THE EFFECTS OF THE INTERACTIVE WHITEBOARD AND POWERPOINT PRESENTATION ON THE WRITINGS AND ATTITUDES OF EFL LEBANESE LEARNERS.

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Doctoral Thesis:

The Effects of the Interactive Whiteboard and PowerPoint Presentation on the Writings and Attitudes of EFL Lebanese Learners

by

Abir Abdallah

September, 2015

Dr. Mar Gutiérrez-Colón Plana, STATES that the present study entitled "**The Effects of the Interactive Whiteboard and PowerPoint Presentation on the Writings and Attitudes of EFL Libanese Learners**", presented by Abir Abdallah for the award of the degree of Doctor, has been carried out under my supervision at the Department of English and German Studies of the University Rovira I Virgili.

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DEDICATION

I dedicate this work to my beloved and dearest parents who have constantly surrounded me with prayers, encouragement, and love

To You, Mom and Dad

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I would like to express my special appreciation and gratitude to my supervisor. Dr. Mar Gutiérrez-Colón Plana for her incessant support and assistance while conducting this research study.

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ABSTRACT

The Effects of the Interactive Whiteboard and the PowerPoint Presentation on the Writings and Attitudes of EFL Lebanese Learners

The present study aimed at examining the use of the Interactive Whiteboard (IWB) and the PowerPoint presentation (PPT) in pre-writing activities and their respective effects on the development of ideas and the use of topic-related vocabulary words in the writings of Lebanese English Foreign Language students. It also investigated the Lebanese EFL students' attitudes towards writing when the IWB and PPT were employed in pre-writing activities. As such, the current study studied the progress of three control groups (n = 69) and three experimental ones (n = 65) in three secondary public schools in Beirut which teach English as a first foreign language. The participants in both, the control and experimental groups, were asked to write about the same writing prompt in order to identify their writing performance before they received any prescriptive treatment. Afterwards, the control group received traditional prewriting instruction in which the teachers developed ideas with the students about the writing topic and introduced topic-related vocabulary words as pre-writing activities through traditional instruction. The experimental group, on the other hand, received prewriting instruction via IWB and PPT which provided students with pre-writing activities that enabled them to develop adequate ideas about the writing prompt and to acquire topic-related vocabulary words. The data collection comprised the participants' pre-posttest scores, three questionnaires, interviews with the teachers of experimental groups, and PMI inventories. Quantitative data were analyzed using the SPSS, and content analysis was conducted with qualitative data. Findings of quantitative as well as qualitative data analysis indicated the effectiveness of the IWB and PPT in enhancing students' development of ideas and proper use of vocabulary words in essay writing. They, also, reported

positive attitudes of students towards the use of IWB and PPT in prewriting instruction and towards writing when the IWB and PPT were used in the writing class.

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CHAPTER 1 - INTRODUCTION

Introduction

The march of technology has carried every aspect of learners' lives in its folds. As technology, in its various facets, has become progressively accessible to the mainstream learners, it has revolutionized the teaching and learning approaches and modes. Technology has essentially contributed in elevating learners' performances during the process of learning and lifting up their motivation to learn. It, also, empowers teachers with more interactive activities and materials. Technology is currently conceived as an impetus to embark on learning as it promotes interpersonal, intrapersonal, and whole class interaction. Moreover, its wide-ranging bouquet of functions addresses learners' individual needs, meets their multiple intelligences, and, consequently, prompts them to be autonomous learners.

The International Society for Technology in Education (ISTE) employed the concept of "Educational Technology" to review their standards for students in 2007. "Educational technology", according to Gillman (1989), "has the power to enhance the instructional program, to improve student academic performance, and to provide effective and efficient classroom, school, and administrative systems" (p. 16). In 2008, the International Society for Technology in Education completed its first revision of the National Educational Technology Standards for Teachers (NETS-T). Present applications of Educational Technology denote that new technology-based manners of teaching and learning have the promise to thrive all through educational outcomes since they create learning environments where students are actively engaged in the learning process. Many of the performance indicators for the 2008 standards are essentially expressions of constructivist learning theory with the additional requirement that it is done with technology (Willis, 2012). According to Maclean (2011), "A constructivist learning

setting differs greatly from one based on the traditional model. In the constructivist classroom the teacher becomes a guide for the learner, providing bridging or scaffolding, helping to extend the learner's zone of proximal development. The student is encouraged to develop metacognitive skills such as reflective thinking and problem solving techniques. The independent learner is intrinsically motivated to generate, discover, build and enlarge her/his own framework of knowledge" (p.7). Theories of learning such as the constructivist theory highlight the significance of actively engaging students in the learning process, and lately a variety of technologies has been designed to support active engagement in learning. They have induced educators to assimilate technology into their curricula efficiently and efficaciously. ESL/EFL teachers have been enthralled by the use of technology in their classes. Propelled by this high interest in technology, many organizations have been created specifically for technology and language such as World Computer Assisted Language Learning (WorldCALL), Europe Computer Assisted Language Learning (EuroCALL), the American Council for Teachers of Foreign Languages (ACTFL), and Computer Assisted Language Instruction Consortium (CALICO). Moreover, the professional organization of Teachers of English to Speakers of Other Languages (TESOL) added a Computer Assisted Language Learning (CALL) interest section for teachers dedicated to using computer technology in their teaching practices. Furthermore, Journals, such as *Language Learning and Technology* and *Computers and Composition*, have offered teachers a heap of research and practical uses of technology in language classrooms. In addition, numerous researchers have highlighted the value of the use and practice of incorporating technology into the teachers' instructional practices. According to Takacs, Reed, Wells and Dombrowski (1999), multimedia is able to grab students' attention through the use of sight, sound, and response. It can also be very exciting since it deviates from the routine of

dealing with workbooks and texts. Multimedia tools produce interactive and experimental classroom experiences that have been reported to improve attitudes. Research findings evidenced that positive attitudes boost and motivate learning (Ross and Moeller, 1996).

Several researchers (Brouse, Basch & Chow, 2011; Garrett, 2009; O'Dowd, 2007; Toscu, 2013; Warschauer & Meskill, 2000; Wiebe & Kabata, 2010) carried out research studies in different settings that reveal the significance of the use of technology in language learning. Moreover, Gasciogne (2006) stated that employing multimedia in the classroom enables students to extensively visualize the content and become more imaginative and creative. Teachers, in particular, have attempted to seek optimum benefits out of technology (Villano, 2006; Venezky, 2004). Teachers believe it is their exigent duty to create an interactive EFL learning environment and to provide a conductive atmosphere through incorporating technology in EFL classes in order to maximize students' learning. One of the challenging areas in language teaching is teaching writing. With the advent of novel technological devices and teaching aids, one of the focal interests of EFL researchers and teachers has been on how to effectively employ technology in teaching writing and on how to optimally manipulate the various capabilities of technology to improve the academic achievements of EFL learners and boost their attitudes towards writing. More research by George and Sleeth (1996) found that technology use in the classroom can trigger students by augmenting learning, enjoyment, and interest in the material. Such motivation suggests that higher levels of technology can assist students recall facts, and consequently, perform better in exams (George and Sleeth 1996).Research findings regarding the use of technology with L2 writing have shown that technology can have positive effect on students' writings and attitude (Bloch, 2002; Hertel, 2003; Knoy, Lin, Liu, & Yuan, 2001, Kubota, 1999; Warschauer, 2000).

Chakraverty & Gautum (2000) define Writing as a reflective activity that demands adequate time to cogitate on a certain topic and to investigate and sort any background knowledge . EFL/ESL Writing has always been viewed as a prominent skill in teaching and learning since it provokes students' thinking and forming of ideas, develops their ability to summarize, analyze and criticize, and enables them to learn, think and reflect on the English language (Rao, 2007).

There has been a drastic shift from the traditional writing approach, known as the product approach focusing on the accuracy of the linguistic form and the imitation of model writing, to the process approach which relieves the student from the heavy load of obtaining directly the final writing product. This is because in the process approach to writing, the students pass through many stages in order to accomplish the final writing product. These stages involve pre-writing, drafting, revising, editing, and publishing (Hayes & Flower, 1980). Accordingly, the process approach to writing entails a collaborative process instead of a private and solitary act. Hence, writing is more matched with the concepts of social, cooperative/collaborative, and constructivist activities. However, the students' ability to communicate in writing still poses a continual learning problem. Hamp-Lyons and Heasley (1987) stated, "Writing is clearly a complex process, and competent writing is frequently accepted as being the last language skill to be acquired" (p.2). Reilly & Reilly (2005) also pointed out that many teachers view writing as a skill they suffer to teach and a lot of students consider it a skill they don't like to learn. This has induced teachers to seek advanced instructional tools to assist them in teaching writing.

In correlation with the above discussion, the current study investigated the effect of using Interactive Whiteboard (IWB) and PowerPoint presentation (PPT) on students' attitudes towards writing and towards employing these two technological aids in writing classes examined by the

study .Besides, the research examined students' writing achievements through engaging them in pre-writing activities which hint at enriching them with more ideas and support about the writing topic and providing them with vocabulary words needed for a clear expression of thoughts.

Background of the study

The inevitable employment of technology in education has propelled teachers to adopt new pedagogical approaches, strategies, tools, materials, and equipment and integrate them with technology in a way that fulfils the needs of their students as digital beings. Technology has proved its efficiency in teaching English as a Foreign Language (EFL). Various technological tools such as blogs, webquests, wikis, IWBs, PPTs, and others have been highly instrumental in facilitating the teaching/learning process of the English language. In fact, integrating technology in pedagogical practices enables EFL students not only to practice the English language within the confined walls of the classroom, but to transcend them and use it outside the classroom using their personal PCs, mobiles, ipads, and others either to surf the net for various educational websites, blogs, videos, and wikis; to download instructional applications that provide heaps of activities and exercises on the different skills of the English language; or to refer to PowerPoint presentations for various purposes such as getting organized information about language topics. This provides opportunities for EFL students to study or practice English at their availabilities and to interact with their peers, friends, relatives, or native speakers of English and to communicate in English virtually and at any time. Moreover, the interminable exposure to the language and the inveterate use of it through a vast variety of applications and activities boost the EFL students' performance and, progressively, lead them to be autonomous learners of the English language.

Two of the recent technologically instructional tools are the PPT and the IWB which facilitate the learning and teaching processes. The first tool, PowerPoint, is a software package created by Microsoft. Users create a presentation with a series of slides. It is easy to import documents from other types of software such as Microsoft Word and import it into PowerPoint. Presentations are created in a series of PowerPoint slides, using available templates or starting from a blank page. Users can import audio, video, graphics and text into PowerPoint to make interesting and dynamic presentations. When creating a presentation, users design a slide that they will generally present to an audience or print as a handout or manual. To present a PowerPoint document, users often use a projector and screen rather than showing the presentation on a desktop or laptop. Users can also write notes underneath the slide to draw upon as reminder points during the presentation. The audience cannot see the notes on the screen. Users can animate the screen, setting it up so that portions of the slide appear on the screen at timed intervals. Animation can be useful if the user has an abundance of information on the screen and wants to avoid a cluttered effect. Users can time parts of the screen to disappear from view at certain intervals as well (Ayers, 2012).

Many research studies have been carried out to explore the use of the PowerPoint Presentation in the classroom and its impact on the performance of students in various school subjects. (Apperson, Laws and Scepansky, 2006; Loisel and Galer 2004; Reinhardt, 1999). Also, numerous researchers studied the attitudes of students as well as those of teachers towards the use of the PowerPoint Presentation as an instructional and learning tool. (Gatlin-Watts et al.,1999; Loisel and Galer 2004; Reinhardt, 1999).

The second tool, the Interactive Whiteboard, is a technological tool that, used along with a computer, makes an intense impact as a presentation device. However, IWBs differ from other

computer technologies in targeting a whole-class instruction rather than individual use. In recent years, there has been a remarkable financial investment in the installation of the IWBs in schools in Britain, the United States, Australia, and other few countries. Part of this has been funded by grants and some by the governments themselves. This has led to a notable change in pedagogical practices and approaches. For instance, using the IWB effectively demands providing teachers with a comprehensive view on it as a technological device and on its use as a supportive instructional tool in the classroom. In other words, teachers should first be able to recognize its different parts, such as the pen, the touch screen, the projector, etc… they should also be aware of the utility of each part in order to be able to deal with any sudden technological problem. More importantly, teachers should be informed about the real potential of the IWB as an instructional technological device and its effects as a teaching aid on the teaching/learning process. However, mere information about the IWB doesn't attain the intended target behind using it. Actually, teachers should also receive adequate training on the IWB's various functions to the extent that allow them to devise activities that suit their students' styles of learning and needs so that they can reach optimal learning in their classrooms.

Several research studies investigated found that IWBs had a positive effect on teaching and learning in various disciplines, though the extent to which this effect occurred has differed (Amolo & Dees, 2007; Beeland, 2002; British Educational Communications and Technology Agency (BECTA), 2002; Morgan, 2008; Smith, Hardman & Higgins, 2006; Somekh, B., Haldane M., Jones, K., Lewin, C., Steadman, S., Scrimshaw, P., et al., 2007; Swan, Schenker,and Kratcoski , 2008). Few studies have explored the impacts of this new technology as a pedagogical tool on English Language learners, especially EFL learners, and their findings were positive with respect to the effect and the potential of the technology (Bettsworth's, 2010;

Davies, 2007; Lee, 2002; O'Dowd, 2007; Orr, 2008; Schmid, 2006, 2007; Schroeder, 2007; De Almeida Soares, 2010; Toscu, 2013; Warschauer, Shetzer & Meloni, 2000).

Currently, technological tools, such as IWB and PPT, have rarely been used in teaching in Lebanon, especially in public schools. This is because all Lebanese schools have to adopt an established curriculum designed by the Ministry of Education and Higher Education in 1997. Part of this curriculum comprises Information Technology (IT) instruction at the secondary level, in grades 7-12 with one class period per week. This instruction is restricted to information skills and does not emphasize the use of ICT in other content areas. The Lebanese secondary curriculum concentrates on the content subjects that are part of the Lebanese official examination, and, accordingly, teachers certainly exert their efforts on covering as much content as possible through lectures and demonstrations. Given its lack of prominence in the Lebanese official examination, and due to the high-stakes nature of the examination system in Lebanon, teachers have little motivation to use ICTs. In consequence, very few studies pertaining to the use and effect of the abovementioned technological tools, the PPT and IWB, were carried out in Lebanon, and indeed, no previous study investigated their impact on the writings of EFL learners in Lebanon. However, a lot of studies have highlighted the function of technology in enhancing different facets of writing such as content development, vocabulary, syntax, and others. As Fang (2014) stated, "computers are playing an increasingly critical role in second and foreign language learning and teaching, especially in the area of writing instruction." (p.143). In addition, Cunningham (2000) has found out that ESL students who are unwilling to write become more motivated and involved in writing when they accomplish tasks via technologically advanced devices such as computers, overhead video projectors and others. Furthermore, Farhady (1996) asserted that EFL teachers can arouse students' motivation and provide them with collective

experience in writing by using visually-based materials that include maps, diagrams, charts, pictures, etc. in a variety of writing tasks. Chuo (2007), in his turn, emphasized the considerable role of visual input in attaining interaction and promoting output in second language writing.

In light of the above discussion, there is a vital need for a research study that investigates the effect of the aforementioned technological tools, IWB and PPT, on the writings and attitudes of Lebanese EFL students in secondary public schools.

Purpose of the Study

Teaching writing for EFL students in Lebanon has always been viewed as a challenging task. The adoption of the process approach to writing, in contrast to the product approach, has reduced, to a certain extent, the stress and anxiety that EFL students used to feel when they were asked to write in English. However, the Lebanese EFL students continue to struggle with writing. As a teacher in one of the public schools in Lebanon, I have noticed that students don't like to write because they don't have sufficient knowledge about the writing topic and are unable of developing topic-related ideas. Another difficulty that I recognized is that a lot of students lack the vocabulary words needed to express their thoughts regarding a certain topic. As a result, students start to form a negative attitude towards writing and they feel anxious when they are asked to write in English. Their lack of content ideas and paucity in word knowledge impede their written performance in English and they get to view the writing task as a burden on them. As a foreign language teacher in a Lebanese public school, I have incessantly attempted to employ innovative and efficacious teaching strategies and tools to fill in the gaps and resolve the aforesaid challenges. Integrating technology in language classrooms has proved its productivity.

Based upon the above analyses, my primary goal from using the IWB and the PPT as instructional tools is to assist the Lebanese EFL students at public schools in transcending the

aforementioned difficulties. Moreover, I aspire that employing the IWB and the PPT in pre-writing activities would create a motivating and an interactive atmosphere which allows students to be less worried when they write in English. The purpose of the present study is to examine the use of technologically instructional tools, specifically, the Interactive Whiteboard (IWB) and the PowerPoint presentation (PPT) in pre-writing instruction and their respective effects on the development of ideas and the proper use of vocabulary in the writings of the Lebanese English Foreign Language students. It also investigates the Lebanese EFL students' attitudes towards the writing class including the act of writing and the use of IWB and PPT in the writing class when the IWB and PPT are employed in pre-writing instruction.

Significance of the Study

A lot of research studies support the functionality of using multimedia in a variety of writing tasks and in increasing students' interaction and motivation in a writing class. However, limited research studies have been conducted to study the effects of two particular technological tools, the Interactive Whiteboard (IWB) and the PowerPoint presentation (PPT), on language learning. Indeed, no previous research has been conducted to study the impact of using the IWB and PPP on Lebanese EFL students' written achievements, and on shaping their attitudes towards writing and the use of the said technological tools in public secondary schools. The aforementioned discussion urges me to conduct the present research study especially that preceding research studies conducted to examine the effects of IWB and PPT on Language learning have been carried out in more technologically developed countries than Lebanon .It is worth noting that in Lebanon, the use of technology in educational institutions in general and public schools in particular is very limited. In fact, the IWB was installed in the public schools in Lebanon in 2011, and only few public school teachers have started using it in their language

classrooms. The significance of this research is that it is the first study conducted in Lebanon that investigates the efficacy of the use of the IWB and PPT on developing the Lebanese EFL students' writings on one hand, and on changing the EFL students' attitudes towards writing and the use of the mentioned technological tools on the other hand. Another reason for carrying out the current study is that most EFL students at public schools in Lebanon find difficulty in writing in English because they can't find ample ideas about the writing topic, and they are unable to express their ideas due to a lack of the required vocabulary words. Here lies the need of such a study since it illuminates how the employ of the IWB and PPT in pre-writing instruction facilitates the Lebanese EFL students' development of ideas on the writing topic and the proper use of topic-related vocabulary words. In addition, this research elucidates how the use of IWB and PPT in pre-writing activities affects Lebanese EFL students' attitude towards writing, and how it influences their attitude towards the use of the IWB and PPT in a writing class.

Research Questions and Hypotheses

The target behind using the IWB and PPT in a writing classroom is to facilitate EFL students' writing by enhancing their development of ideas, as well as allowing for proper use of topic-related vocabulary words. Also, the employment of these two tools aims at developing a positive attitude in EFL students towards writing in English and towards their use in a writing class. Thus, the current study will tackle the following research questions:

1. Does the use of Interactive Whiteboard in pre-writing instruction improve the development of ideas in writing of EFL secondary students?
2. Does the use of PowerPoint presentation in pre-writing instruction enhance the development of ideas in writing of EFL secondary students?

3. Does the use of Interactive Whiteboard in pre-writing instruction lead EFL secondary students to use topic-related vocabulary words properly?
4. Does the use of PowerPoint presentation in pre-writing instruction lead EFL secondary students to use topic-related vocabulary words properly?
5. Does the use of Interactive Whiteboard in pre-writing instruction boost the attitudes of EFL secondary students towards writing?
6. Does the use of PowerPoint presentation in pre-writing instruction promote the attitudes of EFL secondary students towards writing?
7. What are the attitudes of EFL secondary students towards the use of Interactive Whiteboard in pre-writing instruction?
8. What are the attitudes of EFL secondary students towards the use of the PowerPoint presentations in pre-writing instruction?

Based on the stated research questions, the present research study will examine the following hypotheses:

H1: The use of Interactive Whiteboard in pre-writing instruction improves the development of ideas in the writings of EFL secondary students.

H2: The use of PowerPoint presentation in pre-writing instruction enhances the development of ideas in the writings of EFL secondary students.

H3: The use of Interactive Whiteboard in pre-writing instruction leads EFL students to use topic-related vocabulary words properly.

H4: The use of PowerPoint presentation in pre-writing instruction leads EFL students to use topic-related vocabulary words properly.

H5: The use of Interactive Whiteboard in pre-writing instruction boosts the attitudes of EFL secondary students towards writing

H6: The use of PowerPoint presentation in pre-writing instruction promotes the attitudes of EFL secondary students towards writing.

H7: Secondary EFL students have positive attitudes towards the use of Interactive Whiteboard in pre-writing instruction.

H8: Secondary EFL students have positive attitudes towards the use of PowerPoint presentation in pre-writing instruction.

Research Assumptions

The current research is an experimental study that uses the mixed method to examine the effect of the IWB and the PPT in pre-writing activities on Lebanese EFL secondary students' development of ideas, proper use of topic-related vocabulary, attitudes towards writing after employing IWB and PPT in pre-writing instruction and attitudes towards the use of IWB and PPT in pre-writing activities. Some assumptions have been made with respect to this study.

I assume that the demographic questionnaire which inspects about the personal and language background of the students forms an important step in the procedure of the research study. In fact, the target of this step is to check whether external variables interfere in the study or not such as if any student receives tutoring in writing, enrolls in a certain educational program that teaches writing, or has regular written communication with native speakers. This contributes in filtering the sample of the study from inappropriate students and secures the homogeneous nature of the classes in the study.

Moreover, I presume that the random selection of the three control classes and the three experimental classes and the continual coordination with all the teachers to explain in details the procedure of the study lead to a valid and a reliable collection of data.

In addition, I suppose that administering the questionnaires to the participants in the experimental classes will render ample data in order to inspect their attitudes towards writing and towards the use of the IWB and PPT in the writing lessons. Serving the same purpose, the interview with the teachers of the experimental classes supplies the research with results that contribute in analyzing the previous findings and in substantiating them.

Definition of Terms

Attitude: Attitude is a combination of positive or negative, learned and consistent behaviors towards a specific object (Magno, 2003)

CALL: Levy (1997) defined it as "the search for and study of applications of the computer in language teaching and learning." (p.1)

Constructivism: It is defined as learning that "is a process of constructing meaning; it is how people make sense of their experience" (Merriam, Caffarella, & Baumgartner, 2007, p. 291).

Educational Technology: Educational technology is defined as “recent developments in computer-based technologies used to facilitate teaching” (Ebersole & Vorndam, 2003, p. 4). The goal of educational technology is to improve student achievement and ensure that the technology benefits students, teachers, parents, school administrators, and communities nationwide (The CEO Forum on Education and Technology, 2001).

EFL: It is an acronym for English as a foreign language, is defined as "the role of English in countries where it is taught as a subject in schools but not used as a medium of instruction in education nor as a language of communication" (Richards, Platt, & Platt, 1992, p.123-124).

ICT: Information and Communication Technology (ICT) is defined as computer based tools used by people to work with the information and communication processing needs of an organization. It encompasses the computer hardware and software, the network and several other devices (video, audio, photography camera, etc.) that convert information (text), images, sound, motion, and others into common digital form (Milken Exchange on Education Technology, 1999).

Interactive White Board: The British Educational Communications and Technology Agency (BECTA) defines IWBs as a large, touch-sensitive board which is connected to a digital projector and a computer. The projector displays the image from the computer screen on the board. The computer can then be controlled by touching the board, either directly or with a special pen. The potential applications are: using web-based resources in whole-class teaching, showing video clips to help explain concepts, presenting students' work to the rest of the classroom, creating digital flipcharts, manipulating text and practicing handwriting, and saving notes on the board for future use (BECTA, 2003, p. 1).

MEHE: The Ministry of Education and Higher Education in Lebanon (Jamali, 2011)

PowerPoint: It is Microsoft's presentation software (Pountain, 2001). PowerPoint was designed with the intent and purpose of being used for presentations.

Process Approach: The writing process approach puts emphasis on a process in which the finished products came after a series of drafts (Cohen, 1990, p.105). The focus of process

approach is on the steps involved in drafting and redrafting the piece of written work (Nunan (1999, p.272).

Product Approach: It is a writing approach that focuses on the final product; the coherent and error- free text. Nunan (1999, p.273).

Promethean ActivBoards: Promethean ActivBoards offer interactive whiteboard solutions. Promethean offers a range of interactive whiteboard solutions to meet needs of today's classroom (Gupta, 2011). Durability for the classroom environment is built in; built-in RF technology lets it communicate wirelessly with other products (like the Activslate mini-board) without additional computer ports, receivers, or drivers (Branzburg, 2008).

Zone of Proximal Development: It is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978).

Overview of the Thesis

The present study comprises five chapters. The first chapter provides an introduction, a background of the study, the purpose of the study, the research questions and hypotheses, the significance of the study, the , assumptions of the study, and definitions of terms.

The second chapter consists of a literature review that presents the theoretical background, the role of technology in education and writing, learning styles, definition and kinds of IWBs, the advantages and drawbacks of IWBs, and previous studies on IWBs. Also, the chapter investigates the role of PPTs, the benefits and shortcomings of PPTs, and previous studies on PPTs.

The third chapter examines the research methodology of the present study. It explores background information on the participants of the study, the research design, the research setting, instrumentation, materials, data collection, and data analysis procedure.

The fourth chapter provides the results pertaining to the eight research questions and hypotheses of the research study.

The fifth chapter provides a summary of the procedure, discussion of the findings, implications, limitations, recommendations, and a conclusion.

CHAPTER II – LITERATURE REVIEW

Chapter II lays out the theoretical bedrock of the present study and probed into previous studies pertaining to the use of IWB and PPT in education in general and EFL classrooms in particular.

Process Theory of Writing

Several researchers (Adelman, 1997; Grabe, 2001; Santos, 1992; Silva & Leki, 2004; Woodall, 2002) stated that there is no one underlining theory for second language writing. The research studies carried out on the second language writing depend, to a high degree, on first language research studies (Devine et al., 1993; Pennington and So, 1993; Silva & Leki, 2004). These studies pointed out that second language learners have mostly the same cognitive processes in writing as learners who write in their first language. Therefore, theories of writing in the second language were based on theories of writing in the first language; a prominent theory is the process approach in writing as a pedagogical reaction to the product approach.

The product approach in writing underscored the accuracy of the final written product; teaching writing was restricted to teaching of grammatical, stylistic, and structural chunks which hindered the expressive flow of students' thoughts instead of boosting their communicative abilities. Giving priority to accuracy and correctness has turned the writing task into a monotonous practice rather than an interactive opportunity to receive feedback on content and to develop ideas in an organized manner.

The concept of writing as a cognitive process started with Emig (1971) who viewed writing as a recursive act. Afterwards, the process model of writing was developed by the two cognitive psychologists, Flower and Hayes (1981). This model was based on the cognitive theory of learning which maintains that writing does in fact happen in "steps," but these steps aren't

necessarily followed in the same order as in the stage model. Nor does each step lead directly to another in a sequential order. Instead, for the most part the writer moves fluidly back and forth between the processes that make up the act of writing. This cognitive perspective focused on the liaison between input and the mental construction device for second language acquisition. Vollmer (2002) considered that the cognitive theory makes writing a cognitive activity that involves the learner in composing processes and strategies. In addition, Garner (1990) emphasized the integral role that the meta-cognitive theory plays in the process writing. This is because it demands from the learner to use three basic strategies while writing which are developing a plan of action, monitoring the plan, and revising the plan. The process approach allowed students to use writing as a heuristic to explore ideas about a topic through free-writing and brainstorming in the beginning of the writing process (Blanton, 1987; Spack, 1984; Zamel, 1980, 1982). The primary emphasis in the process approach is on the exploration of meaning and the development of ideas, whereas the teaching of grammar and form becomes subsidiary (Spack & Sadow, 1983; Zamel, 1976, 1985, 1987). Unger and Fleischman (2004) explained process writing by saying, "This approach emerged from researchers' study of the steps that accomplished writers engage in as they write: planning and organizing ideas, translating ideas into text and reviewing and revising the result" (p. 90). Cushing Weigle (2002) pointed out that it is the individual that is the chief focus in the Hayes-Flower model, not the task and that the distinct parts of writing engage "interactions among four components: working memory, motivation and affect, cognitive processes and long-term memory" (p. 25).

Later, the writing process includes the social context in addition to the cognitive process. The social constructivist theory highlighted the importance of negotiation and consensus in writing. Allan (2005) stated that according to the social constructivism theory, learners are

viewed as interactive who learn beyond the "the context of pedagogical structuring into a process of social transformation" (p.249). The focus in teaching writing has shifted from the final product to the different phases of writing through which the student writer communicates meaning and discovers ideas by interacting with others in a language context. Freedman et al. (1983) stated that "conventional composition teaching focused on the message, the product, the written composition, analyzing style, organizational patterns, and rules of usage. The new rhetoric, in contrast, has consciously and deliberately shifted its focus to the encoder or writer, investigating especially the process of writing itself and the developing of writing abilities within that encoder" (p.4). Accordingly, teachers orient their students to experience convenient and correlated phases of the writing process: pre-writing, drafting, revising, editing and publishing. During these phases of the writing process, students reflect on a given topic, exchange ideas with the class and then generate their own ideas. Prewriting is a significant phase. In prewriting, writers start to bring their ideas together. They explore a topic by drawing on their experiences to write about what they know and by interacting with others and sharing ideas with them to accumulate a certain input for writing. In agreement with this, Lee (2006) found out that there is a solid and steady relationship between topic-related background knowledge and the students' performance in writing; a variety of knowledge leads to better performance in different writing tasks. According to El-Mortaji (2001), prior knowledge plays a salient role in students' writing performance. Holliday (1996), in his turn, spotlighted the significance of giving students an opportunity to discuss or negotiate what they learn. Moreover, it is stated that familiar content and form facilitate the act of writing (Reid, 1993). Prewriting defines the topic, audience, focus, overall message, organization, and voice. To activate prior knowledge, the writer can make lists or organize ideas on a planner. It is worth noting that teachers de-emphasize language form and

mechanics at the first phase of drafting to help students express their ideas fluently without obstructing their stream of thoughts. When revising their drafts, students focus on how to express their ideas more efficiently by taking advantage of their teacher's and peers' feedback. According to Scordaras (2003), prior knowledge and writing experiences have a direct impact on students' revision processes. Later, students edit their writings for grammar and language mechanics to be ready for final publication. According to Hedge (2005), writing means the ability of students to "produce whole pieces of communication, to link and develop information, ideas, or arguments for a particular reader or a group of readers…" (p, 10) rather than to construct accurate and complete sentences. Peregoy and Boyle (2001), in their turn, considered that cooperation and interaction among students together with the exchange of each other's opinions through oral discussion endorse language development and produce a sufficient comprehensive input about a writing topic.

Computer Assisted Language Learning (CALL)

Computer Assisted Language Learning (CALL) as Levy (1997) defines is "the search for and study of applications of the computer in language teaching and learning" (p.1). CALL, starting from 1980s to 1990s, was acutely correlated to how computers and technology had developed over time. Computers were at first viewed as the taskmaster; they were mainly used in content courses, chiefly in English grammar, Math and Computer Science. Learning occurred in a lab where each student sat in front of a computer and gradually learned a certain section of the content course by receiving a certain input and practicing it in a form of tests. In the mid-1980s, the appearance of silicon chips, desktop personal computer, and later Word-processing changed the scene. In fact, computers developed with respect to speed and power until "multimedia" has become almost tantamount with "computer." Consequently, CALL was, first, concerned with

how to operate technology more than with its pragmatic effects on learning. At that moment, Higgins and Johns (1984) aroused a critical pedagogical dispute about the role of the computer in the learning process. They argued whether the computer controlled the learning process or was a slave to it. The first era of CALL was based on the behavioristic pedagogical approach of language learning, for computer programmers at that time didn't have sufficient knowledge on language teaching and acquisition. With the advent of the communicative theory, CALL was matched by experimental models of communicative teaching and learning. The quandary for CALL was whether to promote student-computer communication or student-student communication, with the computer simply an impetus to the conversation. Since computer languages are limited in nature, in comparison to the sophisticated nature of human languages, a computer wasn't able to be a copacetic conversation partner.

The use of cooperative learning in language teaching brought human interaction to CALL, for students were asked to use the computer in pairs or groups and work on games, simulations, and grammar drills. A debate was held on whether group work merely led to language learning. Moreover, pedagogical computer programs, at that time (in the late 1980s and early 90s), were limited, so students were triggered to use the novel technology more than to acquire the language. However, the word processor was a paramount computer application that considerably facilitated the "process approach" to writing, a groundbreaking pedagogy which was based on multiple drafting, revising, and editing. Later, more sophisticated programs were invented such as the Hypercard and CDs. At the beginning of the 1990, content-based learning and task-based learning had substantial impact on language learning, and accordingly, on CALL. The internet and content CDs prominently boosted content-based learning since they provided classrooms with a heap of information on any content area. As to task-based learning, CALL

allowed students to learn how to use collocations of the simulation or adventure and to explore information at the same time. Moreover, CALL equipped students with multimedia tools that enabled them to produce their own presentations. In addition, multimedia motivated students to enhance their communication skills, solve problems collaboratively, determine their own best learning strategies, and practice written and oral language appropriate to the context of their study.

The development of the internet paved the way for the efficacious role of e-mail in student to student communication. Indeed, communication inside and outside the classroom enabled students to negotiate meaning, interact with each other culturally and exchange information pertaining to various academic topics; such communication was pivotal for language acquisition in the early 1990s. Moreover, email and the increasingly popular live chat interactions have allowed students to perform in a highly authentic virtual platform which is considered an ideal language learning environment from a pedagogical point of view.

In the late 1990s and the early 2000s, and with the advent of the theory of "constructivism", CALL has taken a different dimension in language teaching and learning. According to constructivism, the student learns a language by constructing a series of associations between meanings and various language items. This occurs through exposure to "experts" in the language (Krashen's Input Hypothesis) and hypothesis testing. Indeed, students try out various expressions and receive more information based on the results of the transactions. They become conscious of their learning process through planned use of memory, deliberate practice, and schema building which demand the use of high cognitive processes in the learning task. CALL has facilitated such learning by providing intensive, customized, and autonomous situations that allowed students to explore a surfeit of electronic information. It has, also, equipped students with tools and means to

organize, structure, and incorporate such information in their own language learning. Thus, a student has become the dynamo of his own learning by controlling its pace and the input needed. Currently, technology including tools, devices, software, programs, and the web enhances group work, task-based learning, the use of authentic language (mainly in computer-mediated communication), content-based learning, and conscious schema-building; and it addresses a variety of learning styles. Thus, the previous argument about the role of technology as master versus slave is no more valid since teachers themselves have become the guide by the side instead of being the sage on the stage. Students have become the sole master of their learning process with teachers as mentors and technology as a facilitator. Studies have confirmed that the integration of CALL into language classrooms can improve both native and second language learners' English proficiency (Barker & Torgesen, 1995; Chang & Huang, 2012; Macaruso & Walker, 2008; Leitner, Mioduser, & Tur-Kaspa, 2000). The new era of digital education has developed learners from passive audience to active participants and provided them with opportunities to engage in authentic communication in meaningful contexts (Blattner & Fiori, 2009; Mills, 2011; Reinhardt & Zander, 2011; Wang & Vasquez, 2014). This corresponds to Vygotsky's (1978) view that learning is a social activity that takes place through communication or interaction with others. Teachers become able to engage all students in such interactive environment when they become aware of each student's preferred learning style. Jonassen and Grabowski (1993) indicated that students vary in their propensities for learning, their inclination to learn, and their styles of learning. Research studies show that an environment of multisensory reinforcement accelerates the pace of learning. This is confirmed by Murray-Harvey (1994) who emphasized the impact of students' individual differences and preferred learning styles on learning outcomes when implementing technology in classrooms.

CALL and Writing

The advent of technology has radically changed the society in diverse life domains. Therefore, it becomes a key obligation for teachers to assist each generation of students to cope with the demands of, what Tapscot (1998) called, a digital future. Indeed, the invasion of technology in all life domains has posed a challenge for professional teachers to cope with such a technological revolution by integrating computer-assisted instruction with their conventional teaching practices. Students' attitudes comprise their personal beliefs or feelings that induce them to act in a certain way. Oppenheim (1992) defined, attitude as "a state of readiness, a tendency to respond in a certain manner when confronted with certain stimuli" (p.174). Davis, in his turn, (1989) claimed that the attitude and stance of learners towards a technology program propel them to use it or not. Also, Butler-Pascoe (1997) highlighted the significance of computer technology in EFL instruction as it promotes autonomous and cooperative learning environments that facilitate the acquisition and practice of English for EFL students. In addition, Fox (1998) pointed out that the internet is a motivator for ESL students to acquire the English skills. Along the same line, Muehleisen (1997) advocated the use of the web in foreign language instruction since it intrinsically motivates students to learn English through interactive internet projects and enables them to use English authentically and outside the classroom. Gitsaki and Taylor (2001) further indicated that internet learning provides students with adequate English and computer practice, plethoric and authentic input of English, various opportunities of autonomous learning by selecting topics that suit their interest, wide space for communicating with native speakers, and lastly motivating learning activities. Likewise, Lee (2006) and Berg (2003) stated that classroom access to the internet makes a variety of English resources and activities available for language teachers and students. The findings of several research studies (Ellis, 1994; Fotos,

1995; Harley, 1998; Leow, 1998; Smith, 2000 cited in Chuo, 2007) ascertained that enhanced input leads to better recognition and learning of different element of language.

According to Chuo (2007), input, interaction, and output are viewed as three pillars in second language writing. He noted that the visual input offered by technology provokes interaction and, accordingly, supports output. In fact, computer assisted instruction is available in various permutations such as text, audio, animation, colored images, interactive tasks, videos and others. Thus, the input becomes more plainly displayed and easily accessed to the students by computers or other technological devices. Many researchers (Wresch, 1993; Ghaleb, 1993; Chun, 1994; Sullivan & Pratt, 1996; Warschauer, 1996; Kramsch, A'Ness, & Lam, 2000; Bloch, 2002; Hertel, 2003) found out a positive influence of technology on students' performance and writing. Some of them studied the function of technology in enhancing different facets of writing such as content development, vocabulary, syntax, and others. CALL represents an influential means for enriching language learners' bank of vocabulary through multimedia presentation of glossary interpretations. Plass, Chun, Mayer, and Leutner (1998) stated that students recalled unknown vocabulary words better when learned with both pictorial and written annotations than when learned with no annotation. Newton (1995) indicated that students acquired more vocabulary words when they engaged in communicative tasks that required interactions than when they just discussed word meanings orally. Also, Wesche & Paribakht, (2000) pointed out that students were able to learn vocabulary words more effectually when they practiced the targeted vocabulary words contextually. Chun and Plass (1993; 1996), Plass, Chun, Mayer, and Leutner (1998), Kost, Foss and Lexini (1999), Yoshii (2001), and Al-Seghayer (2001) carried out several research studies that verified the value of dual presentation types of vocabulary annotations (text + visual aids) on vocabulary learning. The research carried out by Chun and

Plass ascertained that students acquired more vocabulary words through text and picture than through text only. Later, Kost et al. (1999), in their turn, highlighted the efficiency of dual annotation—textual and pictorial glosses on students' vocabulary acquisition. Underwood (1989) spotlighted the significance of visual memory in the learning process. Actually, students recall words better if they are presented with images. According to Nam (2010), multimedia annotations (images and text) are more valuable to students than single-medium glosses. Gasciogne (2006) pointed out that multimedia boosts comprehensive visualization of the content and can buttress students' imagination and creativity.

English teachers have found out that employing technologically instructional tools plays a pivotal role in teaching writing. EFL/ESL Writing has always been considered an important skill in teaching and learning. While writing, students encounter a series of challenges including lack of motivation, lack of self-confidence, and writing anxiety. Reilly and Reilly (2005) noted that writing is a skill many learners do not enjoy. Holliday (1996) pointed out how students' negative attitudes towards essay writing made writing a difficult task for them. Along the same line, Bacha (2002) hinted at the negative impact of EFL students' lack of motivation on their development of essay writing. Furthermore, Research studies have revealed that high apprehensive writers were more hesitant during writing than low apprehensive ones (Hayes, 1981); they were less organized in structuring their essays (Selfe, 1984); and they chose topics that were more familiar to them and avoided unfamiliar topics (MacIntyre, Noel, & Clement, 1997). Several researchers (Pajares, 2003; Collins & Bissell, 2004; Graham et al., 1993; Kear et al., 2000; Phinney, 1991; Pajares and Johnson, 1993; Peregoy and Boyle, 2001; Raimes, 1998) pinpointed the sturdy impact of students' attitudes, self-efficacy, motivation and apprehension on their achievements in writing. Collins and Bissell (2004) and Pajares (2003) referred to research

studies that proved statistically the connection between students' attitude and their writing performance. In the same vein, Pintrich and Groot (1990) and Pajares (2003) indicated that those who believe they are able to do academic writing tasks can properly manage their cognitive strategies, and consequently, self-reflect more. Tan et al. (1999) explored the impacts of web pages on teaching writing. The authors stressed the function of cooperative learning in fostering the instruction of thinking skills and creativity in a writing class. This was demonstrated in a secondary class in Singapore by a writing lesson that integrated cooperative learning with thinking, creativity, and information technology. In addition, Belisle (1996) investigated the advantages of using electronic mail in ESL writing instruction. The researcher revealed how first and second year Japanese English learners benefitted from e-mail writing activities and model tasks. The researcher, also, found out that interacting with peers, classmates, and teachers via e-mails provided opportunities for efficient collaboration and cooperation, enabled the learners to interpret and come up with more ideas and thoughts, boosted the learners' social awareness and confidence, and shifted the learners from using traditional learning tools that inhibited their stream of thoughts to employing active learning tools that allowed them to explore and produce ideas freely and enthusiastically. Furthermore, Holmes (1996) employed word processors to correct writing assignments quickly and clearly. In fact, the word processors provided the subjects of the study with error identification, correction, and feedback. Also, Stevens (1999) proposed using the computer as a learning and instructional tool in a writing class. He emphasized the benefits of the word processor on enhancing students' writing skills. Other researchers (Hertel, 2003; Kubota, 1999; Warschauer et al., 1996) have revealed how technology improved students' attitudes towards writing, and how it increased their motivation. Greenfield (2003) pointed out that students found pleasure in the Computer Assisted Language Learning

(CALL) class and achieved valuable improvement in writing. Also, Trokeloshvili and Jost (1997) conducted a study on students at a foremost university in Japan. They explored how a one-year course helped students share in newsgroup discussions, surf the net for research objectives, and devise materials for home pages. The study revealed that the students were highly motivated to write in English and to display their writings on their home pages. In addition, Gousseva (1998) made a study on the effect of the computer on a writing class. She examined the students' attitudes towards employing the computer in language learning. The results of the study showed positivity in the students' attitude towards CALL and in developing the students' writing skills as well as highlighted the stress-free CALL environment. Moreover, Krajka (2000) investigated the issue of teaching different writing genres in the context of an on-line classroom. The findings demonstrated how certain websites and other internet techniques made the writing class authentic, enjoyable, attractive, and motivating.

Foreign language learning, in general, is a laborious and elongated process. To facilitate it and enable learners overcome entailing hindrances, teachers should identify the individual needs of the learner and fulfill them through various modes of instruction that accommodate to different competence levels. Teachers can address almost all types of learning modalities or preferences if they adopt interactive and collaborative approaches to language learning as well as create stress-free environments that allow students to be independent and learn at their own pace. Using technology in EFL classrooms enable students to learn in accordance to their dominant learning style and become autonomous learners.

Learning Modalities

Students learn and process information in their own ways although they have some learning preferences and approaches in common with others. The term "Learning styles" is

equivalent to what researchers call "perceptual modalities" which means how students take in information through their senses. A Perceptual modality is how students perceive the world, that is, how they see, hear, feel, and move through the world. Those perceptions intensely affect their learning aptitude. Whether they rely more or less on one sense than another has a tremendous influence on how they grasp new experiences and how they reach certain accomplishments (Conner, 1997-2007). According to Kanninen (2008), "Learning styles are based on the research results of cognitive psychology about processing information, active learning and the structure of information. The learners prefer intuitively some forms of information and a specific way of action over others when reaching quality learning" (p.12). Knowing students' learning styles is recognizing how students interact with the learning environment differently from each other and how they approach information in a way that best addresses their own individual needs. The concept of constructivism, which promotes learner-centered instruction, is congruent with the notion of individual learning preferences. Hoven (1997) stated that "in order to make the most of this control, learners need to understand their own learning processes, to be able to make informed choices about the paths their learning takes, and to be proactive in managing and directing their own learning" (p.184). Boulter (2007) indicated that since second language students are of different achievement levels, instructional methods should take into account their individual differences. Indeed, versatile learner-centered environs in which instruction can be adjusted to diverse learning styles are able to solve the frequent problem of having mixed level students in any language class. Therefore, adaptability to different learning styles has a significant effect on student's academic achievement. Brown (2000) highlighted the significance of addressing individual differences in acquiring a second language when he pointed out that:

> The conventional wisdom, it seems, has been that second language acquisition theories should attempt to explain how "the learner" develops competence, as though learners were a relatively homogeneous lot. This assumption, however, is being challenged as more and more scholars recognize that differences among people might matter a great deal more than was once thought. (pp.63-64)

Several researchers have viewed the learning process from a different perspective and, accordingly, classified learning styles or modalities in various ways. According to Kolb (1984), Learning is "the process whereby knowledge is created through the transformation of experience" (p.38). He believed that the most desirable learning process occurs in line with four learning styles: Converging, diverging, assimilating, and accommodating. Kolb based these four leaning styles on four learning cycle stages which are: Concrete Experience (CE) – feeling; Reflective Observation (RO) – watching; Abstract Conceptualization (AC) – thinking; and Active Experimentation (AE) – doing. Kolb's experimentations indicated that a learner goes through all four learning stages, but two of these stages dominate the learning process of each learner. The diverging learning style is learning through feeling and watching; the assimilating learning style is learning through watching and thinking; the converging learning style is learning by doing and thinking; and the accommodating learning style is learning by doing and feeling (Kanninen, 2008). Based on Kolb's model is Honey – Mumford's learning style model which was developed in 1986. Honey and Mumford suggested that learners are categorized as "Activist", "Reflector", "Theorist" and "Pragmatist" who correspond to "Accommodator", "Diverger", "Assimilator", and "Converger" respectively.

A popular model of personality development is Myers-Briggs model which was based on Jung's model in the early 1940's. To Myers, there are four general main ways learners differed

from one another. She labeled these differences "preferences". The first set of mental preferences is related to how people perceive or take in information. Those who prefer Sensing Perception go in for lucid data and information based on direct experience, while those who prefer Intuition Perception favor abstract and theoretical information. The second set of mental preferences relates to how people form judgments or make decisions. Those who prefer Thinking about Judgment make decisions in an objective, logical, and analytical way and give importance to tasks and results to be achieved, whereas those who favor Feeling Judgment make their decisions in an inclusive, visceral way and care for the effect of their decisions and actions on other people. The third set of preferences is Energy Orientation which is concerned with Extroversion and Introversion. Those who prefer Introversion draw their energy from the inner world of information, thoughts, ideas, and other contemplations, and when they face situations that demand exposure to the exterior world, they withdraw to a more secluded setting to revitalize their energy. In contrary, those who prefer Extroversion draw their energy by interacting with people and engaging in activities going on in the outside world. The fourth set of preferences is Outer World Orientation which is the style or orientation one uses in dealing with the external world: Judging or Perceiving. Those who prefer Judging like to order the outside world, that is, they like to organize, plan, or manage the things and people found in the external environment. Those who prefer Perceiving like to experience the outer world and, accordingly, they become tolerant and flexible with things and people in the outside world.

Another popular model of learning style is Felder-Silverman learning style model developed by Richard Felder and Linda Silverman in 1988. Felder and Silverman (1988) believe that students learn in different ways: by hearing and seeing; by reflecting and acting; reasoning either logically or intuitively; by memorizing and visualizing and drawing analogies; and, either

steadily or in small bits and large pieces (p.674). Felder (1996) states that the Felder-Silverman model classifies students as fitting into one of the following four learning style dimensions: (1) Sensing learners (concrete, practical, oriented towards facts and procedures) or intuitive learners (conceptual, innovative, oriented towards theories and meanings); (2)Visual learners (prefer visual representations of presented material – pictures, diagrams, flow charts) or verbal learners (prefer written and spoken explanations); (3) Active Learners (learn by trying things out, working with others) or reflective learners (learn by thinking things through, working alone); and Sequential learners (linear, orderly, learn in small incremental steps) or global learners (holistic, systems thinkers, learn in large leaps) (p. 19). According to Felder and Silverman (1988), learning in a structured educational setting is a two-step process comprising the reception and processing of information. They indicated that "in the reception step, external information (observable through the senses) and internal information (arising introspectively) become available to students, who then select the material they will process and what they will ignore. The processing step may involve simple memorization or reasoning, reflection or action, and introspection or interaction with others" (p.674).

A multisensory approach to teaching and learning is the VAK learning model, the acronym for visual, auditory, kinesthetic. It wasn't developed by any specific person but was used first in 1920 by the psychologists and teaching professionals Fernald, Keller, Orton, Gillingham, and Stillman şi Montessori (Mackay, 2010). The VAK model classifies learners into three groups pertaining to three basic learning preferences: Visual, Auditory, and Kinesthetic. Those who learn more efficiently through watching prefer the visual style of learning; those who learn more efficiently through listening/hearing prefer the auditory style; and those who learn more efficiently by doing practical activities prefer the kinesthetic style. Dunn (2000) and

Sarasin (1998) noted that these three learning styles exist in varying strengths in learners. A good student is the one with a mélange of learning styles (Joyce and Showers, 1995). The VAK model was then developed by Fleming and Mills (1992) to become the VARK model preferences for learning. VARK is an acronym for Visual, Aural, Read/write and Kinesthetic. What Fleming and Mills added to the previous one was a second 'visual' modality for Read/write learners. According to them, some students have a distinct preference for the written word while others prefer figurative information as in maps, diagrams, and charts. These two preferences are not always found in the same person. Filimon (2012) pointed out that visual learners collect information best through teaching aids including graphic representations: maps, diagrams, and symbols; those with an auditory learning style favor verbal teaching input such as lectures and debates and audio teaching aids such as web chat and recordings; those with read/write learning style learn best when information presented through reading and writing in textbooks, books, dictionaries, PowerPoint presentations, and the Internet; and finally kinesthetic learners favor practical activities, applications, tangible experiences, simulations, and multimedia presentations as a source of learning. Fleming and Baume (2006) considered that kinesthetic learning style is an intricate style, for although it relies basically on the kinesthetic sensory organ, it also involves other sensory modes: visual, auditory, tactile, gustatory and olfactory.

