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Using Waterfall Model in Teaching Writing Skills for Iraqi Fifth Secondary School Students

Asst. Prof. Dr. Wiaam A. Albayati
Faculty of Languages
University of Kufa
weam.albayati@uokufa.edu.iq

Asst. Prof. Sabeeha Hamza
College of Basic Education
University of Babylon
sabeehadehham66@gmail.com

Abstract:
As the world tends to become text-oriented, writing has been identified as one of the most important skills. Writing is a complex activity that is believed to be effective in teaching and learning of English as a foreign/second language. Thus, this study sheds the light on one of the teaching strategies, namely waterfall model, used to improve students' writing skills. The aim of the present study is to identify the impact of waterfall model in teaching writing skill and to enhance Iraqi Fifth Preparatory students' performance in writing by using one of the social media programs. A control and an experimental group have been chosen for the required experiment; each group is of 37 students. Then, a T-test formula has been used to analyze the results. The study has, eventually, proved that the students of the experimental group showed better a performance in writing due to the use of the waterfall model; that model has been considered more useful, enjoyable, and suitable to teach writing skill than the traditional method.

Keywords:
Waterfall Model, Secondary School, Teaching, Writing skills

1. Introduction

Sabarun (2013) states that the primary aim of English teaching is to improve the four language skills: listening, speaking, reading and writing and that writing is one of the core skills in English learning. As a productive and expressionistic practice, writing is used to communicate with others indirectly and not face-to-face. He adds that teaching writing involves many components such as word choice, grammar, organization, and mechanisms. Besides, as a mental activity, writing is one of the tricky subjects of schooling that requires learning different techniques. Westwood (2008) states that written language is probably the most difficult of all skills to learn because its development requires the successful integration of various cognitive, linguistic, and psychomotor processes.

As Boardman (2002**)** mentions, writing is a process of constant thought, organization, rethinking, and reorganization**.** In fact, writing is a way in which ideas can be expressed in written form using letters, words, art or media and requires a mental process to express feelings. It is dynamic as opposed to other skills; in writing, many aspects will be involved including the use of vocabulary, sentence structure, sentence composition and spelling and thus it is not as easy task to teach writing. Accordingly, writing is creative as students are engaged in a learning process and can have motivation, build their confidence, have an opportunity to explore the language, communicate, and search for the best ways of self-expression. Hedge (1999) assumes that the teacher's role in this process is undoubtedly very essential by providing an environment in which students will see models of good writing, learn about writing, get plenty of practice and help in the writing process.

While Al.gomoul (2011) considers writing as language skill teachers often neglect, Kannan (2009, p. 2) states that students of English are mostly unable to write a single sentence free from grammatical error. Unfortunately, many students are unable to express their ideas, organize their writing correctly and

to plan well before writing. This, in a way or another, may be justified by their teachers' role. A teacher is supposed to use an attractive method of teaching to draw the students ' attention and empower them to write actively and correctly by using new teaching methods. Otherwise, the teaching/learning process would be monotonous. This implies that the teacher must find the methods of teaching necessary to develop the students' competencies and to enhance learning.

The problem of the present study is that the Iraqi EFL preparatory school students face a difficulty in writing skills, on the one hand. On the other hand, the traditional methods of teaching teachers use do not develop students' performance in writing. It is believed here that one of the strategies for motivating students to learn writing is to use the waterfall strategy or model, a well-known strategy for teaching English, especially writing. Such a model is, hence, expected to make the process of learning writing more productive and innovative. The current study tries to show the effect of this model in teaching writing.

Despite the variety of writing approaches teachers can adopt in their classrooms, a common underlying objective is to make sure that students recognize the ultimate aim behind their learning and that they are aware of their writing properly so as to accomplish certain deliberate functions. Hence, in order to teach writing effectively, teachers must be explicitly cognizant of the skills and processes that are involved and adopt deliberate strategies; further, some such approaches to teaching writing may be so challenging that it treats writing as a profession and a qualification to be attained by discipline and hard work, and not just only an innate ability or subconscious habit.

