Both classes had the same instructions and assignments and worked in the computer lab. On the other hand, the third class which was the control group was taught process writing traditionally without wikis or technology in their classroom.
Every class in the experimental group had their own class wiki page. In this page the teacher prepared links to assignments and organized pages so that it would be easy for the students to navigate and understand. An assignment page of what the students will be required to do before every session was established. The teacher explained every step carefully which involved Searching for information, planning, drafting, revising and publishing (see Appendix C). Then the students were divided into groups randomly and were asked to write their names in their group page and edit each other’s work to get familiar with how to use the wiki page.

3.5.2.2. **Discussing the story and Searching for information (Session 3 & 4)**

In session 3 & 4, in class the students in both the experimental and control groups read a children’s story called “Alexander and the Terrible, Horrible, No good, Very bad day” by Judith Viorst. Then the literary analysis of the story was discussed. The students were then asked for their opinion of the story and its suitability for children. Then the teacher discussed the critical review assignment they had to do and the steps they had to go through when writing a critical review. After that the students were asked to watch an animated movie production of the story. The students were then asked to search the internet for more information about the story in addition to write some literary analysis of the story to complete a table. The whole class was asked to work collaboratively to complete the table before the next session. The experimental group did all what has mentioned on the wiki and were asked to work in class and at home. The table they had to fill in was on their wiki page. Whereas the control group did everything in class accept for searching the internet for information.
3.5.2.3. Planning the students’ response (Session 5 & 6)

In sessions 5 & 6, the students in both groups worked in their small groups to brainstorm their ideas about writing a critical review on the story they read. They were asked to write without paying attention to spelling and structure and write all the ideas they had in mind. Each member of the group had to add her ideas without editing. They were taught how to write their main idea and then supporting ideas under it. The focus in this stage was on content only and disregarding accuracy, organization and fluency. The control group worked in class but the experimental group started their work in class and was asked to finish before the next session as homework through their wiki page.

3.5.2.4. Writing the draft (session 7 & 8)

In sessions 7 & 8, the students in both groups were asked to write their first draft. In this stage they were supposed to choose the ideas that they had written and support what they wrote with examples and put them in complete sentences and paragraphs. The focus on this stage was on fluency and organization. The control group worked in class but the experimental group started their work in class and was asked to finish before the next session as homework through their wiki page.

3.5.2.5. Revising the draft (session 9 & 10)

To revise the students’ draft, students in both groups were asked to edit their work and their groups’ work in terms of accuracy which involves vocabulary, spelling and structure. Then they worked together to agree on their final draft and comment on each others’ changes and ask their teacher for advice. Then the students were asked to publish their work by organizing their final draft and by adding pictures and publishing the layout of their work before next class. Both groups worked in class and at home.
3.5.2.6. Publishing and Presentation (session 11)

In this last session, each group in both the control and experimental group published their final draft on the wiki and presented their work to the class. Then each group commented on the other groups, asked questions and discussed their opinions. Finally, each group in the experimental group commented on this experience which was a positive reaction among most students (See Appendix D). On the other hand, the control group was tired of writing and mentioned that they were bored of working on the same piece of writing. However, both groups’ reactions were not taken into consideration in this study due to the focus on the students’ performance not attitudes.

3.5.3. The Posttest (session 12)

After the treatment in session 12, the students in both groups the control and the experimental groups were given the posttest for them to answer in 40 minutes. The posttest was an essay writing exam that had the same form and the same level of difficulty as the pretest they took in session one. The content of both tests had different topics but were very similar in terms of type and content which fit the test specifications constructed for the content validity in both tests. The posttest was then analyzed and discussed in the next chapter.

3.6. Scoring Criteria

It is of great importance to consider how students’ responses are scored for a test to be valid in addition to the validity of its items (Hughes, 2003). Therefore, to ensure the validity in scoring, the pretest and the posttest were scored in the same way. Moreover, the test specifications constructed were used to set scoring criteria to distribute the marks among them. This helped in making the scoring of the test as objective as possible which will make
the test more reliable (Hughes, 2003). Each test was out of 10; 5 for accuracy and 5 for the quality of writing. The division of the marks was as follows:

As for the students’ language accuracy, three aspects were considered. They are vocabulary, spelling and structure. 5 points were given for language accuracy; 3 points were given for vocabulary and spelling, (1.5 points for each) and 2 points were given for structure. The spelling was scored in that every four mistakes, half a mark was deducted. On the other hand, half a mark was deducted for every three structure mistakes. The vocabulary was judged according to the correct usage of words and half a mark was deducted for every mistake in vocabulary.

The quality of the students’ writing, which involved organization, fluency and content, was given 5 marks and was divided as follows; 2 points were given for content. It involved the main idea of the passage and if the students supported their answers with supporting ideas, reasoning and examples. Another 2 points were given for organization. It involved paragraphing and length of sentences, logical flow of ideas between sentences and between paragraphs and spacing. Fluency was also given 1 mark. It was scored according to the length of the passage which was evaluated according to the number of paragraphs and the number of sentences in each paragraph.
Chapter 4: Analysis of Data and Discussion of Results

4.1. Introduction

This chapter reports the results of the posttest, which were analyzed as measures of learning outcomes with the aim of answering the research questions proposed in this study. This chapter also presents a discussion of these results and how they add to the field of CALL.

The purpose of the study was to investigate if Wikis and the process writing approach when applied on Saudi female tenth grade secondary students in the AHD, American High school Diploma Department in Riyadh schools, affected students’ accuracy in terms of vocabulary, spelling and structure and the quality of their writing skills such as their organization, fluency and content. This was measured in their performance in the posttest compared with their results in the pretest and compared with the control groups' results.