A further learning modality is that devised by Howard Gardner in 1983. Gardner believed that learners tend to develop a preference for some intelligences over others, and to use these intelligences more than the others as their desired ways of learning, thinking, and operating in the world. In 1983, Gardner proposed seven kinds of intelligences: (1) Linguistic intelligence which involves sensitivity to verbal and written language, the ability to learn and use language to achieve certain aims. This intelligence includes the capability to effectually use language to

express oneself rhetorically or poetically and to recall information; (2) Logical-mathematical intelligence which consists of the capability to examine problems logically, to solve mathematical operations, and to inspect issues scientifically; (3) Musical intelligence which involves skill in the performance, composition, and appreciation of musical patterns. It encompasses the ability to identify and compose musical pitches, tones, and rhythms; (4) Bodily-kinesthetic intelligence which entails learning through interaction with one's environment and accumulation of concrete experiences; (5) Spatial intelligence involves learning visually and organizing thoughts spatially. It is the ability to perceive ideas in the form of images or pictures; (6) Interpersonal intelligence is learning through interactions with others. It allows learners to work collaboratively and cooperatively; (7) Intrapersonal intelligence entails the capacity to understand oneself, to appreciate one's feelings, values and attitudes. It is the ability to use information to regulate one's life.

In 1999, Gardner added the Naturalist intelligence, which is the ability to discriminate among living things as well as sensitivity to other features of the natural world; and the Existential intelligences which is the ability to connect real world understandings to new learning. It is concerned with ultimate issues such as the purpose of life and death. Later, Gardner proposed the Moral-Ethical intelligence which pertains to morality and the kind of personality, individuality, will, and/or character that a person has developed. It is focused on the highest realization of human nature.

Gardner suggested that a learner might be strong in a certain learning ability or intelligence and at the same time possess other abilities. In other words, from the ten intelligences, an individual may excel in one, two or even three of these. By introducing a broader range of learning methods or intelligences, Gardner allowed teachers to focus on

learners' strengths and weaknesses by identifying their preferred learning style and selecting appropriate instructional schemes. Indeed, teachers should construct the presentation of materials in a way that engages most or all of the intelligences since activating a wide assortment of intelligences can promote better comprehension. This would provide students with the opportunity to learn in ways more prolifically to their unique minds. Song, Liang, Liu, and Walls (2005) considered that Gardner's theory of Multiple Intelligence puts emphasis on the need of creativity in education. Teaching in accordance to Gardner's Multiple Intelligence modality can augment the validity of learning experiences, encourage learner centeredness, and improve students' views of their abilities (Kallenback and Veins, 2002). Stenberg, in his turn, stated that "People have different patterns of abilities, and they will learn a language successfully when the way they are taught fits their ability patterns" (p.15). Using computers in classrooms can best facilitate the implementation of the Multiple Intelligence theory in the teaching/learning process which offers multi-faceted learning. McKenzie (2002) showed how technology serves students' multiple intelligences to boost learning. He clarified how the six standards of the International Society for Technology in Education (ISTE) if integrated well in instruction and supported by the concept of multiple intelligences can cultivate advanced learning. He matched each standard with more than one intelligence as follows: (1) technology operations and concepts – logical and naturalist management of digital technologies for target-oriented tasks; (2) digital citizenship – training students on responsible use of technology to assist permanent learning, collaborations, and productivity; (3) creativity and innovation – verbal, kinesthetic, interpersonal, and visual input to apply knowledge in a novel manner; (4) communication and collaboration – using a selection of media and layouts to communicate effectually to various audiences; (5) research and information fluency – assessing, detecting, assembling, and reporting on information; and (6)

critical thinking, problem solving, and decision making – logical, intrapersonal, and existential tools to resolve complications in the real world.

Numerous Studies showed that matching teaching styles to learning styles can significantly enhance academic achievement, student attitudes, and student behavior at the primary and secondary school level (Griggs & Dunn, 1984; Smith & Renzulli, 1984) and specifically in foreign language instruction (Oxford, Ehrman, & Lavine, 1991; Wallace & Oxford, 1992). The quality of student's learning is governed in part by that student's innate ability and prior preparation as well as by the harmony between the student's individual approach to learning and the teacher's own approach to teaching. Boulter (2007) remarked that "What seems clear is that contemporary education throughout the world must increasingly reflect individual differences of students' learning styles rather than attempting to make students conform to a well-established pedagogical mold" (p.115). The significance of determining learning styles of the students is to select a variety of materials that address these styles and to incorporate them in the language classroom so that learners can attain optimal language learning. Integrating technology in language classrooms leads to more exciting and stimulating learning and fulfill the individual needs of students with different learning styles. Identifying relevant and individual differences among students and varying instruction to better satisfy diverse learning needs is essential for student achievement (Borko, Mayfield, Marion, Flexer, & Cumbo, 1997).

Constructivism

As a whole, there are two wide analyses of constructivism: Individual Constructivism associated with Piaget, and Social Constructivism associated with Vygotsky. In Individual Constructivism, prominence is given to cognitive development. According to Piaget (1971), cognitive learning occurs by organizing information in chunks and incorporating it in the

learner's memory to be used in the future. Knowledge is constructed by devising appropriate tasks and questions that explore a student's understanding. However, Grasha (1996) cautions that "tasks that provide variety and novelty will capture students' attention better, but care must be taken not to overload the cognitive system with too much information" (p. 121).

Vygotsky's theory of social constructivism is opposed to Piaget's individualistic approach to constructivism. According to Vygotsky (1978), the child's actual development is when he/she works on his/her own, whereas the child's potential development is when he/she works with more capable adults or peers. The range between the child's actual development and his/her potential development is what Vygotsky (1978) calls the Zone of Proximal development. Vygotsky (1986) stated that "the discrepancy between a child's actual mental age and the level he reaches in solving problems with assistance indicates the zone of his proximal development" (p. 187). His concept of the zone of proximal development embodies his belief that learning is directly related to social development (Rice & Wilson, 1999). This is expressed by Vygotsky (1978) "Learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. Once these processes are internalized, they become part of the child's independent developmental achievement" (p. 90).

This is attuned with what most constructivists promote that instructional intercession should not only match but also speed up students' cognitive development. According to Li (2001), a constructivist view of learning is derived from experience, social interaction, and communication. Learning occurs through a process in which students are active constructors of knowledge. Knowledge is constructed through observation, reflection and interaction with the encircling milieu such as students' peers, teachers or technology. Along the same line, Bruner

(1990) averred that learners do not merely grasp and pile information but they actively analyze experiences and come up with sensible inferences. Thus, students from childhood become active independent constructors of knowledge rather than passive recipients to it. Away from cognitive approach to learning, educators became more concerned with how students use, receive, construct or deconstruct knowledge (Miller, 1993). Copley (1992), in his turn, considered that constructivism needs a teacher who facilitates the learning process by placing students in situations that trigger them to actively participate in their learning and establish meaningful connections between prior knowledge, new knowledge, and the processes involved in learning. Also, Omrod (1995) highlighted the role of teachers who should devise tasks that students can perform only with the help of their surrounding environment, which is, in other words, their zone of proximal development. Similarly, Pratton and Hales (1986) found that the achievements of students taught with active participation were better than the achievements of students taught without active participation. Active participation is an efficient teaching method that leads to a significant positive change difference in student learning because teachers ask students to do activities that require thinking, responding and verifying what they know. Therefore, the teacher no more acts as the lone source of knowledge but as a facilitator providing opportunities for learners to seek knowledge. The perception that knowledge is poured from the head of the teacher to the head of the student is abandoned in constructivism. Instead, the teachers become models and guides, orienting students on how to reflect on their acquired knowledge and how to encounter learning obstacles. The extent of assistance provided by the teacher is contingent to the degree of knowledge and experience of the students (Newby et al., 1996). Social Constructivism reassures that students work together as peers, employing their combined knowledge in a skillful way to resolve their learning difficulties. The dialogue that results from

this joint effort offers students the opportunity to scrutinize and enhance their understanding in a continuing process. These opportunities make students responsible for generating knowledge since they are invited to cross-examine each other's understanding and clarify their own points of view. Ranjit and Mohameds (2012), in their turn, considered that "students' engagement" plays a pivotal role in the concept of "constructing meaning". In fact, the concept of "constructing meaning" is grounded on students' abilities to choose and construct knowledge in a learning environment which galvanizes the entire class, grips students' attention, and facilitates structured-teacher students' interaction when students are dynamically engaged in learning (Buttner, 2011). When students are socially engaged, they get a sense of belonging to the classroom environ, and hence, they feel stress-free in their learning setting. Such a feeling will be embedded in students' behavioral and academic engagement. According to Newman and Marshall (1992), students' engagement ensues while "students make a psychological investment (engagement) in learning. They try hard to learn what school offers (cognitive engagement). They take pride not simply in earning the formal indicators of success (academic engagement), but in understanding the material (environment) and incorporating or internalizing it in their lives (social and behavioral engagement)" (p.3).

According to the constructivist perspective, learning is determined by the multifaceted interaction among learners' existing knowledge, the social context, and the problem to be solved. This approach of learning emboldens the construction of a social context in which collaboration creates a sense of community in which teachers and students actively participate in the learning process. As Ertmer and Newby (1993) stated, students are situated in a collaborative situation in which they have both the means and the chance to construct "new and situationally-specific understandings by assembling prior knowledge from diverse sources" (p.63).

The social constructivist approach of learning seems to be a good match for the technological applications being developed today. By integrating technology in learning taking into consideration the constructivist approach, teachers become more able to involve students in learning accomplishments, erect instruction to meet individual differences by addressing various learning levels and styles, and expand the range of resources accessible to the learner.

Social Constructivism and Technology

Technology, in a social constructivist learning environment, is not only a tool for presenting information, but also an infrastructure for the instructional and learning methodology. Technology plays a valuable role in enhancing students' learning experiences since it provides authentic, constructivist, and collaborative problem solving learning experiences. In a technologically-supported environ where concepts and ideas can be displayed in an assortment of formats such as animated pictures, videos, texts, interactive games, audio, and others, students are engaged in collaborative tasks that encourage them to analyze and negotiate their learning context together. As a result, students' language awareness will be nurtured and they will become autonomous learners.

Students use technologies to handle data, establish relationships, process information, and reflect on the learning process (Jonassen et al., 1999). Riddle (1995) commented that students who used hypermedia revealed increased ability to convey discernment and individuality, greater descriptive detail, and inimitable viewpoints.

. If education is to be fecund, advanced and eidolon then the adoption of technology can no longer be unnoticed, but must be fed, embraced and embodied within the educational realm; making every attempt to nurture it rather than ignore it (Papert, 1999). Because technology, in its various forms, has recently been invading students' lives, in general, and their homes, in

particular, students will definitely be unwilling to be educated in ways that are inferior to what they can achieve at home with their computer (Bennahum, 1996). Indeed, technology has imposed itself as an optimum medium for facilitating the instructional/learning process in a constructivist environment. According to Murphy (1997), when software and audiovisual aids are used in constructivist ways such as designing and fashioning artwork, exploring virtual reality, problem-solving in multimedia performances, experimenting in simulations, and surfing websites, students become active participants in the learning process. In contrast to lectures, technology offers collaborative and authentic situations in which students can develop critical thinking and problem solving skills. Animation, for instance, can trigger students to accomplish cognitive activities. Beerman (1996) stated that images and animations enabled students to conceptualize information. Reiber, Boyce and Assad (1990) verified the efficacy of computer-animated graphics in instruction. In fact, technology allows users to enter virtual environments that include text, sound, visual images, animation, and video. Moreover, teachers can devise computer-based tasks that meet the requirements of a critical learner. PowerPoint presentations can offer such environments if designed dexterously.

Computer tools and learning environs have been "adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher-order learning" (Jonassen, 2000, p. 11). Learners are required to play a diversity of roles when using technology as a medium for interacting with others; they thoroughly probe ideas and successfully deal with real-life problematic tasks. They become able to gather, manipulate, and generate ideas and information in order to make decisions. Saunders (1992) and Brooks and Brooks (1993), also, pointed out that social interaction and exchange of information with others develop creative learning. This is congruent with what Salomon (1991) hinted at that a smart

integration of technology in the instructional/learning process has supplanted knowledge possession by knowledge construction and has substituted externally directed learning by self or internally directed learning. Teachers benefit from a series of technological tools such as the PowerPoint and Interactive Whiteboard that allow them to devise authentic and learner challenging tasks. The Interactive Whiteboard, an interactive technological device, has assisted teachers in contriving interactive instructional units that address the different learning styles and multiple intelligences of students; this provides a fertile learning setting in which students can collaborate with each other and perform at a high level of thinking.

The Use of Technology in Lebanon

Lebanon had witnessed civil war for around fifteen years and had passed through recurrent conflicts which were intensified in 2006. In light of such environ, Lebanon has recently concentrated on rebuilding its institutions and structures, and thus, it can be classified as an emerging nation with respect to the use of technology in education.

Lebanon instigated its educational technology strategy in 2000, but it's in 2007 that the Ministry of Education and Higher Education (MEHE) started seriously to develop a centralized, national educational technology strategy and to concoct the supporting systems and documents necessary to implement such a strategy. Most educational technology projects have been funded by international technology companies, institutions, foundations or organizations: Microsoft, Intel, Cisco, Arab Thought Foundation, Walid Bin Talal Foundation, Promethean and IET, International Education Association, British Council, World Bank, and UNESCO (Burns, 2012).

Technology is not prevalent in most Lebanese public schools. Most of the efforts exerted to integrate ICT in education have focused on one of two areas. The first are initiatives that focus on securing access (through provision of hardware, software, or connectivity) for teachers and

students. The second are efforts to connect computer technology to teaching and learning through the provision of learning opportunities to teachers, students or both (Burns, 2012).

These initiatives have contributed to a certain extent to improve access to technology; still, such contributions were too limited in Lebanese public schools. According to the data collected from the Center for Educational Research and Development (CERD) in 2008, "Lebanese public schools reported having 9.85 computers per school compared to 17.23 per private schools" (Nasser, 2008, p.68). "The same set of CERD data indicated that 5.7 percent of public schools reported having Internet access compared to 52.7 percent of private schools" (Nasser, 2008, p.69). However, serious efforts were exerted by MEHE and some national and international foundations and organizations to improve technology integration in Lebanese public schools.

In 2011, MEHE received 113 IWBs for intermediate and secondary public schools in Lebanon as a donation from Al-Walid Bin Talal foundation and distributed them equally among public schools in all Lebanese regions. Later, 67 IWBs were also donated by the same foundation for public schools in the southern suburb of Beirut and in the Minaa in the North. In this way, the number of public schools that received IWBs becomes 180 schools. To ensure optimal use of these IWBs, MEHE signed a document of understanding with Promethean Limited in London. Under this document, MEHE received six IWBS with their accessories to six elementary public schools. More importantly, the document comprised training more than 100 trainers within six groups distributed among the major teacher training centers in Lebanon. Later, these trainers will be training teachers in the 186 schools which received the IWBS to be able to use the IWB in instruction properly.

The Interactive Whiteboard

A primary requirement in education in the 21st century is the integration of technology in the fabrication of teaching/learning process. With every new modus operandi, researchers and educationalists delve into its worthiness in the teaching profession, its suitability for specific population rather than another, its practicality and method of implementation upon usage, its validity and reliability in achieving intended outcomes, and its budget. The outcome of such investigation is a division in opinion between proponents and advocates of technology who commend the use of technology in education and opponents who prey on its pitfalls. The present section provides a definition of this new technology, the Interactive Whiteboard (IWB), surveys the opinion of both opponents and proponents, highlighting their arguments and the efficiency of IWB in the language classroom.

Definition (Brands and Parts) and Functions

Interactive Whiteboard (IWB), as the name reveals, is a white electronic board, touch-sensitive, used as a presentation device and a casual board for writing or drawing. This white board is connected via USB port or wirelessly to a computer with appropriate software such as web browser or ActivInspire, and a projector; all of which are connected to electricity. Other tools can be connected to the board such as tablets. An IWB itself is "a projection surface, not a monitor" and can only display what a projector displays onto it (SMART Technologies, 2010, p. 138). Through the digital projector, the computer screen is displayed on the whiteboard, which, consequently, becomes the screen and all applications on the computer can be controlled by touching the board by finger or with other accessories such as an electronic pen and making changes in real-time. Everything written or drawn on the board and all annotations or actions can be saved to and printed from the computer (Schmid, 2008).

The major brands of IWB are Promethean World and Smart Tech. Both companies provide these boards along with accessories, maintenance and training. According to the annual reports of these companies, the use of IWB is widely spreading. According to Smart Technologies (2010), 18 million students in more than 600,000 classrooms in more than 100 countries around the world are currently using an interactive whiteboard.

Harris (2005) lists three types of interactive whiteboards. These types reflect the stages that this new technology has passed through. The first type of IWB consists of an infrared/ultrasound kit that can be fixed to an existing traditional whiteboard. This IWB does not have the same number of functions as an active whiteboard. A simple lacking feature is the inability to save any new notes to the lesson; once the kit is turned off, nothing is available except what is written on the board. The second type is a passive whiteboard that is sensitive to finger manipulations and has more functions than an infrared kit. The last one, which is the most recent, is the active whiteboard, which can be used with both a special pen and a human finger. The pen or other object acts like a mouse on the screen, allowing the user to operate the computer from the board. This kind of interactive whiteboard has the most functions especially with the type of software used.

In addition, a whiteboard can be portable or fixed. The majority of boards in classes are fixed. However, portable boards need to be set up again and calibrated each time when it is carried to another place. IWB also comes in different sizes, but the most common one is 190 centimeters in width. This standard size is the most preferable since it ensures clear visibility in majority of classes.

Interactive Whiteboards can be a portable one placed on a rolling stand and moved from room to room (See figure 1), or a fixed one always connected to a computer and a projector (See figure 2).

Figure 1. A mobile Interactive Whiteboard

Figure 2. A fixed Interactive Whiteboard

Several devices can be used to facilitate and enrich teaching and learning in an interactive classroom. An interactive pen is used by a teacher or a student to write on the board (See figure 3).

Figure 3. Interactive pens

Another device is the Promethean ActiveConnect, a wireless presentation solution that connects existing technology, including computers, tablets and smartphones, wirelessly to the screen monitor. It enhances collaboration and interaction by allowing multiple users to simultaneously share ideas on the screen monitor using their personal devices (See figure 4).

Figure 4. The Promethean ActivConnect

A third device is the document camera. Document cameras are digital cameras used to present objects or papers for a group to see. The document cameras do not have the ability to project or display an image on their own, so they need to be connected to a computer or projector (See Figure 5).

Figure 5. Document camera

A common device is the ActivExpression, an intuitive learner response system designed to promote full-class participation and engagement throughout lessons while facilitating ongoing, real-time feedback on student progress. ActivExpression can be used during whole-class

instruction to gauge students' prior knowledge, assess their understanding as the lesson progresses, or gain their insights into the topic at hand. Alternately, it allows students to work and learn at their own pace and gathers detailed data on their progress using ActivExpression's self-paced mode (See figure 6).

Figure 6. The ActivExpression

A further device is The Promethean ASB-40 ActivSoundBar, a powerful, high-quality sound option for classrooms (See figure 7).

Figure 7. Promethean ASB-40 ActivSound Bar

The interactive feature of the board depends on its type and the material used in its manufacture. The first type of interactive whiteboard is made up of a "solid impact-resistant material" which interacts only with pen (or stylus). The pen sends signals from the whiteboard to the computer. Limiting the input to the pen can be a disadvantage; in case of any malfunctioning of the pen, interaction with the whiteboard would be impossible. The second type of interactive

whiteboards uses "the infra-red scanners" which detect all the movements across the board. A special electronic pen with encoded information is used. This pen allows the scanner to identify the position of the pen on the board and other types of input. This type of boards is the most practical and affordable since it permits to use the traditional whiteboard and not necessarily install a new one. This is why this type of boards is becoming more and more popular among schools. The third type of whiteboard is made up of a "dual membrane and has a soft, flexible surface. It has two layers of resistive material which are touch-sensitive." Interaction takes place by touching the board via any pointing device like a pen or even a finger. This type of whiteboards simulates a natural tendency – using one's finger which is considered the most natural application of the interface. Besides, this type of boards can be used like traditional, ordinary whiteboards which teachers can write on with a simple dry-erase marker. In this way, each teacher can choose to follow interactive or traditional lessons while fully using the interactive whiteboard (Stańczak, 2011, p. 26).

Many researchers, like Walker, 2003; Miller & Glover, 2006; Smith et al., 2006 and many others, assert that IWB is a tool that supports both teaching and learning.

IWB simulates the instruments that are used in traditional classroom teaching – ability to write, draw, and erase. It also provides a variety of functions: highlighting texts, handwriting recognition, capturing and manipulating web content, shading, coloring, and animation where an object can move according to a pre-determined direction , dropping and dragging objects on the board in various directions, hiding and revealing objects on the board and placing them into layers, creating virtual versions of paper flipcharts, using virtual rulers, protractors, compasses and other tools, manipulating the size and direction of objects, and adding a response to objects when a certain command is fulfilled (Glover, Miller, Averis, & Door, 2007). IWB "acts as a

multi-modal portal" which enables teachers to include "still, moving images and sound" when presenting lessons (Somekh et al., 2007, p. 5). With this variety of actions, many learning activities can be implemented: creating digital activities with instructional material such as images, recordings, videos and multimedia, manipulating text and images and saving these modifications, showcasing presentations, websites and other online activities like sending e-mails, getting students to solve exercises that require their interaction, and simulating scientific phenomena and processes. Depending on the software, it provides the option of connecting over the internet to a library of subject specific flash content like a virtual calculator, interactive maps, virtual frog dissector and the like. Many of these libraries are available at the IWB manufacturer's website, so that content can be added on a regular basis, giving teachers more options. Other options of interaction are available depending on the accessories available. To illustrate, students equipped with tablets connected to the board can respond to instructions they receive. If a voting device (ActivExpression) is available, students can pass their opinions creating dynamic interaction with the entire class.

Marzano (2009) investigated the impact of the IWB through eighty five action research studies conducted by teachers in fifty schools across the USA. The control group comprised 1622 students taught in regular classrooms, while the experimental group included 1716 students taught in Promethean ActivClassrooms. The results yielded positive percentile gains in elementary, middle, and high schools, with a significant effect size for elementary and secondary schools without middle schools. Moreover, there were positive percentile gains in language arts, mathematics, science, and social studies, and a significant mean effect in language arts, mathematics, and science but not in social studies. furthermore, Albaaly (2010) pointed out that " meta-analytic findings suggested relatively large percentile gains in student achievement under

four conditions: (1) a teacher has 10 years or more of teaching experience; (2) a teacher has used the technology for two years or more; (3) a teacher uses the technology between 75 and 80 percent of the time in his or her classroom; (4) a teacher has high confidence in his or her ability to use the technology" (p.85).

The Use of IWB in Language Classrooms

Since 1991 when Smart Tech Inc. manufactured the first interactive whiteboard, many empirical studies have been conducted at different milieus with different participants and for various purposes revealing mixed-outcomes as to the usefulness of IWB. Among the purposes of inventing the IWB is in the field of pedagogy. An IWB can be employed "as a tool to enhance teaching and as a tool to support learning" (Smith, Higgins, Wall, & Miller, 2005, p. 92).

Jennifer Lisi (2010) followed a quantitative and qualitative research on the efficiency of the IWB in teaching the French language. She surveyed attitudes and perceptions of teachers of FSL (French as a Second Language) towards the IWB. In her research analysis, she arrived at the conclusion that teachers appreciated IWB mode of enriching FSL instruction as well as learning. She also acknowledged the necessary training that teachers needed to undergo in an attempt to benefit from its optimal potential. On the other hand, teachers had mixed attitudes towards "the push" for technology use in the FSL classroom. IWB is used in the language classroom to enhance interactivity where interaction acts as a focal point in classroom, to influence students' motivation, attention, and engagement, and to attend to their multiple intelligences.

Albaaly (2010) investigated the impact of the IWB on the Egyptian medical school students' ESL essay writing and attitudes towards writing. The study comprised sixty students randomly selected and later divided into control and experimental groups. Results indicated that the IWB had no positive impact on the Egyptian students' attainment in ESL essay writing.

However, the IWB had a positive impact on students' attitudes towards both writing and towards the board itself. The findings regarding students' achievement in writing was contrasted to a study conducted by Martin (2007) in which the use of IWB led to improvement in whole class writing in Scotland.

Swan, Schenker, and Kratcoski (2008) explored if the use of IWBs in English language arts and/or mathematics lessons increased students' scores on state achievement tests. The study included students in the third through eighth grades in a small urban school district in northern Ohio. Findings indicated that the use of IWB significantly increased students' achievements in the fourth and fifth grades and slightly improved students' achievements in other grades.

Lopez (2010) compared the effect of the IWB on performance of students in English Language Learning (ELL) settings and those in traditional settings. She found positive contributions of the IWB on the performance of students in ELL settings.

IWB and interactivity.

The idea of collaboration has been the highlight of many studies that investigated the *interactive* nature of IWB. The interactive use of IWB allows spontaneous and collaborative teaching and learning (Kennewell & Beauchamp, 2007). Thanks to the innovative activities it permits, students can learn together on the board or they can watch and interpret a simulation of a mechanism. To illustrate, students can match words to their corresponding pictures while being coached by the teacher or in collaboration with their peers (Schmid, 2008; Kennewell & Beauchamp, 2007). As to interaction, it is relevant to the technical function of the board – the production of sound when touching a picture, for example. Smith et al. (2005) credit the efficiency of "technical interactivity" of an IWB as the reason that teachers are able to speed up the pace of a lesson (p. 93).

In fact, interaction can be examined on an individual level or collective level within the classroom system. Interactivity on the individual level has its roots in the way learners are ready to interact with the board, to the extent that learners interact with content and engage in their personal learning. It involves many skills that learners use like activating background knowledge, critically thinking, interpreting, analyzing, reasoning and making sense of information and drawing on new strategies for accessing and constructing knowledge following their own pace. On a collective level, interactivity refers to the exchange of knowledge within a group between peers. That is, learners will interact with their peers, in small or large group to work on activities or tasks. In such an interactive atmosphere, students will appreciate the value of discourse and collaboration through shared construction and exchange of information. The role of the teacher would be managing the learning environment and students would be immersed in their learning, inquiring, exploring, and constructing knowledge under the guidance of their teacher (Lim-Fong, 2010). This corroborates with the implications of the social constructivist theory.

Smith, Higgins, Wall and Miller (2005) state that "the uniqueness and the boon of the technology lies in the possibility for an intersection between technical and pedagogic interactivity" (p.99). In other words interactivity with the board, whether individual or collective, does not foster classroom interaction. Here comes the teacher's role in organizing and preparing the content to achieve the intended results where IWB's use is purposeful.

According to Glover and Miller (2007), upon using IWB, teachers progress through three stages of interactivity: supported didactic, interactive stage, enhanced interactivity. At the supported didactic stage, IWB is used as visual support and is not yet used pedagogically. At this stage, most of students' attraction is the result of the "novelty" factor. The second stage, the

interactive stage, is a transitional or can even be called an experimental stage. The teacher uses a variety of stimuli to illustrate, develop, and test discrete concepts. IWB becomes the focal point of the lesson and teachers still show an occasional lack of confidence as they still search for new approaches to pedagogy. At this stage, teachers are more excited and share their experiences with other teachers. The third stage, enhanced interactivity stage, is when the teacher exploits the interactive capacity of the IWB seeking to integrate concepts and cognitive development. IWB is then used to explain processes, prompt discussions, develop hypotheses and the like by varied application. This stage requires advanced skills on the behalf of the teacher like careful lesson preparation including verbal, visual, and kinesthetic activities, the ability to store and edit lessons, and the willingness for pedagogic change. This last stage is the culmination point of using IWB to achieve the greatest impact on the teaching/learning process. Indeed, as Higgins et al. (2007) concludes: teachers are the critical agents in mediating the IWB software and the IWB hardware to promote interactions and interactivity.

Another type of interaction that takes place in the presence of IWB is socio-cognitive interactivity. This type of interaction results from brainstorming of ideas between teacher and students and/or between students and students to co-construct knowledge. Levy (2002) found that when students use IWB to present their own work, it becomes a point of focus for "teacher-student and student-student discussion and feedback" and leaves "more time for interaction between the students and teacher and for task-related activity" (p. 9). A study by BECTA (2007) concluded that with IWB, students can direct their attention and supports participation in "whole-class teaching" (p. 5).

Some researchers claim that teachers need to use appropriate software that enhances student interaction (Armstrong, Barnes, Sutherland, Curran, Mills, & Thompson, 2005). Good

quality IWB software could be a good option for teachers to incorporate interaction into pedagogy. One example is discussed by Thompson & Flecknoe (2003) where a software product called Easyteach Maths was used. This software was designed to bring students to the IWB, more directly involving them in the lesson.

IWB and vocabulary acquisition.

Many researches have studied the impact of IWB on the acquisition of various language skills and sub-skills in EFL classrooms. Their arguments revolve around the potential waste of resources if new technological tools are not incorporated in teaching practices (Dunkel, 1987). At this stage, it is vital to review the literature of using the new technology, IWB, and its impact on various skills.

Language teachers can benefit from the direct access to dictionaries and encyclopedias provided by either websites or software programs. When encountering a problem with a new word, the teacher can immediately display that word with all the forms and sample sentences. Thanks to the audio and visual materials associated with IWB, students can easily understand even abstract concepts. A teacher can display a photo or picture expressing the word. In this case, students get a full picture of the meaning of that word, its use, its related structures and even its etymology. According to a study done by Martin (2007), the majority of students reported that the pictures and the sound help them to understand better.

Chen (2009) investigated vocabulary acquisition in Grade Four elementary class in Taiwan through an experimental research. The vocabulary retention method was based on the comparison between semantic clusters and thematic clusters through explicit instructions via Interactive Whiteboard as a pioneering method since it was the first time IWB was used in such manner, according to Chen. He credited IWB not only for saving time and money in making

instructional material, but also for its interactive nature especially in the acquisition of words. However, when he arrived at the analysis of results, he concluded that IWB's "effectiveness in English teaching cannot be taken for granted and needs more investigation" (p. 63). He explained that "with the IWB, not only the teacher but also the learners seemed to have stuck to the board due to the physical nature of it". Chen seemed to be surprised by this outcome because he did not expect such a result.

IWB and classroom management and students' engagement.

IWB plays a significant role in class management and motivation especially when it is used effectively. The higher the level of engagement is, the better the atmosphere for learning is. Various studies have shown that students who learned with the IWB were more attentive and engaged in learning, participated more actively in the classroom, and interacted much more with their teachers, their peers, and even with the IWB (Smith et al., 2005). Additional studies provided evidence that the IWBs serve as significant motivational tools for students, and facilitate students' desire to remain on-task (Levy, 2002).

As mentioned in the earlier section, the dominant merit of IWB is maintaining dynamic interaction with the entire class without isolating students by encouraging a higher level of student interaction in both teacher-directed and group-based exchanges. This type of student participation leads to an increased state of engagement as well as enhances the students' learning environment (Bryant & Hunton, 2000). Additional studies found that teachers skilled in the use of IWB create knowledge together with students in a dynamic process during the lesson. This dynamic strategy results in developing students' ideas and speculations and engaging them in critical thinking and joint ownership of the knowledge.

Julie Langan-Perez (2013) used the expression "focal point" when describing how IWB fulfills engagement considering that it provided "visual reinforcement to complement instruction" and encouraged students to remain focused and engaged on the task at hand (SMART Technologies, 2010, p. 9).

In his study, Levy (2002) supported "that the quality of students' attention in many IWB-based lessons is generally high" (p. 10). He further explained that student engagement and interest is mainly due to the larger pool of available resources and means to provide enhanced explanation allowing students to have an easier time in comprehending ideas and concepts. He revealed that some teachers expressed that increased attention levels may be credited to "novelty value". On the other hand, Beeland (2002) credited "the visual aspects" of IWB as the main reason for "increased student engagement" (p. 7).

IWB, student-centered class and learning styles.

If technology is to become a "transformative device to enhance learning", then a pedagogical change must occur (Jones, Kervin, & McIntosh, 2011p. 258). In an effort to promote the use of IWBs, Jones et al. proposed "alternatives to teacher-centered styles of delivery…and … expand the opportunities for classroom discourse beyond teacher presentation of facts" (p. 39). IWB offers the opportunity to better match learning to different student learning styles (Glover et al., 2007; Slay, Siebörger, & Hodgkinson-Williams, 2008). These learning styles include the kinesthetic, visual, audio, active, and verbal-social. In the same direction, Bell (2002) pointed out that IWB can provide materials for different learning styles such as tactile, audio, and visual. With the help of the variety of the materials, different types of learners in a classroom can benefit from this technology

Beeland (2002) praised IWB for its potentiality not only in meeting the needs of students with diverse learning styles but also in engaging students in learning. Some students may find a singular mode of communication difficult; therefore, including a variety of multimedia approaches in a lesson can attend to the needs of diverse learners (Somekh et al., 2007, p. 5). To illustrate, a visual and/or a graphic learner can find IWB as highly captivating due to the easy inclusion of graphs, photos, and any other visual material; an auditory learner may benefit from the inclusion of sound in a lesson; and a kinesthetic learner is "able to reinforce learning through exercises involving touch, movement and space" (SMART Technologies, 2006, p. 9)

IWB and instruction.

Numerous studies have shown that the use of IWB improves learning processes specifically that it enables meaningful instruction upon the integration between the teacher's instruction style and the IWBs' potential (Betcher & Lee, 2009). It supports the effective integration of differentiated instruction to attend to students various learning styles and needs. Levy (2002) revealed that using IWB for instruction may "improve learning outcomes and increase learners' motivation". He indicated that it enables teachers to provide "more vivid illustrations and better explanations" (p. 10).

Moreover, Glover and Miller (2001) commended the use of IWB for instructions. They reported that using IWB in providing instructions aided teachers in presenting lessons more efficiently in comparison to presenting lessons without an IWB (p. 262). Glover and Miller (2001) also reported the opinion of the teachers who considered that IWB allowed them for a "more clearly defined structure and planned progression" of lessons (p. 262). In addition, most teachers, in a study conducted by Türel and Johnson (2012), reported that instructional use of IWB aided them with saving time. They concluded that IWB instructional use supported

classroom management, pace and variety. Based on the evidence provided by these studies, it appears that there is a positive relationship between teachers' instructional use of IWBs and the effects on teaching.

IWB and time management.

Technically speaking, IWB presents the feature of timing any activity according to the convenience of the teacher and the nature of the activity. IWB acts as an alarm. In addition, Chapelle (2001) states that if computers are used for language testing, teachers can save more time because computers do all the evaluation and calculation. Although the teacher might spend more time for the preparation of materials before the lessons, time spent during the lesson is used more efficiently by allowing students to ask more questions or practice the language since the materials are ready.

Levy (2002) stated that when the teachers use materials prepared before class, they save time for other teaching activities. With IWBs, teachers can allocate more time for students, focusing on individual problems, extra challenging tasks, and communicative activities because they do not spend a lot of time writing on the board. Normally, when the teacher is writing on the board, he/she is facing the board not the class, so the teacher might not keep control over the class. Using IWB based resources may reduce time spent in writing and leave more time for teaching (Levy, 2002), and materials generated in the classroom can be saved, printed, and reused later (Levy, 2002; Walker, 2002).

In addition, Moss, Jewitt, Levaaic, Armstrong, Cardini, & Castle (2007) point out that the pace of teaching can be increased by bringing in and moving between the texts or materials quickly. When learner characteristics are taken into consideration, it was shown that the pace of

the lesson can be increased and the lesson can be made more challenging with extra materials for students who are quick and good at learning new items,.

Advantages of Using the IWB

While evaluating the benefits of technology in education, many criteria are considered and various perspectives and opinions are consulted especially of those who are directly affected by this new technology: teachers and students. Teachers try to find to what extent this new technology will facilitate the process of teaching, help in providing instructional material and decrease the load work. As to students who are too much indulged in technology, they try to relate their academic performance to such a novelty.

Advantages of IWB to students.

In the literature on the efficiency and validity of IWB, the majority of the reviewed scholarly studies reveal positive attitudes. Several researches have investigated the impact of IWB on students' perception and test scores. These studies have examined aspects such as the technological features of IWB – simulating phenomenon and explaining difficult concepts through interactive and sequential strategies – and how IWB motivates and engages students (Kennewell & Beauchamp, 2007; Smith et. al., 2005). According to Warwick, Mercer, Kershner, & Staarman (2010), IWB creates an environment that encourages dialogue and knowledge building among students. The use of interactive whiteboards creates a learning environ where students analyze, solve problems, share ideas, and work collaboratively (Brabec, Fisher, & Pitler 2004). Magana and Frenkel (2004) considered the IWB as a prominent seedbed for upgrade student achievement. According to them, the primary target of designing the Promethean ActivClassroom was to ensure paramount practices of curriculum and instruction so that educators can transform classrooms meritoriously.

Smith et al. (2005) conveyed students' voice regarding lessons which are explained via IWB. They reported that students found lessons with IWB as overall "more enjoyable and interesting" (p. 96). Schuck and Kearney (2007) stated that students perceived lessons using IWB as "better than" other class work. They related this to the fact that IWB can be perceived as easy to use, visual, interactive, immediate, and matching the students' digital culture.

In Wall et al.'s (2005) study, which was conducted with 80 students at 12 English primary schools, students commented that they felt their teacher was more inventive and active with IWB. The students were highly engaged because the teachers seemed better able to find original ideas or interesting ways to teach the subjects.

Akbaş and Pektas (2011) investigated the effect of IWB on the achievements of university students pertaining to the topic of electricity in a science and technology laboratory class. Findings indicated that students felt more engaged, excited, and enthusiastic during IWB lessons although no significant increase in students' academic achievement was recorded.

In Levy's (2002) study, students maintained that an IWB can "…make learning more enjoyable and interesting" and that they "enjoy IW-based lessons more than other lessons" (p. 10) and that students appeared to have higher interest and were more engaged in IWB lessons. Levy affirmed that when an IWB is used for instruction, it "encourages students to pay more attention" (p. 13). Students reported that they were "more able to focus their attention on IWB-based presentations and explanations" (p. 13). Learning is viewed more favorably by some students with an IWB because "they are more interested, and because teachers' explanations, multimedia resources and the large screen make subjects easier to understand" (p. 14). IWB also allows students to share their own work with their classmates, which Levy (2002) concluded to be "enjoyable" for the students, especially that it is an "effective means of presenting and

discussing personal work" (p. 12). Students also recognized that IWB alleviated the time teachers and students normally would devote to writing during a lesson. They showed their appreciation to the fact that IWB manages time more efficiently. It allowed teachers to use time in the classroom more efficiently "in terms of the ease and speed with which pre-prepared materials can be accessed and presented" (p. 14).

Wallace (2007) described how IWB and its software created a more captivating learning environment for students, who seemed to be attracted to this new technology. The interactive software supported teachers in displaying abstract ideas and concepts in a new-fangled ways which would enhance their understanding (Richardson, 2002; Miller, 2003).

Other studies have investigated the impact of IWB on different learning styles including students with special needs (Zirkle, 2003). Kaya, Akçakın, and Bulut (2013) examined the impact of the IWB on students' achievement in transformational geometry. Findings showed that interactive whiteboards led to gains in student academic achievement during the learning process. The interactive features of the IWB stimulate one or more of the senses, the thing which helps students retain learning longer. Kaya et al.'s study, students were able to understand transformational geometry better due to the visual and distinctive features of IWB.

Other researches include findings that suggest positive impact on student sense of positive identity (Walker, 2003). Upon using IWB, the participants' attitudes towards language learning increased significantly. The researcher revealed that there was a link between students' attitudes towards IWB, its relevance to their course of study and their level of computer literacy, language level and age.

Amolo and Dees (2007) conducted a study on the contributions of the IWB to students' performance in Social Studies and found out that students showed an increase in interacting with content via IWB.

The findings of many researchers revealed that the use of IWB enhances motivation in students to learn, raises their level of concentration, and improves behavior because it is "fun" and innovative (Levy, 2002). Motivation, attention, and behavior represent an overall student attitude in the classroom. However, Slay et al. (2008) cautioned that pedagogic value is of significant importance in maintaining motivational effects. The use of IWB should be purposeful, in subject-specific ways, and should be embedded into teaching and learning.

Students' interaction with IWB influences the effects of the IWB on motivation, attention, and behavior. If students interact with the board themselves, motivation and attention can also be increased. Glover et al. (2007) reported that IWB use in the K-12 sector promoted student interest and higher levels of sustained concentration due to the multimedia aspects of the IWB.

Learning via IWB helps develop autonomous learning by means of developing a sense of self competence (Walker, 2003). In this manner, IWB may serve as a type of alternative to the teacher and as a center of attention contributing to the development of autonomous learning and higher order thinking skills.

IWB seems to have positively influenced students' ability to understand complex concepts, for example, in math and science The multi-faceted technological presentation (that relates to a number of senses – sight, hearing, and sometimes even touch, when the student nears the board) aids students who have difficulty developing mental images of complicated concepts (Kennewell, 2006).

Zittle (2004), in a study in the United States, revealed the positive effect of using IWB on students' achievement. He examined the influence of lessons with the IWB on elementary school students' achievements in geometry. In his quantitative experimental study, significant statistical differences were reported between the groups' achievements; the group that learned with the IWB achieved higher scores than the group who did not learn with it.

Similarly, Dhindsa and Emran (2006) ran an experimental study on college students in chemistry. In this study as well, the group who were taught via IWB performed significantly better.

Similar findings were obtained in a study by Lewin, Somekh, & Stephen (2008). After two years of exposure and interaction with IWB, British elementary school students improved with respect to their achievements in language and math on national tests. Similar data was obtained regarding improved scores on national tests in Australia as well (Lee & Boyle, 2004).

Lewin et al. (2008) reported that IWB became a mediator of interactions among students themselves, between students and the IWB and the teacher and students. The researchers concluded that students felt greater motivation to demonstrate their knowledge in the operation of the various functions of the board. They noted that positive gains were realized in literacy, mathematics, and science for children aged 7-11.

Thompson & Flecknoe (2003) noted significant improvement in academic attainment in math. They reported a 14.1% improvement in attainment in the first term, a 22.1% improvement in the second term, and a 39.4% improvement overall.

Higgins et al (2005) tested the effect of IWB on the achievement of students in 5th and 6th grades in various areas of Australia. The data analysis showed that the use of the IWB contributed primarily to the achievement of students who were weak in the area of language,

particularly in the area of writing. However, the researchers found no significant differences in test scores between schools using IWB and schools not using IWB. Other similar findings by Schuck and Kearney (2007) also reported that little or no difference was found on national test scores in mathematics and science in UK primary schools when comparing IWB and non-IWB classrooms. It seems there are some contradictory findings as to the effect of IWB on achievement.

Regarding the issue of the suitability of IWB to different populations of students, teachers, in the study conducted by Bell (2002), posit that there is an advantage to the use of IWB's in elementary schools, and particularly with students with a learning disability.

Glover el al (2007) summarized the findings of various researches and studies and created a list of the five central skills that students need to be equipped with: (1) information or literacy skills that relate to the ability to gather, edit, analyze, process, and connect information, (2) higher order thinking skills in particular, problem solving, critical thinking, and creative and entrepreneurial thinking, (3) communication, collaboration and cooperation skills, (4) technological skills, and (5) autonomous learning skills.

Some research suggests that the real impact of IWB may lie in the affective domain that focuses on the learners' motivation, attention, emotions, self-concept, self-esteem, and social interaction in the learning environment. This type of learning is important to learning and achievement as it adds a social dimension to learning where students can share knowledge publicly and can learn by making mistakes together (Smith et al., 2006).

BECTA (2007) concluded that students' achievement was directly proportional to the time they are exposed to IWB. The longer the exposure is, the better the achievement (p.3).

Advantages of IWB to teachers.

In addition to the numerous benefits that students have reported, IWB renders specific benefits for teachers. First of all, IWB use in the classroom facilitates the ease of integration of ICT in classroom teaching. It also ensures flexibility as to the use of a wide range of virtual material and web-based resources that can save time. Such content can be applied easily by the teacher and can be further developed and customized to fit the teacher's purpose and lesson objectives. IWB allows teachers to organize and manage information and lesson content more effectively and efficiently. It also has the features of saving and storing the material after any modification for multiple reuses which can be shared with others as well. With such features, teachers reduce the load of preparation they have (Kennewell, Tanner, Jones, & Beauchamp 2008).

In their study, Türel and Johnson (2012) reported that nearly half of the teachers they surveyed "agreed or strongly agreed" that delivery of instruction had been altered due to IWB use. They concluded that "some level of pedagogical change may have occurred due to IWB technologies" (p. 390).

In his article, Higgins (2010) conveyed the perception of teachers towards IWB. The teachers interviewed showed increased positivity towards the impact of interactive whiteboards on their teaching. They were also positive about the training and support that they had received as part of the pilot project. The majority of teachers reported that using the interactive whiteboard had improved their confidence. All of them felt that the interactive whiteboard helped them achieve their teaching aims and cited a number of factors such as "the wealth of resources available, the stimulating nature of the presentation and the flexibility that the technology offers" (p. 90).

In the same direction, coping with and learning about IWB is an asset to teachers. Nowadays, it is an integral part of their professional development especially in this technological era. Armstrong et al. (2005) supported the idea that without professional development in this area, teachers may not know how to or have the skills necessary to use IWBs to their fullest potential (p. 465). Levy (2002) emphasized the relevance of professional development activities which are more in-depth than "basic technical training" (p. 19) on using IWB. That is, teachers receive training that targets pedagogical areas and enhances efficient and effective learning. Levy (2002) continues that teachers "…need opportunities to explore broader pedagogic issues from the outset" in addition to developing skills in IWB operation (p. 19). These two skills need to be explored in parallelism.

Teachers reported the advantages resulting from using IWB to enhance the delivery of instruction. Possible benefits of using an IWB for instruction include "flexibility and versatility, multimedia/multimodal presentation, efficiency, supporting planning and the development of resources, modeling ICT skills, and interactivity and participation in lessons" (Smith et al., 2005, p. 92).

Teaching via IWB also allows teachers to bring various perspectives from the outside world into the classroom through the formation of an authentic and more relevant connection to their students. Teachers have pointed out that they are more inventive, creative, and effective in their explanations when they use IWBs. They also reported that IWB makes it easier to access a wider variety of information and learning sources which can be used flexibly and spontaneously in response to different pedagogical needs (Levy, 2002).

Besides, the use of IWB facilitates teachers' work; it enables the immediate collection and analysis of students' work in ways not previously possible. Teachers in Glover and Miller's

(2001) study also strongly agreed with the idea that the use of IWB makes it possible, effective and easier to review, re-explain, and summarize a topic since the saved or ready examples from the previous lessons and a great variety of other sources make it easier for the teacher to re-present the subject.

As discussed, an interactive pedagogy is an important component if IWB is to be fully exploited for learning and achievement. Technical training should be reinforced by pedagogical one. This dual training should be given enough time and further enhanced and invested by getting teachers practice and develop course materials. Teachers need to experiment with new ideas and to share these ideas with other teachers. Having a collaborative and supportive environment and maintaining IWB culture should help in the transformation to an interactive pedagogy (Glover et al., 2007)

Indeed, Glover et al (2007) also maintained that providing teachers with timely technical support should help in creating IWB culture. Technical support and regular maintenance program help avoid issues encountered with teachers who would feel comfortable to have a reference whenever they face any obstacle. Even well trained and highly motivated teachers would feel frustrated if the equipment doesn't work or breaks down regularly. Besides, students are smart enough to figure out the technical and pedagogic abilities of their teachers especially if teachers are somehow beginners. This results in negative impacts on the educational process altogether.

Many researchers concluded that an interactive school culture is needed in order for IWB to have the greatest positive influence on student learning and achievement. The school culture includes administrators, teachers, staff, students, and parents. The efforts and cooperation among all parties in the school culture can be demonstrated by embracing change and taking on the idea

of transforming teaching and learning through IWB use. To help in creating this culture, teachers need to be given the training and time to explore IWB and its uses. This training should be both technical and pedagogical, and it should be ongoing assisting teachers in transforming teaching through the three stages of interactivity mentioned in the previous section (Glover & Miller, 2004).

With proper training, preparation, and practice time, teachers are more likely to develop confidence in IWB use, which has been shown to affect long-term motivation. Without this level of confidence and pedagogical transformation, an IWB might simply be seen as a technological tool and not a mediating artifact (Glover et al., 2007).

In another direction, IWB may assist in reducing the amount of time teachers devote to planning and delivering lessons (SMART Technologies, 2009, p. 1). Although initially teachers invest time in planning, practicing and developing materials to use with IWB, time spent on lesson preparation should decrease over time as teachers "save, share and re-use lesson materials" (Smith et al., 2005, p. 94). Teachers recognize that time dedicated to preparing IWB lessons is not ill-used, as lessons can be reused and enhanced as needed (Levy, 2002, p. 16). The ability to refine lessons rather than preparing from scratch can allow lessons to be continuously improved and updated. It is not only the lesson as initially prepared by the teacher that is saved, but also any input whether recorded during a lesson and/or written on the screen with the electronic pens can be saved and can be revisited as needed (SMART Technologies, 2009, p. 6). Levy (2002) concluded that teachers "value the practical and educational benefits of saving work that is generated dynamically during classes" (Levy, 2002, p. 9).

From this reviewed scholarly work it can be concluded that the use of IWB is beneficial for language learning as well as for procuring positive student attitudes particularly if IWB

applications were well-designed and used. These findings present the changes and improvements to learning and teaching practices, the challenges to teachers and recommendations for future research.

Drawbacks and Barriers of IWB

Though there are many advantages presented in the literature on IWB use, disadvantages that challenge teachers and students have also been reported. Some researchers and teachers did not find IWB as a promising tool for teaching. Skeptics considered that much of this evidence on the benefits of IWB were either anecdotal or based on case studies making it difficult to generalize.

Lisi (2010), in her review of scholarly work, summarized the factors that render IWB inefficient in some cases. She classified the factors into four categories: teacher's technical knowledge, availability of computer-related technology, financial barriers and acceptance of the technology. Other researchers revealed their findings in areas such as students' achievement.