The aim of this study is to investigate the impact of Waterfall Model on the enhancement of the writing skills of Iraqi EFL Preparatory School Students in composition writing. It is, accordingly, hypothesized that there are no statistically significant differences between the mean scores of the experimental group which is taught by using waterfall model and that of the control group which is taught by using the traditional one.

The study confines itself to the application of waterfall model to teaching writing skills in the Iraqi EFL 5th Secondary Class in the academic year 2019-2020.

2. Literature Review

2.1 Waterfall Model

The Waterfall Model is a time-tested approach that has been turned over the decades as it has been used for more than 40 years. This model, as its name suggests, centers on a step-by-step design process in which every stage must be completed before moving to the next. It has served as a base-model for the future development of new methodologies (Eason, 2016).

Waterfall model is believed to be one of the best cooperative learning strategies that rely on the cooperation of students among themselves in order to increase confidence, and gain useful material by sharing information. It provides an opportunity for all the students to gain the material at the same time. It relies heavily on the planning and research aspects of e-learning course design, so that teachers can be already aware of learner's needs and the problems that must be addressed before creating the first prototype (Eason, 2016). It allows all collaborators within e-learning team to work on their aspects of the e-learning project autonomously (Harmer, 1998). Once everything clarified about e-learning program needs, everyone can dive into his/her respective tasks to speed up the process.

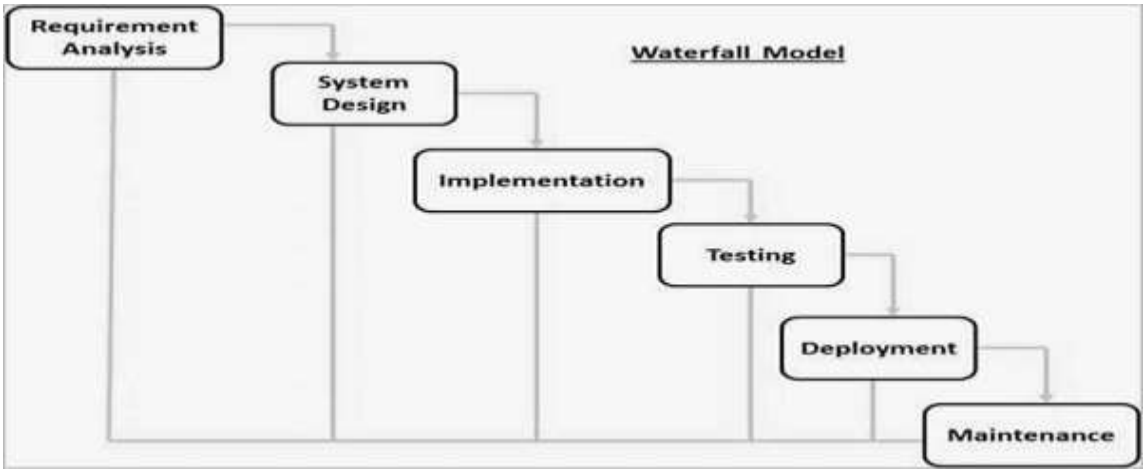
Furthermore, it is a linear organized strategy that seems to be ideal for instructional designers **(**Pappas, 2016**)**. It is linear in the sense that it gives the chance to work on every aspect of the e-learning project rather than piecing all of its elements together at the end. Thus, cohesiveness and organization will be apparent as features of the e-learning program. Participants will be able to see how each of the ideas or concepts connect with each another, instead of sitting through a disjointed e-learning experience (Pappas, 2016).

Accordingly, waterfall model works in a series of dependent phases that start with gathering extensive requirements up front and executing a project based on those requirements. It is the sequential development model as it is a sequence of stages in which the output of each stage becomes the input for the next (Balaji & Sundararajan, 2012; Hoffer, 2002)**.** It can be realized when the teacher poses a question, and students type their answers in the chat, but they do not submit their answers until the teacher prompts everyone to hit enter at the same time, resulting in a cascade of student answers in the chat.