Motivated by encouraging literature and research on: (a) the importance of choosing activities carefully when using wikis to help students’ accuracy to rise in (Kessler, 2009), (Lee, 2010), (Lund, 2008). (b) The importance of process writing and its benefits in (Fogelman, Harrington, Kenny, Pacheco, Panofsky, Santos, Smith, 2005), (Ho, 2006), (Kang,2006), (O’Brian, 2004), (Suzuki, 2008). (c) The importance of using technology with process writing in (Ferris and Hedgcock, 2005) and (Harmer, 2007).

This study aimed at finding out if process writing through wikis would lead the students to write accurately and improve the quality of their writing. In addition it aimed at finding out if their performance on tests would be better than those in the control group who experienced process writing without wikis. To be specific three research questions were tackled by this study:
1. Will there be a significant improvement in the subjects’ performance in the post writing test in terms of accuracy, which includes fewer errors in vocabulary, spelling and structure in both groups; the control and the experimental groups?

2. Will there be a significant improvement in the subjects’ performance in the post writing test regarding the quality of their writing which includes organization, fluency and content in both groups; the control and the experimental groups?

3. Which group’s performance (the experimental group; process writing with wikis or the control group; traditional process writing) will have significantly improved the most in the post writing test regarding accuracy (vocabulary, spelling and structure), the quality of their writing (organization, fluency and content) and on the posttest as a whole?

Data was collected over a period of six weeks in ten sessions, other than the pretest and the posttest, from two groups; the control group (n=14) who did traditional process writing with no technology and the experimental group (n=30) who did process writing through wikis. All 44 students completed the pretest and posttest.

The scores retrieved from the pretest and the posttest were used for comparing the differences between the two groups to see whether or not there was a significant difference between the experimental and control groups. Statistical computations were conducted using the Statistical Package for Social Science (SPSS) for windows. The alpha level of significance p<.05 (95% confidence) was determined prior to data collection and was used throughout the study. That is because it has been agreed on in Educational research that the alpha level of significance p<.05 (95% confidence) is one of the most commonly used levels of significance (Ary, Jacobs & Reazavieh, 2002).

More specifically the SPSS program was used for conducting the following analysis:
(A) Descriptive analysis and an Independent Samples t-test investigating significant differences in posttest findings of the control and experimental groups.

(B) Descriptive analysis and paired samples t-tests investigating whether mean scores of both groups significantly increased on the posttest compared with their pretest.

The analysis and findings resulting from each set of data are explained in greater detail in the section below.

4.1.1. Testing Question one

Research question one states: Will there be a significant improvement in the subjects’ performance in the post writing test in terms of accuracy, which includes fewer errors in vocabulary, spelling and structure in both groups; the control and the experimental groups?

The aim was to investigate if each of the control group and the experimental group’s performance regarding their accuracy (vocabulary, spelling and structure) has improved in the posttest compared with their pretest.

To answer the first question of this study, descriptive analysis and Paired Samples t-Tests (paired t-tests) were used to investigate any statistically significant differences in the posttest findings compared with the pretest results of the control and experimental groups. The following is a presentation of the descriptive and inferential statistics computed for their final scores on the posttest compared with their pretest for both groups; the control and the experimental groups regarding their accuracy (vocabulary out of 1.5, spelling out of 1.5 and structure out of 2).
4.1.1.1. Analysis of the control group’s accuracy

Table 4 - 1: Means of the control group's accuracy

<table>
<thead>
<tr>
<th>Control Group (n=14)</th>
<th>Tests</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vocabulary</strong></td>
<td>Pretest</td>
<td>1.5</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.4</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td>Pretest</td>
<td>1.3</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.3</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>Pretest</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.3</td>
<td>0.6</td>
</tr>
</tbody>
</table>

The table reveals that the subjects in the pretest showed better performance in vocabulary (M=1.5) than on the posttest (M=1.4). In addition, the subjects performance in spelling was similar (M=1.3) in both the pretest and the posttest. As for their performance in structure, the means show that the subjects preformed better in the posttest (M=1.3) than on the pretest (M=1.2).

Table 4 - 2: A Paired Samples t-test of the data collected from the control group's accuracy

<table>
<thead>
<tr>
<th>Control Group (n=14)</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vocabulary</strong></td>
<td>1.47</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>-.22</td>
<td>0.83</td>
</tr>
</tbody>
</table>

A Paired Samples t-test (Paired t-test) was conducted to explore the impact of traditional process writing on students’ performance in accuracy (vocabulary out of 1.5, spelling out of 1.5 and structure out of 2) in the posttest. Subjects in the pretest showed better performance in vocabulary (1.5) than on the posttest (1.4). However, there was no
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statistically differences at the p<.05 level in scores of the pretest and the posttest in vocabulary \([t = 1.47, p=0.17]\). In spelling the mean difference of the subjects’ performance in both tests were the same and there were no significant differences statistically either at the p<.05 level in scores of the pretest and the posttest in spelling \([t = 0.00, p= 1.00]\). As for structure, the subjects preformed better in the posttest (\(M= 1.3\)) than on the pretest (\(M=1.2\)). However, there weren’t any significant differences at the p<.05 level in scores of the pretest and the posttest in structure \([t =-.22, p=0.83]\)

Therefore, the control group has shown to have no significant differences in their performance in accuracy (Vocabulary, spelling and structure) in the posttest compared with the pretest.

![Figure 4 - 1:Mean scores of the control group's accuracy](image)

4.1.1.2. Analysis of the experimental group’s accuracy

Table 4 - 3: Means of the experimental group's accuracy

<table>
<thead>
<tr>
<th>Experimental Group (n=30)</th>
<th>Tests</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>Pretest</td>
<td>1.5</td>
<td>0.0</td>
</tr>
</tbody>
</table>
The table reveals that the subjects in the experimental group (group B) showed similar results in their performance in vocabulary (M=1.5) in both the pretest and the posttest. However, the subjects performance in spelling was better on the posttest (M=1.3) than on the pretest (M=1.2). In structure, the subjects also performed better on the posttest (M=1.4) than on the pretest(M=1.2).