Many researchers suggest that introducing IWB to classrooms is insufficient. Smith et al. (2005), among others, note that the skills and professional knowledge of the teacher in using IWB and manipulating its features are a major factor. Some teachers try to avoid using this technology as a result of lack of confidence in IWB use and its benefits. This can be explained as a result of their inability to cope with technical issues. If there is no support system for teachers, installing IWBs only places more pressure on teachers (SMART Technologies, 2009, p. 9). Any technological tool can become a source of stress in the absence of professional development and resources (SMART Technologies, 2009, p. 3).

Though training is in most cases provided to teachers at the school by the IWB companies and suppliers, it is limited in time and does not provide any updating on any new

activities, supplies or material. Interviewees in Glover and Miller's study (2007) commented that initial training by IWB companies and suppliers with their "slick presentation and high-quality prepared materials" were successful in "firing" teachers with initial enthusiasm (p. 261). The long-term value of such training, however, remains more questionable, as one teacher interviewed by Walker (2003) put it, "if you don't catch them at the start, provide support and show them how to use learning material, their enthusiasm quickly wanes" (p. 2).

This generates the need for adequate training in order to use IWB to its full potential and to surmount the various difficulties related to the practicalities of IWB use. Levy's study (2002), in which he interviewed teachers and students, revealed that teachers' inexperience in setting up equipment, wiring them, finding features on the board and manipulating these features often cause lesson disruption and waste of time. Some researchers have highlighted the frustration that teachers experience when using IWB and being impeded by their lack of practical and methodological training. IWB use must go beyond the "wow factor" and "teachers must learn to explore the potential of interactivity for enhanced learning" (Beauchamp & Parkinson, 2008, p. 101). Teachers need to be convinced of the value of IWB for pedagogical purposes on one hand and should understand its nature of interactivity. Teachers need to be competent and confident in IWB use to be able to change the way they teach (Beeland, 2002). Since many teachers do not understand how to use the new technologies to their benefit or to the benefit of their students and how to integrate the new means of learning, little benefit is foreseen.

Moreover, teachers may not be motivated to use IWB if it does not serve their purpose or when it adds extra work. An example of teachers' discouragement to use IWB is presented by Levy (2002, p. 16). He exposed the case when teachers had to prepare a lesson in which IWB

was used and another version of the lesson to be delivered without IWB in case IWB was not accessible.

Glover and Miller (2001) concluded that teachers will be able to use IWB to their fullest potential if they have daily access to IWBs in their own classrooms (p. 270). A similar finding is yielded from a case study conducted by Armstrong et al. (2005). They revealed the importance for teachers to have "long-term, sustained engagement with new technologies" before a new technology can be used to "support and enhance students' learning" to the fullest potential (p. 463).

After discussing some of IWB's benefits in the teaching/learning process, Moss, Jewitt, Levaaic, Armstrong, Cardini, and Castle (2007) highlighted some of IWB's pitfalls concluding that its use did neither necessarily lead to improved teaching nor a better learning experience for students. In their study of secondary classrooms equipped with this technology, they observed that IWB attracted learners due to its novelty. However, this attraction to this new device wore off and did not motivate students as it was expected. It turned into any board they were used to. Wood and Ashfield (2008) have also noted that "in many ways, the functionality of the IWB can be viewed as a modern technological version of a traditional blackboard" (p. 94).

In terms of learning patterns, it appears that using IWB increases the amount of time spent on whole-class activities at the expense of time for group work. Besides, it seems that the class turns into more teacher-centered rather than student-centered in case the activities are not interactive (Smith et al., 2006). Moreover, it is also time-consuming to relocate a class to different room just to use an IWB when not all classes are equipped with an IWB.

Financial issues are among the major limitations. The financial barriers that are commonly encountered include the cost of hardware, software, maintenance, and staff

development. First, not all schools can afford IWB nor are they all wired to accommodate the technology (Smith et al., 2005). It is noteworthy that any advanced technology is relatively of high cost. Besides, maintenance is equally costly especially that it is required regularly. Without maintenance, using the IWB can reach to a halt.

In the same direction, Herschbach (1994) argued that new technologies are add-on expenses and will not, in many cases, lower the cost of providing educational services. He stated that such new technologies did not replace the teachers; they supplemented teachers with easy access to virtual material. They intend to aid teachers in their pedagogical mission. In this sense, IWB did not decrease educational costs nor did it increase teacher productivity as the already surveyed literature has proved. Herschbach suggested that the time spent by students and teachers on using IWB should increase to approach the concept of cost-effectiveness.

Other problems result from the numerous difficulties encountered with IWB equipment and electricity issues in classrooms hindering the teaching/learning process. In Lebanon, there is no 24 hour supply of electricity. Without electricity, the board cannot be used. Some schools, mainly private schools, have generators. However, upon electricity cut, the computer needs to re-initiate and some features might be lost. This re-initiating period takes time which is not that available. Teachers also view "technical difficulties and failure in the classroom" to be problematic as they interrupt lessons and "undermine teachers' confidence" (Levy, 2002, p. 16). Thus, teachers need be prepared in case the IWB does not function properly and spend time planning a back-up lesson ending up completing twice the amount of work to deliver one lesson.

Besides, visual problems are reported in different contexts. In one UK school, students reported their difficulty, or even impossibility, to see IWB screen when sunlight was shining directly on it. This implies that positioning of a board within a classroom and providing effective

blinds are of critical importance. In addition, the height at which the board is installed can be an issue especially if young students are to use them since, most often, IWB are permanently fixed. On the other hand, if the board is not installed and is on wheels, every time it is moved, it needs calibration. This is a major inconvenience if this process is repeated every time a student tries to use the board (Tameside, 2003).

Other technical difficulties reported include "projector breakdown and difficulties with IWB system features" which are seen as interruptions to successful IWB use (Levy, 2002, p. 14). Students also acknowledge "poor visibility" due to "inappropriate colors and fonts," poor positioning of the IWB in regard to sunlight and "inexperienced" users of IWBs as obstacles to be overcome in IWB-based lessons (Levy, 2002, p. 14). It can lead to further displeasure when students are not awarded the opportunity to use IWBs themselves (Levy, 2002, p. 15).

Students criticized the fact that there were sometimes technical problems, that it was difficult to see the boards from a distance, and that the teachers were not skilled enough in their use of the IWB (Hall & Higgins, 2005). Teachers may be hesitant to use IWB if they feel that "pedagogical competency" is not accounted for while integrating IWB into the classroom. If teachers lack confidence and ability, perceptions can change, and IWBs can be perceived as just another presentational 'gimmick' (Glover et al., 2005). Both in Levy's (2002) and Glover and Miller's (2001) studies, some other technical problems such as lack of response of the electronic pen, freezing of the screen, and inability to manipulate certain images and symbols are mentioned.

There are, as well, many doubtful questions regarding pedagogical benefits as to what elements in software and what type of hardware will promote different kinds of learning. Many researchers find that developing material is best done by practitioners and educators since they

are in the field. However, few educators are skilled in designing software because its development is time-consuming and costly (Thomas, 2010). In addition, choosing hardware is difficult for educational institutions because of the many choices of systems and equipment that could be used in delivering education as well as the rapid changes in technology.

The currents of change move so quickly that coping with them is not an easy task. Consequently, there is a natural tendency for teachers as well as organizations to resist change. Herschbach (1994) found that teachers tended not to use educational technology applications that required substantially more preparation time and more knowledge about diverse application especially that new applications are released on weekly basis if not on daily basis. Thus, the role of teachers will however continue to diversify as educational use of technology increases. At the same time, teachers need to stay updated, to develop digital instructional content, and to be knowledgeable and skillful in a variety of technological applications in order to meet the demand of their students. Illiteracy today is inflicted on those who do not cope with technological advancement. This is what Snyder (2004) clearly supported and called for:

> This is no time to try and revivify 20th century schools or to push faculty and administrators to deliver 21st century graduates without investing in 21st century technology and the training to master that technology (p. 2).

Thus, the emphasis on professional development in this technological era is an integral part in any expected advancement in the learning process.

The literature of IWB does not focus on what is used as much as on how it is used. Again, research has emphasized that teachers are not going to be replaced by computers, but they, computers, offer new opportunities for better language practice. Teachers can combine technology and their teaching skills and materials in a way to achieve maximum possible benefit educational wise. This is referred to as a “hybrid approach” – an expression coined by Myers,

Saunders and Rogers (2002). That is, by incorporating technology with teacher's methodology, students receive student-centered learning as well as teacher-centered learning.

Many of the researchers who praised the novelty and innovativeness of IWB were later shocked by what they encountered. To illustrate, Chen (2009), contrary to his expectations, did not find IWB as efficient as expected. He concluded that

> "with the IWB, not only the teacher but also the learners seemed to have stuck to the board due to the physical nature of it… its effectiveness in English teaching cannot be taken for granted and needs more investigation" (p. 63).

Crook (1994) commented on teachers' attempt to assimilate the use of new technologies to their pre-established teaching styles considering that "this inertia is unfortunate in that it reflects a failure to seize new opportunities" (p.13). Using an IWB as a blackboard replacement may have an initial beneficial effect, but the research to date has shown limited long-term benefit. Incorporating an IWB into existing pedagogy will not transform learning; it will only change how learning takes place. Without transforming learning, long term achievement gains are less likely to be realized.

Although the IWB can simulate certain contextual experiences especially in scientific subjects, authentic experiences cannot be replaced and many curricular objectives that teachers are required to cover cannot be achieved. "Virtual learning" (Armstrong et al., 2005), for example, could not replace real hands-on learning in the case study of a teacher who had her students use software to learn science. Students were required to investigate an ecological system and understand the characteristics of fish and their relationship to surviving in its habitat. Students interpreted the activity as a superficial game (Armstrong, et al., 2005). This means that virtual learning did not yield any significant understanding of the phenomena under consideration.

Despite the many researches praising the positive effects of IWB, many questions remain as to whether these effects are simply related to the novelty factor (Glover et al., 2005, 2007). Many of the studies were not longitudinal and were done shortly after the IWB has been introduced to the school. Therefore, the novelty factor could have been a strong influence. Glover et al. (2007) noted that, "It is only when basic technological fluency and pedagogic understanding have been achieved that teachers can overcome the novelty factor" (p. 17).

Interaction is a significant factor in sustaining student motivation and interest and is a signal that learning is taking place (Glover et al., 2005; Higgins et al., 2007; Smith et al., 2005). However, IWB is not always used interactively and can reinforce teacher-centered instruction on one hand. Teachers consider IWB's placement in front of the class while interacting with the multimedia content as an advantage to them and thus, rendering the class teacher-centered. For some teachers, interactivity is just not as important as the display of course content in multimedia modes. Armstrong et al. (2005) comment that IWB has limited impact when teachers do not realize that interactivity also requires a new approach to pedagogy.

The tactile nature of the IWB calls for interaction, yet this interaction is, in many cases, limited to teachers. Schuck & Kearney (2007) reported that many teachers had a tendency to dominate the IWB lesson without inviting students to interact with the board themselves. In their study, the surveyed primary teachers reported that students and teachers should be interacting with the IWB; however, teachers did not always follow this approach. They found that the IWB worked best when used interactively, especially when students interacted with the board themselves.

On the other hand, IWB can easily be used as a blackboard replacement. Slay et al. (2008) reinforced the idea that IWB is sometimes used in traditional ways where its value can be

attributed simply to the use of a data projector and computer.

Higgins, (2010) maintained that the initial impact on tested attainment was positive, but small. However, in the long run, there was no sustained improvement in test scores once "the technology was embedded in the classrooms" (p. 98) of the schools where it had been introduced.

Levy (2002) cautioned that the IWB is not to be mistaken to be "a guaranteed cure for boredom" (p. 15) either. He considered that an overextended presentation is still an overextended presentation, with or without an IWB as the medium for delivery. Although an IWB can help students understand lesson objectives, it can also become a boundary to understanding because "traditional media – or techniques – are sometimes more straightforward" (p. 15).

This contradiction in findings regarding students' achievement is due to the fact that there are no absolute properties of an IWB that would allow one to predict the effects they have on learning (Armstrong et al., 2005). In fact, it is not clear as to how IWB use might affect learning outcomes or concept development (Schuck & Kearney, 2007). (Glover et al., 2007) maintained that the use of IWBs alone cannot lead to enhanced learning. The teacher, not the technology, is still the most important element in student learning. Besides, many studies were done in schools where IWB was a new addition to the classroom. A key factor to keep in mind is that IWB is an intercessor artifact.

PowerPoint Presentation

PowerPoint is a software package created by Microsoft. Users create a presentation with a series of slides. It is easy to import documents from other types of software such as Microsoft Word and import it into PowerPoint. Presentations are created in a series of PowerPoint slides, using available templates or starting from a blank page. Users can import audio, video, graphics

and text into PowerPoint to make interesting and dynamic presentations. PowerPoint was initially used by business executives and sales people who used it to give reports at meetings and presentations to clients. Later, it has been frequently used in education due to its ability to demonstrate and clarify information (Oommen, 2012). Today, PowerPoint presentation is a conventional lecture aid in higher education and is recurrently used to visually present the main points of classroom lectures. Accordingly, it becomes a popular way of presenting information to audiences of all kinds and a standard for academic presentations (Axtell, Maddux, & Aberasturi, 2008) because it becomes widely available and cost effective (Newby, Stepich, Lehman, & Russell, 2000).

The platform for running PowerPoint can either be an IBM compatible PC or an Apple Macintosh. PowerPoint software is versatile. It can run on both laptop and desktop computers and can be displayed via three ways: (1) a regular computer monitor; (2) an ordinary television set; (3) a special projector. The regular computer monitor suits individual work. One student can view a presentation to practice or revise material at his or her own pace. The television set is more appropriate for a whole class since it provides a clear vision for all the students especially if the screen is big enough. The teacher can move the presentation slides from somehow far distance or let one of the students change them by using a cordless mouse or a remote control. However, plugging the computer into the set is not always an easy task. The teacher has to be sure that the computer has the type of output compatible with the TV. The projector can be considered the best for displaying a PowerPoint presentation for large number of audience since it offers a clearer and more accurate vision especially if the room light is adequately dim and a screen rather than a blank wall is used for projection.

When creating a presentation, users design a slide that they will generally present to an

audience or print as a handout or manual. To present a PowerPoint document, users often use a projector and screen rather than show the presentation on a desktop or laptop. Users can also write notes underneath the slide to draw upon as reminder points during the presentation. The audience cannot see the notes on the screen. Users can animate the screen, setting it up so that portions of the slide appear on the screen at timed intervals. Animation can be useful if the user has an abundance of information on the screen and wants to avoid a cluttered effect. Users can time parts of the screen to disappear from view at certain intervals as well (Ayers, 2012.).

There are primarily two types of mode in PPT discourse: audio mode and visual mode. Audio mode includes music or sound; visual mode includes bullet points, images, graphs and color and it is of three types. The first one is verbal mode. The second one is the combination of the mode of image and the mode of language. The third one is the mode of image (Zhuanglin, 2007).

Advantages of PowerPoint Presentations

There are several advantages of using PowerPoint in classrooms in case the presentation is devised and delivered properly. Pratt (2003) stated seven rules for obtaining an effective PowerPoint presentation: (1) PowerPoint shouldn't be used as a mere channel of information delivery, but rather a medium for mutual open communication with learners; (2) there should be a balance between slideshow and audience engagement and discussion; (3) bulleted phrases or words on each slide should abide by the "triple-seven" rule which states that each bulleted slide should comprise a maximum of seven lines with not more than seven bullets and not more than seven words per bullet. This is because "comprehension of messages increases significantly with decreased information load" (p.23); (4) non-bulleted slides shouldn't exceed three lines with a maximum of seven words per line unless they show long, direct quotes and complex formulas,

and in case they involve images, charts and/or data, these should be simple and precise; (5) it is advisable to use a large lettering on a flip chart besides the slideshow if the audience is less than 20; (6) display bulleted items in each slide consecutively instead of displaying the whole slide at once with a click; and (7) the presenter should try his/her best to be different in a way or another from the standard. Accordingly, a presenter should interact with the audience at the cognitive and emotional levels rather than merely dictate content in words, graphics, or images. As Mahin (2004) pointed out, "the bulk of a presentation comes not from the slides but from the depth and breadth of the presenter's extemporaneous discussion of the topic during the presentation" (p.220)

One of the advantages of a well-designed PowerPoint presentation is that it can be used for instruction and testing by teachers and for practice, drilling, games, reviewing, and tests by students (Fisher, 2003a) if the language learning tasks are contextual (Towndrow & Vallance, 2004). At the instructional level, prior research found out that PowerPoint presentations allowed instructors to offer illuminating feedback and to devise assignments that required students to perform in a critical or creative way. They also enhance the instructor's credibility (Atkins-Syre, Hopkins, Mohundro, and Syre, 1998) and performance (Susskind, 2008), makes the instruction more organized, interesting, and enjoyable (Susskind, 2008), and saves time (Daniels, 1999; Mantei, 2000). Besides, instructors can save lessons, use them again, and modify them if necessary. As to the learning level, a well-planned PowerPoint presentation elucidates areas of misunderstanding and difficulty to students in a logical and uncluttered way which improves students' performance and motivates students to learn (Babb & Ross, 2009; Savoy, 2009; Savoy, Proctor, & Salvendy, 2009; Nouri & Shahid, 2008; Susskind, 2008; Harrison, 2006). In fact, it enables learners to be involved in authentic language experience. When the PowerPoint is used

in a stress free classroom environment, it facilitates the practice and integration of the four language skills. In addition, A PowerPoint presentation can be used to explain new ideas and concepts to students, structure the content and processing of a lesson (Mason & Hlynka, 1998), and aide note-taking (Cook, 1998). The layout of designing a title and bullet points on a PowerPoint slide allows learners to detect main ideas and their supporting details and, accordingly, acquire an organized way of thinking Moreover, a PowerPoint presentation enhances the value of idea presentation, clarifies intricate material, and helps learners to pay attention and recall much of what is displayed on the slides (Gaskins, 1984; Roblyer, 2003). This is verified by Paivio's dual coding theory of memory and cognition (Paivio, 1986). In light of this theory, learning occurs as follows: information collected from external sources by senses selects sensory registers to transform into particular forms which are then coded in short-term memory. This new information in the short-term memory integrates with the information in the long-term memory and carries a new meaning which is re-coded and stored in the long-term memory (Tay, 2004 cited in Selimoglu & Arsoy, 2009). According to dual coding theory, imagery and verbal systems are two subsystems of information processing. Akkoyunlu & Yılmaz (2005) cited in Selimoglu and Arsoy (2009) pinpointed that what facilitates transmitting the information from sensory registers to the short term memory is attractiveness of the information which can be intensified by imagery systems. Memory has a distinctive configuration that synchronously code the linguistic (written and verbal) forms and non-verbal objects and events. Aldag (2005) cited in Selimoglu and Arsoy (2009) commented that the language perceptions are coded on the verbal system and affect it, and non-verbal perceptions are coded on the imagery system and affect it. If the information perceived by senses is coded in the two aforementioned systems, remembering it becomes much easier than when it is coded in only one of these

systems. (Akkoyunlu & Yılmaz, 2005 cited in Selimoglu, & Arsoy, 2009). This is illustrated by a lot of research work pertaining to the Dual Coding Theory which prove that effective learning occurs when information is perceived verbally and visually. During a PowerPoint presentation, the words or the concepts that should be learned are also visually displayed. This activates the student's verbal system as well as the visual which increases the attractiveness of the information and, consequently, leads to effective learning. (Levasseur & Sawyer, 2006; Rose, 2001). Mayer and Anderson (1991) found out that students performed better when they learned words-with-picture through PowerPoint presentations due to the link between imagery and verbal representations. Clark and Paivio (1991) pointed out that PowerPoint presentations outline ideas and topics along with images, pictures, graphics, colors, and/or animation, the thing which enables students to "use a mental image of that outline to study, to retrieve the information on a test, to organize their answer for an essay question, and to perform other educational tasks" (p. 176). Roblyer (2003) indicated that efficacious use of PowerPoint presentation enables learners to focus and recall much of what they see on these slideshows (p. 179). Moreover, Fisher (2003b) found out that students scored better in tests with PowerPoint instruction as opposed to conventional lectures.

Another significant contribution of PowerPoint presentations is that they foster direct interaction between instructors and learners as opposed to traditional teaching (Lanius, 2004). Such features make PowerPoint presentations appeal to learners' diverse learning styles.

A key advantage of PowerPoint presentation is its ability to present content in a variety of presentation modes such as visual, aural and kinesthetic modes and, as a consequence, appeal to students' diverse learning styles (Birch, 2006; Sankey & St Hill, 2005; Solvie & Kloek, 2007) by using multimedia materials such as audio and video content, color, animation, interactive

diagrams, embedded links to useful websites and hyperlinked examples and activities. Along the same line, Miltenoff and Rogers (2003) hinted at the distinctive role that PowerPoint can play as a multimedia and interactive tool. This is because a PowerPoint presentation can provide learners with pictures, animations, graphics, music, etc…, the thing that raises the quality of the presentation and deepens the learning experience. Such enriched learning environment supports student retention of ideas and concepts (Mason & Hlynka, 1998), enhances student's attention (Mayer & Anderson, 1992; Mousavi, Low, & Sweller, 1995), and enables ESL students comprehend content in a better way. Power Point presentations can improve the efficiency of English language classroom instruction (Oomenn, 2012), promote a clear and concise organization of thoughts, and grab audience attention by triggering the five senses (Yaworski, 2001). Hanna and Remington (1996) verified that the effective use of color in a PowerPoint presentation can support memory representation. Color is actually encoded as a verbal representation and perceived as a visual image (Allen, 1990). When concepts and ideas are spotlighted in different colors, students become more attentive (Dwyer & Lamberski, 1982). The multimodal feature of a PowerPoint presentation allows for an engaging and interactive learning environment that boosts student learning outcomes (Sankey & St Hill, 2005; Capobianco & Lehman, 2004; Zywno, 2003), improves the performance of low achievers (Chen & Fu, 2003; Fletcher & Tobias, 2005; Moreno & Mayer, 2007), creates interesting and motivating learning environs, and lifts students' attitudes towards learning (Catherina, 2006; Fisher, 2003a)

Shortcomings of PowerPoint Presentations

Although many researchers verified the efficacy of PowerPoint presentations in education, some of them hinted at certain drawbacks and challenges that a presenter may

encounter. Foremost criticism was stated by Tufte (2003) in an article entitled "PowerPoint is Evil". Tufte considered that PowerPoint slides assist presenters in organizing their thoughts, but a series of PowerPoint features diminish content comprehension. According to him, tables and charts may be misrepresented or their demonstration may be obscured due to the low resolution of some computers. Also, the bulleted layout of ideas and thoughts in PowerPoint slides may limit students' creativity and critical thinking, for students will be oriented to think about the targeted content in the same way it is presented to them. McFedries (2004) highlighted a similar shortcoming of PowerPoint when he stated that listing ideas in bulleted format encourages students to think from a narrow perspective and oversimplifies complicated concepts if the PowerPoint presentation is misused or overused. Also, Reinhardt (1999) pointed out that students usually rely on the outline provided to them and no more take notes using their own words. In addition, presenters who are not proficient in devising PowerPoint presentations may choose inappropriate templates and badly design charts, graphs, or ideas; they may stuff a lot of information in the same slide and/or use a lot of flamboyant colors and much animation on each slide. Such PowerPoint presentations may cause distraction to students and, accordingly, hinder their understanding of the content. This corroborates with Miltenoff's (2003) remarks on PowerPoint presentations, for he considered that the PowerPoint feature of presenting loads of information by just a click of a mouse leads some presenters to display a heap of information to the audience in little time, the thing which poses much difficulty for students to comprehend or recall the displayed content. Along the same line, McDonald (2004) contended that a major shortcoming of PowerPoint presentation is when the instructor gives priority to graphics, animations, and sound effects at the expense of course content, classroom discussion, or active communication. Voss (2004), in his turn, considered that many instructors stay beside the

computer and look at the screen all the time to be able to move from one slide to another, and others sometimes get busy with the technical parts of the presentation rather than with the displayed information. This causes students to feel ignored and restricts any kind of interaction between the instructor and students. This concurs with what Reinhardt (1999) stated that during a PowerPoint presentation students become "spectators rather than participants, in a classroom where the professor 'orchestrates' a multimedia presentation" (p.49). In the same vein, Pratt (2003) warned about four issues when using PowerPoint:

- "Difficulty in getting the machine started…
- Possibility of experiencing machine failure during presentations
- Likelihood of having unreadable slides
- Risk of using distracting slides" (*pr reporter*, 1998 cited in Pratt, 2003, p.21)

A further disadvantage of using PowerPoint in classrooms is the dim light needed to attain clear and resolute projection since it may induce students to feel asleep and slumber (Reinhardt, 1999). Tufte (2003) reached a conclusion that PowerPoint is more a valuable tool for presenters rather than for students.

The Use of PowerPoint Presentations in Education

Many research studies have been carried out to explore the use of the Power Point Presentation in the classroom and its impact on the performance of students in various school subjects. Also, numerous researchers studied the attitudes of the students as well as those of the teachers towards the use of the Power Point Presentation as an instructional and learning tool.

Gatlin-Watts et al. (1999) referred to a study made in the Institute for Operations Research and the Management Sciences Proceedings. The results of the study showed that eighty percent of the students surveyed stated that employing the PowerPoint in the class enriched the

course. They further revealed that eighty two percent of the students who responded expressed their preference to take a course that employs the PowerPoint rather than a course without the PowerPoint.

Reinhardt (1999), an associate professor of psychology at the University of Wisconsin-Rock County, in Janesville, realized both benefits and drawbacks for using the power point as a supportive instructional aide. While she was giving the "Introductory psychology" course, she decided to deliver the lectures using PowerPoint Presentations. At the end of the course, she asked her students about the extent of effectiveness of the PPTs. On one hand, the vast majority of her students (over 80 percent) reported that the PowerPoint Presentations were consistent with the content of the lectures, facilitated the comprehension of the course content, made the ideas of the lectures more organized, simplified the act of taking notes, prevented them from being distracted from the content of the lectures, and contributed in clarifying the information. A smaller majority of the students (60 to 79 percent) found that the PowerPoint Presentations enabled them to remember the key ideas of the lectures, to be more involved in the lectures, and to pay more attention. On the other hand, the professor found out that making the PowerPoint Presentations available may induce the students to view them as a substitute for taking notes or even for attending class; another drawback of using the PowerPoint Presentation is that students feel asleep when the room is darkened to display the images; moreover, the participants were not invited to share in any active activities, but they were able to receive information properly due to the organization and clarity of the bulleted slides.

Apperson, Laws and Scepansky (2006) studied the effect of the PowerPoint on the students' classroom experience. Research evidence revealed that students appreciated the organization and eagerness created by the PowerPoint supported classrooms albeit the fact that

there were no significant differences in grades after employing the PowerPoint in the classrooms. Away from the technological issue, the students noted that the instructors in PowerPoint enhanced classrooms showed more concern and assistance such as giving useful feedback in a timely manner and creating assignments that involve deep and sound thought.

Loisel and Galer (2004) carried out a study to investigate the value of the PowerPoint Presentation when used by the students in a computer- assisted English course, E314L. At the beginning of the course, the students were asked to prepare presentations using a certain form of technology. Fifteen out of sixteen students chose to use the Power Point Presentation. The remaining student selected the dreamweaver as a method of presentation. After delivering their presentations, the students were polled over their experiences with the PowerPoint. The results of the poll demonstrated that students with no previous idea about the PowerPoint found it easy to learn and practical in functioning. For instance, students could move backwards and forth with in the presentation easily whenever they were asked to repeat or clarify a certain idea. In addition, the PowerPoint presentation can yield to a better comprehension of its content because the information discussed orally by the presenter or lecturer is accompanied by a visual representation on a projector screen. Also, three-fourths of the students stressed its ability to engage them in the material covered although some preferred the dreamweaver. Some students, in fact, hinted at the uniformity of the presentations, the thing that caused monotony. However, a student justified that by drawing the attention to the fact that all the students were somehow similar because they dealt with similar assignments and presented similar ideas. All in all, the results of the study proved that the PowerPoint Presentation was an effective pedagogical tool although the subjects of the study would rather ask for an alternative median to view information. Nevertheless, they considered the PowerPoint Presentation the preferred mode of

presentation in comparison to other modes (lecture, dreamweaver) because it actively kept them in contact with the presenter.

In their article "Iranian EFL learners' attitudes towards the use of computer-mediated PowerPoint presentations", Tabatabaei and Bandari (2012) examined the attitudes of sixty MA freshmen TEFL students towards the effect of PowerPoint presentations on their behaviors and their evaluations of the efficiency of their instructor's performance in the PowerPoint classes in comparison with the traditional ones. Two sets of questionnaires and 10 sessions of class observation were used to collect data. Data analysis revealed that PowerPoint presentation had positive effect on the learners' class discussions and weblog usage, but it did not improve the students' class attendance and note taking. The learners rated their instructor's performance above average in the traditional classes, while they evaluated the teacher in the PowerPoint class average. The researchers concluded that using PowerPoint in classrooms has its advantages and disadvantages. However, the findings of this study are limited to how the participants perceived their experience with PowerPoint instruction.

Axtel, Maddux, & Aberasturi (2008) examined whether there was a significant difference in student recall of information or in student verbal interaction after three modes of lecture presentation: lectures using PowerPoint versus the same lectures presented in two conventional lecture formats (lecture with overhead transparencies and lecture without visual presentation aid). Students' retention of the lecture content was measured by a multiple-choice quiz. Findings of the data analysis showed that lectures presented by PowerPoint slides were more effective in terms of student retention than the other two formats: lecture with overhead transparencies or lecture without visual aids. However, there was no difference in student duration or frequency of interaction between the modes of lecture presentation.

Lavin, Korte, & Davies (2011) investigated the use of technology in business courses at a mid-sized Midwestern university. Data were collected by means of a survey administered to the participants. The findings indicated that the use of technology positively affected students' perceptions of the instructor and their behavior in courses where technology is not usually used. On the other hand, removing technology from courses that already used it didn't affect any aspects of student behavior, and some aspects of student behavior - the amount of time that students study, the quantity of notes they take, their attendance, and their interaction with the instructor - were technology neutral. However, technology had a positive effect on student preparation for class, attentiveness, quality of notes taken, student participation in class, student learning, desire to take additional classes from the instructor or in the subject matter, and the overall evaluation of the course and the instructor.

Corbeil (2013) explored the effectiveness of using PowerPoint presentations in teaching grammatical structures as opposed to that of using a textbook and blackboard. Corbeil, also, studied the relationship between students' perceptions of the efficacy of these presentations and their actual learning outcomes. Instructors of the experimental group explained and gave examples on grammatical rules via PowerPoint presentations, while instructors of the control group explicated and illustrated the same grammatical rules by referring to a textbook and traditional blackboard. Data were collected from a pre-posttest and another delayed posttest administered to both groups. Moreover, to determine the students' perceptions of the efficacy of using PowerPoint presentations and the textbook in helping to attract their attention and improve their learning, students completed open-ended questionnaires. The results revealed that PowerPoint presentations were equally effective to textbook and blackboard presentations. In addition, students expressed their preference for PowerPoint presentations over the textbook

presentations and reported that they were more attentive due to highlighting, color coding, use of different fonts, and visual effects used in the PowerPoint presentations. They also stated that PowerPoint presentations enabled instructors to manage the classroom in a better way, to move around, and to interact with students more.

Oommen (2012) in "Teaching English as a global language in smart classrooms with PowerPoint presentation" reported the results of a research study carried out at Jazan University in Saudi Arabia. The purpose of the study was to examine the perceptions of 50 learners enrolled in a Preparatory Year English Program with respect to PowerPoint presentations used in English classroom instruction for enhancement and integration of four language skills and pertaining to the effective use of PowerPoint presentation as an instructional technique in smart classroom settings. A questionnaire survey was used in data collection. The results showed that learners preferred the use of PowerPoint Presentations as a mode of lecture delivery over traditional methods, and they had positive attitudes towards PowerPoint presentations and towards lecturers who used them in their instruction.

On the other hand, Tufte (2003) in "The Cognitive Style of PowerPoint," considered that the PowerPoint deprives the presentation from its analytical quality. He explained that the low resolution of the PowerPoint can dilute information. In other words, the limited number of words in a slide results in either shortage of information or a great amount of slides in a single presentation. Turkle (2004) commented on that by saying that a professional teacher can produce a highly effective presentation that complements his/her lecture regardless of the number of words per a slide or the quantity of slides in the whole presentation. Indeed, a skilled teacher is the one who demonstrates a proper mélange of ideas, images, and animation in the Power Point Presentation to back up his/her lecture in an efficient way. Therefore, Tufte was

imprecise in his critique, for he evaluated the slides themselves away from the whole presentation. In other words, he ignored the effect of the human contact of the lecturer with the audience. It is worth mentioning also that the PowerPoint should be viewed as an instructional aide and not as a replacement of the presenter.

Willerton's "The Point of PowerPoint in SophLit" experiment explored the efficacy of PowerPoint when used for pre-reading preparation at Abilene Christian University in 1999. The experiment took a whole semester and was conducted in four different Sophomore Literature classes taught by two different professors. Each professor had one PowerPoint class and one non-PowerPoint class. The professors gave a PowerPoint presentation at the end of each PowerPoint class which provided students with background information about the previous night's reading. Two quizzes that measured comprehension and satisfaction were given to the participants in the following class period. After analyzing the collected data, one professor reported that her PowerPoint class gained more satisfaction and preformed higher than her non-PowerPoint class. In contrast, the other professor reported that her non-PowerPoint class was in fact more satisfied with the presentation of the material than the PowerPoint class. As to the performance, it was the same in both classes (Anderson, Barnard, & Willerton, 1999).

"The Point of PowerPoint in SophLit" experiment rejected Willerton's hypothesis that PowerPoint is a valuable instructional tool when used for pre-reading preparation in the classroom. However, such findings were affected by many experimentation flaws with respect to the sample groups, the experiment environment, and the method of experimentation (Loisel & Galer, 2004). Regarding the sample groups, the participants were selected from only two English classes, and accordingly, such a selection can't be considered a truly random sample which represented the majority of the college student population. Concerning the experiment

environment, some extraneous variables existed between the two sample classes such as "the effects of time of day, the content of the classes, and the mind-set of each course", and they were ignored by the researcher when analyzing the data. As to the method of experimentation, it "was filled with flaws such as the facts that PowerPoint was not used to its full potential, the quizzes were not evenly administered, and the questions in the satisfaction quizzes were unfair to the non-PowerPoint classes" (Loisel & Galer, 2004, p.4).

CHAPTER 3: METHODOLOGY

This current chapter presents the research methodology utilized in the current study which includes: (1) the participants in the study, (2) the research design, (3) the research setting, (4) the instrumentation, (5) the materials, (6) the data collection procedure and analysis of data reported.

Participants

Public schools in Lebanon are mainly classified into three types: elementary public schools, which include cycles one and two (Kindergarten one till grade six); intermediate public schools, which include cycle three (Grade seven till grade nine); and secondary public schools, which include cycle four (Grade 10 till grade 12). Indeed, the second secondary classes are divided into two branches: The Scientific branch and the Literary branch, Also, the third year of the secondary class is divided into four branches: The General Sciences class, The Life Sciences class, The Socio-Economics class, and The Humanities class. It is significant to note that all the students in Lebanon have to sit for two official exams, the first is at the end of grade nine and the second is at the end of grade 12. Students who pass the official exam in grade nine will be promoted to the first secondary class. Thus, the first secondary class is considered a transitional class in which the students shift from cycle three or the intermediate classes to cycle four or the secondary classes. Moreover, students who pass the official exam in grade twelve will graduate and can seek university studies. The subjects of the present study are 134 Lebanese EFL students enrolled in second secondary classes, literary sections, at secondary public schools in Beirut. Indeed, the researcher intentionally utilized this sampling of Lebanese EFL students to participate in the study for valid reasons. In fact, students in the first secondary class were not a suitable sample for the study since it was their first year in cycle four and, as previously

mentioned, they were passing through a transitional stage from the intermediate classes to the secondary ones. Hence, many factors or extraneous variables might have interfered in the results of the current study. Likewise, students in the third secondary classes were inappropriate for sharing in any experimental study because their syllabus was stuffed and they finished the academic year before school students in other classes in order to have adequate reading period to study for the official exams. In fact, second secondary students in the literary section, rather than in the scientific section, were selected on purpose to participate in the present research study because the number of English periods in the literary section at secondary public schools is six periods per week, which is double the number of the English periods in the scientific section (three periods per week). This provided more space of time for conducting the experimental study. More importantly, the writing skill is more emphasized in literary sections and gets an integral part in the English syllabus and the grading system. Therefore, the second secondary students in literary sections were regarded as the most proper to be participants in this research study. The native language of the participants is Arabic with English as a first foreign language. They are males and females, and their ages range between 17 and 19 years old. It is worth mentioning that there are only 10 secondary public schools in Beirut that teach English as a first foreign language. Accordingly, three secondary public schools were assigned randomly from the ten. Afterwards, six secondary classes were assigned randomly from the three selected secondary public schools that exist in Beirut, and then three control classes and three experimental ones were assigned randomly out of these six. Accordingly, the total number of students in the control and experimental classes was 160 students. However, the researcher administered a demographic questionnaire on all the students before carrying out the experiment to avoid the interference of any external factor in the findings of the present study.

Demographic Information of Students in the Study

The researcher administered a demographic questionnaire (Appendix A) to all the students (n= 160) in both, the control and experimental groups. The purpose of the questionnaire was to examine whether all the students had similar language background and to check if there was any external factor that might interfere in the study and affect its findings. The questionnaire comprised fourteen items. For every item statistically analyzed, the frequency and percentage were computed followed by an interpretation of the findings. The first question inquired about the gender of the students. The remaining questions examined if students practiced the English language or received any language input outside their schools.

Demographic information of students in control classes. A total of eighty one students in control classes responded to the demographic questionnaire administered before conducting the experiment. Table 1 shows the frequency, percentage, mean, and standard deviation of the demographic data of all the students in control classes. As indicated in table 1, 37 students are males (45.7%) and 44 ones are females (54.3%), and all of them (n=81) are not native speakers of English and haven't lived in any country where English is the formal spoken language; thus questions 3a and 3b are excluded. 65 students out of 81 (80.2%), haven't studied in schools where the English teacher was a native speaker of English. Three students (3.7%) out of the remaining 15 students who studied in such a school were in grades eight and nine; two students (2.5%) were in grades one, two, and three and the same number of students were in grades seven and eight; and only one student (1.2%) was in grade10; one student was in grade two; one student was in grade eight; one student was in grade nine; one student was in grades six and seven; one student was in grades nine and 10; one student was in grades two, three, four, five, and six; one student was in grades K-6; and finally one student was in grades one till seven.

Hence, four student have studied in schools where the English teacher was a native speaker of English for 1 year; six students have studied in such a school for 2 years; two students have studied for 3 years; one student has studied for 4 years; one student has studied for 5 years; one student has studied for 8 years; and one student has studied in such a school for 10 years. Most students, 73 ones out of 81 (90.1%) don't have one or more of their family members native speakers of English. Four students of the remaining eight (4.9%) have cousins as native speakers of English; one student (1.2%) has four family members as native speakers of English (grandma, grandpa, uncle, and cousin); one (1.2%) student has a sister-in-law as a native speaker of English; one (1.2%) student has an uncle as a native speaker of English; and another one (1.2%) has an uncle's wife as a native speaker of English. All the eight students (9.9 %) communicate with their relatives in English. None of the students uses English formally outside the school and is enrolled in any program or has a tutor that teaches the English language; thus questions six, seven, and eight are excluded. 35 students (43.2%) sometimes do English writing activities, games, or exercises via an educational website; 21 students (25.9%) rarely do; 18 students (22.2%) never do; four students (4.9%) usually do; and three ones (3.7%) always do. Finally, none of the students uses any CDs to develop his or her English writing skill.

In light of the aforementioned data analysis, researcher noticed that some students have studied in private schools for three years or more, communicate in English with one or more family members who are native speakers of English, and / or always or usually do English writing activities, games, or exercises via an educational website at the same time. So, she excluded these students from the present research study. As a result of the above data analysis of demographic details of students in control classes, the researcher excluded 12 students from the study. Accordingly, 69 students in control classes participated in the current study.

Table 1

Demographic Information of Students in Control Classes

		F	%	*M*	*SD*
Q1	Male	37	45.7	-	-
	Female	44	54.3		
Q2	No	81	100	.00	.000
	Yes	0	0		
Q3	No	81	100	.00	.000
	Yes	0	0		
Q4	No	66	81.5	.19	.391
	Yes	15	18.5		
Q4a	None	65	80.2	-	-
	1,2,3	2	2.5		
	10	1	1.2		
	2	1	1.2		
	2,3,4,5,6	1	1.2		
	6,7	1	1.2		
	6,7,8,9	1	1.2		
	7,8	2	2.5		
	8	1	1.2		
	8,9	3	3.7		
	9	1	1.2		
	K-6	1	1.2		
	till 7^{th}	1	1.2		

Q4b	None	65	80.2		
	1	4	4.9		
	2	6	7.4		
	3	2	2.5	3.00	2.673
	4	1	1.2		
	5	1	1.2		
	8	1	1.2		
	10	1	1.2		
Q5	No	73	90.1	.10	.300
	Yes	8	9.9		
Q5a	None	73	90.1		
	Cousin, uncle, grandma, and grandpa	1	1.2		
	Cousin	4	4.9	-	-
	sister-in-law	1	1.2		
	uncle and son	1	1.2		
	uncle’s wife	1	1.2		
Q5b	No	73	90.1	.10	.300
	Yes	8	9.9		
Q6	No	81	100	.00	.000
	Yes	0	0		
Q7	No	81	100	.00	.000
	Yes	0	0		
Q8	No	81	100	.00	.000

	Yes	0	0		
Q9	Never	18	22.2		
	Rarely	21	25.9		
	Sometimes	35	43.2	1.42	1.011
	Usually	4	4.9		
	Always	3	3.7		
Q10	No	81	100	.00	.000
	Yes	0	0		

Note. *F*: Frequency %: Percentage *M*: Mean *SD*: Standard Deviation

Demographic information of students in experimental classes. A total of 79 students in experimental classes responded to the same demographic questionnaire (Appendix A) administered to students in control classes before conducting the experiment. Table 2 displays the frequency, percentage, mean, and standard deviation of demographic data of students in experimental classes. As demonstrated in table two, 23 students (29.1%) are males, whereas 59 students (70.9%) are females, and all the students (n=79) are not native speakers of English and haven't lived in any country where English is the formal spoken language; thus questions 3a and 3b are excluded. The majority of students, 71 students out of 79, haven't studied in schools where the English teacher was a native speaker of English. The remaining nine students (10.1%) who have studied in such a school before are distributed as follows: three students (3.8%) were in grade 10, three students (3.8%) were in grade seven, one student (1.3%) was in grade five, one student was in grades eight and nine, and one student was in grades one, two, three, four, and five. Thus, seven students of the remaining nine students have studied in a school where the English teacher was a native speaker of English for only 1 year, one student has studied in a

similar school for 2 years, and one student has studied in such a school for 5 years. Few students (n=9) have one or more of their family members as native speakers of English and they are as follows: three students (3.8%) have more than one cousin, two students (2.5%) have one cousin, one student (1.3%) has one aunt and her son, one student has a brother-in-law, one student has an uncle, and one student has an uncle and his son. All the nine students use English to communicate with their relatives. None of the students uses English formally outside the school and is enrolled in any program or has a tutor that teaches the English language; therefore, questions six, seven, and eight are excluded. When asked how often they do writing activities, games or exercises via an educational website, 49 students (62%) responded they never do, 12 students (15.2%) responded they rarely do, 12 students (15.2%) responded they sometimes do, one student responded she usually does, and five students responded they always do. At last, none of the students uses any CDs to develop his or her English writing skill.

With reference to the abovementioned data analysis, the researcher excluded 14 students from the experimental classes by implementing the same procedure she used with the control classes.

Table 2

Demographic Information of Students in Experimental Classes

		F	%	Mean	STD
Q1	Male	23	29.1	-	-
	Female	59	70.9		
Q2	No	79	100	.00	.000
	Yes	0	0		
Q3	No	79	100	.00	.000

	Yes	0	0		
Q4	No	71	89.9	.10	0.304
	Yes	8	10.1		
Q4a	None	70	88.6	-	-
	1,2,3,4,5	1	1.3		
	10	3	3.8		
	5	1	1.3		
	7	3	3.8		
	8,9	1	1.3		
Q4b	None	70	88.6	.18	.656
	1	7	8.9		
	2	1	1.3		
	5	1	1.3		
Q5	No	70	88.6	.11	.320
	Yes	9	11.4		
Q5a	None	70	88.6	-	-
	aunt and her son	1	1.3		
	brother-in-law	1	1.3		
	Cousin	2	2.5		
	Cousins	3	3.8		
	Uncle	1	1.3		
	uncle and son	1	1.3		
Q5b	No	71	89.9	.10	.304
	Yes	8	10.1		

Q6	No	79	100	.00	.000
	Yes	0	0		
Q7	No	79	100	.00	.000
	Yes	0	0		
Q8	No	79	100	.00	.000
	Yes	0	0		
Q9	Never	49	62.0	.75	1.160
	Rarely	12	15.2		
	Sometimes	12	15.2		
	Usually	1	1.3		
	Always	5	6.3		
Q10	No	79	100	.00	.000
	Yes	0	0		

Note. F: Frequency %: Percentage STD: Standard Deviation

In summary, after analyzing the demographic data of students in control and experimental classes, the researcher excluded 12 students in control classes and 14 students in experimental ones from the current study. Thus, the overall number of students who participated in this study was 134 participants, 69 participants enrolled in control classes and 65 ones enrolled in experimental classes.

Research Design

The design of the present research study was the pre-post experimental design with mixed method approach. A mixed-method approach comprises the use of both quantitative and qualitative methods of data collection and analyses in the same study. The quantitative method provides statistical analyses of data, while the qualitative method shows a holistic description of

the educational theory, practice, or treatment being studied through analyzing in-depth information, usually expressed in written forms. The target behind using a mixed method approach is to reveal lucid relationships between variables, to attain a comprehensive and deep understanding of these relationships, and to verify and cross-validate such relationships between variables by comparing findings elicited from quantitative and qualitative methods and check if they conglomerate on a single explanation of these relationships. Quantitative as well as qualitative data were collected to ensure thorough cognizance of the impact of the IWB and PPT on the writings of EFL students in Lebanese secondary public schools and to procure a profound perception of their attitude towards writing in English and the use of technology (IWB and PPT) in EFL classrooms. Thus, the researcher utilized triangulation in the research methodology by analyzing achievement scores and questionnaires quantitatively, and by interpreting the students' Plus Minus Interesting (PMI) inventories and interviews qualitatively. According to Baker and Boonkit (2004), triangulation avoids the limitation of a specific research approach and validates findings established across various sets of data.

The treatment conditions with two levels (experimental and control) constituted the independent variable manipulated in the study. The experimental groups received instruction according to the procedures of IWB and PPT pre-writing instruction and the control groups received regular pre-writing instruction. Furthermore, the scores of the participants on essay writings regarding the development of ideas and topic-related vocabulary words in addition to the participants' attitude towards writing and the use of IWB and PPT pre-writing instruction served as dependent variables.

Research Setting

The present study was carried out in six classrooms distributed among three secondary

public schools, all located in Beirut, the capital of Lebanon. Each school in which the IWB and PPT treatment was carried out had only one Promethean ActivBoard installed in one of its classrooms and each IWB classroom was equipped with a projector, a computer with ActiveInspire software downloaded on it, and an IWB pen to select or write with on the IWB. Also, each school had at least two portable LCDs that can be installed in any classroom and connected to the teacher's laptop to conduct a PPT lesson. It is significant to note that all computers had internet access through a wireless internet connection. Students' seats in the IWB classrooms were arranged in a way that permitted feasible movement of students to the IWB. All the classrooms in the participating schools had either curtains or shutters that prevented any sunlight blurring of the students' vision during the IWB or PPT lessons.

Instrumentation

The instruments of the current study comprised four questionnaires, an essay rating scale (Jacobs et al, 1981) to assess the participants' essays, a PMI inventory, and a structured interview.

Questionnaires

The researcher used a demographic questionnaire and three 5 Likert-scale questionnaires to examine the writings and the attitudes of the participants before and after the treatment. To examine the validity of the questionnaires, the researcher gave drafts of the questionnaires to two educational specialists from the Lebanese University and two teachers of academic writing in English who inspected the general flow, relevance of item, purpose, possible wording, and instruction of each questionnaire. The researcher, then conducted a pilot study with sixteen grade eleven students in a public school in Beirut in order to examine the questionnaires of the control group, and she carried out another pilot study with eighteen grade 11 students in another public

school in Beirut to check the questionnaires of the experimental group. The participants in both pilot studies were different than those in the main study. The aim of the pilot studies was to study the timing, structure, clarity, and comprehensibility of the questionnaires' items. Accordingly, the researcher removed some items that were found repetitive and simplified the wording of some other items. To examine the reliability of the questionnaires, the researcher found out the internal consistency of the items of each questionnaire using the Statistical Package for Social Sciences (SPSS) by computing the Cronbach's Alpha which was ($\alpha = 0.81$) for the attitude questionnaire before the treatment, ($\alpha = 0.78$) for the questionnaire on the attitude of the participants in the control group towards writing after the regular pre-writing instruction, and ($\alpha = 0.88$) for the performance and attitude questionnaire after the IWB and PPT treatment.

Attitude questionnaire before the treatment. It collected quantitative data on the attitudes towards writing of the participants in both, the control and experimental groups. It was administered to participants before carrying out any pre-writing instruction. Participants responded to 15 items about their attitudes towards writing on a 5 Likert scale of 1 to 5, where 1 indicated "Strongly disagree" and 5 indicated "Strongly agree" (Appendix B).

Attitude questionnaire after regular pre-writing instruction. It was administered to participants in control classes after conducting conventional pre-writing instruction. The questionnaire comprised of 15 items devised to collect quantitative data on the participants' attitude towards writing and based on a 5 Likert scale, where 1 indicated "Strongly disagree" and 5 indicated "Strongly agree". The purpose of the questionnaire was to determine whether students in the non-treatment classes changed their attitudes towards writing after the regular pre-writing instruction (Appendix C).