As shown in Figure 1, all the phases in Waterfall Model do not overlap as they are cascaded to each other in which progress is seen as flowing steadily downwards, like a waterfall, through the phases towards the conclusion where each phase starts only after the defined set of goals are achieved for previous phase, i. e., in a sequence of activities working downwards from top to bottom (Balaji & Sundararajan, 2012; Hoffer, 2002)

Figure 1

Waterfall Model



2.2 The Instructional Design of Waterfall Model

In creating an e-learning course, teachers should consider six key phases that take a linear approach (Pappas, 2016). These phases are involved in every instructional design process as follows:

1. **Needs Analysis**

One of the primary goals and objectives of the e-learning course is to identify the learners' needs. Hence, teachers may use surveys, focus groups, online tests, interviews, and observations to get such needs which may focus on the learner's strengths and areas for improvement (Pappas, 2016). The waterfall is a methodology which is really useful only if all needs are well defined at the beginning and do not change during the execution (Cimasoni, 2009).

2. **Knowledge Analysis**

The second step is to identify the way to fill gaps in knowledge and performance in order to make the e-learning program effective. Teachers need to conduct tasks and skills of assessments to figure out how they can improve their productivity and choose their required tools and resources (Bangert, 2012; Kareem et al. ,2019).

3. **Identify Limitations**

Teachers should identify the limitations of their e-learning program to decide whether they have a viable solution or not via a tight e-learning budget, busy schedules, or technology constraints (Weisert, 2003; Rahoomi et al., 2019).

4. **Content Development**

Teachers can incorporate content into their e-learning strategy and be sure that **it** ideally suits the learners' needs by identifying the ideal e-learning activities and online resources that are in line with their goals i.e. identifying the multimedia elements such as virtual presentations, serious games, and e-learning videos etc. (Pappas, 2016).

5. **Prototyping**

Creating a rough draft that could serve as a prototype of the e-learning course is of great importance. Then, it will be effective to conduct a thorough testing. To gather feedback from the target audience, teachers can use focus groups as an invaluable tool at this stage.

6. Deployment

Both e-learning course revisions and modifications are required; so, teachers should be well qualified to launch their e-learning course and measure the results (Pappas, 2016).

3. Methodology

3.1 Experimental Design

Experimental research can be expressed as a combination of process accomplished by the investigator to achieve the aims of the test and to obtain accurate outcomes (Best & Kahn, 2006, p. 177). Indeed, this study is designed according to the experimental method.

3.2 Population and Sample

The sample of the present study is the Fifth Class of Ibn Hayan Secondary Schools students in the city center of the province of Babil (2019/2020). Out of the whole number of the Secondary schools in the province of Babil which is 185 with a total number of 89019 students there, the researchers have intentionally chosen this school. There were three fifth grade classes in the school, viz, class (A), class (B), and class (C). The total number of the sample was 122 students out of which the researchers randomly selected two groups of 74 students to represent the actual samples of the study (see Table 1).

Table 1

The Sample of the Study

Groups	Section	Number of Students	Teaching Method
Experimental	A	37	waterfall Method
Control	B	37	Traditional Method
Total		74	

3.3 Subjects

1-Students' Age

2-Fathers' Education.

3-Mothers' Education, and

4- Students' Scores in the 1st Course.

3.3.1 Students' Age

The researchers have used different statistical tools to analyze students' age. They have found that the difference between the two groups is not statistically significant for this variable because the calculated-value is 0.248 whereas the tabulated t- value is 1.671 at 59 degree of freedom and at 0.5. level of significance (see Table 2).

Table 2

Students' Age

Group	No.	Mean	SD	DF	Calculated T – value	Tabulated T-.value	Level of Significance
EG	37	142.000	12.889	59	0.248	1.671	0.5
CG	37	139.935	14.667	59	0.248	1.671	0.5

3.3.2 Fathers' Education

Chi-square Formula is used to analyze the variable of the fathers' education. It has been found that there is no significant difference between both groups in the academic level of their fathers' education (See Table 3).