<table>
<thead>
<tr>
<th></th>
<th>Posttest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spelling</td>
<td>Pretest</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.3</td>
</tr>
<tr>
<td>Structure</td>
<td>Pretest</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 4 - 4: A Paired Samples t-test of the data collected from the experimental group’s accuracy

<table>
<thead>
<tr>
<th>Experimental Group (n=30)</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>0.571</td>
<td>0.57</td>
</tr>
<tr>
<td>Spelling</td>
<td>-0.528</td>
<td>0.601</td>
</tr>
<tr>
<td>Structure</td>
<td>-2.45</td>
<td>0.02*</td>
</tr>
</tbody>
</table>

* = p< 0.05 level

A Paired Samples t-test (Paired t-test) was conducted to explore the impact of process writing through wikis on students’ performance in accuracy (vocabulary out of 1.5, spelling out of 1.5 and structure out of 2) in the posttest. Subjects in the pretest and posttest showed similar performance in vocabulary (1.5). In addition, there were no statistically differences at the p<.05 level in scores of the pretest and the posttest in vocabulary [t =0.571, p=0.57]. The subjects performance in spelling was better on the posttest (M=1.3) than on the pretest (1.2). However, there were no significant differences statistically at the p<.05 level in scores of the
pretest and the posttest in spelling. \( t = -0.528, \ p = 0.601 \). In structure, the subjects also performed better on the posttest (1.4) than on the pretest (1.2). In addition, there were significant differences at the \( p < 0.05 \) level in scores of the pretest and the posttest in structure \( t = -2.45, \ p = 0.02 \)

Therefore, the experimental group has shown to have significant differences statistically in their performance in structure on the posttest compared with the pretest. However, there were no statistically differences at the \( p < 0.05 \) level in scores of the pretest and the posttest in vocabulary and spelling.

\[
\begin{array}{c|c|c|c}
& \text{pretest} & \text{posttest} \\
\hline
\text{vocabulary} & 0.5 & 1.5 \\
\text{spelling} & 1 & 2 \\
\text{structure} & 1.5 & 3 \\
\end{array}
\]

Figure 4 - 2: Mean scores of the experimental group's accuracy

### 4.1.2. Testing Question two

Research question two states: Will there be a significant improvement in the subjects’ performance in the post writing test regarding the quality of their writing which includes organization, fluency and content in both groups; the control and the experimental groups?

The aim was to investigate if each of the control group and the experimental group’s performance regarding the quality of their writing (organization, fluency and content) has improved in the posttest compared with their pretest.
To answer the second question of this study, descriptive analysis and Paired Samples t-tests (paired t-tests) were used to investigate any statistically significant differences in the posttest findings compared with the pretest results of the control and experimental groups. The following is a presentation of the descriptive and inferential statistics computed for their final scores on the posttest compared with their pretest for both groups; the control and the experimental groups regarding the quality of their writing (organization out of 2, fluency out of 1 and content out of 2).

4.1.2.1. Analysis of the control group’s writing quality

Table 4 - 5: Means of the control group's quality of writing

<table>
<thead>
<tr>
<th>Control Group (n=14)</th>
<th>Test</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Pretest</td>
<td>1.4</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Fluency</td>
<td>Pretest</td>
<td>0.8</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>0.9</td>
<td>0.2</td>
</tr>
<tr>
<td>Content</td>
<td>Pretest</td>
<td>1.9</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.8</td>
<td>0.4</td>
</tr>
</tbody>
</table>
The table reveals that the subjects in the control group showed better performance in organization in the posttest (M=1.8) than on the pretest (M=1.4). In addition, the subjects’ performance in fluency was better in the posttest (M=0.9) than on the pretest (M=0.8). As for their performance in content, the mean shows that the subjects preformed better in the pretest (M=1.9) than on the posttest (M=1.8).

Table 4 - 6: A Paired Samples t-test of the data collected from the control group’s quality of writing

<table>
<thead>
<tr>
<th>Control Group (n=14)</th>
<th>T</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>-2.21</td>
<td>0.05*</td>
</tr>
<tr>
<td>Fluency</td>
<td>-1.39</td>
<td>0.19</td>
</tr>
<tr>
<td>Content</td>
<td>1.32</td>
<td>0.208</td>
</tr>
</tbody>
</table>

* = p< 0.05 level

A Paired Samples t-test (Paired t-test) was conducted to explore the impact of traditional process writing on students’ performance in the quality of their writing (organization out of 2, fluency out of 1 and content out of 2) in the posttest. Subjects in the posttest showed better performance in organization (1.8) than on the pretest (1.4). In addition, there were significant statistically differences at the p<.05 level in scores of the pretest and the posttest in organization \([t = -2.21, p=0.05]\). The subjects’ performance in fluency was also better in the posttest (M= 0.9) than on the pretest (M=0.8). However, there were no significant differences statistically at the p<.05 level in scores of the pretest and the posttest in spelling.\([ t = -1.39, p= 0.19]\). As for their performance in content, the mean shows that the subjects preformed better in the pretest (M=1.9) than on the posttest (M= 1.8). However, there were no significant differences at the p<.05 level in scores of the pretest and the posttest in content \([t = 1.32, p=0.208]\)
Therefore, the control group has shown to have significant differences statistically in their performance in organization in the posttest compared with their pretest. On the other hand, there were no significant differences statistically in their performance in fluency and content in the posttest compared with their pretest.