Post IWB and PPT performance and attitude questionnaire. It included 66 items based on a 5 Likert scale, where 1 indicated "Strongly disagree" and 5 indicated "Strongly agree" and collected quantitative data about the students' performance and attitudes towards writing and the use of IWB and PPT in pre-writing instruction (Appendix D). The questionnaire was administered after the IWB and PPT pre-writing instruction was carried out in experimental classes and it comprised of six parts: Part A (Student Performance with respect to IWB), part B (Student Performance with respect to PPT), part C (Student Attitude towards Writing with respect to IWB), part D (Student Attitude towards Writing with respect to PPT), part E (Student Attitude towards the Use of IWB in Pre-writing Instruction), and part F (Student Attitude towards the Use of PPT in Pre-writing Instruction).

Parts A and B: Student performance. It asked students to respond to questions about the extent they found the IWB and PPT pre-writing instruction beneficial in developing their ideas and in using vocabulary words properly in their essays. The questionnaire consisted of 19 items: 10 items about IWB pre-writing instruction (seven items about idea development and three items about vocabulary) and nine items about PPT pre-writing instruction (six items about idea development and three items about vocabulary).

Parts C and D: Student attitude towards writing. It was administered to participants in the experimental group after conducting the IWB and PPT pre-writing instruction. The questionnaire involved 30 items, and participants were asked to respond to 15 items about their attitude towards writing after the IWB treatment and to other 15 items about their attitude towards writing after the PPT treatment. This questionnaire aimed at examining whether the participants in the experimental classes changed their attitudes towards writing after the IWB and PPT pre-writing instruction.

Parts E and F: Student attitude towards the use of IWB and PPT in pre-writing instruction. It comprised seventeen items, nine items about the attitude of participants towards the use of IWB in pre-writing instruction, and eight items about the attitude of participants towards the use of PPT in pre-writing instruction. The participants in the experimental group filled in this questionnaire after they received the IWB and PPT pre-writing instruction.

Essay Rating Scale

It is a measurement instrument consisting of five sections: Content, organization, vocabulary, language use, and mechanics (Appendix E). Two sections of this scale – Content and Vocabulary - were used in this study to rate the participants' essays. The participants' essays in the control and experimental groups were rated by two raters: the researcher and an independent rater, who both have experience in teaching EFL classes and essay correction. Both raters were not the teachers of the participants in this study. Also, the independent rater didn't know any of the participants and had no interaction with them. Both raters rehearsed rating essays according to the essay rating scale by using essays written by students other than those involved in the study. The rehearsal enabled both raters to practice the scoring procedure and get the hang of some items in the rating scale. Afterwards, the researcher and the independent rater chose three from the participants' essays randomly and scored them independently in line with two sections of the essay rating scale, content and vocabulary. Subsequently, the two raters deliberated their scores for content and vocabulary and agreed on a common understanding of the scoring criteria. To achieve inter-rater reliability, the independent rater rated 13 essays written by participants after receiving regular treatment, 14 essays written by participants after receiving IWB treatment, and 14 essays written by participants after receiving PPT treatment. These essays form around 20% of the total number of essays of each treatment and were selected randomly by the

researcher and given to the independent rater without informing her about the type of treatment each essay was written after. The inter-rater reliability was computed by dividing the number of agreements by the total number of rating and was found to be highly reliable as displayed in table 1. Teachers of the control and experimental groups looked at the essays to know how their students performed after carrying out the pre-writing instruction.

Table 3

Inter-rater Reliability Coefficient

	Regular Treatment	IWB Treatment	PPT Treatment
Content	0.84	0.85	0.92
Vocabulary	0.92	0.92	0.85

PMI Inventory

The researcher employed the Plus Minus Interesting (PMI) inventory devised by De Bono, E. (1994) (Appendix F). It was administered to participants in the experimental group, and it offered them an opportunity to express their thoughts and comment on their learning experiences with respect to the use of IWB and PPT in pre-writing instruction. Qualitative data collected from this inventory served to provide the researcher with insights on what the participants viewed as plus, minus and interesting pertaining to the afore-mentioned treatments.

Semi-structured Interviews

The semi-structured interviews with teachers allowed the researcher to collect qualitative data with regard to the participants' attitude towards writing and towards the use of IWB or PPT in pre-writing instruction. The purpose of the interviews was to cross-validate and support the

findings of the quantitative data collected from essays and questionnaires, and to obtain thorough information that formed a complementary part of the data collection procedure of this study. Once the initial questions were developed by the researcher, they were submitted to a panel of experts to judge their quality and adequacy for matching the purpose of the semi-structured interview and producing supportive data. This was valuable in insuring that the interview questions were comprehensible, and would generate data congruent with the purpose of the study. Based on that review, the wording of four questions were modified. Later, the researcher interviewed the three teachers who implemented the IWB and PPT instruction in the experimental classes. The interview comprised of two major sections: Guided questions and open ended questions. (Appendix G). The first part was the guided questions which consisted of 20 yes/no question items: 10 items inspected teachers' opinions about whether the participants prefer the use of IWB in pre-writing instruction, and 10 items asked teachers if their students find the use of PPT pre-writing instruction beneficial. It is worth to mention that although the questions in this part demand mere yes/no answers, the interviewees eagerly explained their choice in answering almost all the questions. The second part of the interview involved four open-ended questions. Two of them delved into teachers' opinions about the effectiveness of the IWB pre-writing instruction in creating an interactive and enjoyable environment in the writing class and in curtailing students' apprehension while writing their essays. Similarly, the other two open-ended questions asked teachers about the efficacy of the PPT pre-writing instruction in enhancing the students' interest and engagement in the writing class and in curbing students' apprehension while writing their essays.

Materials

The public school teachers sharing in the study and the researcher used some materials to

implement the present research study. The common material between the control and the experimental groups was the English national textbook "Themes" used in all secondary public schools in Lebanon. Another material was the students' writing portfolios where students keep all their writings and essays before and after the treatment. However, teachers of the experimental classes required different materials to carry out the study than those of the control classes.

The English National Textbook *Themes*

The teachers of the control and experimental classes used the English national textbook "Themes" of the second secondary class (Humanities section), issued by the National Center for Educational Research and Development (NCERD), as a major textbook in their English classes. The textbook comprised of three main parts: Imprints, Unity and Diversity, and Reaching out. The first part, Imprints, included three themes: People: Life and Work, Wars and Revolutions, and Explorations and Excavations. The second part, Unity and Diversity, consisted of three themes: Youth: Problems and Expectations, Family Relations: Duties and Rights, and The Arts. The third part contained three themes: Health Issues, Media Issues, and Political Issues. The researcher constructed the writing prompts of the essays on eight topics related to the three main parts of the textbook, specifically, to five themes in these parts. The first two writing prompts were related to the first theme in the first part: People: Life and Work. The third and fourth writing prompts were related to the second theme in the first part: Wars and Revolutions. The fifth writing prompt was related to the third theme in the first part: Explorations and Excavations. The sixth writing prompt was related to the first theme in the second part: Youth: Problems and Expectations. The last two writing prompts were related to the first theme of the third part: Health Issues.

Writing Portfolios

To carry out this research study, the researcher used eight essays from the writing portfolio of the students in the control and experimental groups: Two essays before conducting any treatment and 6 essays after carrying out the conventional or IWB and PPT treatment. Quantitative data on the participants' writing abilities were collected from two essays written by the participants in the experimental and control groups before the teachers carried out any pre-writing treatment. The researcher, also, collected quantitative data from a total of six essays written by the participants after receiving the pre-writing instruction in both, the control and experimental classes. The target from this data collection was to compare the essay scores of the participants in the control and experimental groups before the treatment with those after the treatment to find out if there was a significant difference in the written performance of the participants receiving regular pre-writing instruction and those receiving IWB or PPT pre-writing instruction. All the participants' essays in the control and experimental groups were rated according to an essay rating scale.

Experimental Class Materials

Teachers of the experimental classes utilized Promethean ActivBoards, computers with the ActivInspire software downloaded in them, fixed projectors, interactive whiteboard pens (one used by the teacher and another by students), and the IWB instructional activities in order to conduct the IWB pre-writing instruction. Moreover, they demanded computers with the PowerPoint presentation software downloaded in them, LCD projectors connected to the computers, and white boards to project on them, and the instructional PowerPoint presentations in order to carry out the PPT pre-writing instruction. It is significant to note that the IWB pre-writing lessons were devised by the researcher and her colleague who is a professional IWB

trainer, and the PPT lessons were prepared by the researcher and revised by an experienced teacher. All the IWB and PPT lessons were then discussed with the teachers of the experimental classes. It is, also, worth mentioning that an IWB is installed in only one class in each public secondary school, so a teacher who wants to use it has to ask her students to come to the IWB class. However, there were more than a portable LCD projector in each school, the thing which made it feasible to the teacher to take it with her to the class she needed to use it in.

Control Class Materials

Teachers of the control classes used white boards and white board pens in order to jot down lists of the ideas developed and the terms and vocabulary words discussed throughout the regular pre-writing instruction. The pre-writing lessons were prepared by the researcher and reviewed by an experienced teacher, and they included the same number of ideas and vocabulary words that IWB and PPT pre-writing lessons comprised. All the lessons were then discussed with the teachers of the control classes.

Data Collection and Analysis

Data Collection Procedure

The researcher collected data for the present study during three phases; the pre-treatment phase, the treatment phase, and the post-treatment phase.

Pre-treatment phase. First, the researcher obtained permission from the Ministry of Education and Higher Education (MEHE) to conduct the current research study at secondary public schools after explaining the purpose of the study and assuring confidentiality to protect the identity of participants. Next, the researcher met with the four teachers of the assigned control and experimental classes, consulted with them about the purpose of the study and the procedure of the pre-writing instruction, and obtained their cooperation and voluntary consent:

(a) to implement the pre-writing instruction (b) to issue the questionnaires and PMI inventory to their students (c) to ask their students to write essays on the writing prompts devised by the researcher (d) to allow the researcher to take these essays and return them after scoring them with an independent rater and (e) to be interviewed. It is worth mentioning that the researcher held intermittent meetings with the teachers throughout the period during which the study was implemented in order to get feedback on every pre-writing activity and resolve any hindrance that teachers encountered. Afterwards, teachers of both, the control and experimental classes, administered the demographic questionnaire which allowed the researcher to specify the participants in the control and experimental classes. The teachers, then, issued the second questionnaire which inspected the participants' attitude towards writing before carrying out any treatment.

Treatment phase. It consisted of the regular and experimental treatments. In both treatments, each pre-writing instruction comprised of a specific number of ideas and vocabulary words in each pre-writing instruction. The first pre-writing instruction consisted of 12 ideas and 24 vocabulary words that enabled students to write a descriptive essay. In the first writing prompt, students were asked to use seven of these ideas and 10 of the vocabulary words. The second pre-writing instruction comprised 28 ideas and 15 vocabulary words that aided them in writing a cause-effect essay. Students were asked to use 15 ideas and nine vocabulary words of the learned ones in the second writing prompt. The third pre-writing instruction equipped students with 30 ideas and 19 vocabulary words to write a problem-solution essay. The third writing prompt asked students to use 12 of these ideas and 10 of the vocabulary words. The fourth pre-writing instruction provided 12 ideas and 12 vocabulary words required in writing a contrast essay. In the fourth writing prompt, students were asked to use six ideas and eight

vocabulary words. The fifth pre-writing instruction involved eight ideas and 12 vocabulary words that enabled students to write a cause essay. The fifth writing prompt asked students to use six of the eight ideas and eight of the 12 vocabulary words. The last pre-writing instruction empowered students with 16 ideas and 15 vocabulary words that assisted them in writing an argumentative essay. The sixth writing prompt asked students to use 10 of the 16 ideas and 10 of the 15 vocabulary words. However, the conveyance of each pre-writing instruction by teachers differed between the control and experimental classes.

Regular treatment. Teachers of control classes along with their students developed ideas and discussed vocabulary words about each topic of the six writing prompts on which students were asked to write their essays. The pre-writing instruction was implemented under regular conditions which included oral discussion with spasmodic use of a white board to jot down and practice topic-related ideas and vocabulary words.

Experimental treatment. Teachers of experimental classes implemented pre-writing instruction about each topic of the six writing prompts on which students were asked to write their essays. The pre-writing instruction comprised the use of IWB in the instructional procedure of each topic of three writing prompts and the use of PPT in the instructional procedure of each topic of the remaining three writing prompts.

IWB pre-writing instruction I. The first pre-writing instruction was on the first topic of writing prompt 1 based on a short story “The Sniper” in the student textbook. It comprised ten pages of an IWB flipchart that analyzed the character of the Republican sniper in terms of traits and behavior. The researcher devised the IWB flipchart by using a variety of techniques, property browsers, action browsers, and tools such as “Spotlight”, “Magic Ink”, “Fill”, “Drag to reveal”, “Rub and reveal”, “Next page”, “Restrictor”, “Container”, and “Hidden”. Some of these

were used to carry out instruction in terms of idea development. “Spotlight” was used to allow students to detect the distinctive feature of a sniper in the hidden picture. “Magic Ink”, “Next page”, and “Hidden” enabled students to grasp the historical background of the Irish civil war in which the sniper character played a crucial role. The “Fill” technique was used to provide feedback on students’ answers with respect to the snipers’ character traits and their supporting clues. The remaining tools and techniques - “Drag to reveal”, “Restrictor”, “Rub and reveal” and “Container” were used to conduct instruction pertaining to proper use of vocabulary words. In brief, the first pre-writing instruction aimed at enabling students to analyze the physical features and character of the Republican sniper in a descriptive essay.

IWB pre-writing instruction II. The second IWB pre-writing instruction was on the fourth writing prompt related to a short story “The Chaser” in the student textbook. It involved six pages of an IWB flipchart that provided students with ideas and key words needed to write an essay in which they have to draw a contrast between the two main characters, Alan and the old man. “Revealer” and “Hidden” were used in developing ideas on the differences between the two major figures in the story. The “Fill” and “Container” techniques were used to provide students with ample practice on vocabulary words required to describe each major character and contrast it with the other.

IWB pre-writing instruction III. The third IWB pre-writing instruction was on the fifth writing prompt. It included five pages of an IWB flipchart. Its purpose was to discuss ideas and vocabulary words pertaining to the causes of Anorexia. To attain such a purpose, the researcher employed the following techniques, tools, property browsers, and action browsers such as “Hidden”, “Container”, “Pen action”, “Magic Ink”, “Rub and reveal” and “Revealer”. Students brainstormed ideas concerning anorexia by using the “Hidden” action browser, and then they

were exposed to the foremost factors that lead a person to be anorexic by using the "Pen action", and they were asked to identify the elaborative ideas of each factor and to check answers by using the "Magic Ink" tool. Later, students were asked to recall key ideas concealed to be displayed by using the "Revealer" tool. Moreover, students practiced vocabulary words related to the topic anorexia by using the "Container: Specific object" in the property browser in which they were asked to select the correct word and insert it in the specified container. For further practice, a cloze text exercise was provided to ensure reinforcement of fore-mentioned vocabulary words in a topic-related context by using the "Rub and reveal" technique.

PPT pre-writing instruction I. The first PPT pre-writing instruction was on the second writing prompt. It included ten slides about the causes and effects of war. While constructing the slides, the researcher used the same design, font size, and font style in the slides of causes and effects. However, the font color and pictures used along with the animation of the slides on causes of war were different than those on the effects of war so that students wouldn't get confused between the two. To ensure students' comprehension of the ideas and vocabulary words displayed, the researcher allotted the last two slides as practice activities in which students were asked to fill in a T-chart on the causes and effects of war and to make a vocabulary activity. The purpose from the first PPT pre-writing instruction was to equip students with adequate ideas and terminology needed to write an essay on the causes and effects of war.

PPT pre-writing instruction II. The second PPT pre-writing instruction was on the third writing prompt. It involved twenty nine slides about three main excavation problems, each followed by a variety of suggested solutions. Each problem and solution were presented in different font colors to distinguish it from other problems and solutions and were presented in list forms so that students perceive them in an organized way. Two videos were hyperlinked and

pictures were displayed to elucidate some problems and solutions and to clarify certain terms and topic-related words. In the last two slides, students summed up the main excavation problems and solutions by completing a flow chart and revised highlighted vocabulary words by doing a fill-in the blanks exercise. The second PPT pre-writing instruction aimed at enabling students to write a problem-solution essay by providing them with ample ideas and vocabulary words.

PPT pre-writing instruction III. The third PPT pre-writing instruction was on the sixth writing prompt. It consisted of twenty slides about the arguments and counter arguments on the issue of euthanasia. The researcher was consistent in the use of font color and size with respect to headings and subheadings. She, also, hyperlinked a video that served to initiate a debate on the issue of euthanasia. In most slides, pictures were displayed first to enable students deduce the supporting points pertaining to each argument. Key ideas and words were revised and highlighted in the last slides by asking students to complete an informal outline of both arguments.

It is important to mention that students received a rewarding sound for every correct answer they gave in all IWB pre-writing activities. Moreover, some authentic websites were hyperlinked to the IWB flipcharts and PPT slides in order to offer the participants more opportunities to comprehend and practice topic-related ideas and vocabulary words. For instance, the spelling, pronunciation and sample sentences of some vocabulary words were provided in IWB pages and PPT slides by a hyperlink to *Dictionary.com* website through internet connection.

Post-treatment phase. During this phase, the researcher collected data not only from students but also from teachers. Regarding data collection from students, teachers provided their students with a writing prompt and asked them to write an essay on it after each pre-writing

instruction. Teachers, then, collected the essays and gave them to the researcher who scored them with an independent rater according to a rating scale and returned them to the teachers. At the end of all the pre-writing instruction sessions and after the participants in the control and experimental classes wrote six essays on six different writing prompts, teachers of the control classes administered a questionnaire that examined the participants' attitude towards writing after the regular treatment, while teachers of the experimental classes administered another questionnaire that investigated the participants' performance, attitude towards writing, and attitude towards the use of IWB and PPT in pre-writing instruction after the IWB and PPT treatment. After that, teachers of the experimental classes asked their students to express their views with respect to the benefits (Plus), drawbacks (Minus), and exciting elements (Interesting) of using the IWB and PPT in pre-writing instruction by filling in a PMI inventory that delivered qualitative data. As to data collection from teachers, the researcher conducted semi-structured interviews with teachers of the experimental classes. The interviews aimed at collecting qualitative data about teachers' opinions with respect to students' engagement, interest, interaction, behavior and performance during the IWB and PPT pre-writing instruction and while writing their essays. It is significant to note that all the teachers involved in implementing the study have more than 10 years of experience, hold a BA in English language and literature, and have a teaching diploma for secondary classes. Moreover, all teachers have gone through a series of workshops and seminars on teaching the four language skills and on implementing the Lebanese new curriculum. In addition, all teachers have participated in correcting exam papers of the Lebanese official exams. Furthermore, all teachers of the experimental classes have been trained on using ICT in language classrooms and have received training on the multi functions of IWB as an instructional tool in education. Interviews took place in public schools where teachers

conducted the treatment. Each teacher was interviewed in English for 30-55 minutes. The interviews were audiotaped and transcribed.

Data Analysis Procedure

Quantitative data from essays and questionnaires were analyzed using SPSS. Data analysis of the demographic questionnaire included computations of descriptive statistics such as frequencies, percentages, means, and standard deviations. Qualitative analysis is defined as "a relatively systematic process of coding, categorizing, and interpreting data to provide explanations of a single phenomenon" (McMillan & Schumacher, 2006, p.346). Qualitative data of the present study collected from PMI inventories and interviews were analyzed using a coding scheme. The coding scheme comprised three main categories: Performance, attitude towards writing, and attitude towards the use of IWB and PPT. Indeed, qualitative data allowed the researcher to probe the participants' views and teachers' perspectives with respect to performance and attitude towards writing and the use of IWB and PPT in pre-writing instruction. Therefore, data analysis involved triangulation of quantitative and qualitative data. According to Hussein (2009), "triangulation can indeed increase credibility of scientific knowledge by improving both internal consistency and generalizability through combining both quantitative and qualitative methods in the same study" (p. 10).

The researcher used the same procedure to analyze data collected on the IWB and PPT treatments for the first six research questions. With regard to data analysis for research questions 1 and 2, Descriptive statistics such as means, standard deviations, minimum and maximum scores were calculated. Also, a series of independent samples t-test were carried out. Before conducting each independent samples t-test, the researcher made sure that the data collected met the assumptions underlying the independent-samples t-test which are the following: (1) The data

(scores) are independent of each other (that is, scores of one participant are not systematically related to scores of the other participants). This is commonly referred to as the assumption of independence. In the present study, this assumption is already met since each participant in the control group as well as in the experimental group has an individual score on his/her essay. (2) The dependent variable (scores) is normally distributed within each of the two sample groups (control and experimental). This is commonly referred to as the assumption of normality. Alpha levels (.01 and .001) are commonly used to evaluate the assumption of normality (Tabachnick and Fidell, 2007). Finally, (3) the variances of the dependent variable (scores) in the two groups are equal. This is commonly referred to as the assumption of homogeneity of variance (Sheskin, 2003). After proving the three assumptions, an independent t-test was carried out to examine if there was a significant difference in the mean value between the pre-test scores as regards the development of ideas of the participants in the control group and those of the participants in the experimental group. Another independent t-test was also conducted to examine if there was a significant difference in the mean value between the post-test scores regarding development of ideas of the participants in the control group and those of the participants in the experimental group. Moreover, paired-samples t-tests were conducted to determine if IWB and PPT pre-writing instruction improved students' development of ideas in writing by examining the difference in essay scores pertaining to content between pretest and posttest means of the control group and those of the experimental group. Quantitative analysis was verified by qualitative analysis of four questions in the first part of the interview and of the "Plus" and "Minus" sections in the PMI inventory.

With respect to data analysis for research questions 3 and 4, preliminary analysis was performed to prove the assumptions of the independent t-test. Accordingly, an independent t-test

was carried out to determine if there was a significant difference in the mean value between the pre-test scores relating to the proper use of vocabulary words of the participants in the control group and those of the participants in the experimental group. Another independent t-test was also conducted to examine if there was a significant difference in the mean value between the post-test scores concerning the proper use of vocabulary words of the participants in the control group and those of the participants in the experimental group. Besides, paired-samples t-tests were conducted to determine if IWB and PPT pre-writing instruction improved students' proper use of topic-related vocabulary words in writing by examining the difference in essay scores concerning vocabulary between pretest and posttest means of the control group and those of the experimental group. Moreover, descriptive statistics including means, standard deviations, minimum and maximum scores were computed. To validate quantitative data analysis, four questions from the first part of the interview and the "Plus" and "Minus" sections in the PMI inventory were analyzed qualitatively.

With regard to data analysis for questions 5 and 6, quantitative as well as qualitative analyses were conducted. Pre-treatment and post-treatment quantitative data were analyzed using paired-samples t-tests for means of the control and experimental groups to find out if the use of IWB or PPT boosted participants' attitude towards writing. Also, four items from the first part of the interview and two questions from the second part of the interview in addition to the PMI inventory were analyzed qualitatively.

As to data analysis of research questions 7 and 8, 17 questionnaire items were analyzed quantitatively by computing descriptive statistics such as frequencies, percentages, means, and standard deviations to determine the attitude of the participants in experimental group towards the IWB and PPT treatment. To achieve the same purpose, qualitative data consisting of eight

items from the first part of the interview and 2 questions from the second part of the interview along with the PMI inventory were analyzed.

CHAPTER 4 – RESULTS

Introduction

This chapter presents the results of the current study which used a pre-post experimental design with a mixed method approach to explore the effects of the use of Interactive Whiteboard and PowerPoint Presentation on the achievement and attitudes of Lebanese EFL second secondary students in EFL writing classes. Six second secondary classes at three secondary public schools were surveyed. The data were collected from students' essays, 3 questionnaires and a PMI inventory administered to 134 second secondary students, and interviews with teachers.

The purpose of this study was to investigate the impact of the use of IWB and PPT in pre-writing activities on the writings of Lebanese secondary EFL students and their attitude towards the writing class.

The present study addressed the following questions:

1. Does the use of Interactive Whiteboard in pre-writing instruction improve the development of ideas in the writings of EFL second secondary students?
2. Does the use of PowerPoint presentation in pre-writing instruction enhance the development of ideas in the writings of EFL second secondary students?
3. Does the use of Interactive Whiteboard in pre-writing instruction lead EFL second secondary students to use topic-related vocabulary words properly?
4. Does the use of PowerPoint presentation in pre-writing instruction lead EFL second secondary students to use topic-related vocabulary words properly?
5. Does the use of Interactive Whiteboard in pre-writing instruction boost the attitude of EFL second secondary students towards writing?
6. Does the use of PowerPoint presentation in pre-writing instruction promote the attitude of EFL second secondary students towards writing?

7. What are the attitudes of EFL secondary students towards the use of Interactive Whiteboard in pre-writing instruction?
8. What are the attitudes of EFL secondary students towards the use of the PowerPoint presentations in pre-writing instruction?

Quantitative Findings of Research Question 1

Research question 1: Does the use of Interactive Whiteboard in pre-writing activities improve the development of ideas in the writings of EFL second secondary students?

Quantitative data needed to answer research question 1 were collected from two sources: Pre-test post-test scores with respect to the development of ideas of participants in experimental and control groups, and a questionnaire on the performance of participants in the experimental group regarding the development of ideas after the implementation of IWB pre-writing instruction.

Data Analysis of the Pre-test1 Post-test1 Scores with respect to the Development of Ideas after the IWB Pre-writing Instruction

To find out if the use of IWB in pre-writing activities improved participants' performance regarding the development of ideas in essay writing, the researcher used two independent samples *t*-tests. The first independent samples *t*-test examined whether there was a significant difference in performance between the mean value of pre-test1 scores of participants in the control group and that of pre-test1 scores of participants in the experimental group, and the second independent samples *t*-test inspected if there was a significant difference in performance between the mean value of post-test1 scores of participants in the control group and that of post-test1 scores of participants in the experimental group. Also, the researcher used two paired-samples *t*-tests to compare mean value of pre-test1 scores with the mean value of post-test1 scores of participants in the experimental group as well as in the control group. Before

conducting the *t*-tests, the researcher had to check the assumption of normality and that of variance by using the Shapiro-Wilk test that tested whether the control and experimental level of the independent variable were statistically normal or not, by examining the Q-Q plots, histograms, and boxplots that displayed the degree of normality of the aforementioned levels of the independent variable graphically, and by using the Leven's Test for Equality of Variances that tested the variance of each level of the independent variable.

Regarding the normal distribution of pretest1 scores of control and experimental levels, the results of the Shapiro-Wilk test with an a priori alpha level of .05 displayed in table 4 showed that $p > .05$ for the control group and $p > .05$ for the experimental group which means that neither the control group level nor the experimental group level was significant, and as such, the researcher considered both levels of the independent variable to be normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality, and as such, she concluded that the assumption of normality has been met.

Table 4

Test of Normality of Pretest 1 Scores (Ideas)

	Group	Shapiro-Wilk		
		Statistic	Df	Sig.
Pre-test1 scores (ideas)	C	.96	69	.057
	E	.97	65	.124

In order to determine normality of pretest1 scores graphically, the researcher examined the histograms and Q-Q Plots of the control and experimental groups. A further illustration of normal distribution of pretest1 scores of both groups is displayed in the boxplots (Appendix H1). As revealed in the histogram of pretest1 scores of the control group (Figure 8) and that of the experimental group (Figure 9), the data of both groups were normally distributed.

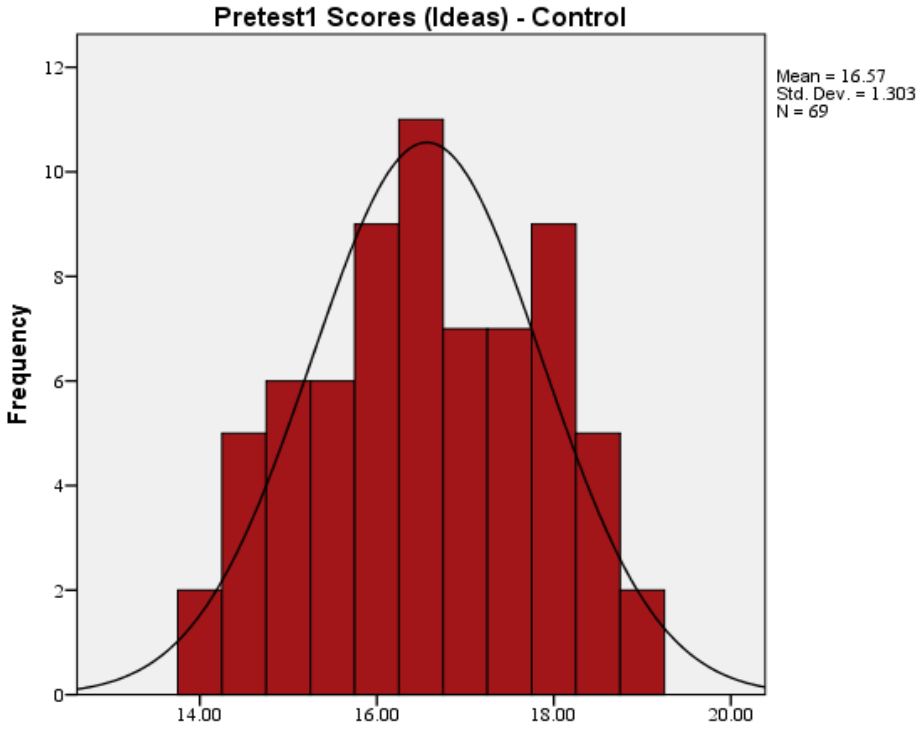

Figure 8. Histogram of pretest1 scores (ideas) of the control Group

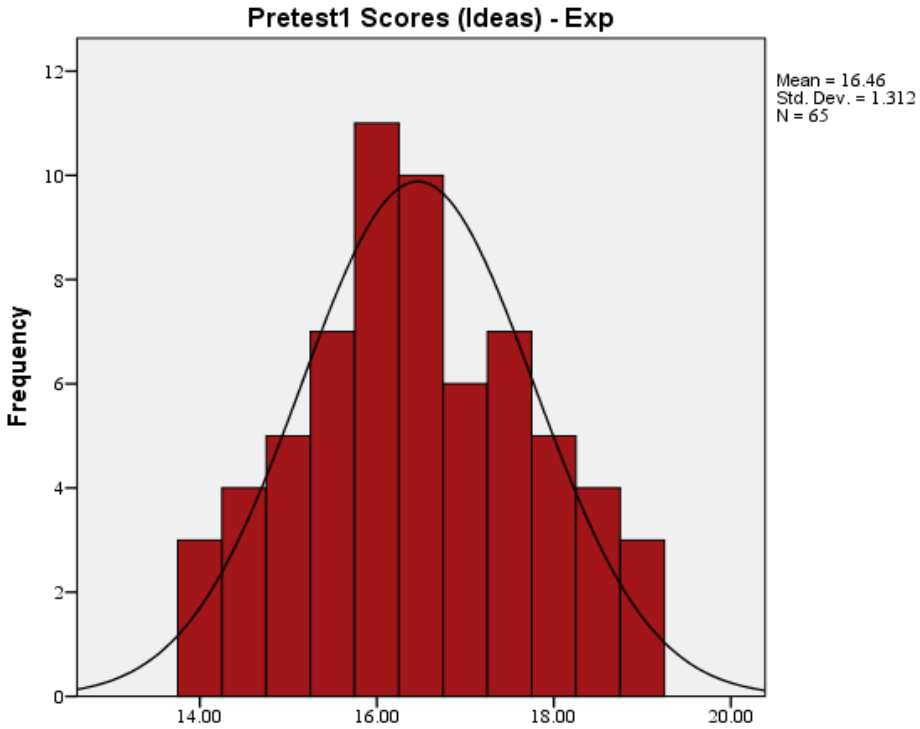

Figure 9. Histogram of pretest1 scores (ideas) of the experimental group

As to the normal Q-Q plots of the pretest1 scores (ideas) of the control group and those of the experimental group displayed in Figures 10 and 11 below, we found that the data were closely located along the diagonal lines, the thing which proved that the assumption of normality has been met in both groups.

Figure 10. Normal Q-Q plot of pretest1 scores (ideas) of the control group

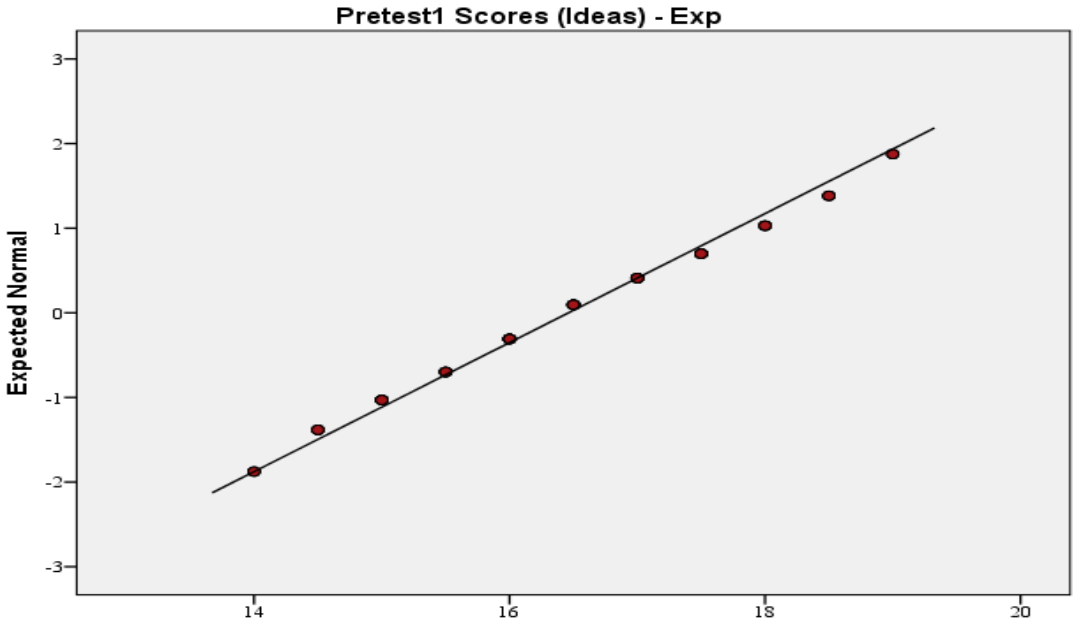

Figure 11. Normal Q-Q plot of pretest1 scores (ideas) of the experimental group

To examine the assumption of homogeneity of variance for pretest1 scores (ideas) variable, the Levene's Test was used with the level of significance $\alpha = .05$. As table 6 indicates, the result shows that P (F=.02; p>.05) = .89. As such, we rejected the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance and concluded that there was no significant difference between the two group's variances. Hence, the assumption of homogeneity of variance was met, so the researcher proceeded with the t-tests.

Table 5 shows that there wasn't a significant difference in descriptive statistics of pretest1 scores (ideas) between the control group (M=16.56, SD= 1.30) and the experimental group (M=16.46, SD=1.31).

Table 5

Descriptive Statistics of Pretest1 Scores (Ideas)

	Group	N	*M*	*SD*	Std. Error Mean
Pretest1.Ideas	C	69	16.56	1.30	.15
	E	65	16.46	1.31	.16

Note: *M*: Mean *SD*: Standard Deviation

The result of the independent samples *t*-test indicated that there wasn't a significant difference between the experimental and control groups in the pretest1 scores with respect to ideas P ($t(132) = .45$, $d_f = 132) > .05$ using an alpha level of .05 as revealed in table 6. Thus, the Alternative Hypothesis $H_1: \mu_{Control} \neq \mu_{Experimental}$ was rejected in favor of the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$.

Table 6

Independent Samples Test of Pretest1 Scores (Ideas)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Pretest1.ideas	Equal variances assumed	.02	.89	.45	132	.64	-.34	.55
	Equal variances not assumed			.45	131.41	.64	-.34	.55

Another independent samples *t*-test was carried out with an alpha level of .05 to examine if there was a significant difference in performance after the IWB treatment. However, before conducting it, the researcher examined the assumptions of normality and homogeneity of variance of posttest1 scores by using the Shapiro-Wilk test and Levene's Test for Equality of Variances and examining the histograms, Q-Q plots and boxplots of posttest1 scores.

The results of Shapiro-Wilk test with an a priori alpha level of .05 demonstrated in table 7 showed that $p > .05$ for the control group and $p > .05$ for the experimental group which means that both levels of the independent variable were normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality, and as such, she concluded that the assumption of normality has been met.

Table 7

Test of Normality of Post-test1 (ideas)

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Post-test1 (ideas)	C	.98	69	.69
	E	.96	65	.10

With respect to the graphical normality of data, an examination of the histogram of posttest1 scores of the control group (Figure 12) and that of the experimental group (Figure 13) evidenced that the data of both groups were normally distributed.

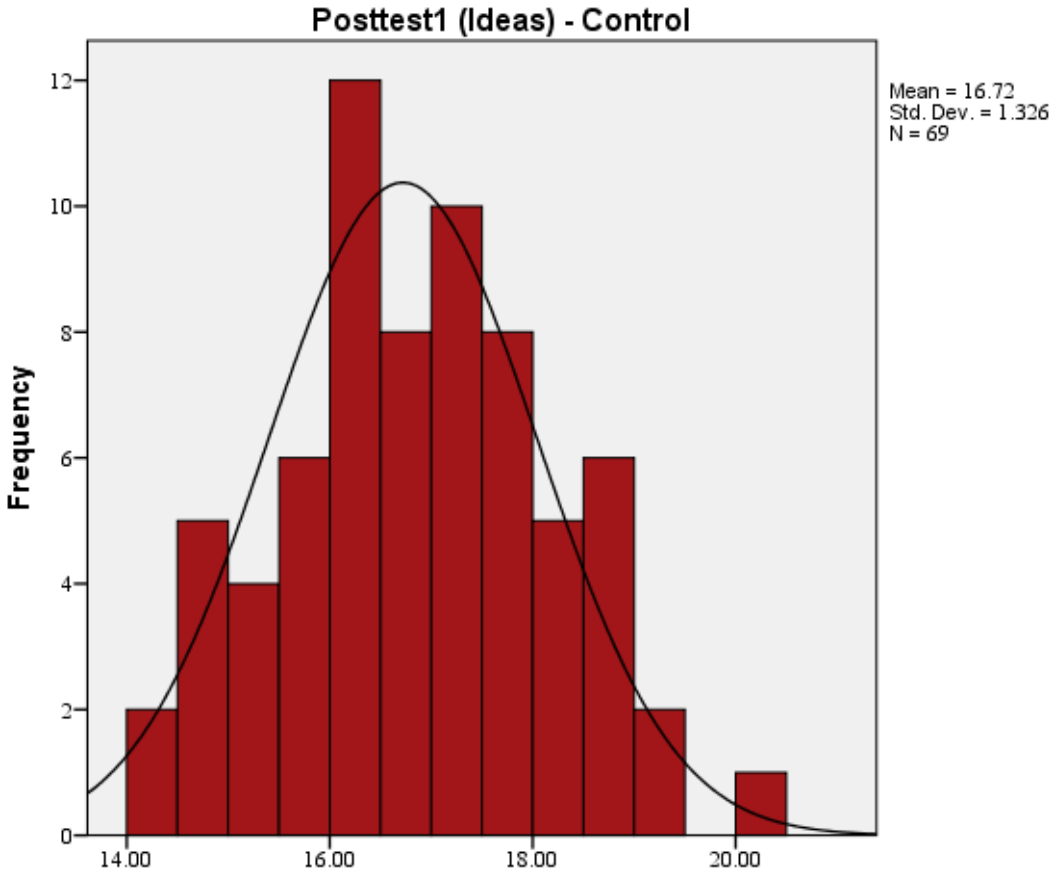

Figure 12. Histogram of posttest1 scores (ideas) of the control Group

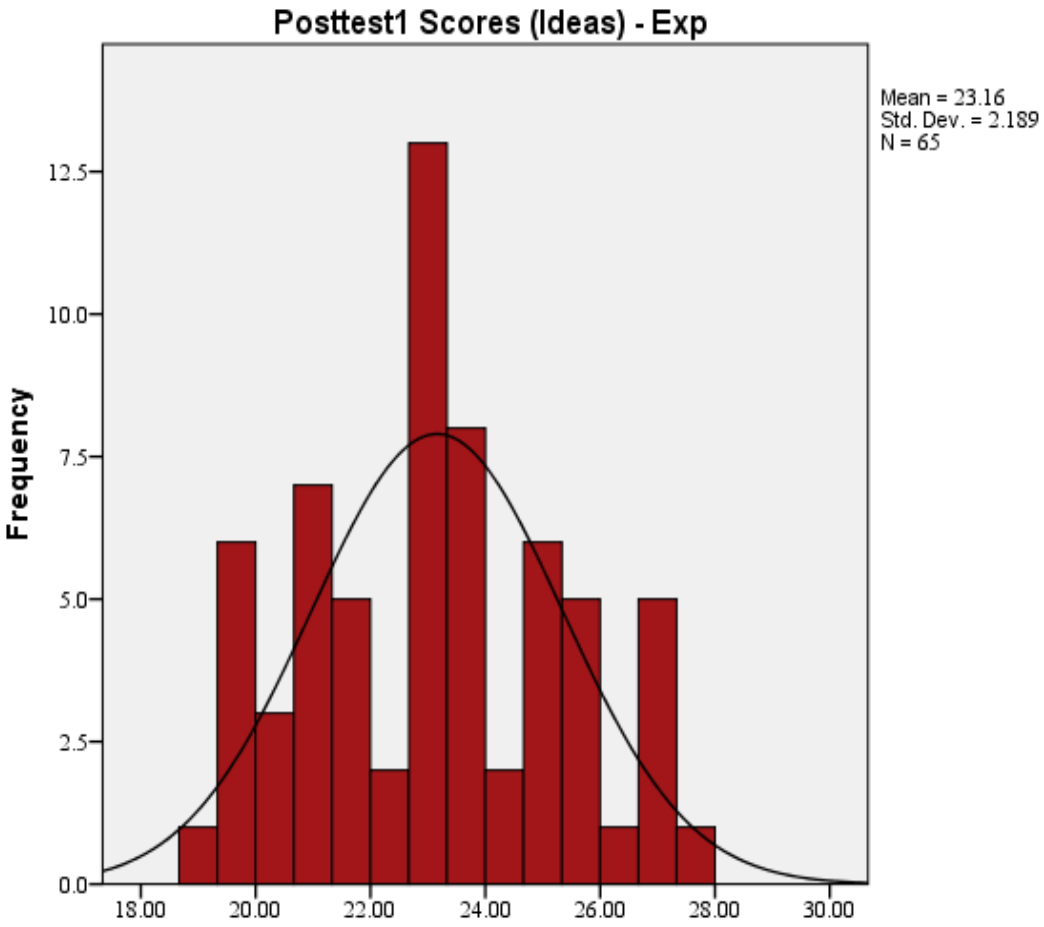

Figure 13. Histogram of posttest1 scores (ideas) of the experimental group

As to the normal Q-Q plots of the posttest1 scores of both groups, Figures 14 and 15 ascertained normality of data in both groups. Boxplots of posttest1 scores of both groups (Appendix H1) provided further cross validation of normality of data.

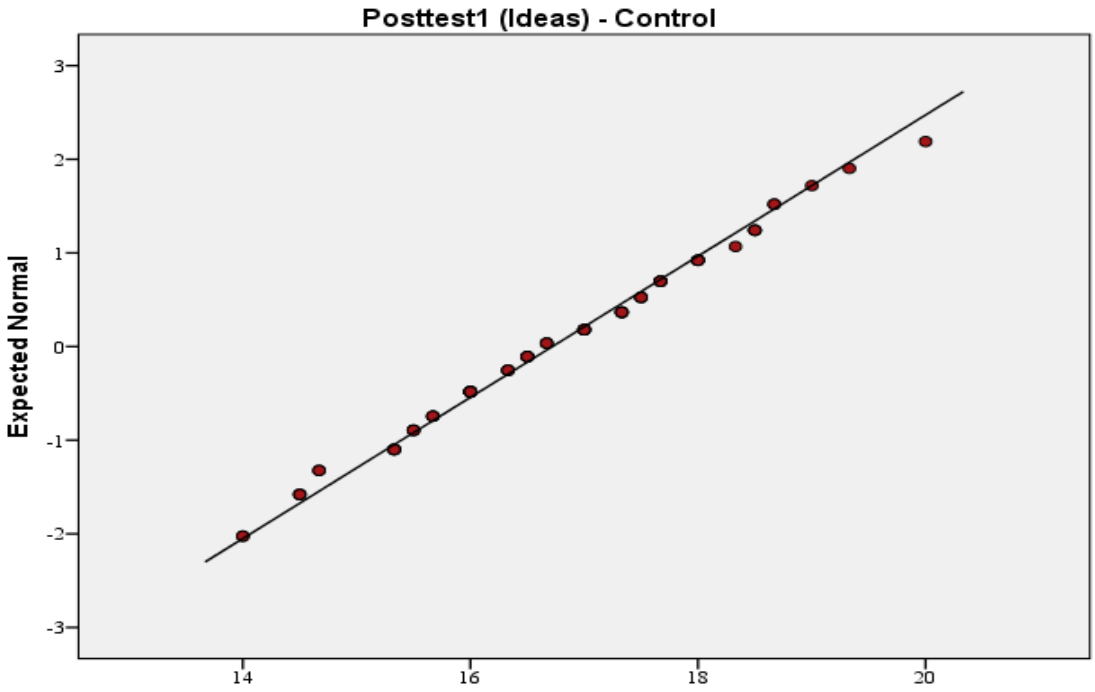

Figure 14. Normal Q-Q plot of pretest1 scores (ideas) of the control group

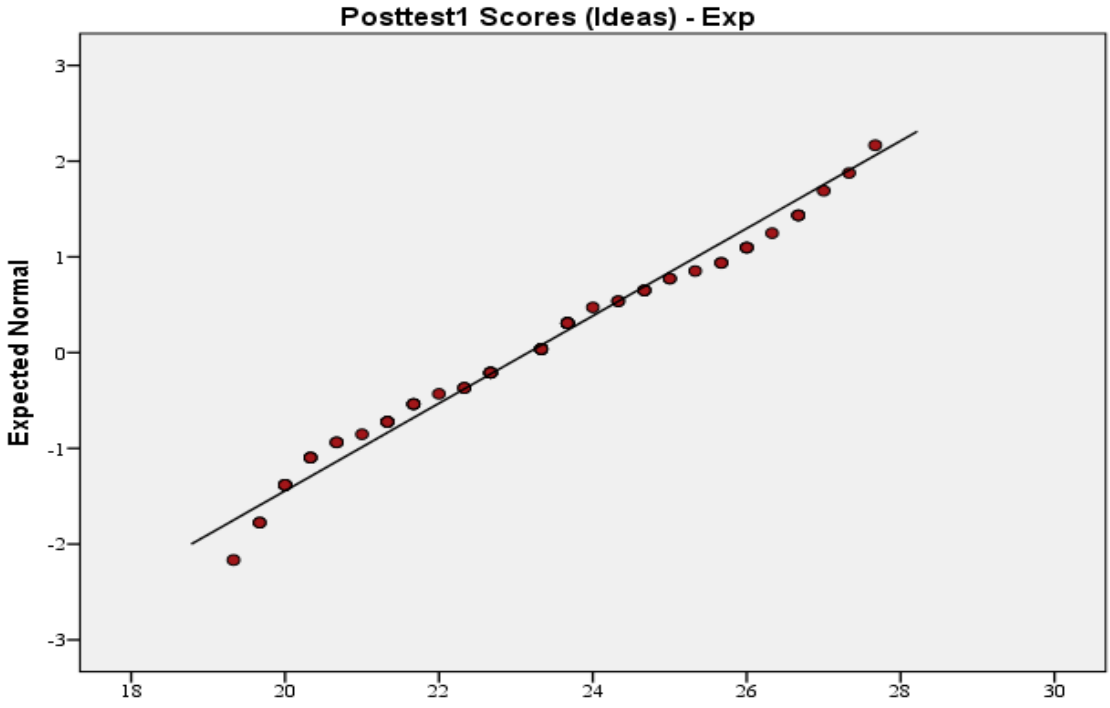

Figure 15. Normal Q-Q plot of pretest1 scores (ideas) of the experimental group

To examine the assumption of homogeneity of variance for pretest1 scores (ideas) variable, the Levene's Test was used with the level of significance $\alpha = .05$. As table 8 indicates, P (F= 15.87; p<.05) = .00. As such, the researcher rejected the Null Hypothesis (no difference) and retained the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance and concluded that there was a significant difference between the two group's variances. Hence, the researcher used the data results associated with the "Equal variances not assumed," which takes into account the Cochran & Cox (1957) adjustment for the standard error of the estimate and the Satterthwaite (1946) adjustment for the degrees of freedom. In other words, the researcher used the bottom line of the *t*-test for equality of means results table and ignored the top line of information. Accordingly, as indicated in tables 8 and 9, the results of the independent samples *t*-test showed that after the IWB treatment, the experimental group (M = 23.15, SD = 2.18) outperformed the control group (M = 16.71, SD = 1.32) in writing achievement P(t (104.20) = -20.44, d_f = 104.20) < .05 with a 95% confidence interval of the difference ranging between -7.06 and -5.81. The effect size of improvement d = -3.53, which suggests a highly significant gain in achievement from an educational point of view (see Table 9). Thus, the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$ was rejected in favor of the Alternative Hypothesis H_1: $\mu_{Control} \neq \mu_{Experimental}$.

Table 8

Descriptive Statistics of Posttest1 Scores (Ideas)

	Group	N	*M*	*SD*
posttest1.ideas	C	69	16.71	1.32
	E	65	23.15	2.18

Note: *M*: Mean *SD*: Standard Deviation

Table 9

Independent Samples Test of Posttest1 Scores (Ideas)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
posttest1.ideas	Equal variances assumed	15.87	.000	-20.73	132	.000	-7.05	-5.82
	Equal variances not assumed			-20.44	104.20	.000	-7.06	-5.81

The researcher, also, carried out two paired samples *t*-tests with the level of significance α= .05. The first was to examine if regular pre-writing instruction enhanced the development of ideas in the essay writings of students in the control group, and the second was to inspect whether the IWB pre-writing instruction improved the development of ideas in the essay writings of students in the experimental group. As indicated in tables 10 and 11, there wasn't a significant difference ($p > 0.05$) between pretest1 scores of students in the control group before receiving pre-writing instruction ($M = 16.56$, $SD = 1.30$) and posttest1 scores of participants in the control group after receiving regular pre-writing instruction ($M = 16.71$, $SD = 1.32$).