Table 3

Fathers' Education.

Group	No.	Illiterate	Read and Write	Primary	Primary	Preparatory	Diploma	Bachelor	M.A/Ph.D./DF	DF	Chi – Square
E G	37	0	0	17	4	3	4	2	0	7	14.67
C G	37	0	0	19	5	4	3	2	0	6	
Total	74	0	0	36	9	7	7	4	0		

3.3.3 Mothers' Education

The same formula that was used in determining fathers' education level is used to analyze the variable of the students' mothers' education; the analysis has demonstrated that there was no significant difference between Experimental group (EG) and the control group (CG)[(1)] in the levels of mothers' education as shown in Table 4 below.

Table 4

Mothers' Education

Group	.No.	Illiterate	Read and Write	Primary	Primary	Preparatory	Diploma	Bachelor	M.A/Ph.D./DF	DF	Chi – Square
EG	37	0	1	14	9	0	0	4	0	7	14.067
CG	37	2	0	32	6	0	0	3	0	7	
Total	74	2	1	36	15	0	0	7	0		

3.3.4 Students' Scores in the 1st course.

[(1)] The abbreviations EG and CG are just used for brief in the tables.

The mean scores of the two groups in the first course examination are (32.903) for then experimental group and (33.233) for the control Group. The T- test formula is also used to verify whether there is a statistical difference between experimental and control groups. The analysis has pointed that there is an insignificant difference at (59) DF and at (0.5) levels of significance as shown in Table 5.

Table 5

Students' Scores in the 1st Course.

Groups.	No.	Means	SD	DF	T- value	Level of significance
EG	37	33.903	7.838	59	2.367	0.5
CG	37	35.233	8.546	59	2.367	0.5

4. Discussion of Results

In the light of the reviewed literature, the researchers have presented the results of the statistical treatment of the data and their interpretations as follows:

The results of the post -test for both groups demonstrated that the mean score is (26.290) for the experimental and (23.876) for the control. Moreover, they proved that the attainment of the experimental group is more powerful than that of the control group.

The T-test equation for the two groups were used and the scores were analyzed by using the SPSS program. The equation was used to find out if there was any significant difference between the participants of the two groups. The equation showed that the T- value was (2.876) which means that a significant difference existed between the two samples at (0.5) level of significance and under (59) degree of freedom as shown in (Table 6 below).

Table 6

The Post- test of both Groups

Group	N	Mean	SD	DF	T-value	Level of Significance
EG	37	**26.290**	3.644	59	2.876	0.5
CG	37	**23.876**	5.583	59	2.876	0.5

5. Conclusions and Recommendations

Based on the results obtained from the statistical analysis and what was proved during the implementation of the experiment, the following conclusions have been drawn:

1. The use of the waterfall strategy has had a significant effect on the overall learning process and performance of the fifth secondary school students in the writing skill.
2. This strategy has been found very suitable for secondary school students as its utilization has reinforced the students' motivation and confidence has led to a better performance.
3. The instant feedback obtained from the strategy has allowed the teachers to alter the dynamics of the groups, based on the responses of the students.
4. The utilization of this strategy gives the students the chance to discuss the questions raised by the teacher continuously throughout various phases.
5. The cooperative learning realized by using the waterfall model has participated to creating a competing atmosphere among the groups and even among the students of the same group.
6. Waterfall model has enabled its students to be active and of high interest.

Accordingly, it is recommended that:

1. As English language teachers need to vary their strategies and activities to assist students in acquiring new input and enhance their performance, teachers should be trained on utilizing new and recent strategies such as waterfall model to teach writing skills.
2. Students need to be familiar with strategies in learning at all the levels of education and this requires great efforts from their teachers.
3. The Ministry of Education should provide many facilities for teachers to help them use new strategies in their educational environments.
4. Curriculum designers should offer more activities and innovate more exercises presented in the textbooks.
5. Training programmes to empower both educators and learners are needed; such programmes should involve teachers to enable them to develop their own capabilities and methods of teaching English in general and writing skills in particular.

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