![Figure 4-3: Means of the control group’s quality of writing](image)

### 4.1.2.2. Analysis of the experimental group’s writing quality

Table 4-7: Means of the experimental group's quality of writing

<table>
<thead>
<tr>
<th>Experimental Group (n=30)</th>
<th>Tests</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Pretest</td>
<td>1.52</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.97</td>
<td>0.1</td>
</tr>
<tr>
<td>Fluency</td>
<td>Pretest</td>
<td>0.75</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>0.98</td>
<td>0.1</td>
</tr>
<tr>
<td>Content</td>
<td>Pretest</td>
<td>1.92</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.96</td>
<td>0.2</td>
</tr>
</tbody>
</table>

The table reveals that the subjects in the experimental group showed better performance in organization in the posttest (M=1.97) than on the pretest (M=1.52). In addition, the subjects’ performance in fluency was better in the posttest (M=0.98) than on the pretest (M=0.75). Moreover, their performance in content showed that the subjects preformed better in the posttest (M=1.96) than on the pretest (M=1.92).
A Paired Samples t-test (Paired t-test) was conducted to explore the impact of traditional process writing on students’ performance in the quality of their writing (organization out of 2, fluency out of 1 and content out of 2) in the posttest. Subjects in the posttest showed better performance in organization (M=1.97) than on the pretest (M=1.52). In addition, there were significant statistically differences at the p<0.01 level in scores of the pretest and the posttest in organization [t = 5.14, p=0.00]. The subjects’ performance in fluency was also better in the posttest (M= 0.98) than on the pretest (M=0.75). In addition, there were statistically significant differences at the p<0.001 level in scores of the posttest compared with the pretest in fluency [t = -3.75, p= 0.001]. As for their performance in content, the mean shows that the subjects preformed better in the posttest (M=1.96) than on the pretest(M= 1.92). However, there were no significant differences at the p<0.05 level in scores of the pretest and the posttest in content [t = -0.57, p=0.57]

Therefore, the experimental group has shown to have significant differences statistically in their performance in organization and fluency in the posttest compared with
their pretest. On the other hand, there were no significant differences statistically in their performance in content in the posttest compared with their pretest.

Figure 4 - 4: Means of the experimental group's quality of writing

4.1.3. Testing Question three

Research question three states: Which group’s performance (the experimental group; process writing with wikis or the control group; traditional process writing) will have significantly improved the most in the post writing test regarding accuracy (vocabulary, spelling and structure), the quality of their writing (organization, fluency and content) and on the posttest as a whole? The aim was to look at the difference between students’ performance in the control group (traditional process writing) and the experimental group (process writing through wikis) on the writing posttest in terms of:

(a) accuracy (vocabulary out of 1.5, spelling out of 1.5 and structure out of 2)

(b) the quality of their writing (organization out of 2, fluency out of 1 and content out of 2)

(c) Their improvement in the posttest as a whole (out of 10)

To answer the third and final question of this study, descriptive analysis and an Independent Samples t-test (t-test) were used to investigate any statistically significant differences in the posttest findings of the control and experimental groups. Since the pretest yielded no significant differences between the two groups at the beginning of the study (See table 3-1), it seems reasonable to consider that any significant differences in their mean scores on the posttest would be due to the experimental treatment. The following is a presentation of the descriptive and inferential statistics computed for their final scores on the posttest for both groups; the control and the experimental groups regarding their accuracy
(vocabulary, spelling and structure) and the quality of their writing (organization, fluency and content) as a whole (out of 10).

**4.1.3.1. Accuracy in subjects' performance in the posttest**

Table 4 - 9: Means of both groups in Vocabulary

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.4</td>
<td>1.5</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.18</td>
<td>0.16</td>
</tr>
</tbody>
</table>

The table reveals that the subjects from the experimental group showed better performance in vocabulary (M=1.5) than subjects from the control group (M=1.4).

Table 4 - 10: An Independent Samples t-test of the data collected from both groups in Vocabulary

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Test value</td>
<td>-1.01</td>
<td></td>
</tr>
<tr>
<td>T-Test Sig</td>
<td>0.32</td>
<td></td>
</tr>
</tbody>
</table>

An Independent Samples t-test (t-test) was conducted to explore the impact of process writing through wikis on the students’ performance in vocabulary (out of 1.5) in the posttest. Subjects in the experimental group showed better performance in vocabulary (M = 1.5) than subjects in the control group (M = 1.4). However, there was no statistically differences at the p<.05 level in both groups’ scores in vocabulary [t=-1.01, p=0.32].
Table 4 - 11: Means of both groups in Spelling

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.3</td>
<td>0.4</td>
</tr>
</tbody>
</table>

The table reveals that the means of the subjects from the experimental group and the control group's performance in spelling showed similar results (M=1.3).

Table 4 - 12: An Independent Samples t-test of the data collected from both groups in Spelling

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Test value</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>T-Test Sig</td>
<td>0.77</td>
<td></td>
</tr>
</tbody>
</table>

An Independent Samples t-test (t-test) was conducted to explore the impact process writing through wikis on the students’ performance in spelling (out of 1.5) in the posttest. The means of the subjects from the experimental group and the control group’s performance in spelling showed similar results (M=1.3). In addition, there were no statistically differences at the p<.05 level in both groups’ scores in spelling [t =0.29, p=0.77]
Table 4 - 13: Means of both groups in Structure.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.6</td>
<td>0.6</td>
</tr>
</tbody>
</table>

The table reveals that the subjects from the experimental group showed better performance in structure (M=1.4) than subjects from the control group (M=1.3).

Table 4 - 14: An Independent Samples t-test of the data collected from both groups in structure.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Test value</td>
<td>-0.91</td>
<td></td>
</tr>
<tr>
<td>T-Test Sig</td>
<td>0.37</td>
<td></td>
</tr>
</tbody>
</table>

An Independent Samples t-test (t-test) was conducted to explore the impact process writing through wikis on the students’ performance in structure (out of 2) in the posttest. Subjects in the experimental group showed better performance in structure (M=1.4) than subjects in the control group (M=1.3). However, there were no statistically differences at the p<.05 level in both groups’ scores in structure [t =-0.91P=0.37].