Table 10

Paired Samples Test of Pretest1 Posttest1 Scores (Ideas) of Control Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair 1	pretest1ideas.C - posttest1ideas.C	-.33	.02	-1.74	68	.08

Table 11

Descriptive Statistics of Pretest1 Posttest1 Scores (Ideas) of Control Group

		N	*M*	*SD*
Pair 1	pretest1ideas.C	69	16.56	1.30
	posttest1ideas.C	69	16.71	1.32

Note: *M*: Mean *SD*: Standard Deviation

In contrast to the above results, table 12 showed an increase in the mean value from Time1 (M = 16.46, SD = 1.31) to Time 2 (M = 23.15, SD = 2.18) in the participants' performance after receiving the IWB pre-writing instruction. The paired samples t-test yielded a value of P (t (64) = -36.06, d_f = 64) < 0.05 which suggests a gain in achievement with a 95% confidence interval ranging from -7.06 to -6.32 as indicated in table 13.

Table 12

Descriptive Statistics of Pretest1 Posttest1 Scores (Ideas) of Experimental Group

		N	*M*	*SD*
Pair	pretest1ideas.Exp	65	16.46	1.31
	posttest1ideas.Exp	65	23.15	2.18

Note: *M*: Mean *SD*: Standard Deviation

Table 13

Paired Samples Test of Pretest1 Posttest1 Scores (Ideas) of Experimental Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair	pretest1ideas.exp - posttest1.ideasexp	-7.06	-6.32	-36.06	64	.00

Data Analysis of the Performance Questionnaire with respect to the Development of Ideas after the IWB Pre-writing Instruction

To cross-validate the aforementioned analyses of pretest1 posttest1 scores with respect to idea development of the participants in the control and experimental groups, seven questionnaire items on the written performance of the participants in the experimental group with respect to idea development in essay writing after receiving the IWB pre-writing instruction were examined and analyzed using SPSS. All the questions (Q1, Q3, Q4, Q5, Q8, & Q10) were stated positively when the IWB was used except one question (Q9) stated negatively. As table 14 shows, the majority of participants disagreed that the pre-writing activities in the Interactive Whiteboard distracted them from developing their ideas during writing (*M*= 2.05, *SD*=1.06). On the other hand, around two thirds of the participants (f=42) agreed and one third of them (f=19) strongly agreed that the pre-writing activities in the Interactive Whiteboard increased their knowledge about the writing topic (Q1). Moreover, more than half the participants (f=37) agreed and around one third of them (f=23) strongly agreed that they were able to develop their ideas better during writing because of the diagrams, charts, and webs displayed via the Interactive Whiteboard (Q3). Similarly, almost all participants reported that they become more able to support the main ideas in their writings after the pre-writing activities used in the interactive Whiteboard (Q4), and they agreed that the pre-writing activities in the Interactive Whiteboard helped them in remembering the main ideas of the topic during writing (Q5) and made them get rid of the mental block that they used to suffer from when they started writing (Q8). Regarding the responses of the last question, although around two thirds of the participants agreed that they no more needed much time to write down their ideas after the Interactive Whiteboard pre-writing activities, one participant strongly disagreed and five participants disagreed at the time that seventeen

participants expressed the opinion that they didn't know (*M*= 3.75, *SD*= 0.93). This suggests that some participants still need some time to think of what to write about even after the IWB pre-writing instruction.

In conclusion, the findings of the data analysis of the performance questionnaire with respect to the development of ideas (figure 16) showed that the participants noticed a positive change in their written performance when they practiced pre-writing activities via the IWB, and as a result, these findings have conformed with the findings of the data analyses of the essay scores with respect to the development of ideas after the IWB pre-writing instruction. Therefore, the first alternative hypothesis that the use of the Interactive White board in pre-writing instruction improves the development of ideas in the writings of EFL secondary students was retained.

Table 14

Descriptive Statistics of Students' Perception of Performance regarding Idea Development after IWB Prewriting Instruction

		SD	D	N	A	SA	*M*	*SD*
Q1	f			4	42	19	4.23	0.55
	%			6.2	64.6	29.2		
Q3	f			5	37	23	4.28	0.60
	%			7.7	56.9	35.4		
Q4	f			9	41	15	4.09	0.60
	%			13.8	63.1	23.1		
Q5	f		1	3	39	22	4.26	0.61
	%		1.5	4.6	60	33.8		
Q8	f		1	13	43	8	3.89	0.61
	%		1.5	20	66.2	12.3		
Q9	f	21	30	8	2	4	2.05	1.06
	%	32.3	46.2	12.3	3.1	6.2		
Q10	f	1	5	17	28	14	3.75	0.93
	%	1.5	7.7	26.2	43.1	21.5		

Note: f: Frequency %: Percentage SD: Strongly disagree D: Disagree N: I don't know A: Agree SA: Strongly agree *M*: Mean *SD*: Standard Deviation

Q1: The pre-writing activities in the Interactive Whiteboard increase my knowledge about the writing topic
Q3: I can develop my ideas better during writing because of the diagrams, charts, and webs displayed via the Interactive Whiteboard
Q4: I become more able to support the main ideas in my writings after the pre-writing activities used in the interactive Whiteboard
Q5: The pre-writing activities in the Interactive Whiteboard help me in remembering the main ideas of the topic during writing
Q8: Practicing the pre-writing activities via the Interactive Whiteboard makes me get rid of the mental block that I used to suffer from when I start writing
Q9: The pre-writing activities in the Interactive Whiteboard distract me from developing my ideas during writing
Q10: I no more need much time to write down my ideas after the Interactive Whiteboard pre-writing activities

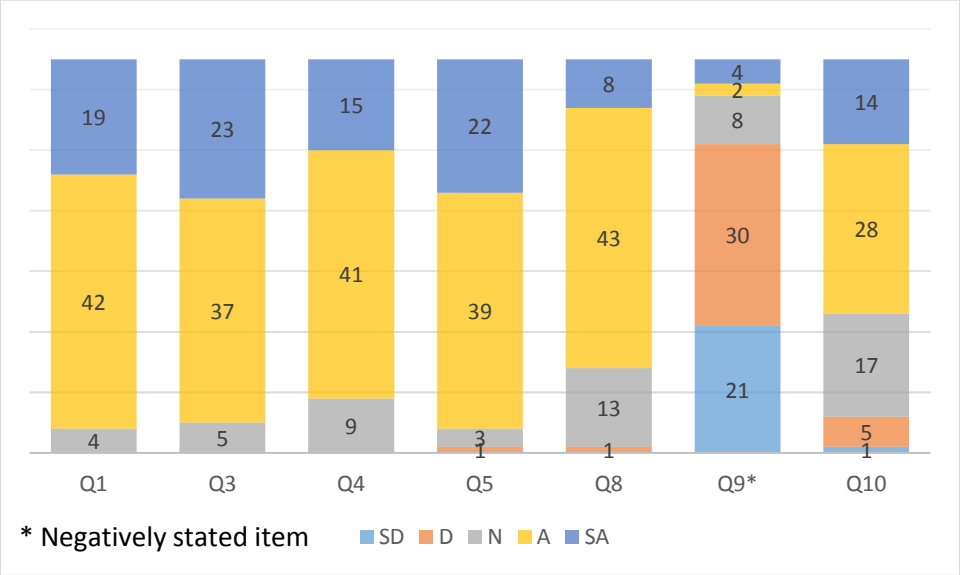

Figure 16. Students' perception of their performance regarding idea development after IWB prewriting instruction

Quantitative Findings of Research Question 2

Research question 2: Does the use of PowerPoint presentation in pre-writing instruction enhance the development of ideas in the writings of EFL secondary students?

Quantitative data needed to answer the aforementioned research question were collected from Pre-test2 post-test2 scores in regard to the development of ideas of participants in treatment

and non-treatment groups and a questionnaire on the performance of participants in the treatment group with respect to the development of ideas after the PPT pre-writing instruction.

Data Analysis of Pre-test2 Post-test2 Scores in terms of the Development of Ideas after the PPT Pre-writing Instruction

Two independent samples *t*-tests were used to examine if the PPT treatment has developed the written performance of the treatment group with respect to the development of ideas. The first independent samples *t*-test tested whether there was a significant difference in performance between the mean value of pre-test2 scores of participants in the non-treatment group and that of pre-test2 scores of participants in the treatment group, and the second independent samples *t*-test checked if there was a significant difference in performance between the mean value of post-test2 scores of participants in the non-treatment group and that of post-test2 scores of participants in the treatment group. Moreover, the researcher used two paired-samples *t*-tests to compare mean value of pre-test2 scores with the mean value of post-test2 scores of participants in the non-treatment group as well as in the treatment group.

With reference to Table 15, the results of Shapiro-Wilk test of normality of pretest2 scores with an a priori alpha level of .05 indicated that that neither the Control Group Level ($p > .05$) nor the Experimental Group Level ($p > .05$) was significant, and as such, both levels of the Independent Variable were normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality and concluded that the assumption of normality has been met.

Table 15

Test of Normality of Pretest2 (ideas)

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pretest2 (ideas)	C	.967	69	.067
	E	.966	65	.071

To validate the results of the Shapiro-Wilk Test, the researcher studied the normality graphically by examining the histogram and the output of a normal Q-Q Plot. As revealed in the histogram of pretest2 scores (ideas) of the control group (Figure 17) and that of the experimental group (Figure 18), the data of pretest2 scores (ideas) of both groups were normally distributed.

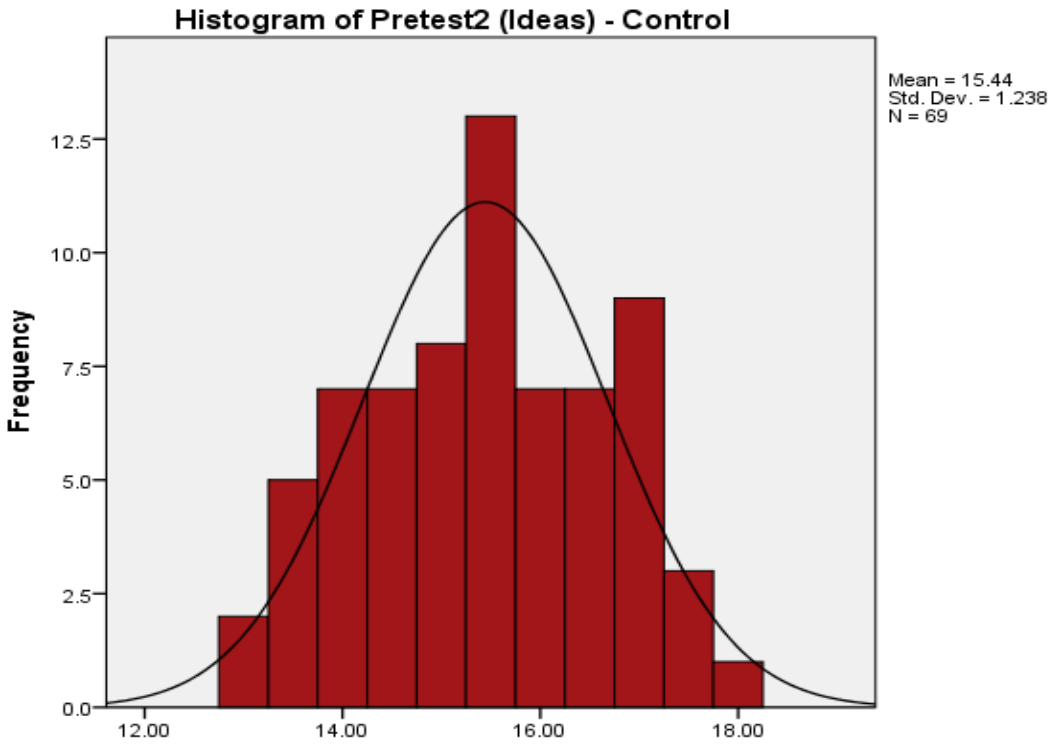

Figure 17. Histogram of pretest2 scores (ideas) of the control group

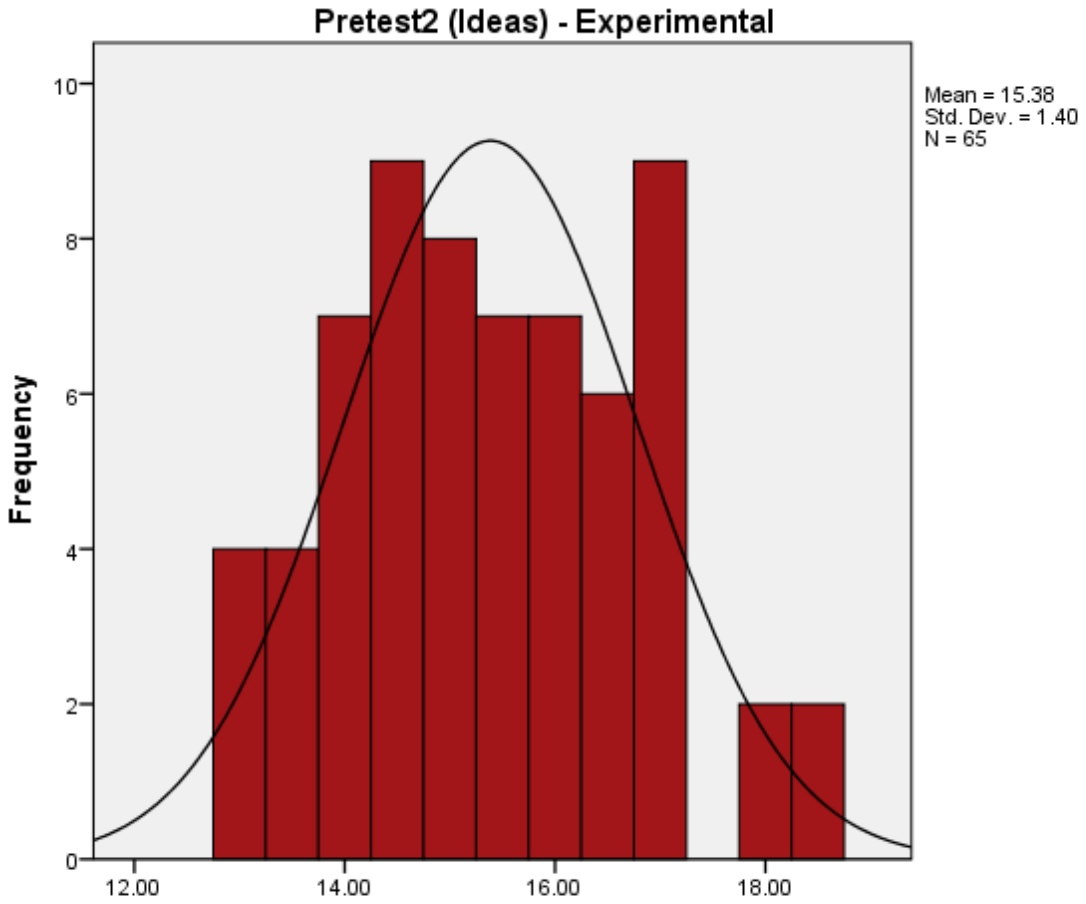

Figure 18. Histogram of pretest2 scores (ideas) of the experimental group after the PPT pre-writing instruction

As revealed in Figures 19 and 20 below, the data of the normal Q-Q plots of the pretest2 scores (ideas) of the control group were placed along the diagonal line and that of the experimental group were somehow attached to the diagonal lines, the thing which verified that the assumption of normality has been met in both groups. A further illustration of normal distribution of pretest2 scores (ideas) of both groups was displayed in the boxplots (Appendix H2).

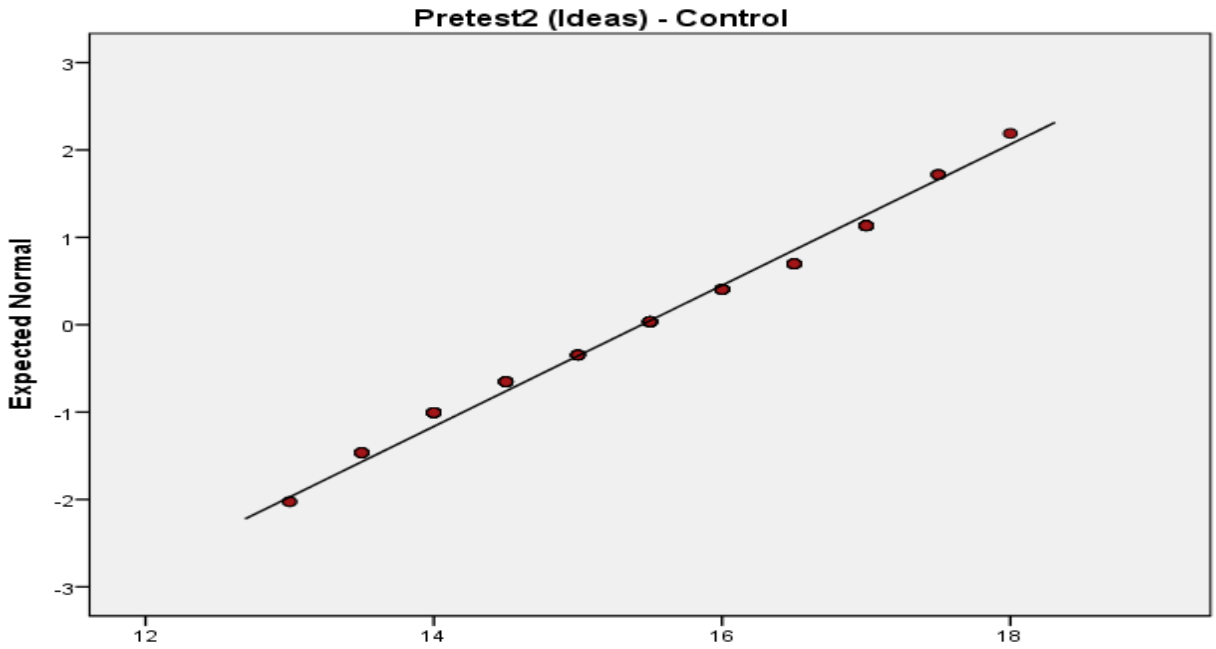

Figure 19. Normal Q-Q Plot of pretest2 scores (ideas) of the control group

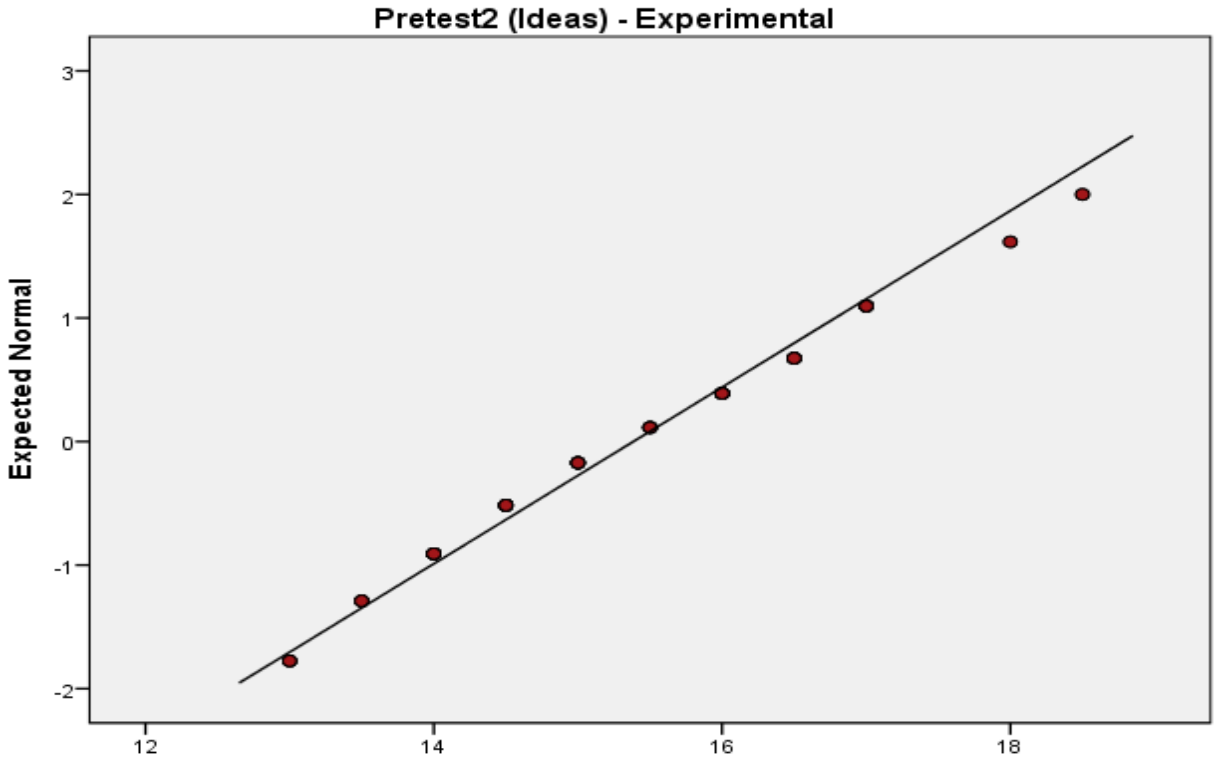

Figure 20. Normal Q-Q Plot of pretest2 scores (ideas) of the experimental group

The Levene's Test was used with the level of significance $\alpha = .05$ to study the assumption of homogeneity of variance for pretest2 scores (ideas) of PPT pre-writing instruction variable. As table 16 indicates, P (F=1.85; p>0.05) = .22. Accordingly, the researcher rejected the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance. As such, the assumption of homogeneity of variance was met since there was no significant difference between the two group's variances, so the researcher conducted the required *t*-tests.

An independent-samples *t*-test was conducted using an alpha level of .05 in order to examine whether the experimental group and the control group differed significantly in the pretest2 scores with respect to development of ideas in essay writing. As table 16 shows, there wasn't a significant difference between the mean value of the experimental group and that of the control group with P (t (132) = .25, d_f = 132) > .05. Also, descriptive statistics showed no considerable difference between the control group (M= 15.44, SD= 1.23) and the experimental group (M= 15.38, SD= 1.39) as indicated in table 17. Thus, the Alternative Hypothesis H_1: $\mu_{Control} \neq \mu_{Experimental}$ was rejected in favor of the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$.

Table 16

Independent Samples Test of Pretest2 (Ideas)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Pretest2 Scores (ideas)	Equal variances assumed	1.46	.22	.25	132	.802	-.39	.50
	Equal variances not assumed			.25	127.78	.802	-.39	.51

Table 17

Descriptive Statistics of Pretest2 Scores (Ideas)

	Group	N	*M*	*SD*	Std. Error Mean
Pretest2 scores (ideas)	C	69	15.44	1.23	.14
	E	65	15.38	1.39	.17

As to the statistical normality of posttest2 scores, the researcher used the Shapiro-Wilk test of normality with an a priori alpha level of .05. As table 18 indicates, the results of the test showed that neither the Control Group Level ($p > .05$) nor the Experimental Group Level ($p > .05$) was significant, and as such, both levels of the Independent Variable were normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality and concluded that the assumption of normality has been met.

Table 18

Test of Normality of Posttest2 (ideas)

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Posttest2 (ideas)	C	.96	69	.06
	E	.97	65	.15

With respect to the graphical normality of postttest2 scores, the researcher examined the histograms and the output of a normal Q-Q Plots. As exposed in the histogram of posttest2 scores (ideas) of the control group (Figure 21) and that of the experimental group (Figure 22), the data of posttest2 scores (ideas) of both groups were normally distributed.

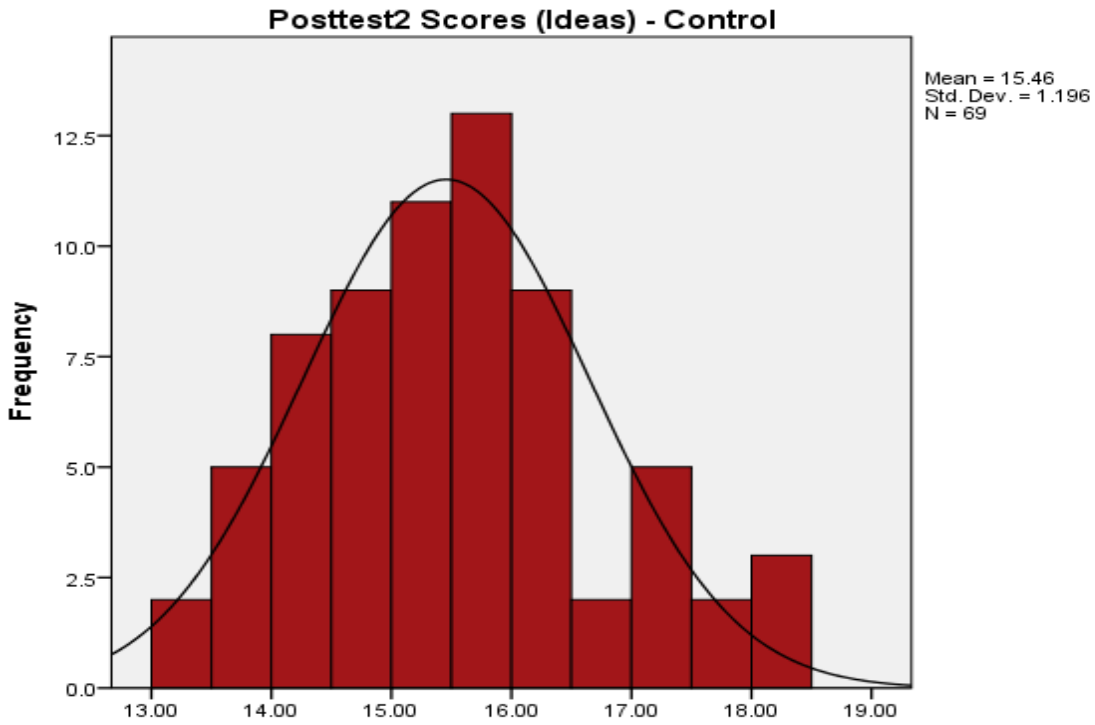

Figure 21. Histogram of posttest2 scores (ideas) of the control group

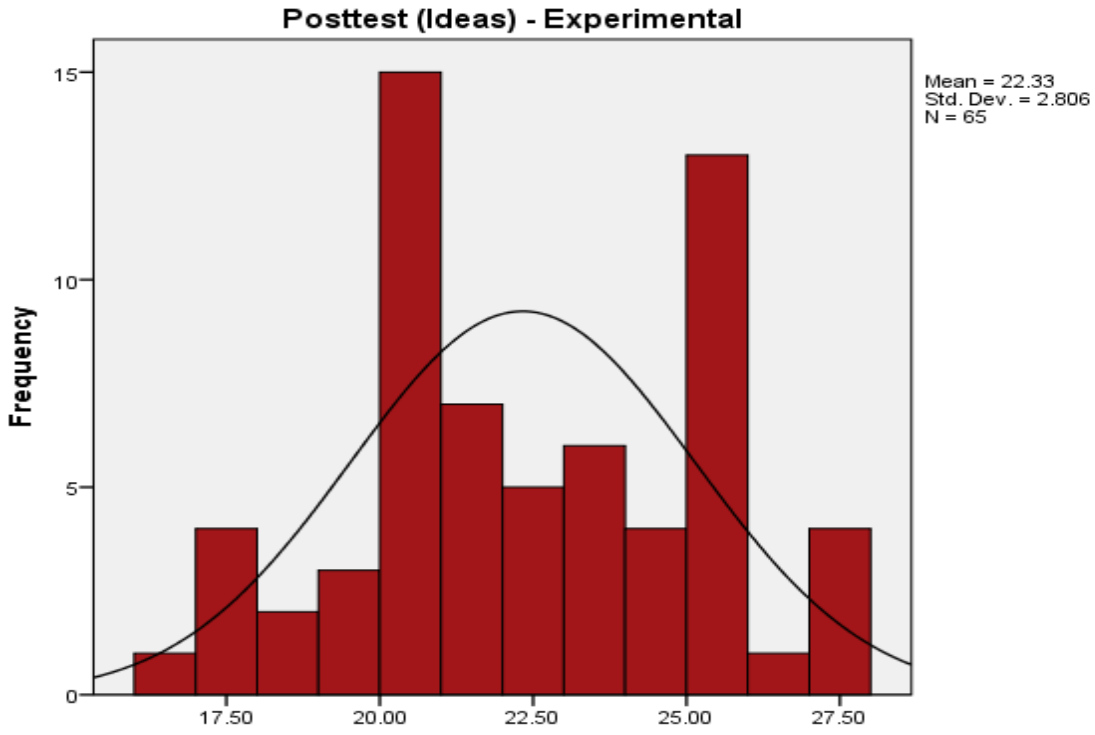

Figure 22. Histogram of posttest2 scores (ideas) of the experimental group after the PPT pre-writing instruction

As revealed in Figures 23 and 124 below, the data of the normal Q-Q plots of the posttest2 scores (ideas) of the control group were placed along the diagonal line and that of the experimental group were somehow attached to the diagonal lines, the thing which verified that the assumption of normality has been met in both groups. A further illustration of normal distribution of posttest2 scores (ideas) of both groups was displayed in the boxplots (Appendix H2).

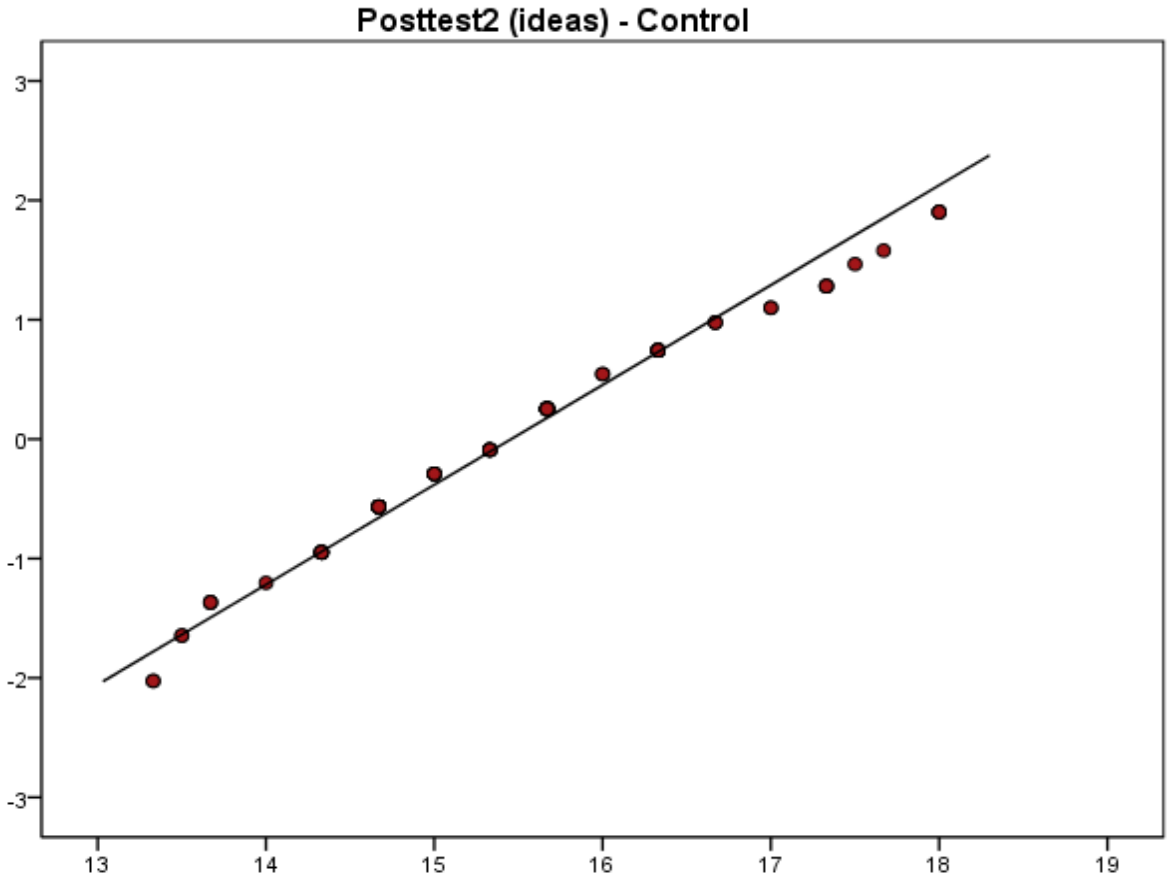

Figure 23. Normal Q-Q Plot of posttest2 scores (ideas) of the control group

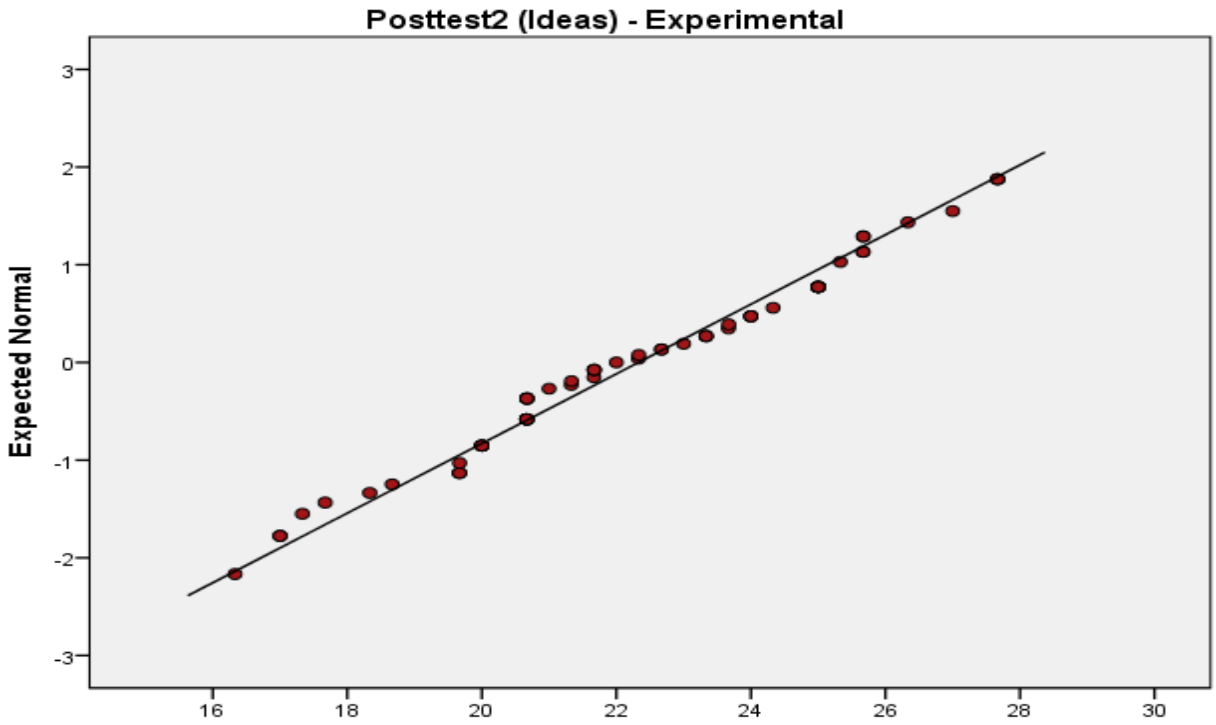

Figure 24. Normal Q-Q Plot of posttest2 scores (ideas) of the experimental group

The Levene's Test was used with the level of significance $\alpha = .05$ to study the assumption of homogeneity of variance for posttest2 scores (ideas) of PPT pre-writing instruction variable. As table 20 indicates, P ($F = 48.41$; $p < 0.05$) = .00. Accordingly, the researcher retained the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance and concluded that there was a significant difference between the two group's variances. Hence, the researcher used the data results associated with the "Equal variances not assumed," which takes into account the Cochran & Cox (1957) adjustment for the standard error of the estimate and the Satterthwaite (1946) adjustment for the degrees of freedom. In other words, the researcher used the bottom line of the *t*-test for equality of means results table and ignored the top line of information. Accordingly, the researcher proceeded with the required *t*-tests.

Descriptive statistics revealed that there was a considerable difference in the mean value between the control group (*M*= 15.45, *SD*= 1.19) and the experimental group (*M*= 22.32, *SD*= 2.81) as indicated in table 19. The results of the independent-samples *t*-test of posttest2 scores showed that the experimental group outperformed the control group in writing achievement after the PPT treatment P (t (85.41) = -18.24, d_f = 85.41) < .05 with an effect size of improvement *d*=3.15, which suggests a highly significant gain in achievement from an educational point of view (refer to Table 20). The 95% confidence interval of difference ranged between -7.62 and -6.12. Thus, the Null Hypothesis $H_0: \mu_{Control} = \mu_{Experimental}$ was rejected in favor of the Alternative Hypothesis $H_1: \mu_{Control} \neq \mu_{Experimental}$.

Table 19

Descriptive Statistics of Posttest2 Scores (Ideas)

	Group	N	*M*	*SD*	Std. Error Mean
Posttest2 scores (ideas)	C	69	15.45	1.19	.14
	E	65	22.32	2.81	.35

Table 21

Independent Samples Test of Posttest2 (Ideas)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Pretest2 Scores (ideas)	Equal variances assumed	48.41	0.00	-18.63	132	.00	-7.60	-6.14
	Equal variances not assumed			-18.24	85.41	.00	-7.62	-6.12

The researcher, also, conducted two paired samples *t*-tests with the level of significance $\alpha = .05$. The first was to find out if regular pre-writing instruction boosted the development of ideas in the essay writings of students in the non-treatment group. The results of the t-test showed no statistical difference in mean values between pretest2 scores (*M* = 15.44, *SD* = 1.24) posttest2 scores (*M* = 15.45, *SD* = 1.19), t(68) = -.23, p >. 05 (Refer to tables 21 and 22).

Table 21

Descriptive Statistics of Pretest2 Posttest2 Scores (Ideas) of the Control Group

		N	*M*	*SD*
Pair	pretest1ideas.C	69	15.44	1.24
	posttest1ideas.C	69	15.45	1.19

Table 22

Paired Samples Test of Pretest2 Posttest2 Scores (Ideas) of the Control Group

		Paired Differences				
		95% Confidence Interval of the Difference				
		Lower	Upper	t	df	Sig. (2-tailed)
Pair	pretest1ideas.exp - posttest1.ideas.exp	-.14	.11	-.23	68	.82

The second was to test whether the PPT pre-writing instruction ameliorated the development of ideas in the essay writings of students in the treatment group. The results of the second paired samples *t*-test, as indicated in tables 23 and 24, revealed that there was a significant difference between pretest2 scores of students in the experimental group before receiving pre-writing instruction (*M* = 15.38, *SD* = 1.39) and posttest2 scores of students in the experimental group after receiving PPT pre-writing instruction (*M* = 22.33, *SD* = 2.80), t(64) = -30.34, p <. 05. The 95% confidence interval for the difference is from -7.40 to -6.49.

Therefore, the researcher deduced that PPT pre-writing instruction helped students in the experimental group to perform better in essay writing as regards the development of ideas.

Table 23

Descriptive Statistics of Pretest2 Posttest2 Scores (Ideas) of the Experimental Group

		N	*M*	*SD*
Pair	pretest1ideas.Exp	65	15.38	1.39
	posttest1ideas.Exp	65	22.33	2.80

Table 24

Paired Samples Test of Pretest2 Posttest2 Scores (Ideas) of the Experimental Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair	pretest1ideas.exp - posttest1.ideasexp	-7.40	-6.49	-30.34	64	.00

Data Analysis of the Performance Survey with respect to the Development of Ideas after the PPT Pre-writing Instruction

Six questionnaire items on the written performance of the participants in the experimental group with regards to idea development in essay writing after receiving the PPT treatment were examined and analyzed using SPSS in order to verify the abovementioned analyses of the participants' essay scores of idea development. Four questions (Q11, Q14, Q16, & Q18) were stated positively, whereas two questions (Q17 & Q19) were stated negatively. As table 25 shows, almost all the participants either agreed (63.1%) or strongly agreed (29.2) that the use of colorful webs and diagrams in the PowerPoint presentations helped them in organizing their thoughts (*M*= 4.17, *SD*= .72). Moreover, more than half the participants (53.8%) agreed and around one

third of them (32.3) strongly agreed that the PowerPoint presentations allowed them to recall the details of the main ideas in a better way during writing (*M*= 4.18, *SD*= .65). Likewise, 83.1 % of the participants reported that they knew exactly what to write about after the display of the PowerPoint presentations (*M*=4.25, *SD*= .77), and the majority of them admitted that they gained more ideas about the writing topic after the PowerPoint presentations (*M*= 4.28, *SD*= .60). On the other hand, when asked if ideas became scrambled in their heads during writing after the display of the PowerPoint, 24.6% of the participants reported that they strongly disagreed, 58.5% of them disagreed at the time that only one participant agreed and another one strongly agreed (*M*= 1.97, *SD*= .77). As to the last question, 40% of the participants strongly disagreed and 40% of them disagreed that they still waste much time to start writing down their ideas even after the PowerPoint presentations (*M*= 1.82, *SD*= .78) , while only one participant agreed and 18.5% of them didn't know.

In summary, the findings of the data analysis of the performance questionnaire with regards to the development of ideas after the PPT treatment (Figure 25) complied with those of the data analysis of pretest2 posttest2 scores in terms of the development of ideas after receiving the PPT instruction. Therefore, the second Alternative Hypothesis "The use of the PowerPoint presentation in pre-writing instruction enhances the development of ideas in the writings of EFL secondary students." was retained.

Table 25

Descriptive Statistics of Students' Perception of Performance regarding Idea Development after PPT Prewriting Instruction

		SD	D	N	A	SA	*M*	*SD*
Q11	F	1	1	3	41	19	4.17	.72
	%	1.5	1.5	4.6	63.1	29.2		
Q 14	F			9	35	21	4.18	.65
	%			13.8	53.8	32.3		

Q16	F		1	10	26	28	4.25	.77
	%		1.5	15.4	40	43.1		
Q17	F	16	38	9	1	1	1.97	.77
	%	24.6	58.5	13.8	1.5	1.5		
Q18	F			5	37	23	4.28	.60
	%			7.7	56.9	35.4		
Q19	F	26	26	12	1		1.82	.78
	%	40	40	18.5	1.5			

Note: f: Frequency SD: Strongly disagree D: Disagree N: I don't know A: Agree
SA: Strongly agree *M*: Mean *SD*: Standard Deviation

Q11: The use of colorful webs and diagrams in the PowerPoint presentations helps me in organizing my thoughts

Q14: The PowerPoint presentations allows me to recall the details of the main ideas in a better way during writing

Q16: I know exactly what to write about after the display of the PowerPoint presentations

Q17: Ideas become scrambled in my head during writing after the display of the PowerPoint presentations

Q18: I gain more ideas about the writing topic after the PowerPoint presentations

Q19: I still waste much time to start writing down my ideas even after the PowerPoint presentations

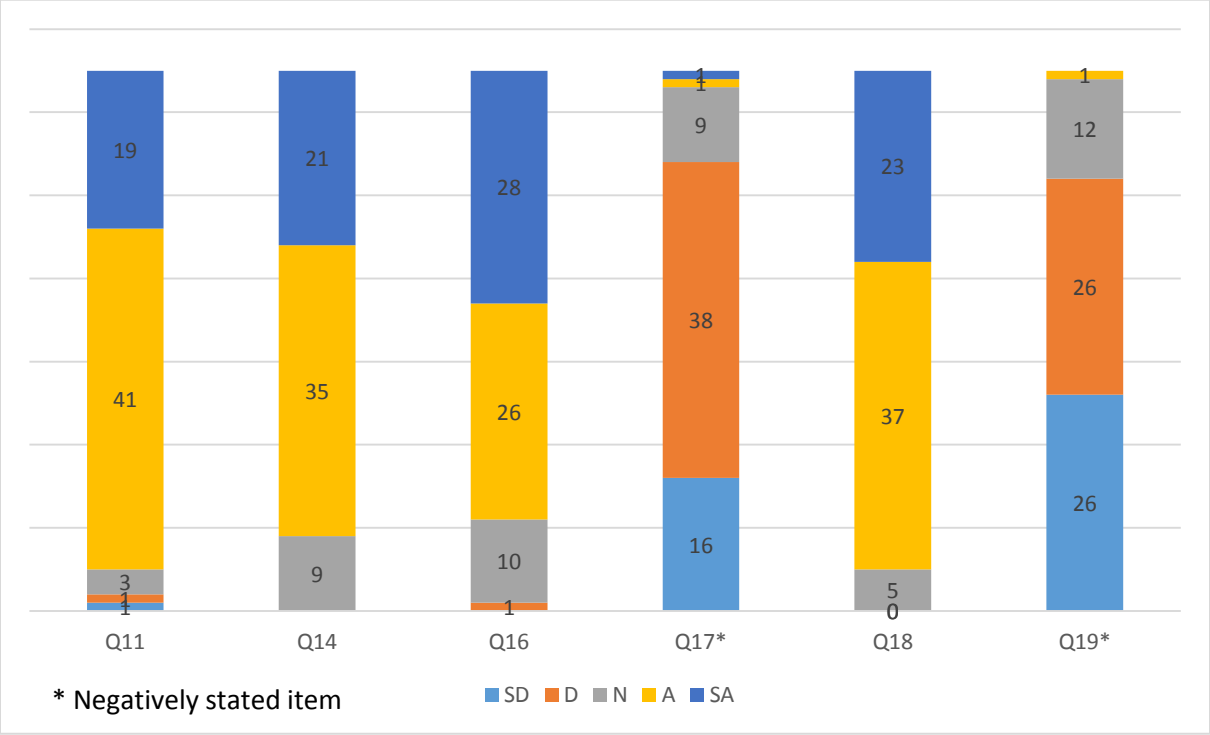

Figure 25. Students' perception of their performance regarding idea development after PPT prewriting instruction

Quantitative Findings of Research Question 3

Research question 3: Does the use of Interactive Whiteboard in pre-writing instruction lead EFL secondary students to use topic-related vocabulary words properly?

To answer research question 3, quantitative data were collected from two sources: Pretest1 posttest1 scores pertaining to the proper use of topic-related words of participants in experimental and control groups and a questionnaire on the performance of participants in the experimental group with respect to the proper use of topic-related words after using IWB pre-writing instruction.

Data Analysis of the Pretest1 Posttest1 pertaining to the Proper Use of Topic-related Words after the IWB Pre-writing Instruction

In order to examine if implementing the IWB pre-writing instruction enhanced participants' performance in terms of the proper use of topic-related words, the researcher used two independent samples *t*-tests. The first independent samples *t*-test compared between the mean value of the pretest1 scores pertaining to the proper use of topic-related words of the participants in the treatment group and that of participants in the non-treatment group. Table 26 shows the results of the Shapiro-Wilk test of normality which investigated whether the levels of the independent variable were statistically normal. The results of the Shapiro-Wilk test with a priori alpha level of .05 revealed that neither the Control Group Level nor the Experimental Group Level was significant given that $p > .05$ for the Control Group and $p > .05$ for the Experimental Group, and as such, the researcher considered both levels of the Independent Variable to be normally distributed. Thus, she rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality, and as such, she concluded that both levels (the experimental and control) of the independent variable are statistically normally distributed.

Table 26

Test of Normality of Pretest1 (Vocab)

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pretest1 (vocab)	C	.97	69	.06
	E	.97	65	.07

To validate the results of the Shapiro-Wilk Tests, the researcher tested the assumption of normality graphically by examining the histograms and the outputs of the Q-Q Plots of pretest1 scores (vocab). The histogram of pretest1 scores of the control group (Figure 26) and that of the experimental group (Figure 27) showed that the data of pretest1 scores (vocab) of both groups are normally distributed.

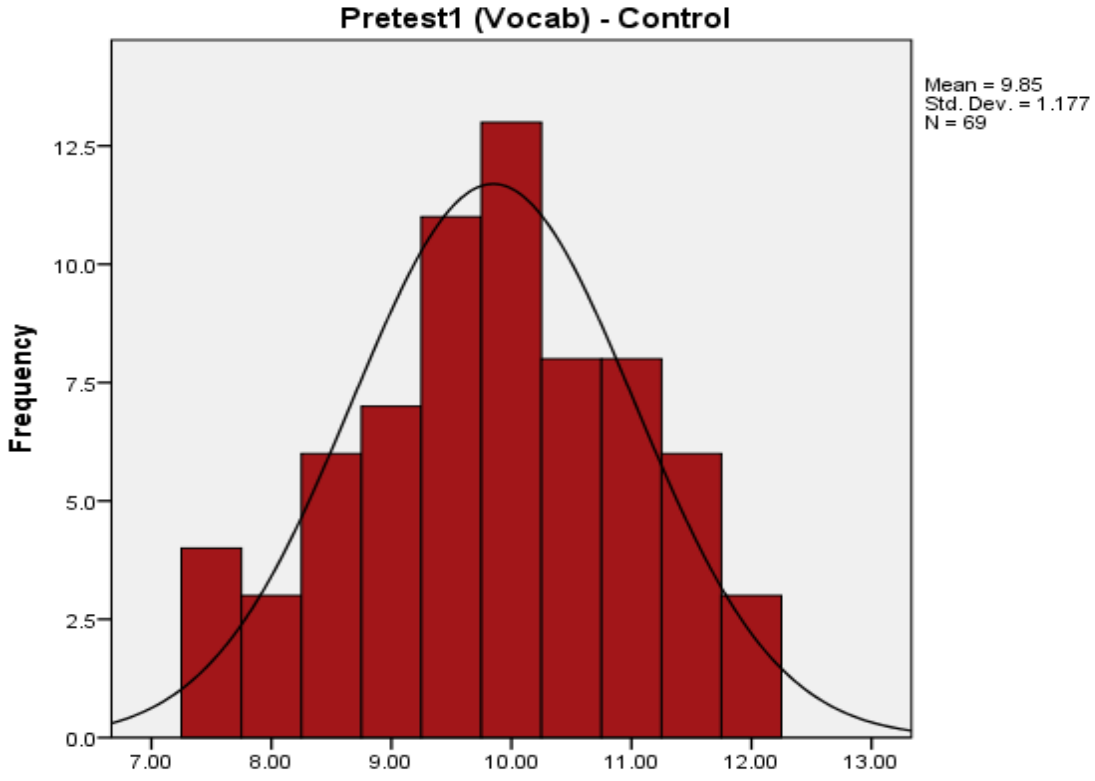

Figure 26. Histogram of pretest1 scores (vocab) of the control group

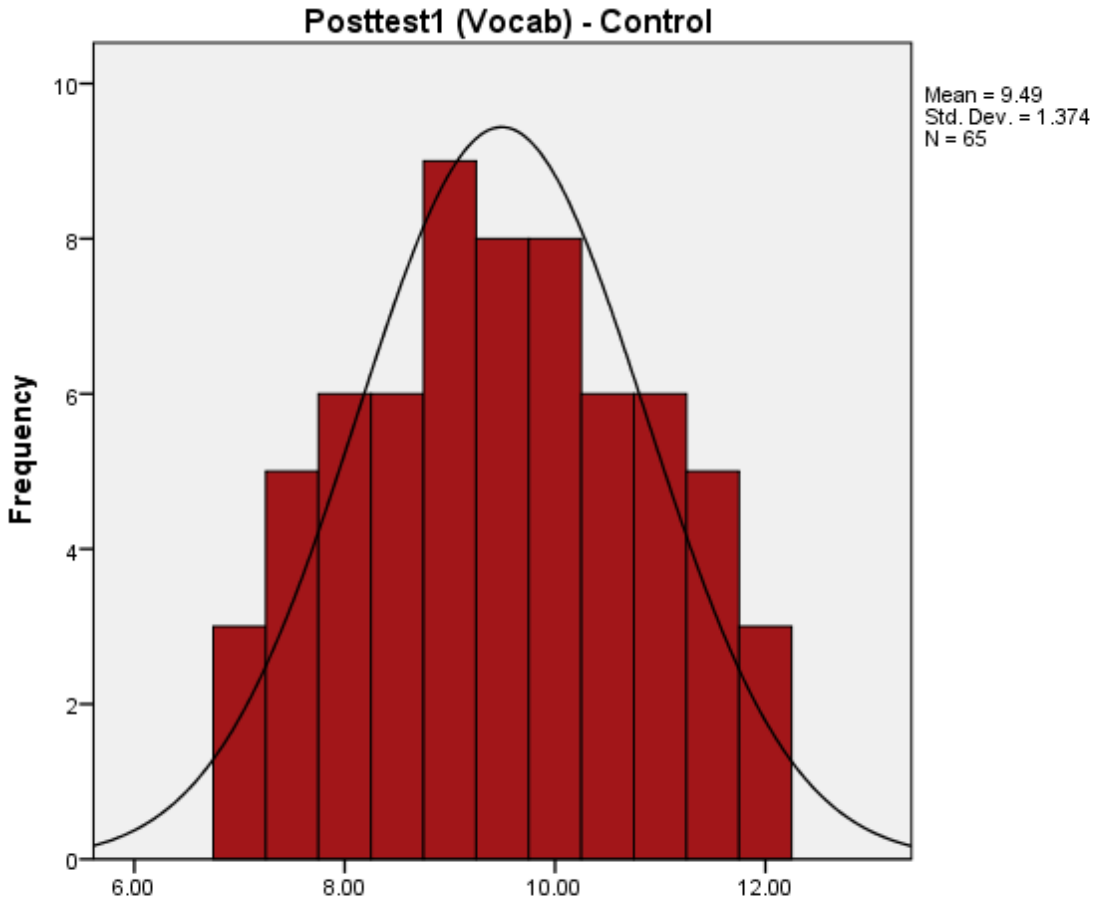

Figure 27. Histogram of pretest1 scores (vocab) of the experimental group

By examining the normal Q-Q plots of pretest1 scores (vocab) of the control group and that of the experimental group shown in Figures 28 and 29 below, the researcher found that the assumption of normality has been met in both groups since the data were located along the diagonal lines in both figures 28 and 29. A further illustration of normal distribution of pretest1 scores (vocab) of both groups was displayed in the boxplots (Appendix H3).

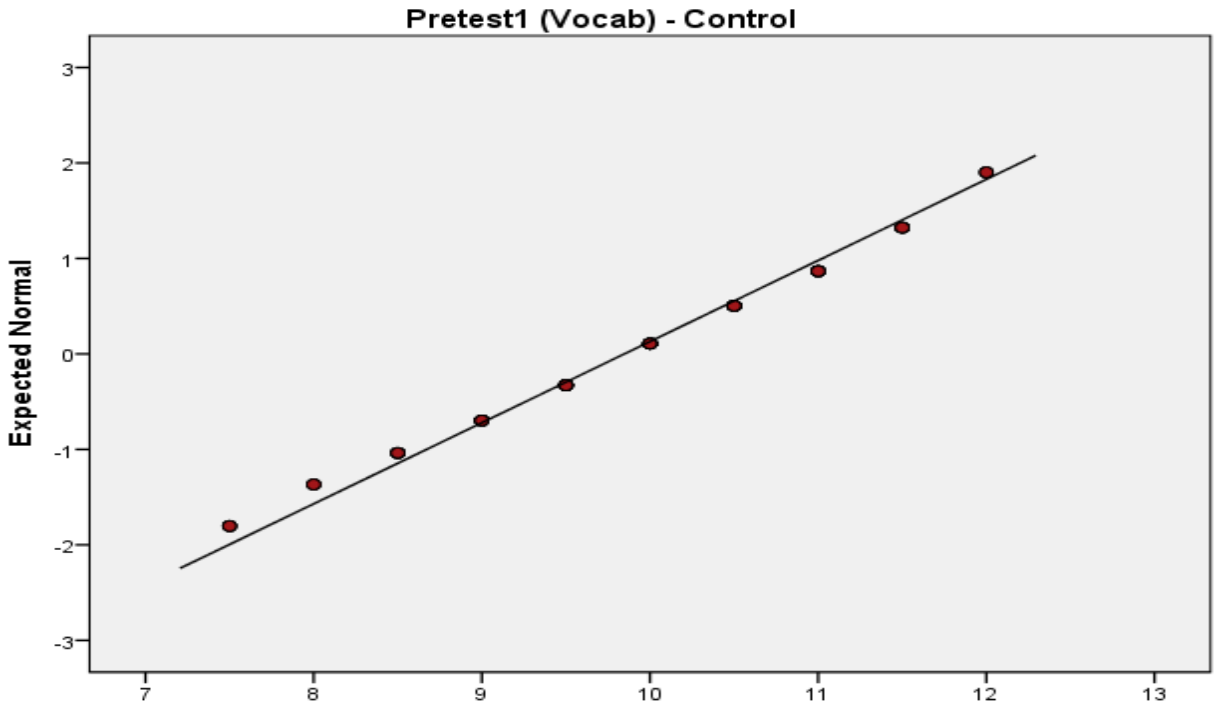

Figure 28. Normal Q-Q Plot of pretest1 scores (vocab) of the control group

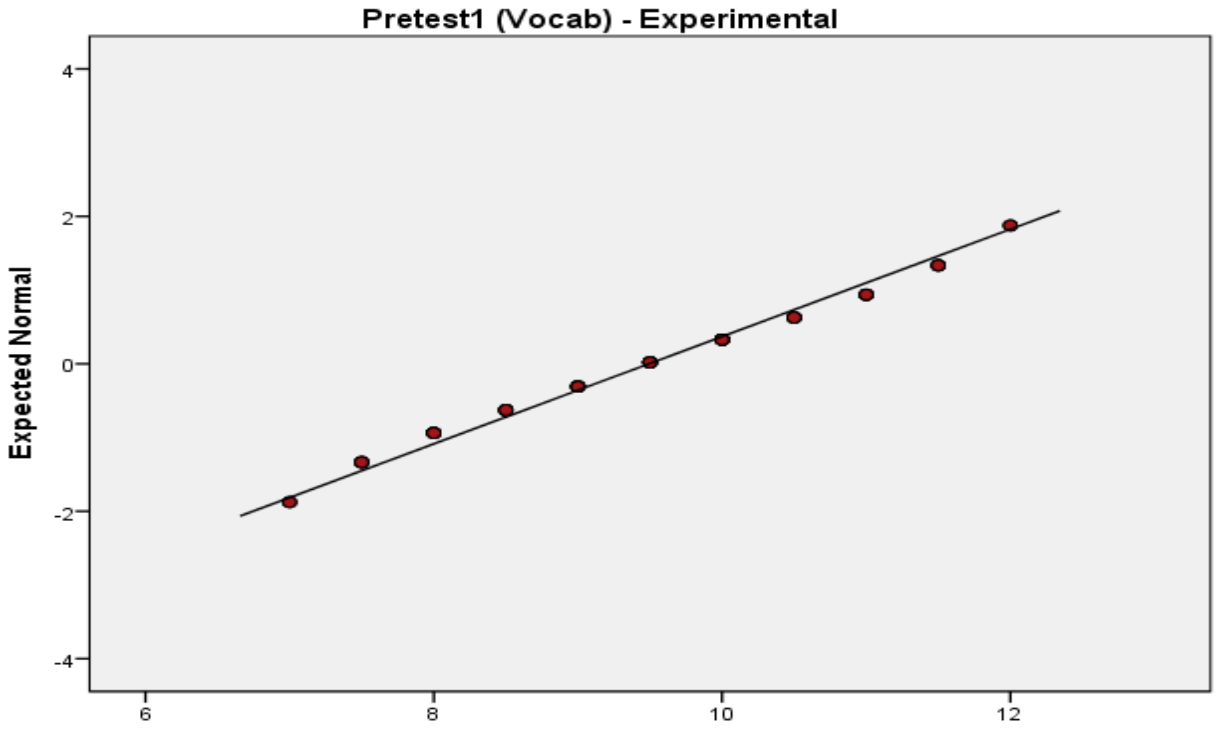

Figure 29. Normal Q-Q plot of pretest1 scores (vocab) of the experimental group

With respect to the assumption of homogeneity of variance for pretest1 scores (vocab), the Levene's Test was used with the level of significance $\alpha = .05$. As table 28 shows, P (F= 1.83; p>0.05) = .15. As such, the researcher rejected the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance and found out that there was no significant difference between the two group's variances. Therefore, she concluded that the assumption of homogeneity of variance was met, and accordingly, she proceeded with the independent samples t-test.

Descriptive statistics showed no substantial difference in the mean values between the control group (M = 9.85, SD = 1.18) and the experimental group (M = 9.49, SD = 1.37) as shown in table 27. The results of the independent-samples *t*-test of pretest1 scores (vocab) with an alpha level of .05, and as revealed in table 28, indicated that there wasn't a significant difference between the mean value of the experimental group and that of the control group with P (t (132) = 1.61, d_f = 132) > .05. Thus, the Alternative Hypothesis H_1: $\mu_{Control} \neq \mu_{Experimental}$ was rejected in favor of the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$.

Table 27

Descriptive Statistics of Pretest1 Scores (Vocab)

	Group	N	*M*	*SD*	Std. Error Mean
Pretest1 scores (vocab)	C	69	9.85	1.18	.14
	E	65	9.49	1.37	.17

Table 28

Independent Sample Test of Pretest1 Scores (Vocab)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Pretest1 Scores (vocab)	Equal variances assumed	2.09	.15	1.61	132	.11	-.08	.79
	Equal variances not assumed			1.60	126.27	.11	-.08	.79

Another independent-samples *t*-test was conducted using an alpha level of .05 in order to determine whether the experimental group (receiving IWB pre-writing instruction) and the control group (receiving regular instruction) differed significantly on posttest1 with respect to the proper use of topic-related words in essay writings. Concerning the statistical normal distribution of posttest1 scores (vocab) of control and experimental levels, the results of the Shapiro-Wilk test with an a priori alpha level of .05 displayed in table 29 showed that $p > .05$ for the control group and $p > .05$ for the experimental group which means that neither the control group level nor the experimental group level was significant, and as such, the researcher considered both levels of the independent variable to be normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality, and hence, she concluded that the assumption of normality has been met.

Table 29

Test of Normality of Posttest1 Scores (Vocab)

	Group	Shapiro-Wilk		
		Statistic	Df	Sig.
Posttest1 scores (vocab)	C	.97	69	.15
	E	.96	65	.06

With respect to the graphical normality of data, an examination of the histogram of posttest1 scores (vocab) of the control group (Figure 30) and that of the experimental group (Figure 31) evidenced that the data of both groups were normally distributed.

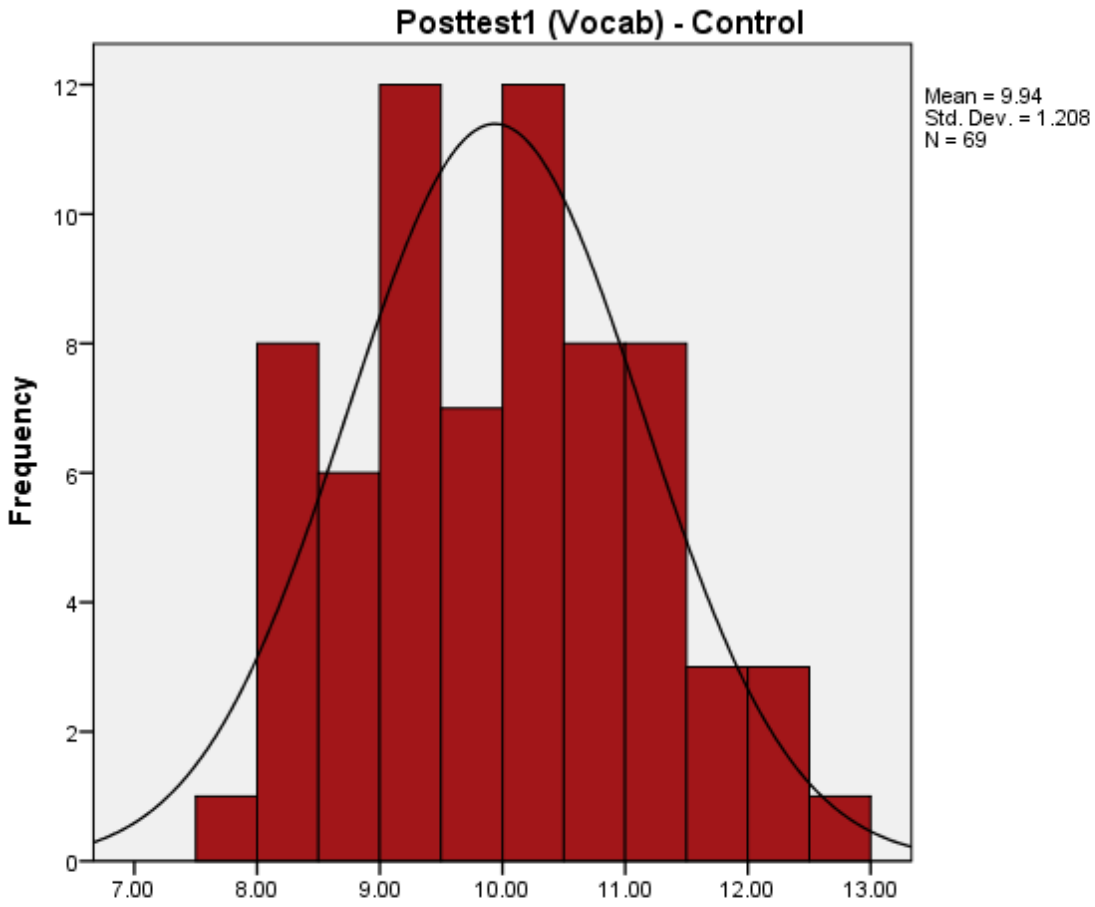

Figure 30. Histogram of posttest1 scores (vocab) of the control group

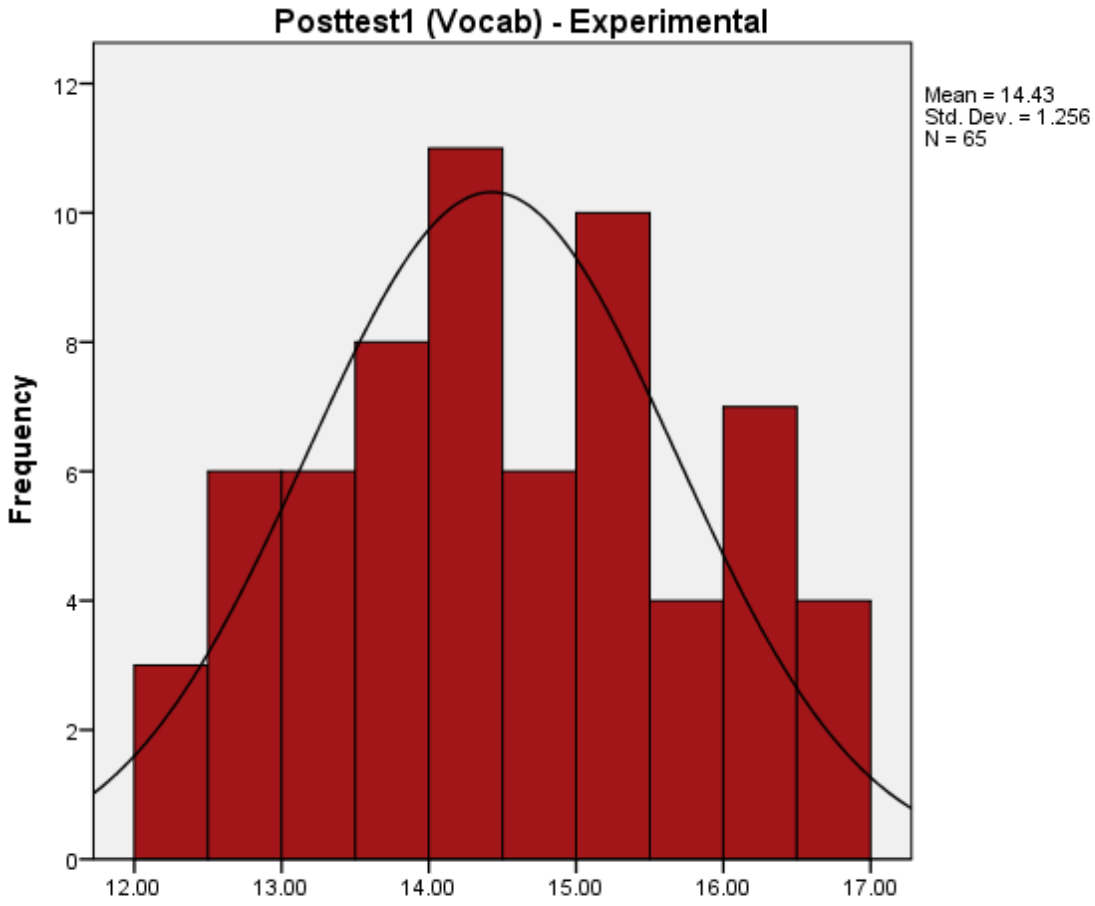

Figure 31. Histogram of posttest1 scores (vocab) of the experimental group

As to the normal Q-Q plots of the posttest1 scores (vocab), Figures 32 and 33 ascertained normality of data in both groups. Boxplots of posttest1 scores (vocab) of both groups (Appendix H3) provided further cross validation of normality of data.

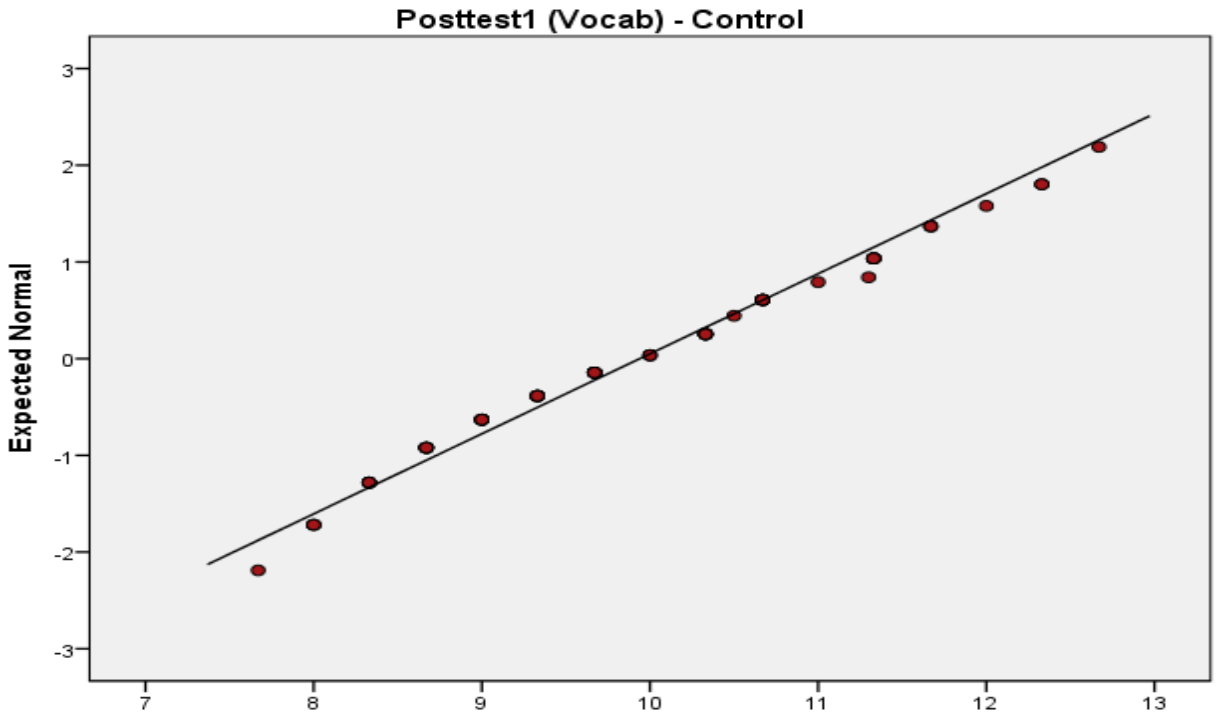

Figure 32. Normal Q-Q plot of posttest1 scores (vocab) of the control group

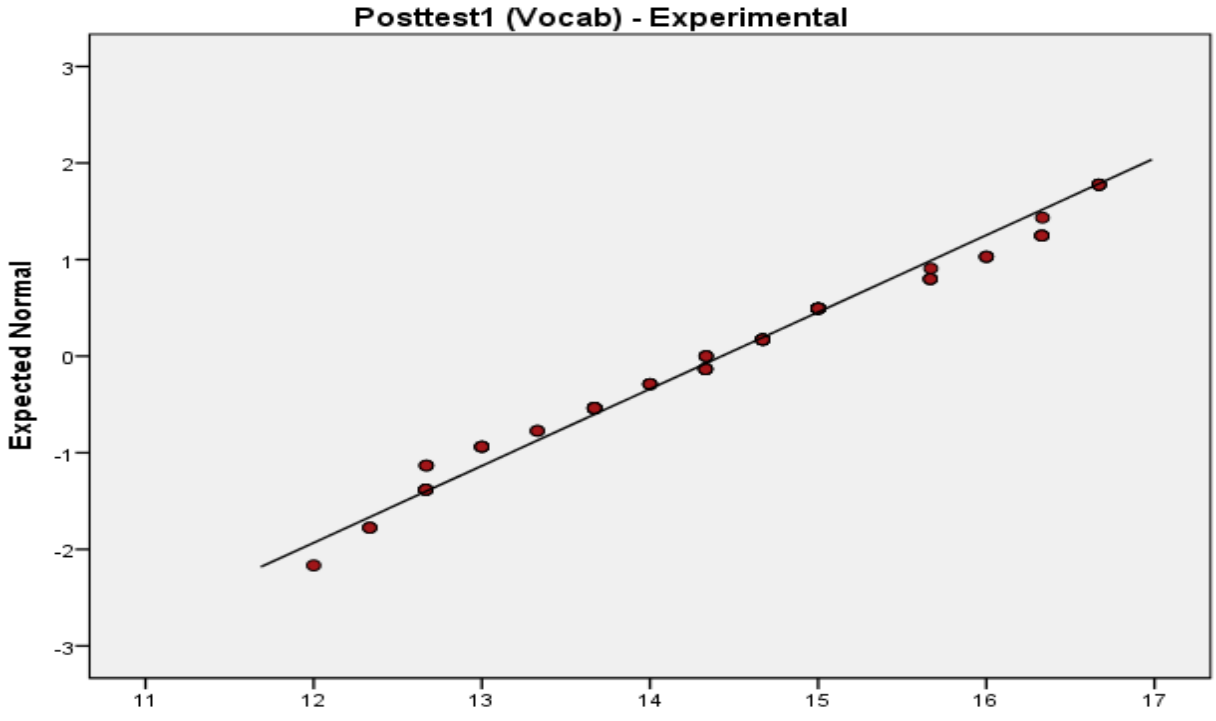

Figure 33. Normal Q-Q plot of posttest1 scores (vocab) of the experimental group

To examine the assumption of homogeneity of variance for posttest1 scores (vocab) variable, the Levene's Test was used with the level of significance $\alpha = .05$. As table 31 indicates, the results revealed that P (F=.017; p>.05) = 0.88. Consequently, the researcher rejected the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance and concluded that there was no significant difference between the two group's variances. Hence, the assumption of homogeneity of variance was met, so the researcher proceeded with the t-tests. As tables 30 and 31 reveal, the results of the independent samples t-test of posttest1 scores relating to the proper use of topic-related words in essay writings showed that after the intervention, the experimental group (M = 14.43, SD = 1.26) outperformed the control group in writing achievement (M = 9.94, SD = 1.21), P(t (132) = -21.08, d_f = 132) < .05. The effect size of improvement d = -3.64 suggests a remarkable gain in achievement from an educational point of view. Thus, the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$ was rejected in favor of the Alternative one H_1: $\mu_{Control} \neq \mu_{Experimental}$.

Table 30

Descriptive Statistics of Posttest1 Scores (Vocab)

	Group	N	*M*	*SD*	Std. Error Mean
Posttest1 scores (vocab)	C	69	9.94	1.21	.14
	E	65	14.43	1.26	.15

Table 31

Independent Sample Test of Posttest1 Scores (Vocab)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Posttest1 Scores (vocab)	Equal variances assumed	.02	.88	-21.08	132	.00	-4.91	-4.07
	Equal variances not assumed			-21.05	130.71	.00	-4.91	-4.06

The researcher, also, conducted two paired samples *t*-tests with the level of significance $\alpha \leq .05$. The first was to find out if regular pre-writing instruction enabled students in the non-treatment group to use topic-related words properly in essay writings, and the second was to test whether the IWB pre-writing instruction allowed students in the treatment group to use topic-related words properly in essay writings. As indicated in table 32 and 33, there wasn't a significant difference ($p > 0.05$) between pretest1 scores (vocab) of students in the non-treatment group before receiving pre-writing instruction ($M = 9.84$, $SD = 1.18$) and posttest1 scores (vocab) of students in the non-treatment group after receiving regular pre-writing instruction (M=9.94, $SD = 1.21$).

Table 32

Descriptive Statistics of Pretest1 Posttest1 Scores (Vocab) of the Experimental Group

		N	*M*	*SD*
Pair	pretest1.vocab.C - posttest1.vocab.C	69	9.84	1.18
		69	9.94	1.21

Table 33

Paired Samples Test of Pretest1 Posttest1 Scores (Vocab) of the Control Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair	pretest1ideas.C - posttest1.ideas.C	-.20906	.02674	-1.543	68	.127

In contrast to the above results, descriptive statistics displayed in tables 34 and 35 show that there was a remarkable difference in mean values ($p < 0.05$) between pretest1 scores (vocab) of students in the treatment group before receiving pre-writing instruction ($M = 9.49$, $SD = 1.37$) and posttest1 scores (vocab) of participants in the treatment group after receiving IWB pre-writing instruction ($M = 14.43$, $SD = 1.26$). The results of the paired samples t-test conducted to measure difference in the participants' writing performance pertaining to the proper use of topic-related vocabulary words after the IWB treatment revealed statistically significant difference $P(t\ (64) = -30.03, d_f = 64) = .00$ at $\alpha \leq .05$. The 95% confidence interval for the difference is between -5.26 and -4.60. Therefore, the researcher deduced that IWB pre-writing instruction helped students in the experimental group to perform better in essay writing with respect to the proper use of topic-related vocabulary words.

Table 34

Descriptive Statistics of Pretest1 Posttest1 Scores (Vocab) of the Experimental Group

		N	*M*	*SD*
Pair	pretest1.vocab.exp -	65	9.49	1.37
	posttest1.vocab.exp	65	14.43	1.26

Table 35

Paired Samples Test of Pretest1 Posttest1 Scores (Vocab) of the Experimental Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair 1	pretest1.vocab.exp - posttest1.vocab.exp	-5.26	-4.60	-30.03	64	.00

Data Analysis of the Performance Survey with respect to Topic-related Vocabulary Words after the IWB Pre-writing Instruction

Descriptive statistics (frequency, percentage, mean, and standard deviation) of three questionnaire items on the participants' perception of their performance in terms of their proper use of vocabulary words in essay writings were calculated and presented in table 36. The findings of the three questionnaire items verified the above mentioned analyses of the participants' essay scores of the proper use of topic-related words in the experimental group after receiving the IWB pre-writing instruction (See figure 34). Almost all the participants disagreed that vocabulary activities in the Interactive Whiteboard were not related to the writing topic (*M*=1.6, *SD*= 0.55). When asked about whether the IWB pre-writing instruction enriched their bank of vocabulary with many words related to the writing topic (Q6), 21.5% of the participants strongly agreed, 64.6 % of them agreed, and only 6.2% disagreed (M= 4.02, SD=0.73). Also, 56.9% of the participants agreed that they use vocabulary words more efficiently in their writings after the IWB pre-writing instruction, 27.7% of them strongly agreed, 10.8% couldn't decide, 3.1% disagreed and only 1.5% strongly disagreed (M=4.06, SD=0.80).

Table 36

Descriptive Statistics of Students' Perception of Performance regarding their Proper Use of Topic-Related Vocabulary Words after IWB Prewriting Instruction

		SD	D	N	A	SA	*M*	*SD*
Q2	F	28	35	2			1.60	0.55
	%	43.1	53.8	3.1				
Q6	F		4	5	42	14	4.02	0.73
	%		6.2	7.7	64.6	21.5		
Q7	F	1	2	7	37	18	4.06	0.80
	%	1.5	3.1	10.8	56.9	27.7		

Note: F: Frequency SD: Strongly disagree D: Disagree N: I don't know A: Agree
SA: Strongly agree *M*: Mean *SD*: Standard Deviation
Q2: The vocabulary activities in the Interactive Whiteboard were not related to the writing topic
Q6: My bank of vocabulary is enriched with many words related to the writing topic due to pre-writing activities in the Interactive Whiteboard
Q7: I use vocabulary words more efficiently in my writing after the Interactive Whiteboard pre-writing activities

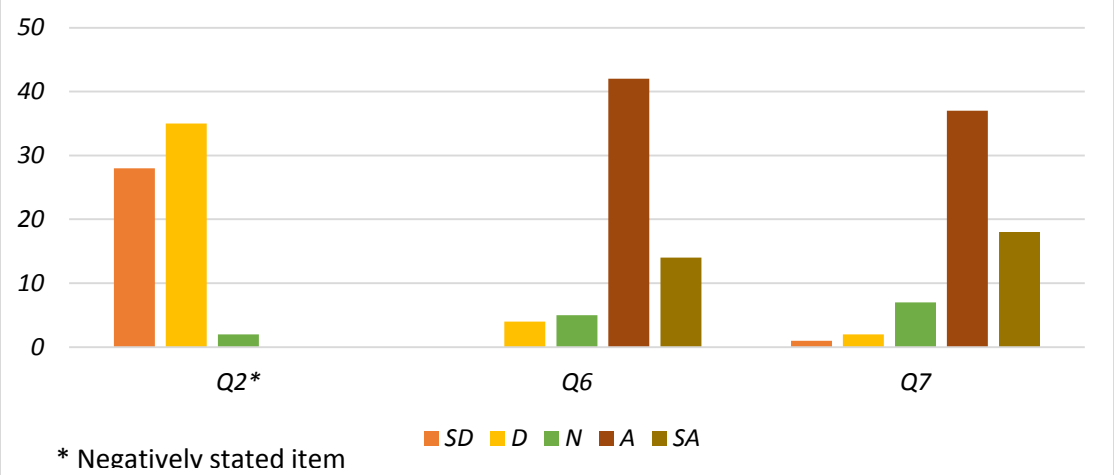

Figure 34. Students' perception of their performance regarding proper use of topic-related vocabulary words after IWB prewriting instruction

All in all, the findings of the data analysis of the performance questionnaire with respect to the proper use of vocabulary revealed that the participants reported that the IWB treatment enabled them to effectually use the acquired vocabulary in their writings; hence, these findings have been in harmony with the findings of the data analyses of the essay scores in terms of the

proper use of topic-related vocabulary words after the IWB treatment. Thus, the second Alternative Hypothesis that the use of Interactive Whiteboard in pre-writing instruction leads EFL secondary students to use topic-related vocabulary words properly was retained.

Quantitative Findings of Research Question 4

Research question 4: Does the use of PowerPoint presentation in pre-writing instruction lead EFL second secondary students to use topic-related vocabulary words properly?

Quantitative data needed to answer the aforementioned research question were collected from pre-test2 post-test2 scores in terms of the participants' proper use of topic-related vocabulary words in essay writings in the control and experimental groups and a questionnaire on the performance of participants in the experimental group with respect to the proper use of topic-related vocabulary words in essay writings after the PPT pre-writing instruction.

Data Analysis of Pre-test2 Post-test2 Scores with regards to the Proper Use of Topic-related Vocabulary Words after the PPT Pre-writing Instruction

Two independent samples *t*-tests were used to examine if the PPT treatment has improved the written performance of the experimental group with respect to the proper use of topic-related vocabulary words in essay writings. The first independent samples *t*-test verified whether there was a significant difference in performance between the mean value of pre-test2 scores (vocab) of participants in the control group and that of pre-test2 scores (vocab) of participants in the experimental group, and the second independent samples *t*-test checked out if there was a significant difference in performance between the mean value of post-test2 scores (vocab) of participants in the control group and that of post-test2 scores (vocab) of participants in the experimental group. Moreover, the researcher used two paired-samples *t*-tests to compare mean

value of pre-test2 scores (vocab) with the mean value of post-test2 scores (vocab) of participants in the control group as well as in the experimental group.

With reference to Table 37, the results of Shapiro-Wilk test of normality of pretest2 scores (vocab) with an a priori alpha level of .05 indicated that that neither the Control Group Level ($p > .05$) nor the Experimental Group Level ($p > .05$) was significant, and as such, both levels of the Independent Variable were normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality and concluded that the assumption of normality has been met.

Table 37

Test of Normality of Pretest2 (Vocab)

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Pretest2 (vocab)	C	.97	69	.09
	E	.97	65	.20

To corroborate the results of statistical normality of pretest2 scores (vocab), the researcher studied the normality graphically by examining the histogram and the output of a normal Q-Q Plot. As revealed in the histogram of pretest2 scores (vocab) of the control group (Figure 35) and that of the experimental group (Figure 36), the data of pretest2 scores (vocab) of both groups were normally distributed.

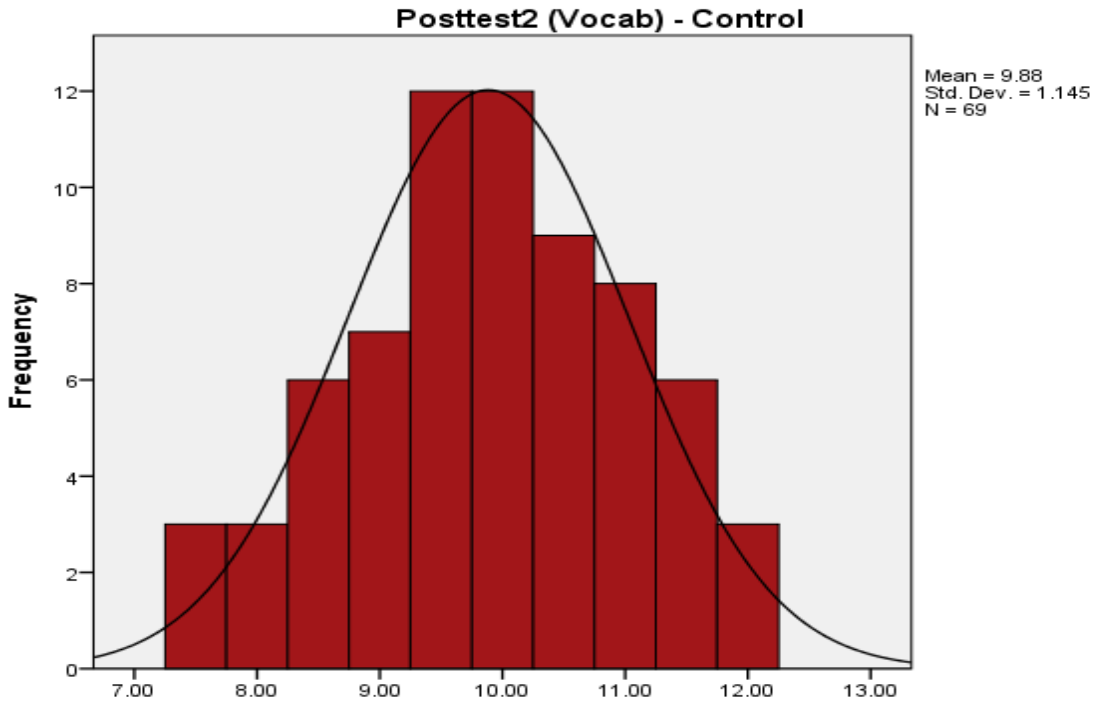

Figure 35. Histogram of pretest2 scores (vocab) of the control group

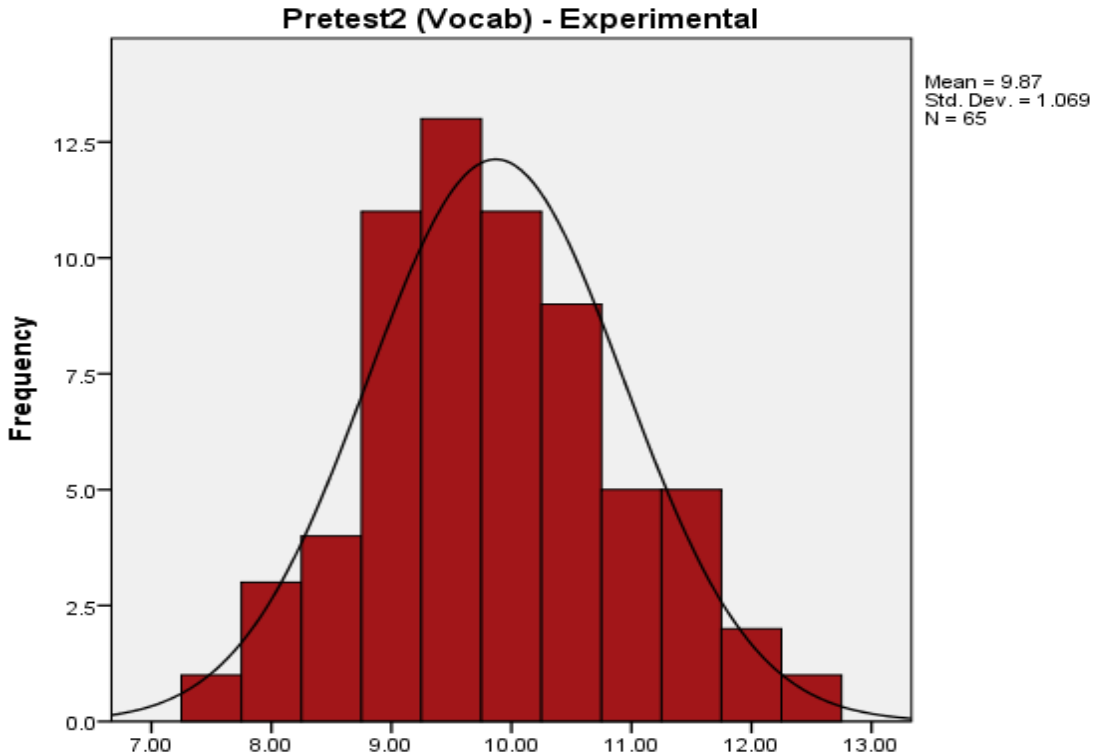

Figure 36. Histogram of pretest2 scores (vocab) of the experimental group

With reference to Figures 37 and 38 below, the data of the normal Q-Q plots of the pretest2 scores (vocab) of the control group were placed along the diagonal line and that of the experimental group were attached to the diagonal lines, the thing which verified that the assumption of normality has been met in both groups. A further illustration of normal distribution of pretest2 scores (vocab) of both groups was displayed in the boxplots (Appendix H4).

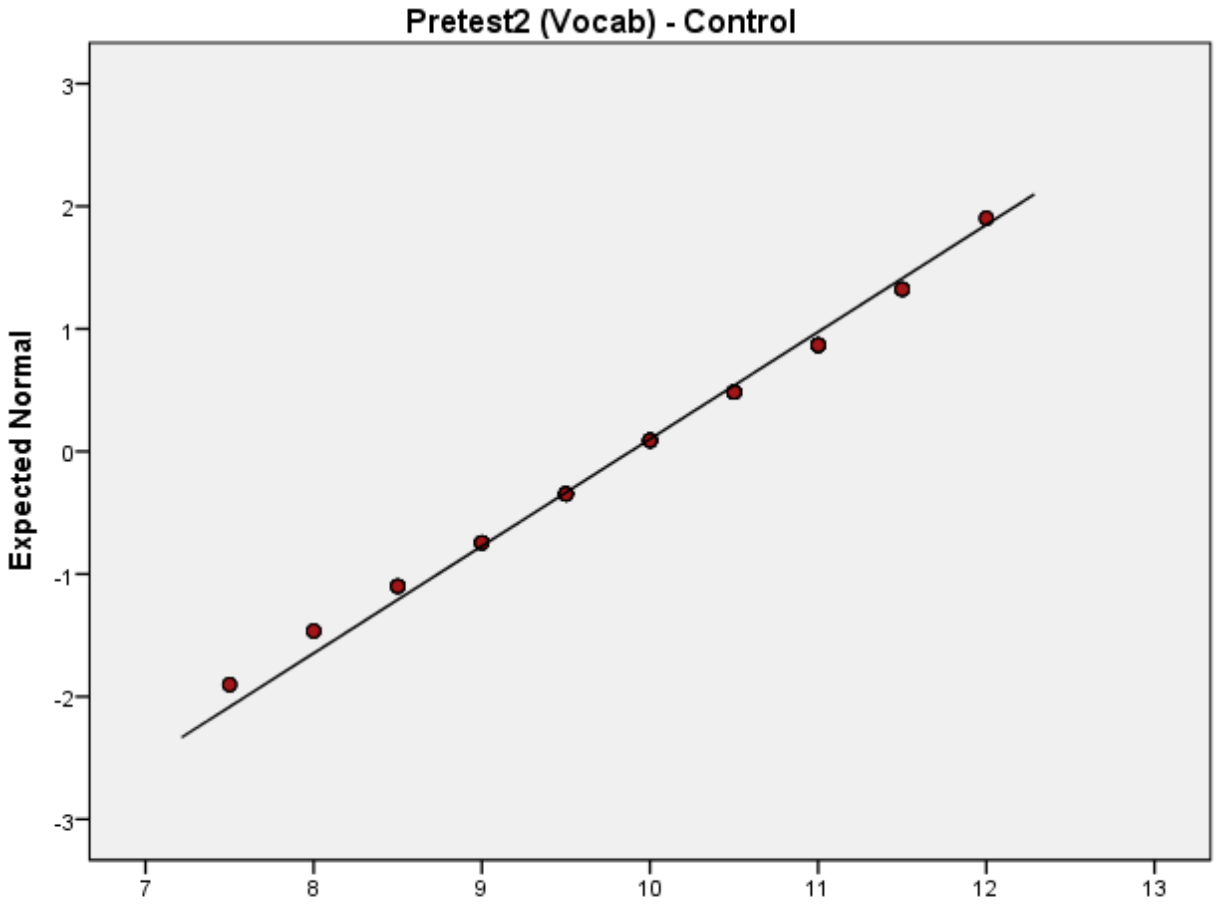

Figure 37. Normal Q-Q Plot of pretest2 scores (vocab) of the control group

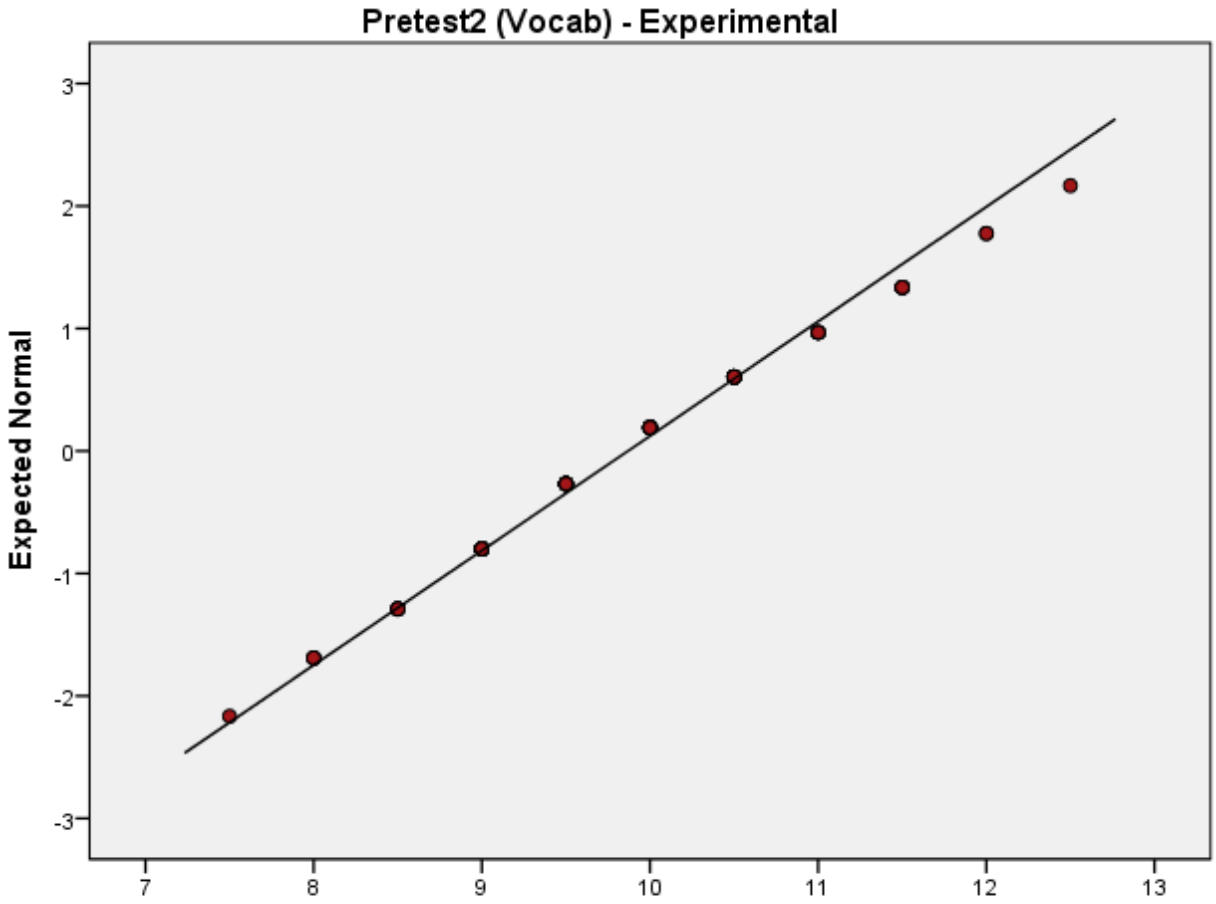

Figure 38. Normal Q-Q plot of pretest2 scores (vocab) of the experimental group

The Levene's Test was used with the level of significance $\alpha = .05$ to study the assumption of homogeneity of variance for pretest2 scores (vocab) of PPT pre-writing instruction variable. As table 39 indicates, P ($F = .38$; $p > 0.05$) =.54. Accordingly, the researcher rejected the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance. As such, the assumption of homogeneity of variance was met since there was no significant difference between the two group's variances, so the researcher conducted the needed *t*-tests.

An independent-samples *t*-test was conducted using an alpha level of .05 in order to examine whether the experimental group and the control group differed significantly in the

pretest2 scores with respect to development of ideas in essay writing. Descriptive statistics indicated no noteworthy difference between the control group (*M*= 9.88, *SD*=1.14) and the experimental group (*M*=9.87, *SD*=1.07) as indicated in table 38. Also there wasn't a significant difference between the mean value of the experimental group and that of the control group with P (t (132) = .08, d_f = 132) > .05 as shown in table 39. Thus, the Alternative Hypothesis H_1: $\mu_{Control} \neq \mu_{Experimental}$ was rejected in favor of the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$.

Table 38

Descriptive Statistics of Pretest2 Scores (Vocab)

	Group	N	*M*	*SD*	Std. Error Mean
Pretest2 scores (vocab)	C	69	9.88	1.14	.14
	E	65	9.87	1.07	.13

Table 39

Independent Samples Test of Pretest2 (Vocab)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Pretest2 Scores (vocab)	Equal variances assumed	.38	.54	.08	132	.94	-.36	.39
	Equal variances not assumed			.08	131.99	.94	-.36	.39

As to the statistical normality of posttest2 scores (vocab), the researcher used the Shapiro-Wilk test of normality with an a priori alpha level of .05. As table 40 indicates, the results of the test showed that neither the Control Group Level (p > .05) nor the Experimental

Group Level ($p > .05$) was significant, and as such, both levels of the Independent Variable were normally distributed. Therefore, the researcher rejected the Alternative Hypothesis ($p < 0.05$) that there was a significant departure from normality and concluded that the assumption of normality has been met.

Table 40

Test of Normality of Posttest2 (Vocab)

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Posttest2 (vocab)	C	.97	69	.14
	E	.97	65	.10

With respect to the graphical normality of postttest2 scores (vocab), the researcher examined the histograms and the output of a normal Q-Q Plots. As exposed in the histogram of posttest2 scores (vocab) of the control group (Figure 39) and that of the experimental group (Figure 40), the data of posttest2 scores (vocab) of both groups were normally distributed.