4.1.3.2. The quality of writing in the subjects’ performance in the posttest

Table 4 - 15: Means of both groups in Organization

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
</table>
The table reveals that the subjects from the experimental group showed better performance in organization (M=1.97) than subjects from the control group (M=1.75).

An Independent Samples Test (T-Test) was conducted to explore the impact process writing through wikis on the students’ performance in organization (out of 2) in the posttest. Subjects in the experimental group showed better performance in organization (M = 1.97) than subjects in the control group (M =1.75). However, there was no statistically differences at the p<.05 level in both groups’ scores in organization \(t=p-1.38=0.19\)

---

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.75</td>
<td>1.97</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.6</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Table 4 - 16: An Independent Samples t-test of the data collected from both groups in organization

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Test value</td>
<td>-1.38</td>
<td></td>
</tr>
<tr>
<td>T-Test Sig</td>
<td>0.19</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 - 17: Means of both groups in fluency

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.93</td>
<td>0.98</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>
The table reveals that the subjects from the experimental group showed better performance in fluency (M=0.98) than subjects from the control group A (M= 0.93).

Table 4 - 18: An Independent Samples t-test of the data collected from both groups in fluency

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Test value</td>
<td>-1.06</td>
<td></td>
</tr>
<tr>
<td>T-Test Sig</td>
<td>0.30</td>
<td></td>
</tr>
</tbody>
</table>

An Independent Samples t-test (t-test) was conducted to explore the impact process writing through wikis on the students’ performance in fluency (out of 1) in the posttest. Subjects in the experimental group showed better performance in fluency (M=0.98) than subjects in the control group (M=0.93). However, there were no statistically differences at the p<.05 level in both groups’ scores in vocabulary [t=--1.06, p=0.30].

Table 4 - 19: Means of both groups in content

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group B (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.75</td>
<td>1.95</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.4</td>
<td>0.2</td>
</tr>
</tbody>
</table>
The table reveals that the subjects from the experimental group showed better performance in content (M=1.95) than subjects from the control group (M=1.75).

Table 4 - 20: An Independent Samples t-test of the data collected from both groups in content

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Test value</td>
<td>-1.85</td>
<td></td>
</tr>
<tr>
<td>T-Test Sig</td>
<td>0.08</td>
<td></td>
</tr>
</tbody>
</table>

An Independent Samples t-test (t-test) was conducted to explore the impact process writing through wikis on the students’ performance in content (out of 2) in the posttest. Subjects in the experimental group showed better performance in content (M=1.95) than subjects in the control group (M= 1.75). However, there was no statistically differences at the p<.05 level in both groups’ scores in content [t=−1.850.91,p=0.08]

4.1.3.3. Subjects' performance on the posttest

Table 4 - 21: Means of students in both groups in the posttest as a whole (out of 10)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Control Group (n=14)</th>
<th>Experimental Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>8.4</td>
<td>9.1</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

The table reveals that the subjects from the experimental group showed better performance in the posttest (M = 9.1) than subjects from the control group (M = 8.4).
An Independent Samples t-test (t-test) was conducted to explore the impact process writing through wikis on the students’ performance in the posttest (out of 10). Subjects in the experimental group showed better performance (M=9.1) than subjects in the control group (M=8.4). In addition, there were statistically differences at the p<.05 level in both groups’ scores in the posttest [t = -2.19, p=0.03].

Therefore, the experimental group showed better performance statistically in the posttest as a whole out of 10 than the subjects in the control group. However when comparing the performance of subjects in both groups in every element, (vocabulary, spelling, structure, organization, fluency and content) there were no significant differences statistically in their performance but the means of the experimental group were better than the control group.
4.2. Discussion of Results

The first research question addressed whether students in both groups, the experimental and control groups showed improvement in their writing in accuracy (which involved fewer errors in vocabulary, spelling and structure) as measured by the pretest and posttest.

As for the control group (who were taught traditional process writing), the results were statistically negative in all three. This means that the subjects did not improve in their writing accuracy in terms of vocabulary, spelling and structure.

On the other hand, the results of the experimental group (who were taught process writing through wikis) were statistically positive in their results in structure at the p<.05 level \(t=-2.45, p=0.02\). However, the experimental group’s results in vocabulary and spelling were statistically negative. This shows that process writing through wikis helped the subjects improve their structure and produce fewer error free sentences. Moreover, even though the statistically results showed no improvement in the subject’ performance in spelling between the pretest and the posttest, their means showed slight improvement. As for their vocabulary, the statistically results showed negative improvement. The reason behind that was that the students’ performance in the pretest in vocabulary was excellent and that led to minor changes in their results because both were excellent for their grade level.
Therefore, from the results mentioned, process writing through wikis has shown to be effective in improving the subjects’ accuracy in their writing in terms of vocabulary, spelling and structure in general and statistically effective in structure.

The second research question addressed whether students in both groups, the experimental and control groups showed improvement in the quality of their writing specifically in their organization, fluency and content as measured by the pretest and posttest.

The control group’s results in their organization in their writing were statistically positive at the p<.05 level [t =-2.21, p=0.05]. However, in fluency, the results were statistically negative even though their means showed slight improvement. As for content, the subjects’ means were lower in the posttest which means that they performed better in the pretest. However, statistically, it only showed that there were negative results in their improvement.

The means of the experimental group’s quality of writing in terms of organization, fluency and content has improved in all. In addition the results were statistically positive in organization and fluency at the p< 0.01 level despite that the level considered in this study was p<0,05 . This shows how process writing through wikis has showed enormous improvement in the students’ organization [t =-5.14, p=0.00] and fluency [ t =-3.75, p= 0.001]. However, despite the fact that the subjects’ means in content has improved, the statistically results were negative. That is due to the same reason as the their performance in vocabulary where their results were excellent in the pretest which made it appear as if there were not any significant difference in their results.

Therefore, from the results mentioned above, it is clear how traditional process writing has improved subjects’ organization in the control group. This was expected because
literature has emphasized on the importance of process writing in helping students organize their writing and teaches them every step they go through (Fogelman, C., Harrington M., Kenny, E., Pacheco, M., Panofsky, C., Santos, J., Smith, S., 2005), (Ho, 2006), (Kang,2006), (Montague, 1995), (O’Brian, 2004), (Suzuki,M., 2008). However, the subjects’ results in fluency and content show that process writing needs moderation and improvement to bring out better results in the quality of their writing.

On the other hand, the experimental group has shown improvement in organization, fluency and content. Statistically, subjects have improved in organization as well as fluency at the p,0.01 level. As for content, even though the results were statistically negative, it can be said that the students have improved which is shown in the means and the reason behind the negative result is the excellence of the students in their content in the pretest as mentioned earlier. This indicates that process writing through wikis were able to improve the quality of the students’ writing especially in organization and fluency.

The third research question addressed Which group’s performance (the experimental group; process writing with wikis or the control group; traditional process writing) will have significantly improved the most in the post writing test regarding accuracy (vocabulary, spelling and structure), the quality of their writing (organization, fluency and content) and on the posttest as a whole?

As for accuracy which involved vocabulary, spelling and structure, the results showed that there were statistically no significant differences at the p<.05 level in both groups’ scores. However, the means show that the experimental group performed better in vocabulary and structure whereas their results were the same in spelling.
Furthermore, the quality of the subjects’ writing involved organization, fluency and content. The means of the subjects in the experimental group showed better performance in all three. However, there were no statistically differences at the p<.05 level in both groups’ scores in organization, fluency and content.

On the other hand, even though when comparing the results of the subjects in both the control and the experimental groups’ performance in accuracy (vocabulary, spelling and structure) and the quality of their writing (organization, fluency and content) showed that there were no significant differences in their results in each part, their results in the posttest as a whole out of 10 showed that the experimental group’s performance was better at the p<.05 level

[t =-2.19, p=0.03].

Therefore, since the students’ pretest results showed no significant differences between subjects in both groups, the control and the experimental, it seems reasonable to consider that the improvement in the experimental group’s posttest results is due to the treatment of process writing through wikis.

From the results mentioned above, it is clear that process writing through wikis has improved the subjects’ performance in writing in terms of accuracy; vocabulary, spelling and structure and in the quality of their writing; organization, fluency and content even though not statistically in every aspect.

4.3. Conclusion

This study was motivated by interest in Wikis and how to use wikis to improve writing skills. This study aimed at finding a teaching strategy or activity to help wikis ensure
accuracy in writing and improve the quality of writing in the performance of secondary students. The primary aim of this study was to investigate if process writing through Wikis can improve the performance of secondary students in writing in terms of their accuracy (vocabulary, spelling and structure) and the quality of their writing (organization, fluency and content).

The findings of this study indicate that the experimental group who were taught process writing through wikis showed better performance statistically at the level of $p<0.05$ in the posttest as a whole out of 10 than the control group who were taught traditional process writing. However, there were no statistically significant differences between the two groups in each part of the posttest (in vocabulary, spelling, structure, organization, fluency and content) individually, even though the experimental groups’ means were higher in all parts accept for spelling which was the same as the control group.

As for the differences in the subjects’ performance between their pretest and the posttest in every part, the results indicate the following:

(a) The results of the control group (who were taught traditional process writing), were statistically negative in their writing accuracy in terms of vocabulary, spelling and structure. This means that the subjects did not improve in their accuracy. However, The control group’s results in their organization in their writing were statistically positive at the $p<.05$ level. In fluency, the results were statistically negative even though their means showed slight improvement. As for content, the subjects’ means were lower in the posttest which means that they performed better in the pretest. However, statistically, it only showed that there were negative results in their improvement.
(b) On the other hand, the results of the experimental group (who were taught process writing through wikis) were statistically positive in their results in structure at the p<.05 level \[t=-2.45, p=0.02\]. However, the experimental group’s results in vocabulary and spelling were statistically negative. In addition, the means of the experimental group has shown improvement in organization, fluency and content. Statistically, subjects have improved in organization as well as fluency at the p<0.01 level. As for content, the results were statistically negative which indicates that there was no improvement.
Chapter 5: Summary, Implications, and Suggestions

5.1. Introduction

This final chapter includes an overview of the study and a summary of its findings. Moreover, the theoretical and practical implications of this study are presented. Finally, suggestions for further research are proposed.

5.1.1. Overview of the study and a summary of its findings

Using technology in teaching is a trend educational institutes are trying to apply. One of these technologies is wikis. Wikis are websites that can be edited by anyone. Research has shown the benefits of using wikis in learning in general and in EFL learning as well. Their effect on EFL writing has also been researched and the results were that using wikis to teach EFL writing had many benefits. However, it has also shown that using wikis in EFL writing tasks can lower the accuracy and the quality of students’ writing skills. That is why many studies suggested choosing activities and teaching strategies that can help ensure accuracy and improve the quality of the students’ writing. However, there is a gap in literature on what kind of activities or teaching strategies would help the learners' accuracy to rise and improve the quality of their writing when using wikis.

Motivated by wikis and its many benefits and wanting to find an activity or teaching strategy that can help teachers and students use wikis and improve writing skills, this study’s main goal was to investigate if the process writing approach can help students’ accuracy to rise and improve the quality of their writing skills when writing with wikis.