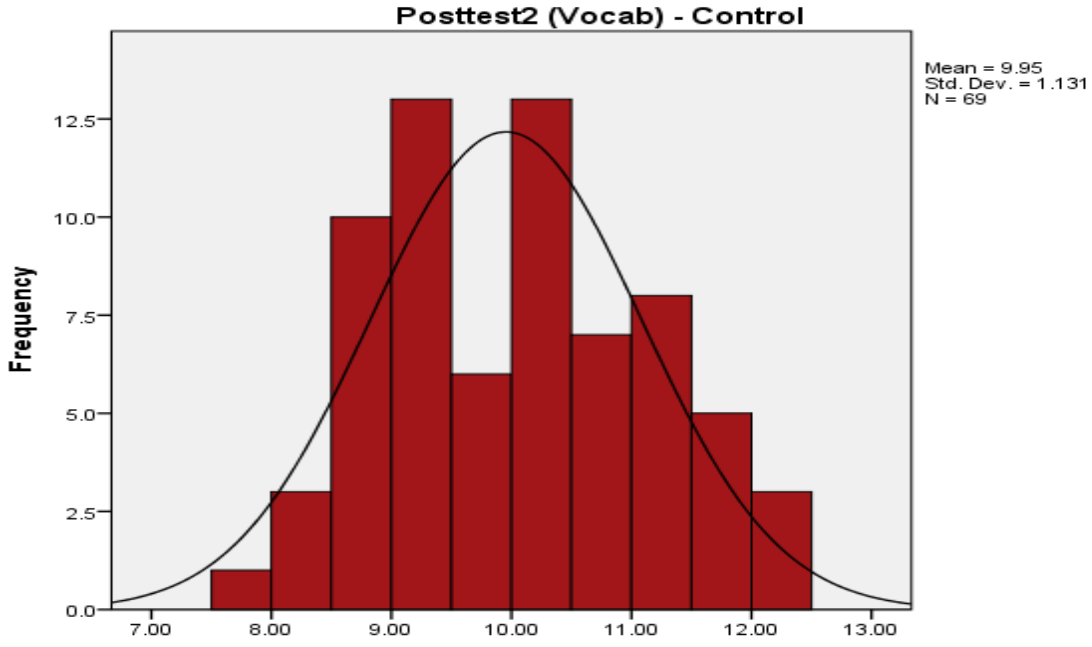

Figure 39. Histogram of posttest2 scores (vocab) of the control group

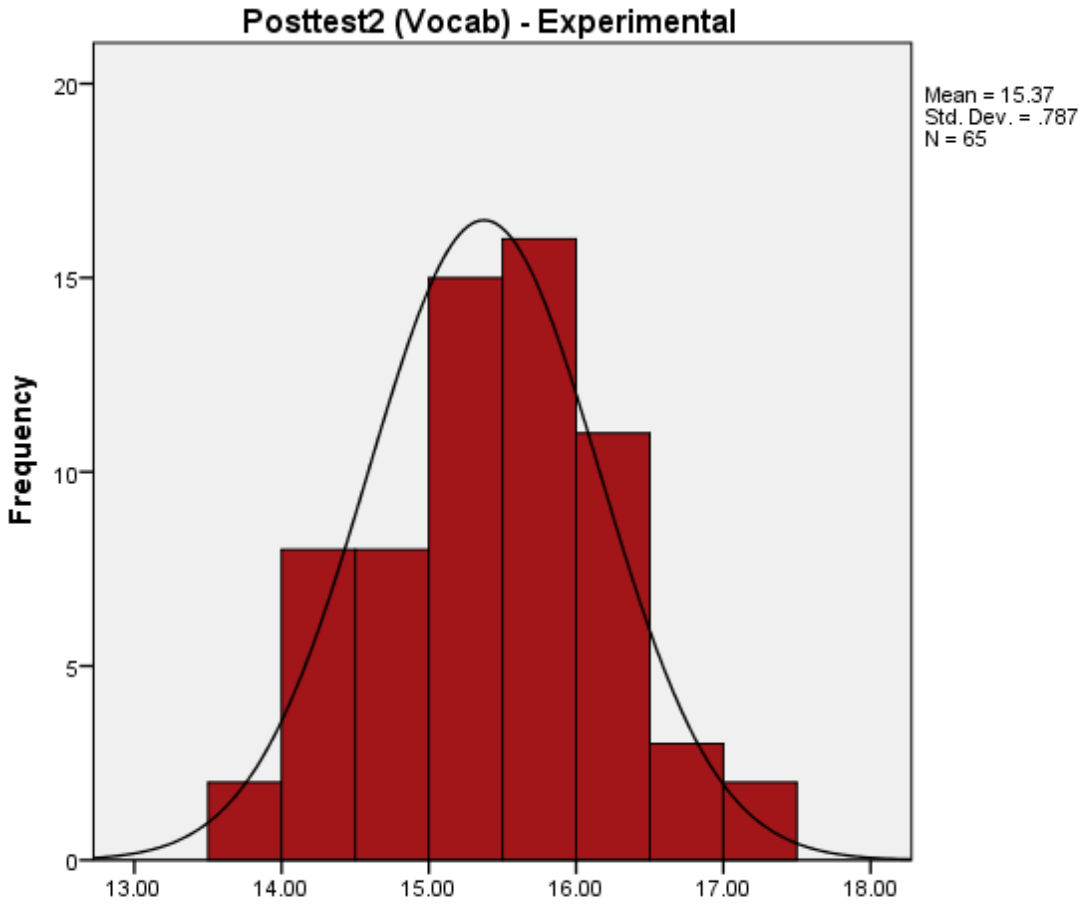

Figure 40. Histogram of posttest2 scores (vocab) of the experimental group after the PPT pre-writing instruction

As exposed in Figures 41 and 42 below, the data of the normal Q-Q plots of the posttest2 scores (vocab) of both groups were mostly placed along the diagonal lines, and as such, the researcher concluded that the assumption of normality has been met in both groups. Supplemental graphics of normal distribution of posttest2 scores (vocab) of both groups were presented in the boxplots (Appendix H4).

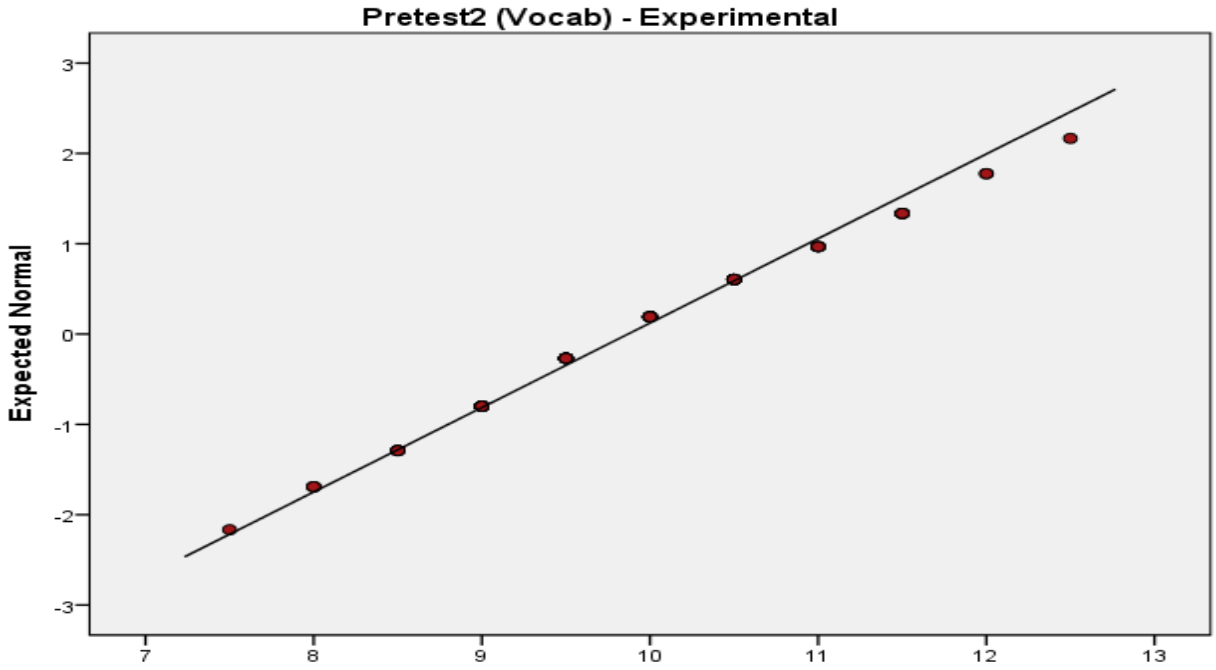

Figure 41. Normal Q-Q plot of posttest2 scores (vocab) of the control group

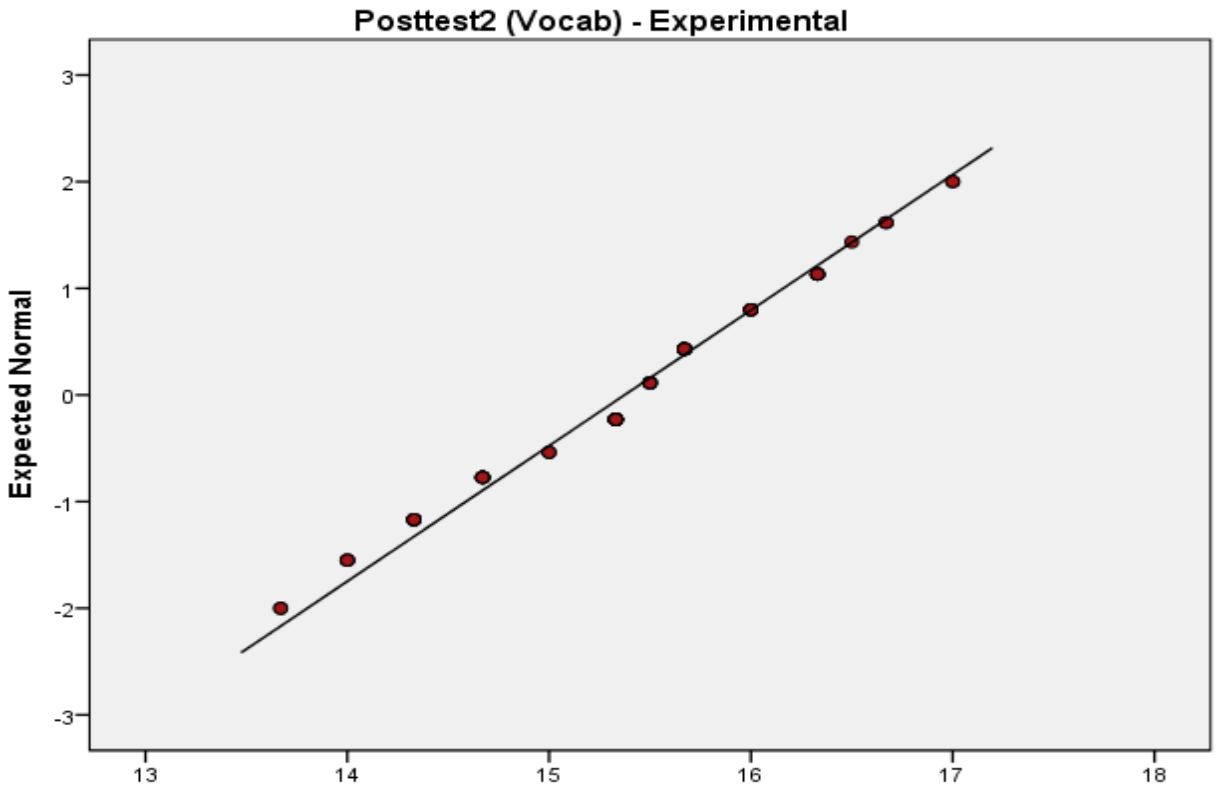

Figure 42. Normal Q-Q plot of posttest2 scores (vocab) of the experimental group

The researcher tested the assumption of homogeneity of variance for posttest2 scores (vocab) of PPT pre-writing instruction variable by using the Levene's Test with the level of significance $\alpha = .05$. Table 42 shows that P ($F= 14.21$; $p<0.05$) = .00. Accordingly, the researcher retained the Alternative Hypothesis (H_1: $\sigma_1^2 \neq \sigma_2^2$) for the assumption of homogeneity of variance and concluded that there was a significant difference between the two group's variances. Hence, the researcher used the data results associated with the "Equal variances not assumed," which takes into account the Cochran & Cox (1957) adjustment for the standard error of the estimate and the Satterthwaite (1946) adjustment for the degrees of freedom. In other words, the researcher used the bottom line of the *t*-test for equality of means results table and ignored the top line of information and then conducted the required *t*-tests.

An independent-samples *t*-test was used with an alpha level of .05 in order to examine whether the experimental group and the control group differed significantly in the posttest2 scores with respect to the proper use of topic-related vocabulary words in essay. Descriptive statistics (see table 41) indicated that the mean value of the control group (M=9.95, SD=1.13) is different from that of the experimental group (M=15.37, SD=.79). Table 42 shows a significant difference between the mean value of the experimental group and that of the control group with P (t (121.68) = -32.36, d_f = 121.68) = .00 after the PPT intervention. Thus, the Null Hypothesis H_0: $\mu_{Control} = \mu_{Experimental}$ was rejected in favor of the Alternative Hypothesis H_1: $\mu_{Control} \neq \mu_{Experimental}$.

Table 41

Descriptive Statistics of Posttest2 Scores (Vocab)

	Group	N	*M*	*SD*	Std. Error Mean
Posttest2 scores (vocab)	C	69	9.95	1.13	.14
	E	65	15.37	.79	.10

Table 42

Independent Samples Test of Posttest2 (Vocab)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
							Lower	Upper
Pretest2 Scores (vocab)	Equal variances assumed	14.21	.00	-32.02	132	.00	-5.75	-5.10
	Equal variances not assumed			-32.36	121.68	.00	-5.75	-5.10

The researcher, also, used two paired samples *t*-tests with the level of significance α =.05. The first was to investigate whether regular pre-writing instruction enabled students in the control group to use topic-related vocabulary words properly in essay writings, and the second was to explore if the PPT pre-writing instruction assisted students in the experimental group to use topic-related vocabulary words properly in essay writings. The first paired samples t-test revealed no statistically significant difference at $P \leq .0\ 5$. As shown in Table 43 below, the pretest and posttest mean scores of the participants in the control group were 9.88 (*SD* = 1.14) and 9.95 (*SD* = 1.13), respectively, *t* (68) = -1.77, P = .08 (See table 44).

Table 43

Descriptive Statistics of Pretest2 Posttest2 Scores (Vocab) of the Control Group

		N	*M*	*SD*
Pair	pretest1.vocab.C - posttest1.vocab.C	69	9.88	1.14
		69	9.95	1.13

Table 44

Paired Samples Test of Pretest2 Posttest2 Scores (Vocab) of the Control Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair	pretest1.vocab.C - posttest1.vocab.C	-.15	.01	-1.77	68	.08

In contrast to the findings of the first paired samples t-test, The results of the second paired samples *t*-test showed that there was a significant difference at $P \leq .0\ 5$ between pretest2 scores (vocab) of students in the experimental group before receiving pre-writing instruction ($M = 9.87$, $SD = 1.07$) and posttest2 scores (vocab) of students in the experimental group after receiving PPT pre-writing instruction ($M = 15.37$, $SD = .79$), $t(64) = -75.71$, $P = .00$ as demonstrated in tables 45 and 46. The 95% confidence interval of the difference ranges from -5.65 to -5.36. Thus, the researcher deduced that PPT pre-writing instruction helped students in the experimental group to perform better in essay writing with respect to the proper use of topic-related vocabulary words.

Table 45

Descriptive Statistics of Pretest2 Posttest2 Scores (Vocab) of the Experimental Group

		N	*M*	*SD*
Pair	Pretest2.vocab.exp - Posttest2.vocab.exp	65	9.87	1.07
		65	15.37	.79

Table 46

Paired Samples Test of Pretest2 Posttest2 Scores (Vocab) of the Experimental Group

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair	Pretest2.vocab.exp - posttest2.vocab.exp	-5.65	-5.36	-75.71	64	.00

Data Analysis of the Performance Survey with respect to Topic-related Vocabulary Words after the PPT Pre-writing Instruction

Three questionnaire items on the written performance of the participants in the experimental group with regards to the proper use of topic-related words in essay writing after receiving the PPT treatment were examined and analyzed using SPSS. The purpose of the questionnaire analysis was to attest the aforementioned analyses of the participants' pretest2 posttest2 scores. Two questions (Q12 & Q15) were stated positively, whereas question Q13 was stated negatively. As table 47 shows, almost all the participants either agreed (61.5%) or strongly agreed (26.2%) that the vocabulary words practiced in the PowerPoint presentations make them more able to express their ideas properly during writing (*M*= 4.09, *SD*= .74). Moreover, more than half the participants (66.2%) agreed and other participants (18.5%) strongly agreed that they acquire more words relevant to the writing topic when the words are displayed in colors and

different fonts in the PowerPoint slides (*M*= 4.00, *SD*= .66). On the other hand, when asked if ideas became scrambled in their heads during writing after the display of the PowerPoint, 46.2% of the participants conveyed that they strongly disagreed and 26.2% of them disagreed at the time that 23.1% of them didn't know and only 4.6% of them agreed (*M*= 2.06, *SD*= .82).

In conclusion, as figure 43 shows, the findings of the data analysis of the performance questionnaire pertaining to the proper use of vocabulary words in essay writing after the PPT treatment conformed to those of the data analysis of pretest2 posttest2 scores relating to the proper use of vocabulary words in essay writing after receiving the PPT instruction. As a result, the fourth Alternative Hypothesis "The use of the PowerPoint presentation in pre-writing instruction leads EFL second secondary students to use topic-related vocabulary words properly" was retained.

Table 47

Descriptive Statistics of Students' Perception of Performance regarding their Proper Use of Topic-related Vocabulary Words after PPT Prewriting Instruction

		SD	D	N	A	SA	*M*	*SD*
Q12	F	1	1	6	40	17	4.09	0.74
	%	1.5	1.5	9.2	61.5	26.2		
Q13	F	17	30	15	3		2.06	0.82
	%	26.2	46.2	23.1	4.6			
Q15	F		2	8	43	12	4.00	0.66
	%		3.1	12.3	66.2	18.5		

Note: F: Frequency SD: Strongly disagree D: Disagree N: I don't know A: Agree
SA: Strongly agree *M*: Mean *SD*: Standard Deviation
Q12: The vocabulary words practiced in the PowerPoint presentations make me more able to express my ideas properly during writing.
Q13: The vocabulary words become mixed up in my mind during writing and after the PowerPoint presentations.
Q15: I acquire more words relevant to the writing topic when they are displayed in colors and different fonts in the PowerPoint slides.

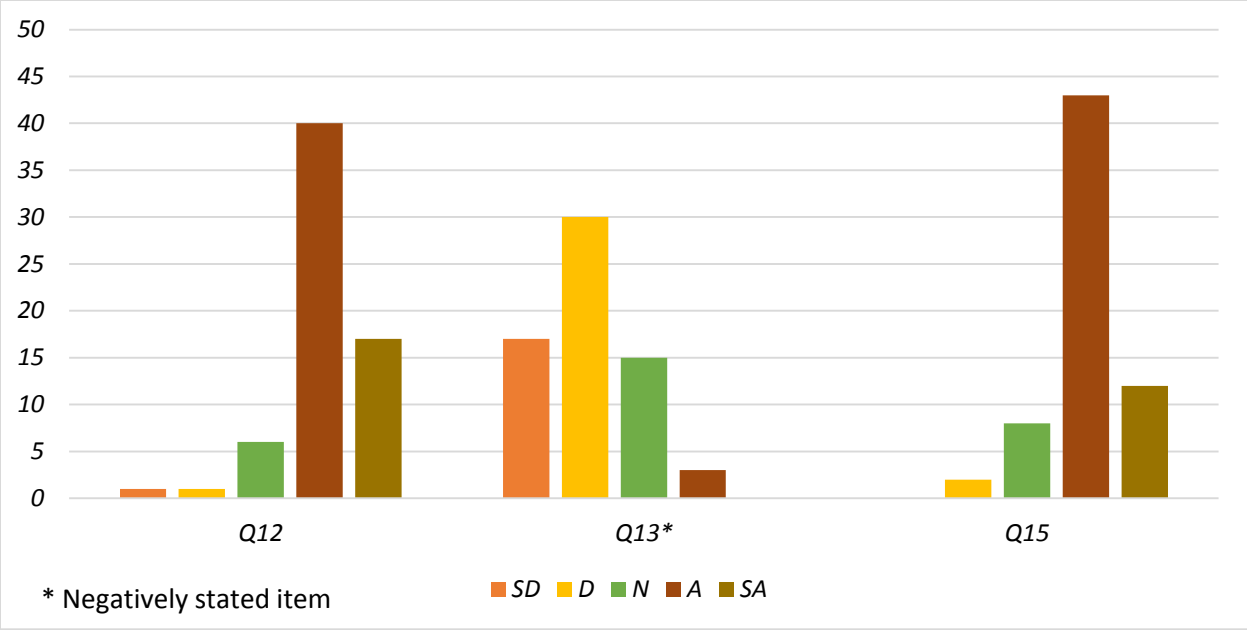

Figure 43. Students' perception of their performance regarding proper use of topic-related vocabulary words after PPT prewriting instruction

Quantitative Findings of Research Questions 5 and 6

Research Question 5: Does the use of Interactive Whiteboard in pre-writing instruction boost the attitude of EFL second secondary students towards writing?

Research Question 6: Does the use of PowerPoint presentation in pre-writing instruction promote the attitude of EFL second secondary students towards writing?

Quantitative data needed to answer the aforementioned research question were collected from a pre-post survey on the participants' attitudes towards writing in the control and experimental groups regarding IWB treatment.

Data Analysis of EFL Student Attitude towards Writing Questionnaire regarding Regular Treatment

Participants' Attitudes towards EFL Writing before and after conducting regular treatment were examined by the use of questionnaires with a five Likert scale for the responses. Responses of students in the control group were analyzed using the mean values, standard

deviation, and a paired samples t-test. Overall mean scores of the total subject sample for each pair in the questionnaire with standard deviation are shown in Table 48; the findings of the paired samples t-test are displayed in table 49.

The results of pair 1 indicated a significant difference in attitude at P≤ .05, *t* (68) =6.02, P= .00. However, when we examine the mean values before regular prewriting instruction (*M* = 2.70, *SD* = .73) and after it (*M* = 2.00, *SD*= .62), we notice that students still disagree that writing in English is an enjoyable activity. Hence, we concluded that students showed a negative attitude (See figure 44).

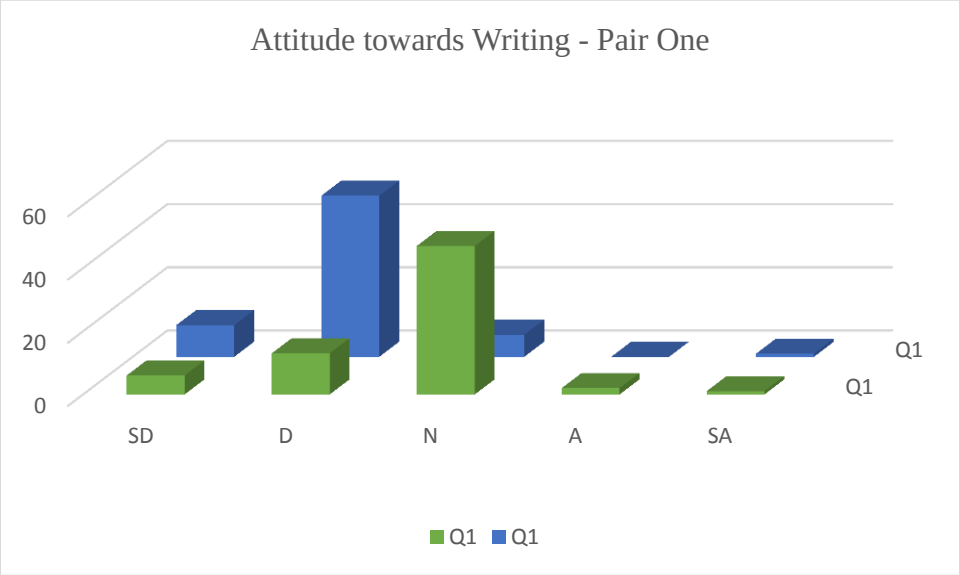

Figure 44. Students' pre-post attitude towards writing – pair one (regular instruction)

The results of pair 2 showed the mean values before regular prewriting instruction (M = 3.97, SD = .54) and after it (M = 4.14, SD= .39) with a significant difference in attitude at P≤ .05, t (68) = -1.99, P= .051. Nevertheless, such a difference was towards negativity in students' attitude towards writing, for more students agreed or strongly agreed that they try to avoid writing in English after regular treatment as revealed in figure 45.

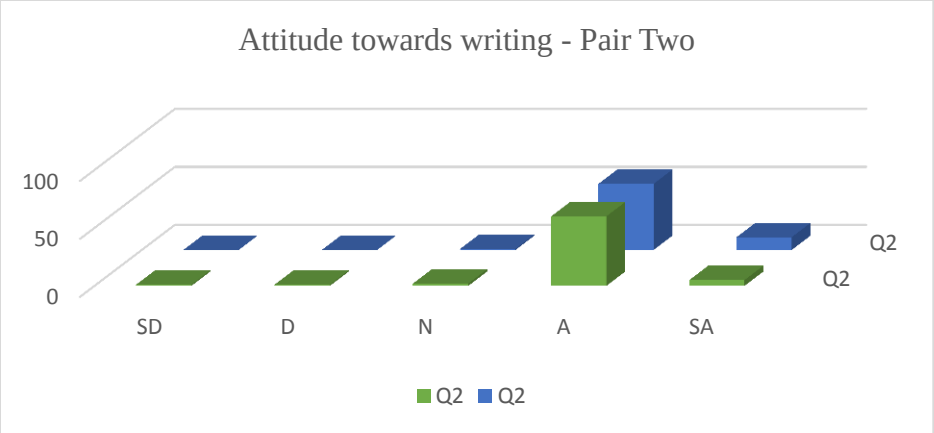

Figure 45. Students' pre-post attitude towards writing – pair two (regular instruction)

The results of pair 3 didn't show a change between the mean values before regular prewriting instruction (M = 2.62, SD = .69) and after it (M = 2.61, SD= .57). Also, the findings didn't show a significant difference in attitude at P≤ .05, t (68) = .13, P= .90. Thus, students still don't like to write in English to communicate their ideas (See figure 46).

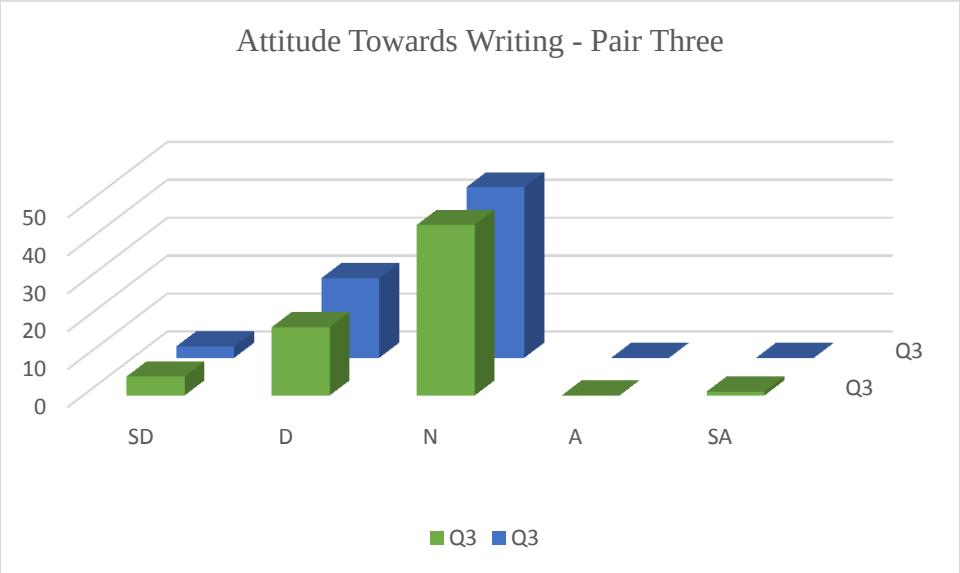

Figure 46. Students' pre-post attitude towards writing – pair three (regular instruction)

The results of pair 4 indicated a significant difference in attitude at P≤ .05, t (68) =6.02, P= .00 with mean values (M = 4.55, SD = .63) before regular prewriting instruction and (M = 4.28, SD = .62) after it. However, as figure 47 indicates, the difference is the result of an increase

in the number of students who agreed or strongly agreed that they feel tense when they can't find the proper vocabulary words to express their ideas even after regular instruction.

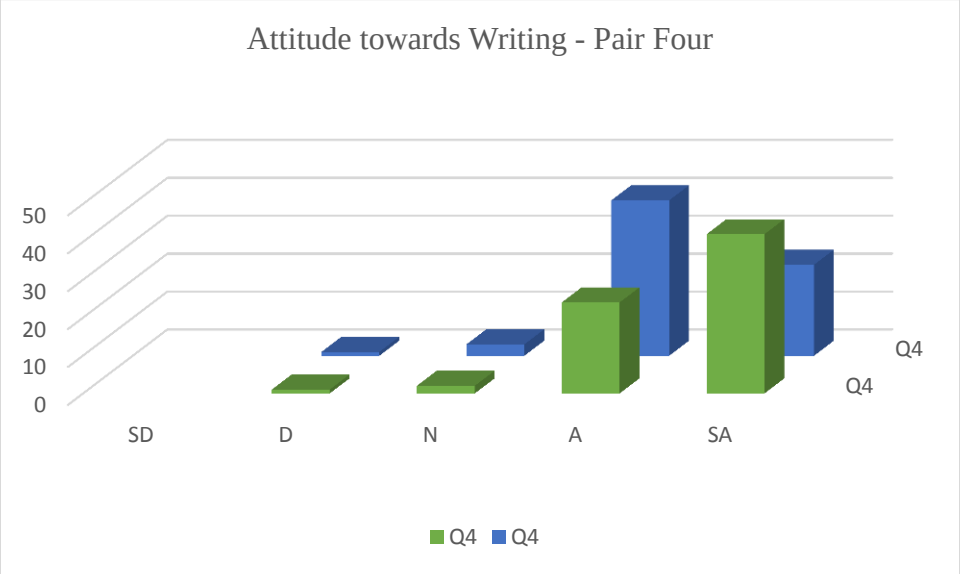

Figure 47. Students' pre-post attitude towards writing – pair four (regular instruction)

The results of pair 5 didn't reveal a change between the mean values before regular prewriting instruction (M = 4.30, SD = .58) and after it (M = 4.25, SD= .47), and they didn't show any significant difference in attitude at P≤ .05, t (68) =.66, P= .51. This means that students remain to suffer in finding topic-related vocabulary words as shown in figure 48.

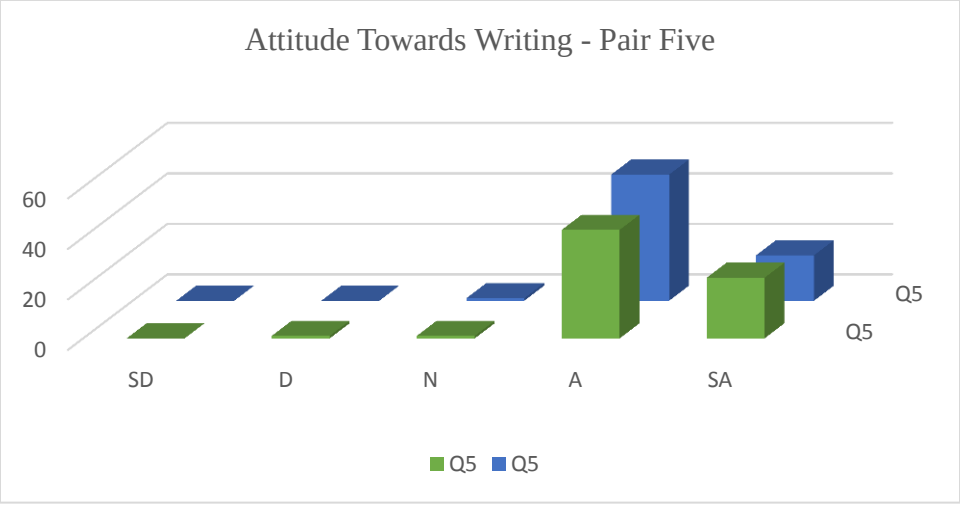

Figure 48. Students' pre-post attitude towards writing – pair five (regular instruction)

The results of pair 6 indicated a significant difference in attitude at P≤ .05, t (68) = 1.98, P= .05 with mean values before regular prewriting instruction M = 4.23, SD = .75 and after it M = 4.04, SD= .36. Nevertheless, an examination of figure 49 reveals that the attitude of the students didn't shift to positivity. In fact, instead of strongly agreeing that it's difficult for them to support their ideas well when writing in English, the students only agreed on that.

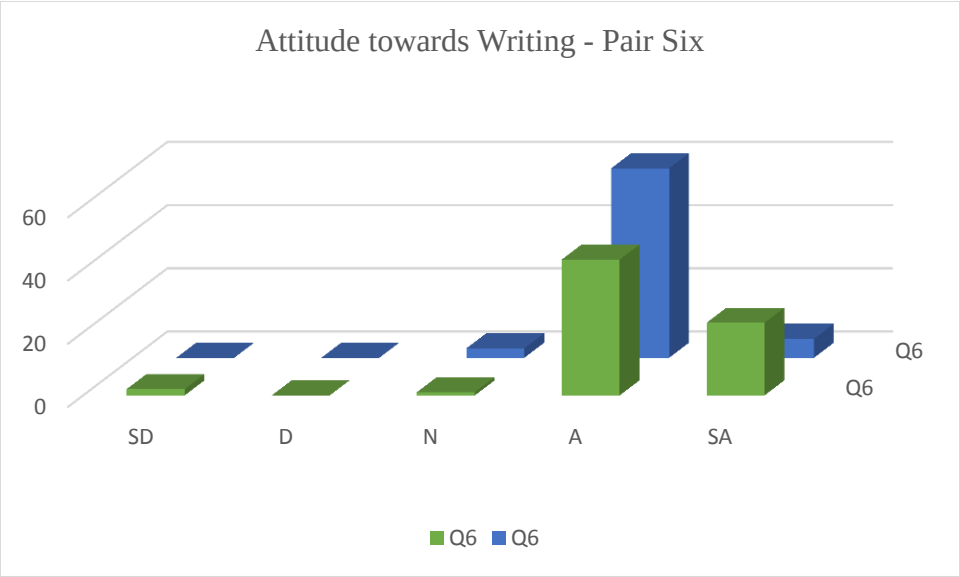

Figure 49. Students' pre-post attitude towards writing – pair six (regular instruction)

The results of pair 7 didn't show a change between the mean values before regular prewriting instruction (M = 2.51, SD = .82) and after it (M = 2.68, SD= .47), and it didn't indicate a significant difference in attitude at P≤ .05, t (68) = -1.68, P= .11. Hence, students continue to disagree that they like to write their diaries in English as shown in figure 50.

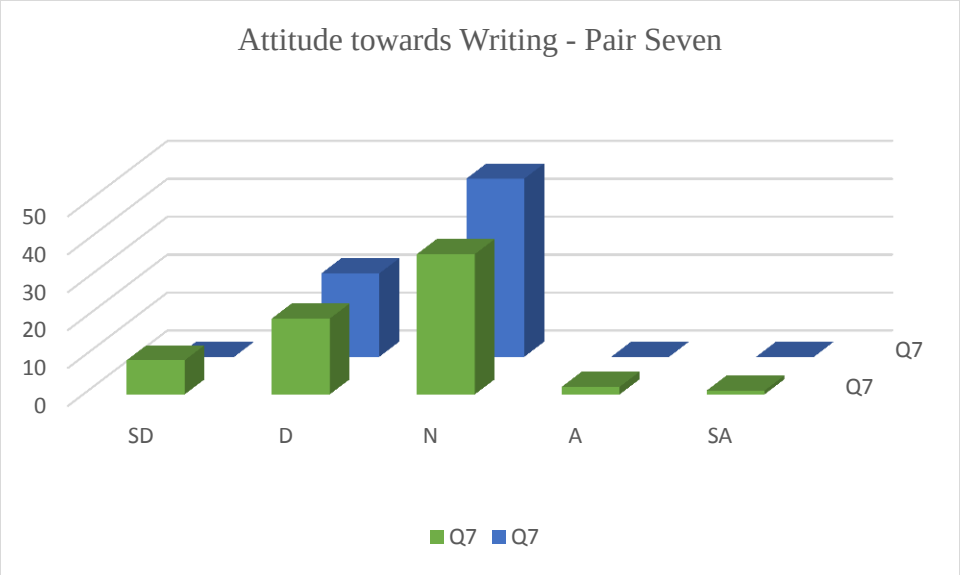

Figure 50. Students' pre-post attitude towards writing – pair seven (regular instruction)

The results of pair 8 didn't show a substantial change between the mean values before regular prewriting instruction (M = 4.26, SD = .53) and after it (M = 4.14, SD= .46), and they didn't indicate a significant difference in attitude at P≤ .05, t (68) = 1.30, P= .20 as well. As a result, students continue to take much time to think of what they have to write about (See figure 51).

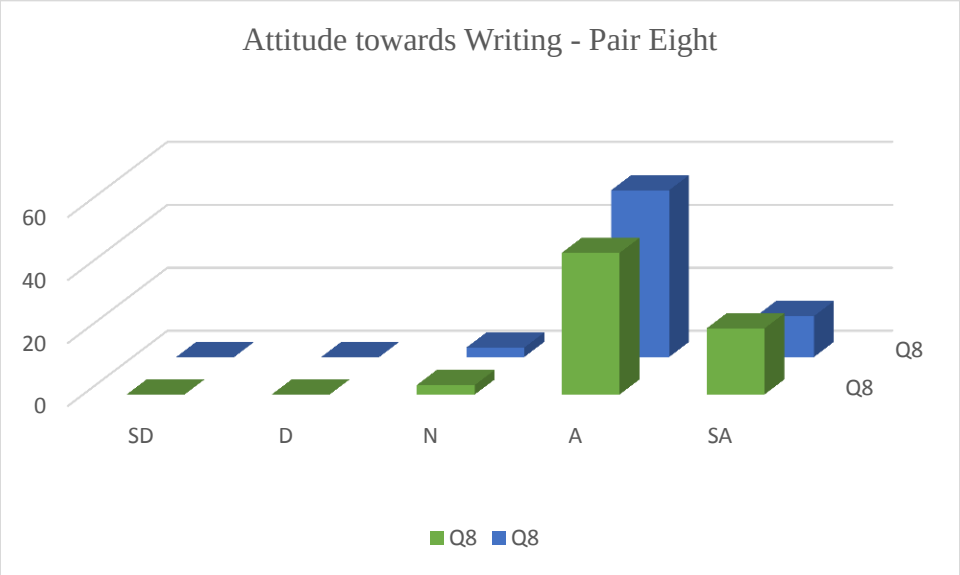

Figure 51. Students' pre-post attitude towards writing – pair eight (regular instruction)

The results of pair 9 didn't indicate a considerable change between the mean values before regular prewriting instruction (M = 3.90, SD = .66) and after it (M = 4.04, SD= .40), and they, also, didn't show a significant difference in attitude at P≤ .05, t (68) = -1.60, P= .11. This means that students still consider writing in English a burden to them (See figure 52).

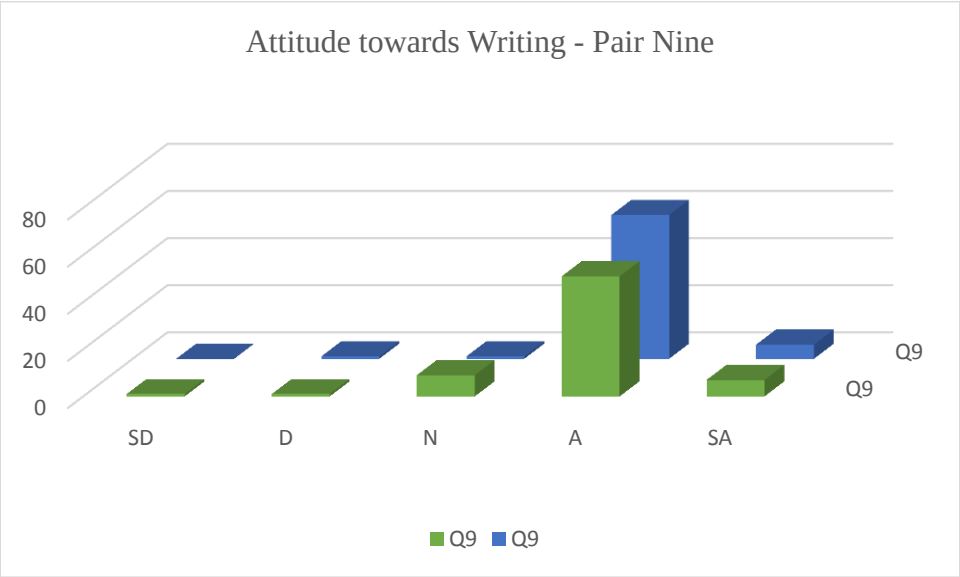

Figure 52. Students' pre-post attitude towards writing – pair nine (regular instruction)

The results of pair 10 indicated a significant difference in attitude at P≤ .05, t (68) =-3.21, P= .002, and a change in the mean values before regular prewriting instruction (M = 2.84, SD = 1.17) and after it (M = 3.42, SD= .83). However, as figure 53 shows, the change in attitude occurred in a more negative sense, for the number of students who agreed or strongly agreed that they feel bored during the English writing period increased.

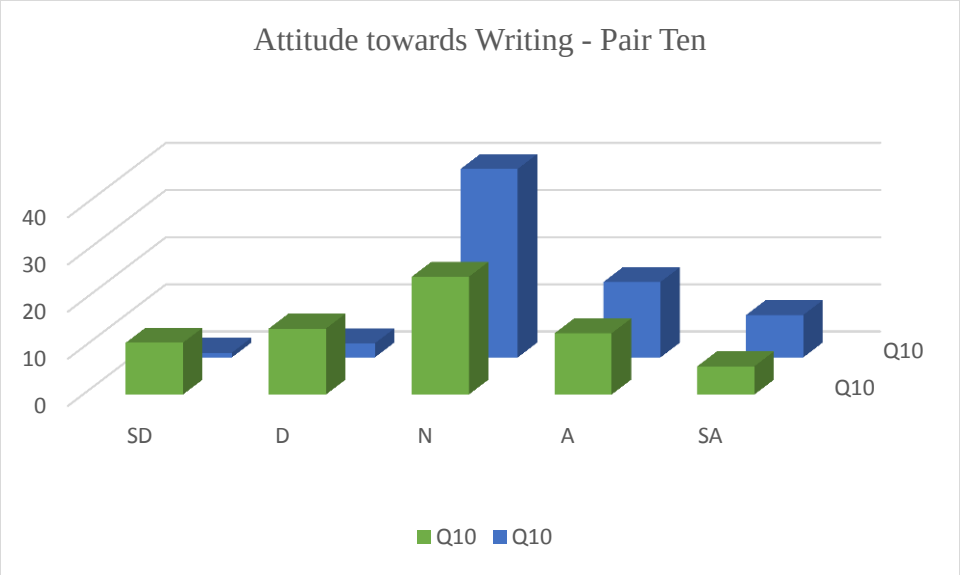

Figure 53. Students' pre-post attitude towards writing – pair ten (regular instruction)

The results of pair 11 displayed neither a substantial change between the mean values before regular prewriting instruction (M = 4.07, SD = .46) and after it (M = 3.99, SD= .50) nor a significant difference in attitude at P≤ .05, t (68) = 1.10, P= .28 as figure 54 indicates. Thus, students continue to get lost when they start writing in English.

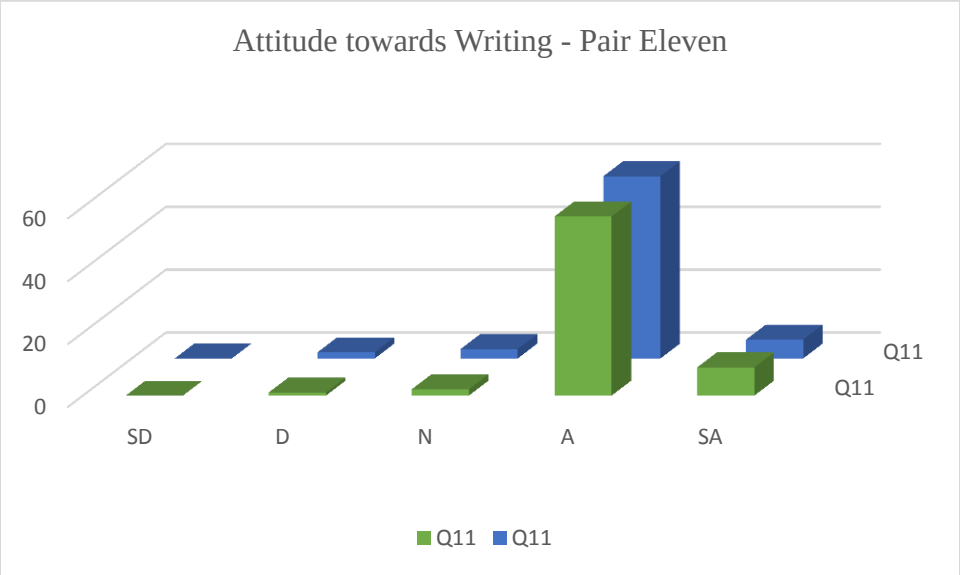

Figure 54. Students' pre-post attitude towards writing – pair eleven (regular instruction)

The results of pair 12 indicated a weighty change between the mean values before regular prewriting instruction (M = 3.61, SD = 1.19) and after it (M = 4.14, SD= .39) and a significant difference in attitude at P≤ .05, t (68) = -3.58, P= .001. But as displayed in figure 55, more students agreed that they like other language skills more than writing after regular instruction.

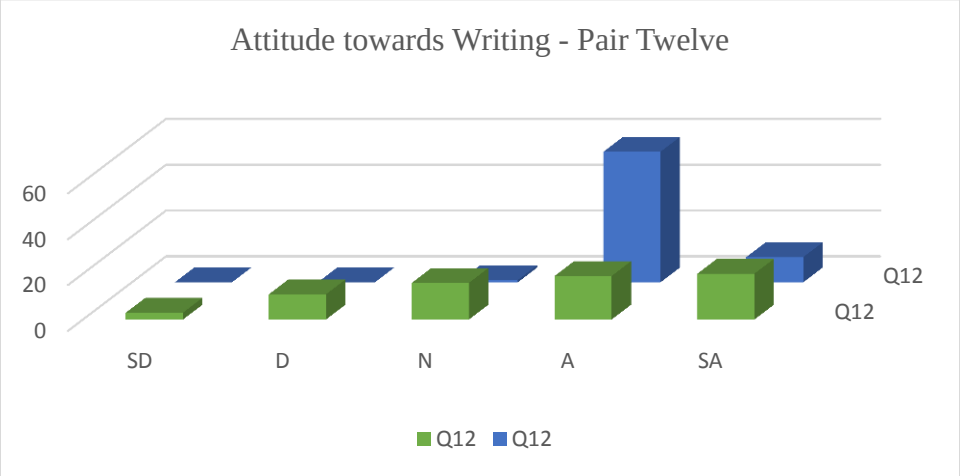

Figure 55. Students' pre-post attitude towards writing – pair twelve (regular instruction)

The results of pair 13 showed no change in the mean values before regular prewriting instruction (M = 2.01, SD = .68) and after it (M = 1.99, SD= .50), and it didn't reveal any significant difference in attitude at P≤ .05, t (68) = .29, P= .78. Accordingly, students continue to disagree that they feel confident when thy write in English (See figure 56).

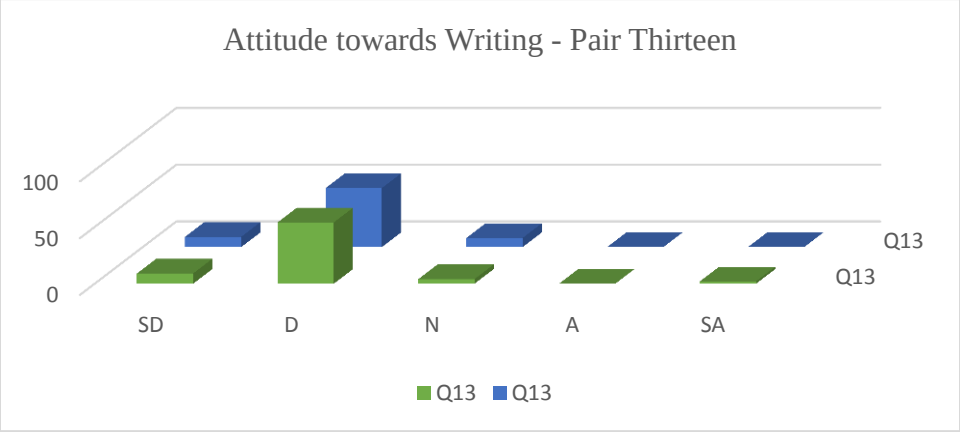

Figure 56. Students' pre-post attitude towards writing – pair thirteen (regular instruction)

The results of pair 14 exposed neither a change in the mean values before regular prewriting instruction (M = 3.87, SD = .64) and after it (M = 4.01, SD= .56) nor a significant difference in attitude at P≤ .05, t (68)= -1.40, P= .17. This indicates that students continue to believe that they can't develop their ideas well in English as displayed in figure 57.

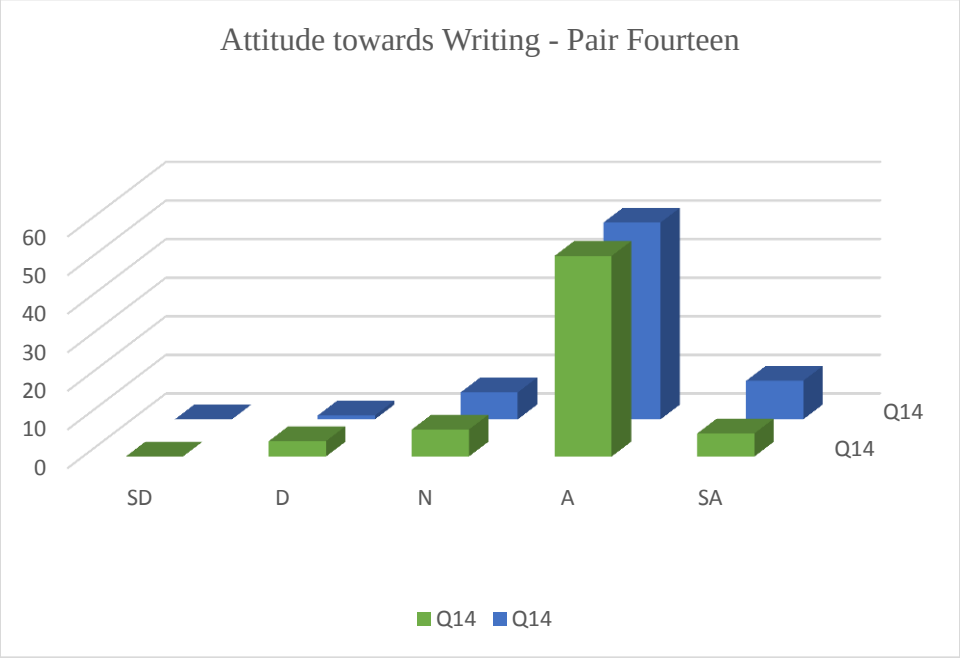

Figure 57. Students' pre-post attitude towards writing – pair fourteen (regular instruction)

The results of pair 15 indicated a noteworthy change between the mean values before regular prewriting instruction (M = 2.71, SD = .77) and after it (M = 2.26, SD= .74) and revealed a significant difference in attitude at P≤ .05, t (68) =3.65, P= .00. Nonetheless, figure 58 shows a shift towards more negativity in students' attitude after regular treatment, for more students didn't approve that writing their thoughts in English is a relieving activity.