The subjects of this study were Saudi Female secondary students, the tenth grade, in the AHD, American High school Diploma, Department in a private school in Riyadh,
Saudi Arabia. The subjects were given different treatments and were divided into two groups; a control group, who were taught traditional process writing without technology and an experimental group, who were taught process writing through wikis.

The results of this study demonstrated that the subjects who were taught process writing through wikis showed better performance statistically in the posttest as a whole out of 10 than the subjects in the control group who were taught traditional process writing without technology. The test measured their accuracy demonstrated in their vocabulary, spelling and structure and the quality of their writing demonstrated in their organization, fluency and content. The following will summarize the findings of this study:

(1) The experimental group’s results on the post writing test compared with their pretest in terms of accuracy showed that there were statistically significant difference at the p<0.05 level in their performance in structure. However, there were no significant difference in their vocabulary and spelling. On the other hand, the results of the control group showed that there were no significant improvement in the subjects’ performance in all three, vocabulary, spelling and structure.

(2) The experimental group’s results on the post writing test compared with their pretest in terms of the quality of their writing showed that there were statistically significant difference at the p<0.01 in their performance in organization and fluency. However, there were no significant difference in their content at the p<0.05 level. On the other hand, the results of the control group showed that there were no significant improvement in the subjects’ performance in fluency and content. However, there was a significant improvement statistically in their organization at the p<0.05 level.
(3) The experimental group showed better performance statistically in the posttest as a whole out of 10 than the subjects in the control group. However when comparing the performance of subjects in both groups in every element, (vocabulary, spelling, structure, organization, fluency and content) there were no significant differences statistically in their performance but the means of the experimental group were better.

5.1.2. Implications of the study

From the design and results of this study, there are many theoretical and pedagogical implications for second and foreign language learners and teachers and for the field of CALL, computer assisted language learning, discussed as follows:

The implications for theory are evident in this investigation. That is because of the gap in literature in terms of what kind of activity or teaching strategy will help the students’ writing to improve when writing with wikis. The results of this study showed that process writing can be used with wikis to improve the students’ performance in writing in terms of improving their accuracy (vocabulary, spelling and structure) and the quality of their writing (organization, fluency and content). This study will also contribute to the field of CALL. That is because it will investigate a technology, such as wikis, that can be used in a language classroom to improve a language skill such as writing.

The pedagogical implications of the findings can encourage language teachers to use new technologies in the classroom such as wikis to improve their students’ performance in writing. This study showed how subjects who were taught process writing through Wikis have improved in their writing accuracy measured in their vocabulary, spelling and structure and in the quality of their writing measured by their organization, fluency and content although not statistically in every element.
The findings show that there were statistically significant improvement of the subjects who were taught process writing through wikis in their structure, organization and fluency. The implications of this finding are that process writing through Wikis can benefit teachers and the students by improving their writing skills. That is because as in this study students were able to work together in groups to collaborate their work step by step with their peers and feedback on every step from their teacher both in class and at home. The students benefited from their peers in peer correction and were motivated to do their assignments before every class which helped the teacher in saving class time and following up on the students’ progress and development. In addition, having the feature of registration before editing on the wiki made it easy for the teacher to know what each member in each group contributed to the group work assigned and students tried their best to participate which made the best of group work.

5.1.3. Suggestions for Further Research

In this study, findings have shown the benefits of using process writing through wikis to improve students’ performance in writing. Combining process writing with wikis helped improve the students’ accuracy and improved the quality of their writing. Research has shown that wikis could not accomplish that without carefully choosing an activity or teaching strategy. Therefore, the following will suggest further investigation for teachers and researchers to consider before applying process writing through wikis.

(1) This study was applied on female secondary students in the AHD, American High school Diploma, Department in a private school in Riyadh. To generalize the findings of this study, gender differences, proficiency levels, geographical areas should be considered. Considering the context in which this study can be applied at may change the findings of this
research. For example, applying this study in some public schools in Riyadh where students are not familiar with using technology may bring out different results.

(2) The subjects in this study had a positive attitude towards wikis but their attitudes were not considered because the focus was on their performance in writing. Therefore, investigating the teachers and students’ perspective on using process writing through wikis would add to the findings of this study. In addition, further research may focus on measuring the students’ motivation which might bring out interesting results on the effectiveness of process writing through wikis.

(3) Investigating the effect of process writing through wikis on one group over a long period of time and measuring their progress throughout the experiment may result in a stronger version of this study. A couple of writing tests may be applied during this period to check the subjects’ progress and development.

(4) Subjects in this study lack techniques in corrective feedback and self and peer correction. Therefore, teaching students how to provide corrective feedback and self and peer correction before treatment may help in benefiting more from this experiment.

(5) Wikis benefits have been widely researched but the lack of research in what kind of activities would help wikis ensure accuracy and raise the quality of students’ writing can be solved in further research. More activities combined with wikis should be investigated. For example, investigating authentic activities with wikis.

(6) This study focused on how wikis can improve writing skills. Exploring wikis in other areas might be worth considering. For example, investigating how wikis can facilitate interaction between participants while going through the different stages of process writing through wikis.
(7) Further research may explore the effects of other web 2.0 technologies such as blogs and forums and their effect on different language skills such as reading and writing or on language constructions such as vocabulary, spelling and grammar.

(8) Doing a journal type action research where after every class the teacher/researcher writes about the experience of applying process writing through wikis may be interesting to investigate. It will show how teachers and students deal with this method on a daily basis and it will show their different attitudes and development over time.

(9) In this study quantitative measures were used to measure the subjects’ performance in writing. More in depth qualitative analysis can be applied in measuring the subjects’ writing skills. For example, measuring if the students were able to write a grade appropriate piece of writing and going beyond the text in analyzing their critical thinking and measuring their development in expressing their ideas.

(10) In this study the students’ accuracy was measured by investigating their vocabulary, spelling and structure. In addition the quality of their writing was measured by investigating their organization, fluency and content. Further research can investigate more aspects of students writing skills such as their complexity in sentences and ideas.
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www.pbworks.com

(http://www.majortests.com/sat/essay-topics.php)
Appendixes

Appendix A

The Pretest

Essay Question

Many societies believe that the search for happiness is a necessary human right. But it is also true that what makes us happy remains mysterious. Perhaps Bertrand Russell had it right when he said; to be without some of the things you want is a part of happiness.

Assignment:

What gives us more pleasure and happiness: chasing after our dreams or having all our dreams come true? Plan your response, and then write an essay.

* Be sure to support your position with specific points and examples. (You may use personal examples or examples from your reading, observations, or, knowledge of subjects such as history, literature or others.)

*Your essay should include at least four paragraphs beginning with an introduction, two or more paragraphs for the body and the last paragraph should be the conclusion. Each paragraph should contain five to eight sentences.

*Remember that the introduction contains the thesis statement and the conclusion should be more than one sentence and should not contain new information.

*Try your best to write accurately by paying attention to your spelling, choice of vocabulary and your grammatical structure.

Appendix B

The Posttest

Essay Question

People say that our actions are guided by either our hearts or brains. The fact is that all our logical decisions are guided by our emotions. Our passion for something is what makes us feel that it is logical. However, in some situations we need to feel more than we think or the other way around.

“Life is a comedy for those who think...and a tragedy for those who feel.” – Horace Walpole

Assignment:

When you want to make a decision that is important to your future studies such as your major in college, should you depend on your heart or brain? Should you choose to study what you love or what is best? Plan your response, and then write an essay.

* Be sure to support your position with specific points and examples. (You may use personal examples or examples from your reading, observations, or, knowledge of subjects such as history, literature or others.)

*Your essay should include at least four paragraphs beginning with an introduction, two or more paragraphs for the body and the last paragraph should be the conclusion. Each paragraph should contain five to eight sentences.

*Remember that the introduction contains the thesis statement and the conclusion should be more than one sentence and should not contain new information.

*Try your best to write accurately by paying attention to your spelling, choice of vocabulary and your grammatical structure.

Self- Designed
Appendix C

The Wiki Assignment Page
Appendix D

Samples of Students' work on the wiki

This short story centers around the day of a chilled named Alexander, who in this terrible horrible, no good, very bad day. He faced a series of unfortunate incidents like losing his yoyo, his mother forgetting his dessert and his appointment at the dentist.

First, the story is very entertaining, for children and for adults, its dialogue is very amusing, also the attention to details really feeds children's imaginations. This short story creates a family atmosphere which makes children feel like they could relate to it. The author has created wonderful characters that suit each other, and are easy to love. The authors main character is one that we could all relate to whenever we are having a bad day.

All the events that occurred to him are both realistic and entertaining. However the theme of the story seemed somehow pointless, and children couldn't learn much from it. There wasn't a moral to the story, though it was entertaining, it wasn't very educational or beneficial and though the authors ideas are great, she didn't present new ideas to the table.

All in all, Alexander and the terrible horrible no good very bad day, was a good children's story, that is very fun to read, and would be a great bedtime story. However I wouldn't name it in my list of top ten best children books.

Fuhan Alshultan said
at 6:13 pm on Jun 13, 2010

Dear Miss Reem, this is about a journal entry, not a poem. I am not sure if you are ever going to read this, but I would like to thank you for the comments you have presented us, to write on a real wiki, for everyone to read, it was entertaining, and educational, I hope to see you again, abeer.
A Story With Many Hidden Morals

The story of Alexnader and the horrible, terrible, no good very bad day, is a very interesting story. It is suitable for all ages; that is what is special about it. It talks about a very young boy who is having a really bad day. I liked the story for many reasons.

One of the reasons of why we liked the story is when Alexander was at his father’s office, where he dropped his father’s new books, and ruined his father’s new copy machine. The story had a really good moral, which was that everyone has bad days, even children. We also liked that when his mom found his yo-yo and put it beside his bed. The characters were not many which is not frustrating, which is good. Further more, the topic that the author chose was an interesting topic; the TV adaption is also good.

More over, the story had many adoptions; it had a TV adaption, which was what we saw, and a theater adaption. These showed that the story was a successful story and its moral affected children all around the world.

Further more, the story has an effect about brotherhood. Although people don’t appreciate their siblings, in this story it shows that even if they are annoying, they are still your siblings. You can’t imagine life without them, you can’t imagine waking up in the morning without them annoying you or making fun of you. Siblings are important, you can’t live with them, but you also can’t live without them.

In brief, the story is great, interesting, and it had many hidden morals other than the ones stated directly in the story. This story is worth to be in any child’s bookcase.

Group members:
Reema Alattahil
Sara Alshaim
Shorouq Aldrees
Appendix E

A Letter of approval to reproduce the essay topic for the pretest

Re: MT Feedback

From: on behalf of Helen Mathur (hm@majortests.com)

You may not know this sender.  Mark as safe | Mark as junk

Sent: Tuesday, April 13, 2010 6:48:29 PM

To:

Dear Ms Reem,
We will allow the use of two essay topics from majortests for research purposes, but be sure to give full acknowledgment.
Regards
Helen

On Sat, Apr 10, 2010 at 9:55 PM, < name > wrote:

name : Mrs. Reem
mail : name@name.com
date : 10 Apr 2010
time : 01:55 PM
message :
Hello
I am an MA TESOL student and I am conducting a research on the influence of Wikis on EFL students writing skills. I would like to reproduce two of your essay topics for the pre and post test I will apply on my students. I would really appreciate your approval.
Thank You
Appendix F

The letter to Riyadh Schools to apply the current study