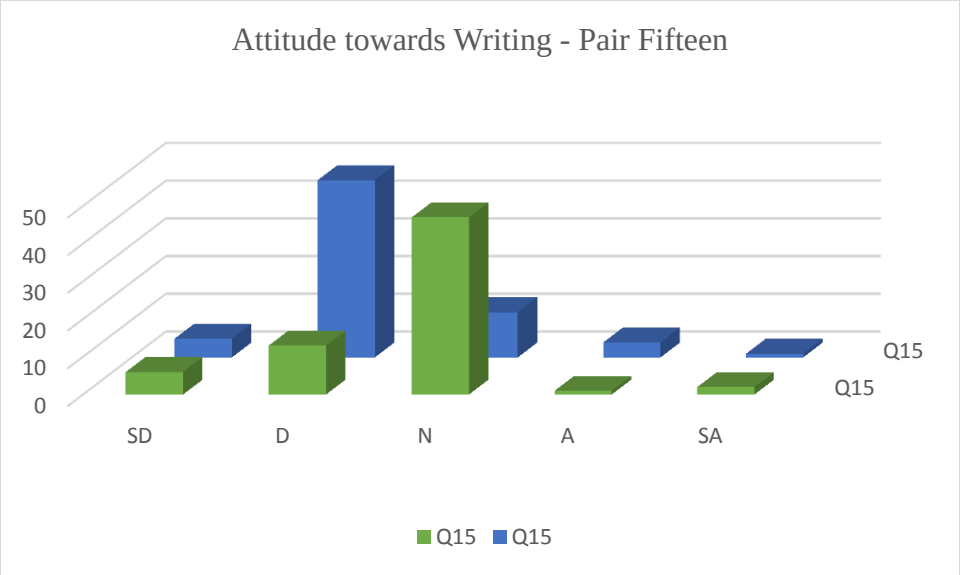

Figure 58. Students' pre-post attitude towards writing – pair fifteen (regular instruction)

In a nutshell, regular prewriting instruction didn't change the participants' attitude towards writing in the control group. This means that participants in the control group still adopt unfavorable attitudes towards writing.

Table 48

Descriptive Statistics of Students Attitude towards Writing regarding Regular Treatment

		N	*M*	*SD*
Pair 1	Writing in English is an enjoyable class activity	69	2.70	.73
	Writing in English is a pleasant class activity	69	2.00	.62
Pair 2	I try to avoid the writing tasks in the English class	69	3.97	.54
	I try to avoid writing in English	69	4.14	.39
Pair 3	I like to write in English to communicate my ideas	69	2.62	.69
	I choose to write in English to communicate my ideas	69	2.61	.57
Pair 4	I feel nervous when I can't find the proper vocabulary words to express my ideas	69	4.55	.63
	I feel tense when I can't find the proper vocabulary words to express my ideas	69	4.28	.62

Pair 5	When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities.	69	4.30	.58
	When I write, I feel stressed to find or remember the topic- related vocabulary words discussed in the pre- writing activities	69	4.25	.47
Pair 6	I feel tense during writing when I can't support my main ideas	69	4.23	.75
	It's difficult for me to support my ideas well when writing in English	69	4.04	.36
Pair 7	I like to use English when writing my diary	69	2.51	.82
	I prefer to write my diary in English	69	2.68	.47
Pair 8	I waste much time to think of what I have to write about	69	4.26	.53
	I take time to start writing in English	69	4.14	.46
Pair 9	Writing in English is a burden to me	69	3.90	.66
	Writing in English is a load on me	69	4.04	.40
Pair 10	I consider the writing period as the most boring among English periods	69	2.84	1.17
	I feel bored during the English writing period	69	3.42	.83
Pair 11	I get lost when I start writing in English	69	4.07	.46
	I become lost when I start writing in English	69	3.99	.50
Pair 12	I would like to learn all language skills except writing	69	3.61	1.19
	I like other language skills more than writing	69	4.14	.39
Pair 13	I feel confident when I write in English	69	2.01	.68
	Writing in English gives me a sense of confidence	69	1.99	.50
Pair 14	I never seem able to develop my ideas well	69	3.87	.64
	I can't develop my ideas well in English	69	4.01	.56
Pair 15	I like seeing my thoughts on paper	69	2.71	.77
	Writing my thoughts in English is a relieving activity	69	2.26	.74

Table 49

Paired Samples Test of Students Attitude towards Writing regarding Regular Treatment

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair 1	Writing in English is an enjoyable class activity - Writing in English is a pleasant class activity	.47	.93	6.02	68	.00
Pair 2	I try to avoid the writing tasks in the English class - I try to avoid writing in English	-.35	.00	-1.99	68	.05
Pair 3	I like to write in English to communicate my ideas - I choose to write in English to communicate my ideas	-.21	.24	.13	68	.90
Pair 4	I feel nervous when I can't find the proper vocabulary words to express my ideas - I feel tense when I can't find the proper vocabulary words to express my ideas	.08	.47	2.79	68	.01
Pair 5	When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities. - When I write, I feel stressed to find or remember the topic- related vocabulary words discussed in the pre- writing activities	-.12	.23	.66	68	.51
Pair 6	I feel tense during writing when I can't support my main ideas - It's difficult for me to support my ideas well when writing in English	-.00	.38	1.98	68	.05
Pair 7	I like to use English when writing my diary - I prefer to write my diary in English	-.39	.04	-1.62	68	.11
Pair 8	I waste much time to think of what I have to write about - I take time to start writing in English	-.06	.29	1.30	68	.20

Pair 9	Writing in English is a burden to me - Writing in English is a load on me	-.33	.04	-1.60	68	.11
Pair 10	I consider the writing period as the most boring among English periods - I feel bored during the English writing period	-.94	-.22	-3.21	68	.002
Pair 11	I get lost when I start writing in English - I become lost when I start writing in English	-.07	.25	1.10	68	.28
Pair 12	I would like to learn all language skills except writing - I like other language skills more than writing	-.84	-.24	-3.58	68	.001
Pair 13	I feel confident when I write in English - Writing in English gives me a sense of confidence	-.17	.23	.29	68	.78
Pair 14	I never seem able to develop my ideas well - I can't develop my ideas well in English	-.35	.062	-1.40	68	.17
Pair 15	I like seeing my thoughts on paper - Writing my thoughts in English is a relieving activity	.20	.70	3.65	68	.001

Data Analysis of EFL Student Attitude towards Writing Questionnaire regarding IWB Treatment

Participants' Attitudes towards EFL Writing before and after conducting IWB treatment were examined by the use of questionnaires with a five Likert scale for the responses. Responses of students in the experimental group were analyzed using the mean values, standard deviation, and a paired samples t-test. Overall mean scores of the total subject sample for each pair in the questionnaire with standard deviation are shown in Table 50, and the findings of the paired samples t-test are displayed in table 51.

The results of pair 1 indicated a considerable change in the mean values before IWB prewriting instruction (M = 2.52, SD = 1.05) and after it (M = 3.92, SD= .78) as well as a significant difference in attitude at P≤ .05, t (64) =-9.88, P= .00. The 95% confidence interval of

the difference ranges from -1.68 to -1.12. Hence, we concluded that students changed their attitude and started to view writing as an enjoyable and engaging activity after the IWB treatment (See figure 59).

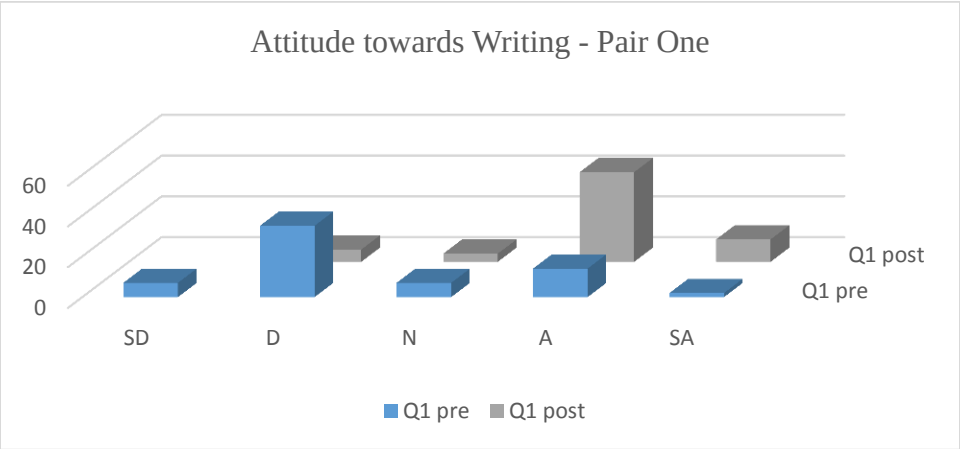

Figure 59. Students' pre-post attitude towards writing – pair one (IWB instruction)

The results of pair 2 showed that students who used to avoid the writing tasks in the English class no more did that after the IWB intervention (Refer to figure 60). This is obviously revealed in the mean values before the IWB prewriting instruction (M = 3.35, SD = 1.15) and after it (M = 1.92, SD= .51) and the significant difference in attitude at P≤ .05, t (64) = 9.42, P= .00. The 95% confidence interval for the difference is between 1.13 and 1.73

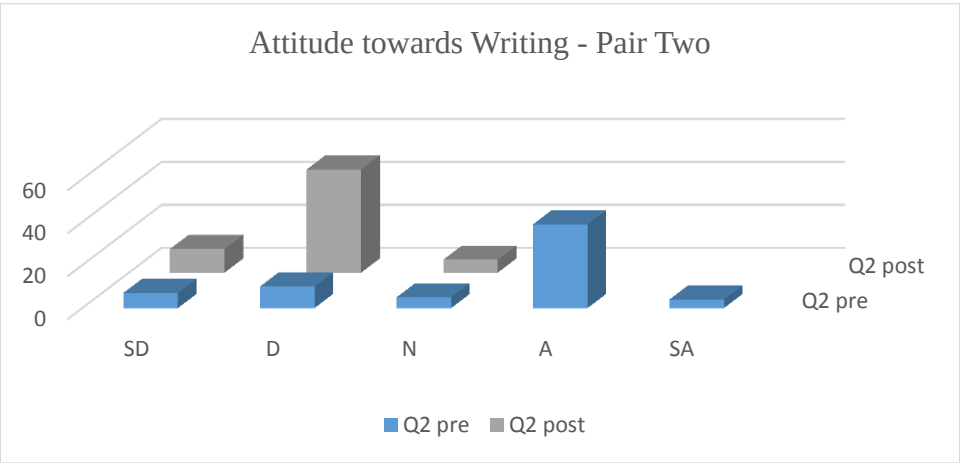

Figure 60. Students' pre-post attitude towards writing – pair two (IWB instruction)

The results of pair 3 showed a substantial change between the mean values before IWB prewriting instruction (*M* = 2.63, *SD* = 1.04) and after it (*M* = 3.83, *SD*= .72). Also, the findings revealed a significant difference in attitude at P≤ .05, *t* (64) = -7.97, P= .00 with 95% confidence interval for the difference between -1.50 and -.90. Thus, The IWB instruction motivated students to write in English to communicate their ideas (See figure 61).

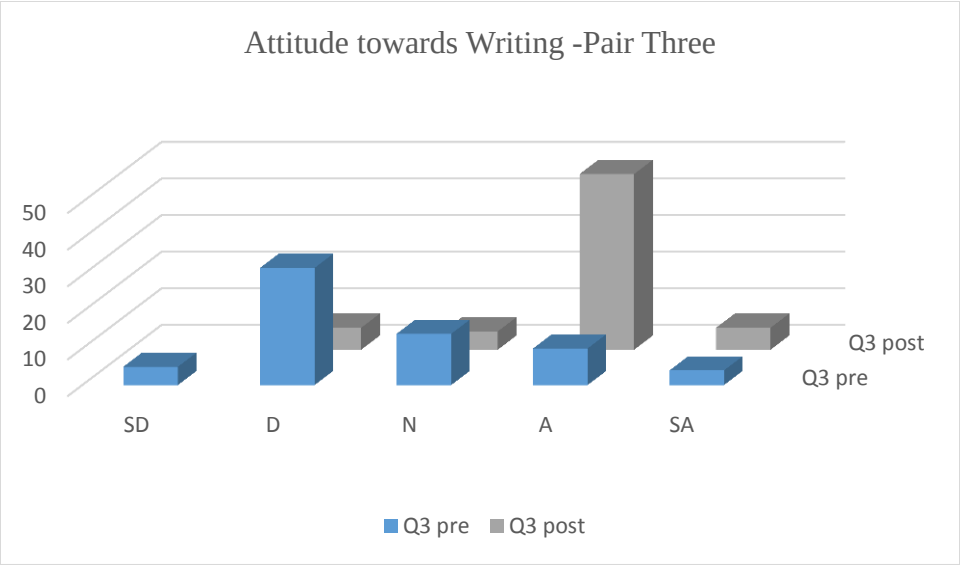

Figure 61. Students' pre-post attitude towards writing – pair three (IWB instruction)

The results of pair 4 indicated a significant difference in attitude at P≤ .05, *t* (64) =3.52, P= .001. As figure 62 indicates, students strongly agreed that they felt nervous when they couldn't find proper vocabulary words to express their ideas before IWB prewriting instruction (*M* = 4.58, *SD* = .71), whereas they agreed that they became less anxious when they write after the IWB treatment (*M* = 4.11, *SD* = .79). The 95% confidence interval for the difference is between .21 and .75.

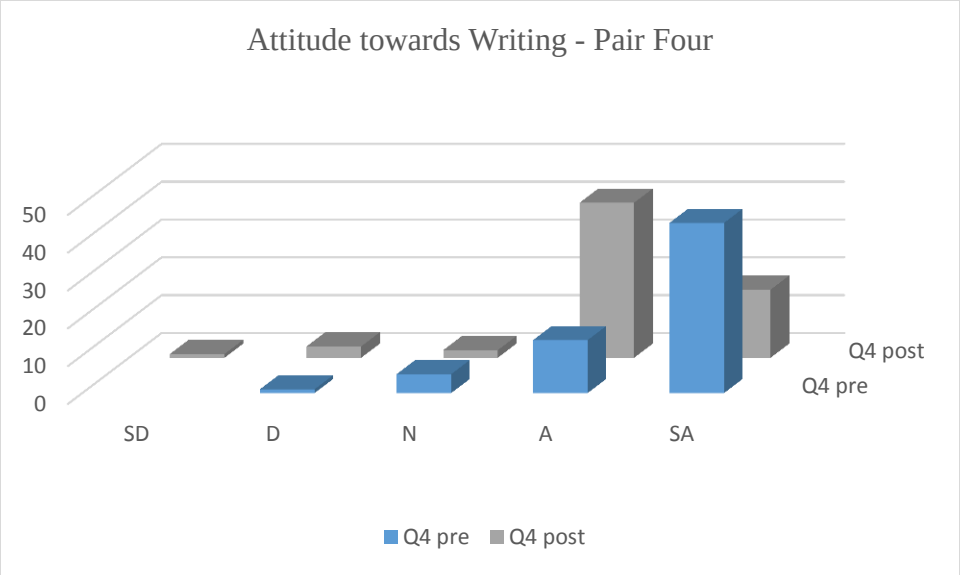

Figure 62. Students' pre-post attitude towards writing – pair four (IWB instruction)

The results of pair 5 revealed a change between the mean values before IWB prewriting instruction (M = 4.09, SD = .86) and after it (M = 1.92, SD= .57) as well as a significant difference in attitude at P≤ .05, t (64) = 18.51, P= .00. The 95% confidence interval for the difference is between 1.94 and 2.40. This means that students no more panic to remember the topic-related vocabulary words after the IWB treatment as shown in figure 63.

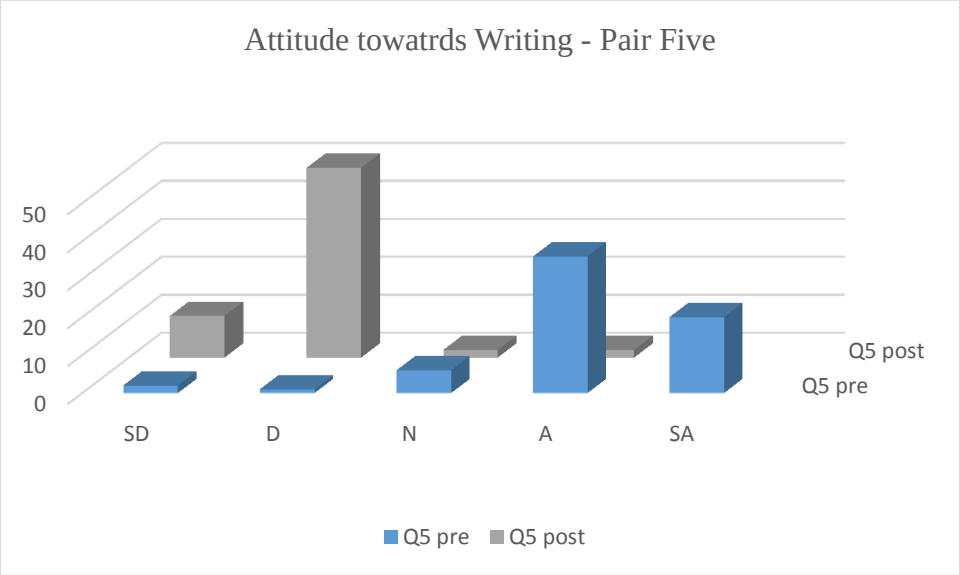

Figure 63. Students' pre-post attitude towards writing – pair five (IWB instruction)

The results of pair 6 indicated a significant difference in attitude at P≤ .05, *t* (64) = 17.07, P= .00 with mean values before IWB prewriting instruction *M* = 4.20, *SD* = .96 and after it *M* = 1.95, *SD*= .60. The 95% confidence interval for the difference is between 1.99 and 2.51. This reveals that it's no more difficulty for students to support their ideas well in writing after the IWB prewriting instruction (Refer to figure 64).

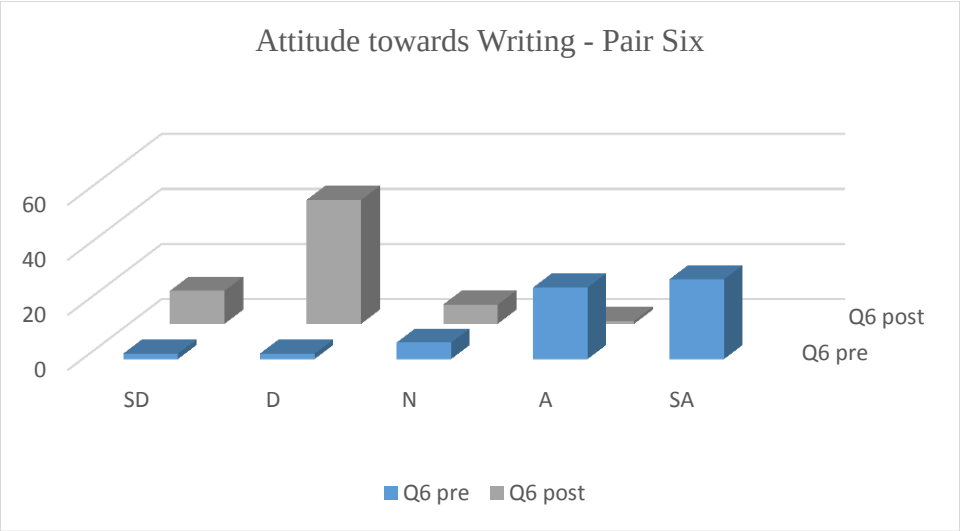

Figure 64. Students' pre-post attitude towards writing – pair six (IWB instruction)

The results of pair 7 indicated a change between the mean values before IWB prewriting instruction (*M* = 3.05, *SD* = 1.44) and after it (*M* = 4.23, *SD*= .63). It, also, showed a significant difference in attitude at P≤ .05, *t* (64) = -5.73, P= .00. The 95% confidence interval for the difference is between -1.60 and -.77. Hence, students who used to have negative attitude towards writing in English before the IWB treatment expressed positive attitudes towards writing after it as shown in figure 65.

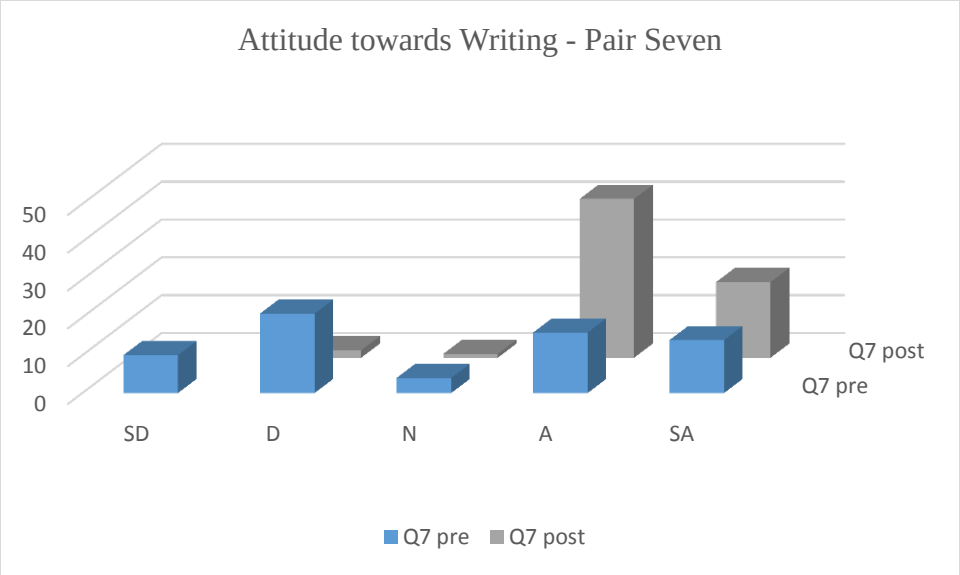

Figure 65. Students' pre-post attitude towards writing – pair seven (IWB instruction)

The results of pair 8 showed a substantial change between the mean values before IWB prewriting instruction (M = 4.03, SD = .88) and after it (M = 2.00, SD= .61) and a significant difference in attitude at P≤ .05, t (64) = 16.38, P= .00 as well. The 95% confidence interval for the difference is between 1.78 and 2.28. As a result, students didn't take much time to think of what they have to write after the IWB treatment as they used to do before it (See figure 66).

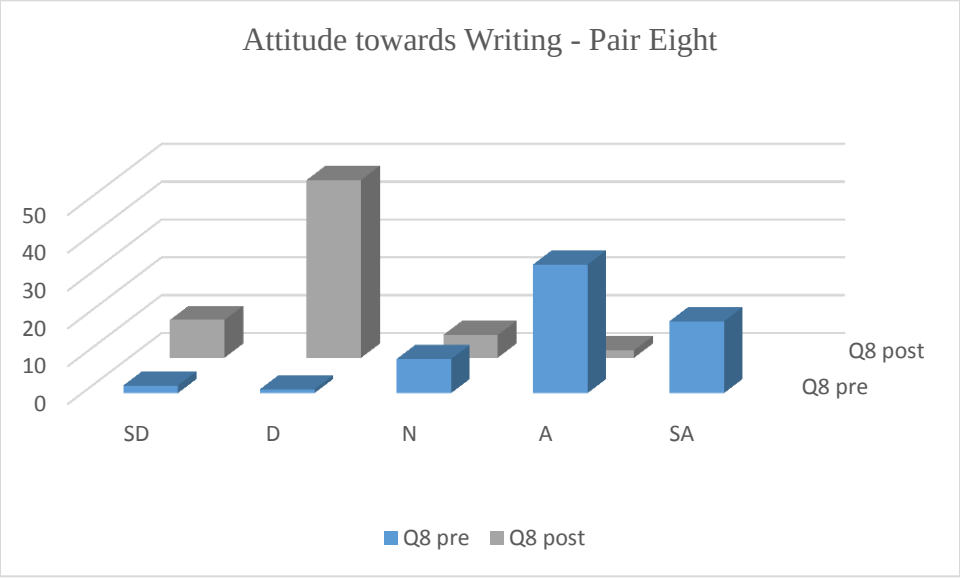

Figure 66. Students' pre-post attitude towards writing – pair eight (IWB instruction)

The results of pair 9 indicated a considerable change between the mean values before IWB prewriting instruction (*M* = 3.29, *SD* = 1.23) and after it (*M* = 3.95, *SD*= .62) as well as a significant difference in attitude at P≤ .05, *t* (64) = -3.71, P= .00. The 95% confidence interval for the difference is between -1.02 and -.31. This means that students no more viewed writing in English a burden to them after the IWB treatment as they used to do before it (See figure 67).

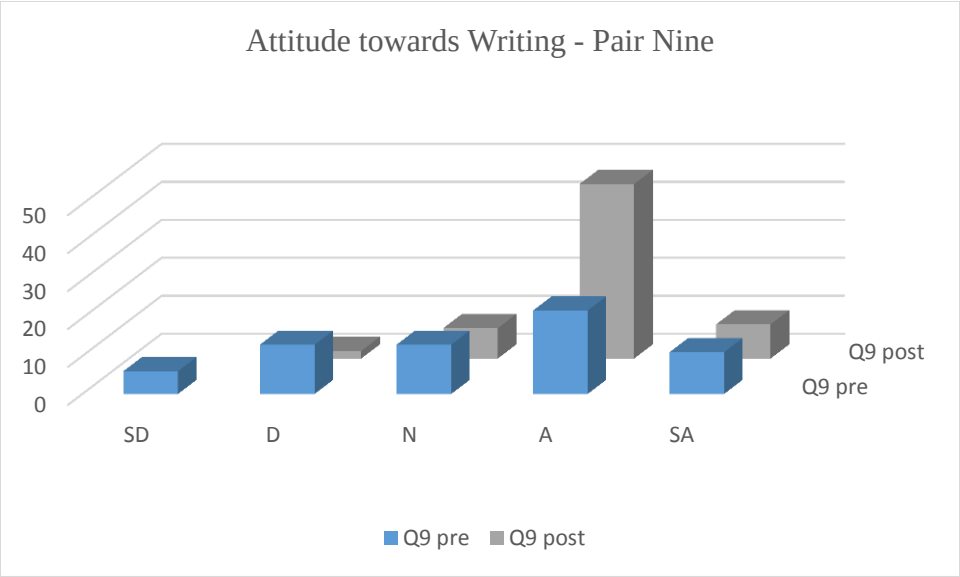

Figure 67. Students' pre-post attitude towards writing – pair nine (IWB instruction)

The results of pair 10 indicated a significant difference in attitude at P≤ .05, *t* (64) = 5.43, P= .00, and a change in the mean values before IWB prewriting instruction (*M* = 2.88, *SD* = 1.17) and after it (*M* = 2.06, *SD*= .66). The 95% confidence interval for the difference is between .56 and 1.12. As figure 68 shows, some students agreed that the writing period is a boring one and others disagreed on that before the IWB treatment. However, the students' attitude changed after the IWB treatment, for the majority of students either disagreed or strongly disagreed that they feel bored during the English writing period.

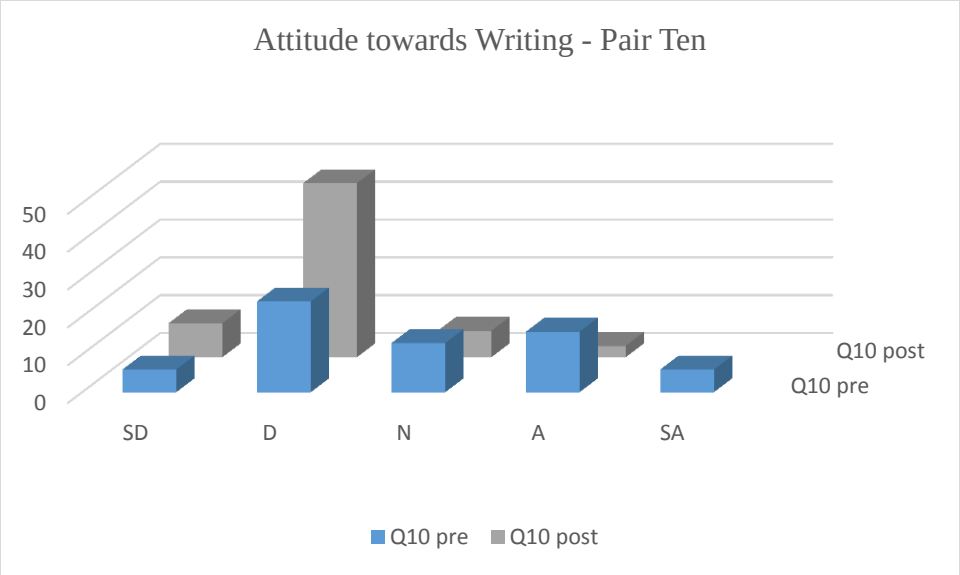

Figure 68. Students' pre-post attitude towards writing – pair ten (IWB instruction)

The results of pair 11 displayed a substantial change between the mean values before the IWB prewriting instruction (M = 3.52, SD = .99) and after it (M = 2.00, SD= .69). They, also, showed a significant difference in attitude at P≤ .05, t (64) = 11.25, P= .00. The 95% confidence interval for the difference is between 1.25 and 1.79. Thus, students no more get lost when they start writing in English after the IWB treatment as they used to do before it (See figure 69).

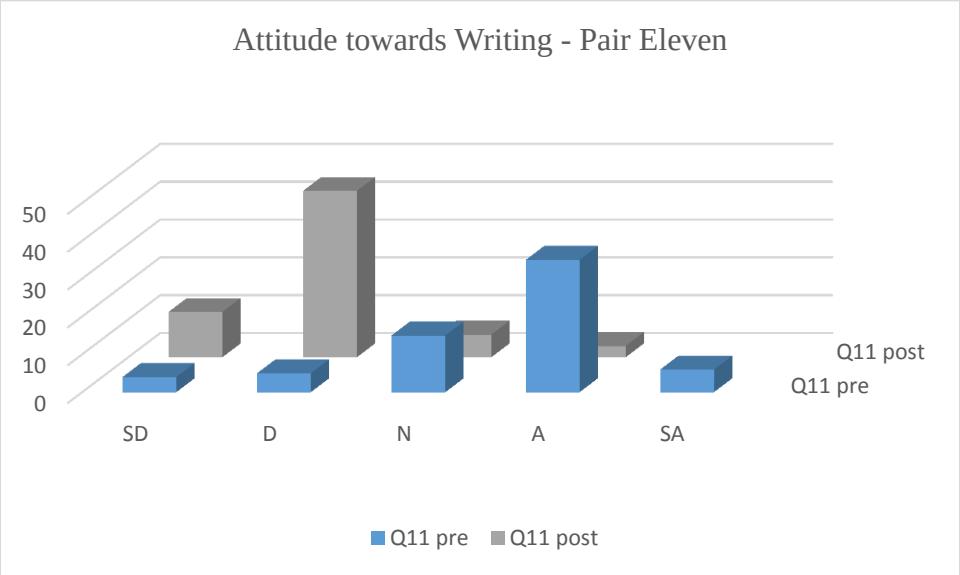

Figure 69. Students' pre-post attitude towards writing – pair eleven (IWB instruction)

The results of pair 12 indicated a weighty change between the mean values before the IWB prewriting instruction (*M* = 3.46, *SD* = 1.11) and after it (*M* = 2.05, *SD*= .65) and a significant difference in attitude at P≤ .05, *t* (64) = 8.34, P= .00. The 95% confidence interval for the difference is between 1.08 and 1.75. As displayed in figure 70, some students agreed that they like other language skills more than writing, and others disagreed before the IWB treatment. Nevertheless, such an attitude drastically changed after the IWB prewriting instruction since most students either disagreed or strongly disagreed that they like other language skills more than writing.

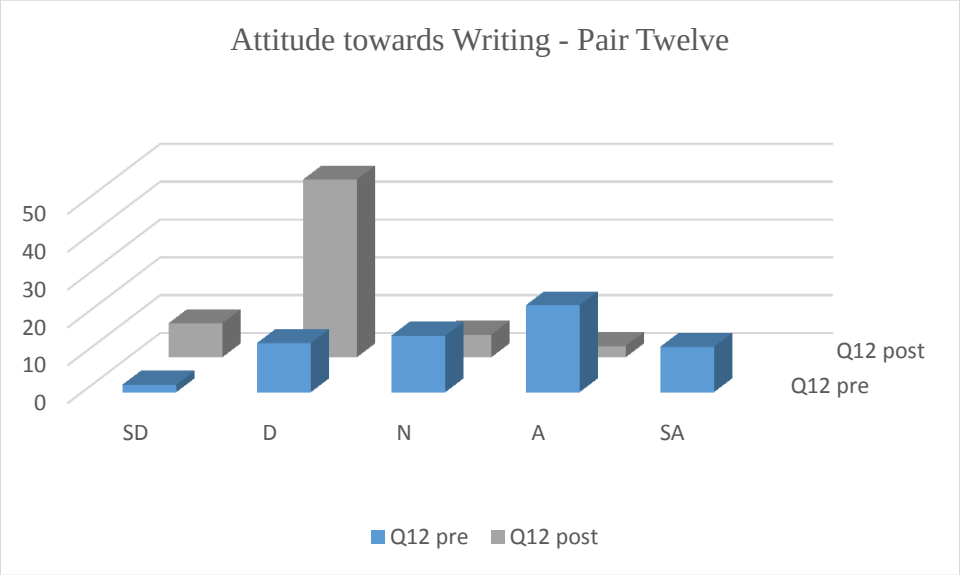

Figure 70. Students' pre-post attitude towards writing – pair twelve (IWB instruction)

The results of pair 13 showed a substantial change between the mean values before the IWB prewriting instruction (*M* = 2.48, *SD* = .92) and after it (*M* = 4.23, *SD*= .63), and they revealed a significant difference in attitude at P≤ .05, *t* (64) = -11.92, P= .00 as well. The 95% confidence interval for the difference is between -2.05 and -1.46. Accordingly, the IWB treatment induced students to feel confident when they write in English (See figure 71).

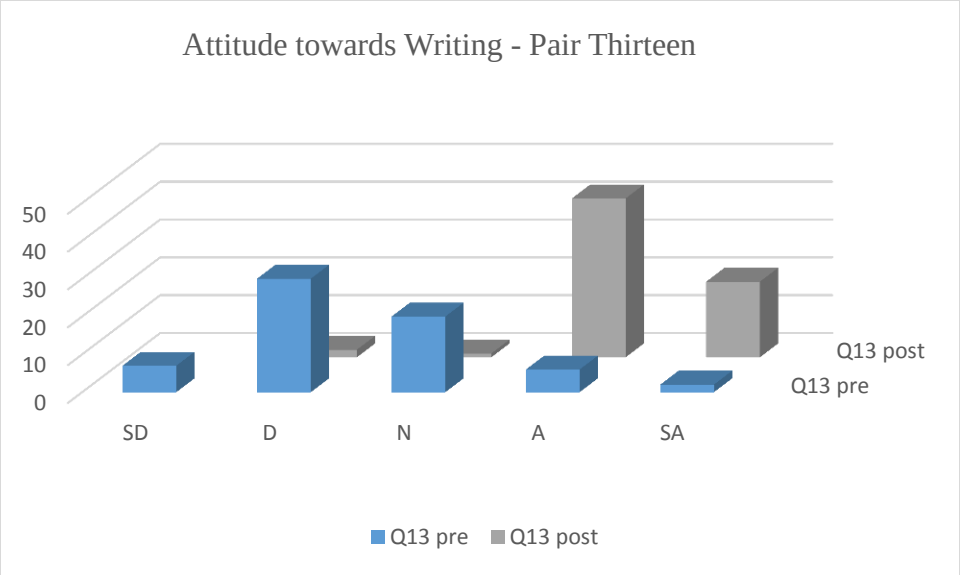

Figure 71. Students' pre-post attitude towards writing – pair thirteen (IWB instruction)

The results of pair 14 exposed a change in the mean values before IWB prewriting instruction (*M* = 3.58, *SD* = .97) and after it (*M* = 4.22, *SD*= .57) and a significant difference in attitude at P≤ .05, *t* (64)= -4.63, P= .00. The 95% confidence interval for the difference is between -.90 and -.36. This indicates that students no more believed that they can't develop their ideas well in English after the IWB treatment as they used to think before it (See figure 72).

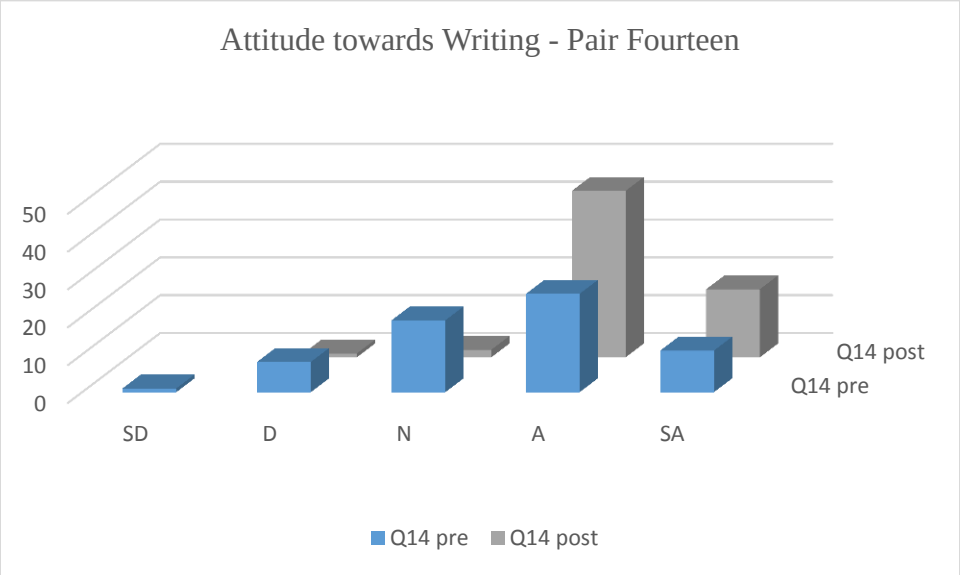

Figure 72. Students' pre-post attitude towards writing – pair fourteen (IWB instruction)

The results of pair 15 indicated a noteworthy change between the mean values before regular prewriting instruction (*M* = 3.22, *SD* = 1.31) and after it (*M* = 4.23, *SD*= .58) and revealed a significant difference in attitude at P≤ .05, *t* (64) =-5.30, P= .00. The 95% confidence interval for the difference is between -1.40 and -.63. As figure 73 shows, there is a shift in students' attitude after the IWB treatment, for almost all students approved that they felt relieved when they write their thoughts in English after the IWB prewriting instruction in contrast to what they felt before the IWB treatment.

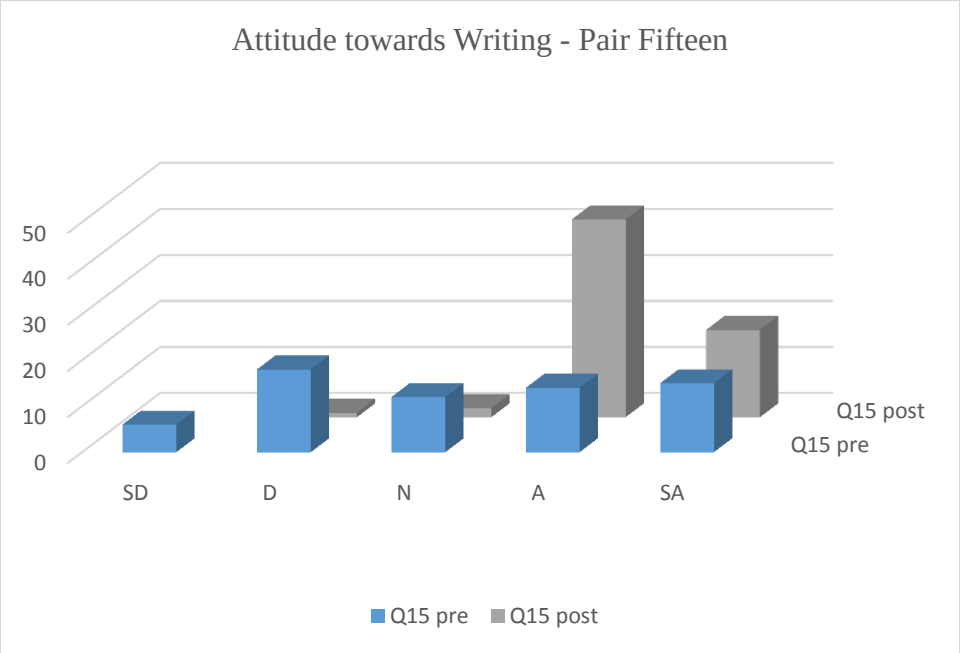

Figure 73. Students' pre-post attitude towards writing – pair fifteen (IWB instruction)

To sum up, the IWB prewriting instruction has led to a remarkable change in the participants' attitude towards writing in the experimental group. This means that participants in the experimental group expressed positive attitudes towards writing after the IWB treatment. Therefore, the Alternative Hypothesis "The use of Interactive Whiteboard in pre-writing instruction boosts the attitudes of EFL secondary students towards writing" was retained.

Table 50

Descriptive Statistics of Student Attitude towards Writing regarding IWB Treatment

		N	*M*	*SD*
Pair 1	Writing in English is an enjoyable class activity	65	2.52	1.05
	Writing in English is an engaging activity after the Interactive Whiteboard pre-writing instruction	65	3.92	.78
Pair 2	I try to avoid the writing tasks in the English class	65	3.35	1.15
	I try to avoid the English writing tasks after the Interactive Whiteboard pre-writing instruction	65	1.92	.510
Pair 3	I like to write in English to communicate my ideas	65	2.63	1.04
	I become motivated to write about what I learned in the Interactive Whiteboard pre-writing activities	65	3.83	.72
Pair 4	I feel nervous when I can't find the proper vocabulary words to express my ideas	65	4.58	.71
	I feel less anxious to find proper vocabulary when I write after Interactive Whiteboard pre-writing activities	65	4.11	.79
Pair 5	When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities.	65	4.09	.86
	When I write, I panic to remember the topic-related vocabulary words discussed in the Interactive Whiteboard pre-writing instruction	65	1.92	.57
Pair 6	I feel tense during writing when I can't support my main ideas	65	4.20	.96
	It's difficult for me to support my ideas well in writing after the Interactive Whiteboard pre-writing instruction	65	1.95	.60
Pair 7	I like to use English when writing my diary	65	3.05	1.44
	I like to write in English after the Interactive Whiteboard pre-writing activities	65	4.23	.63
Pair 8	I waste much time to think of what I have to write about	65	4.03	.88

	I need much time to start writing even after the Interactive Whiteboard pre-writing activities	65	2.00	.61
Pair 9	Writing in English is a burden to me	65	3.29	1.23
	I no more view writing as a burden to me after doing the Interactive Whiteboard pre-writing activities	65	3.95	.62
Pair 10	I consider the writing period as the most boring among English periods	65	2.88	1.17
	I consider writing a boring activity even when the Interactive Whiteboard is used in pre-writing activities	65	2.06	.66
Pair 11	I get lost when I start writing in English	65	3.52	.99
	I get lost when I start writing in English even after the I Interactive Whiteboard pre-writing instruction	65	2.00	.69
Pair 12	I would like to learn all language skills except writing	65	3.46	1.11
	I would like to learn all language skills except writing even after the Interactive Whiteboard pre-writing instruction	65	2.05	.65
Pair 13	I feel confident when I write in English	65	2.48	.92
	I feel confident of what I write about after the Interactive Whiteboard pre-writing instruction	65	4.23	.63
Pair 14	I never seem able to develop my ideas well	65	3.58	.97
	I can develop my ideas well after the Interactive Whiteboard pre-writing activities	65	4.22	.57
Pair 15	I like seeing my thoughts on paper	65	3.22	1.31
	I feel relieved when I write my thoughts in English after the Interactive Whiteboard pre-writing instruction	65	4.23	.58

Table 51

Paired Samples Test of Student Attitude towards Writing regarding IWB Treatment

	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Lower	Upper			

Pair 1	Writing in English is an enjoyable class activity - Writing in English is an engaging activity after the Interactive Whiteboard pre-writing instruction	-1.68	-1.12	-9.88	64	.00
Pair 2	I try to avoid the writing tasks in the English class - I try to avoid the English writing tasks after the Interactive Whiteboard pre-writing instruction	1.13	1.73	9.42	64	.00
Pair 3	I like to write in English to communicate my ideas - I become motivated to write about what I learned in the Interactive Whiteboard pre-writing activities	-1.50	-.90	-7.97	64	.00
Pair 4	I feel nervous when I can't find the proper vocabulary words to express my ideas - I feel less anxious to find proper vocabulary when I write after Interactive Whiteboard pre-writing activities	.21	.75	3.52	64	.001
Pair 5	When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities. - When I write, I panic to remember the topic-related vocabulary words discussed in the Interactive Whiteboard pre-writing instruction	1.94	2.40	18.51	64	.00
Pair 6	I feel tense during writing when I can't support my main ideas - It's difficult for me to support my ideas well in writing after the Interactive Whiteboard pre-writing instruction	1.99	2.51	17.07	64	.00
Pair 7	I like to use English when writing my diary - I like to write in English after the Interactive Whiteboard pre-writing activities	-1.60	-.77	-5.73	64	.00

Pair 8	I waste much time to think of what I have to write about - I need much time to start writing even after the Interactive Whiteboard pre-writing activities	1.78	2.28	16.38	64	.00
Pair 9	Writing in English is a burden to me - I no more view writing as a burden to me after doing the Interactive Whiteboard pre-writing activities	-1.02	-.31	-3.71	64	.00
Pair 10	I consider the writing period as the most boring among English periods - I consider writing a boring activity even when the Interactive Whiteboard is used in pre-writing activities	.56	1.12	5.43	64	.00
Pair 11	I get lost when I start writing in English - I get lost when I start writing in English even after the Interactive Whiteboard pre-writing instruction	1.25	1.79	11.25	64	.00
Pair 12	I would like to learn all language skills except writing - I would like to learn all language skills except writing even after the Interactive Whiteboard pre-writing instruction	1.08	1.75	8.34	64	.00
Pair 13	I feel confident when I write in English - I feel confident of what I write about after the Interactive Whiteboard pre-writing instruction	-2.05	-1.46	-11.92	64	.00
Pair 14	I never seem able to develop my ideas well - I can develop my ideas well after the Interactive Whiteboard pre-writing activities	-.90	-.36	-4.63	64	.00
Pair 15	I like seeing my thoughts on paper - I feel relieved when I write my thoughts in English after the Interactive Whiteboard pre-writing instruction	-1.40	-.63	-5.30	64	.00

Data Analysis of EFL Student Attitude towards Writing Questionnaire regarding PPT Treatment

Participants' attitudes towards EFL writing before and after conducting PPT treatment were examined by the use of questionnaires with a five Likert scale for the responses. Responses of students in the experimental group were analyzed using the mean values, standard deviation, and a paired samples t-test. Descriptive statistics of the entire subject sample for each pair in the questionnaire and the findings of the paired samples t-test are revealed in tables 52 and 53.

The results of pair 1 indicated a substantial difference in the mean values before PPT prewriting instruction (M = 2.52, SD = 1.05) and after it (M = 4.08, SD= .62) as well as a significant difference in attitude at P≤ .05, t (64) =-10.45, P= .00. The 95% confidence interval of the difference ranges from -1.85 to -1.26. Therefore, we concluded that writing becomes an interesting activity after the PPT pre-writing instruction after they showed a negative attitude towards it before PPT the treatment (See figure 74).

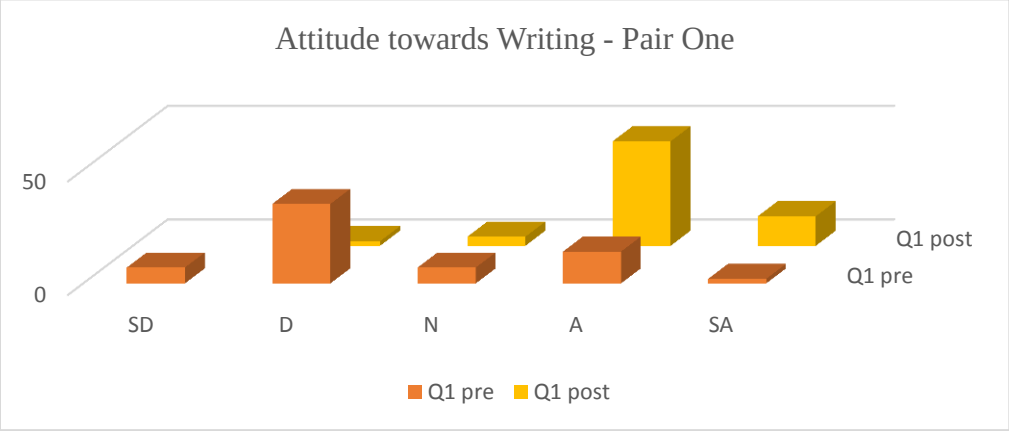

Figure 74. Students' pre-post attitude towards writing – pair one (PPT instruction)

The results of pair 2 showed that students who used to avoid writing in the English class didn't do that after the PPT treatment (See figure 75). This is clearly indicated in the difference between the mean values before PPT prewriting instruction (M = 3.35, SD = 1.15) and after it (M

= 1.83, *SD*= .52) and the significant difference in attitude at P≤ .05, *t* (64) = 10.83, P= .00. The 95% confidence interval for the difference is between 1.80 and 1.24.

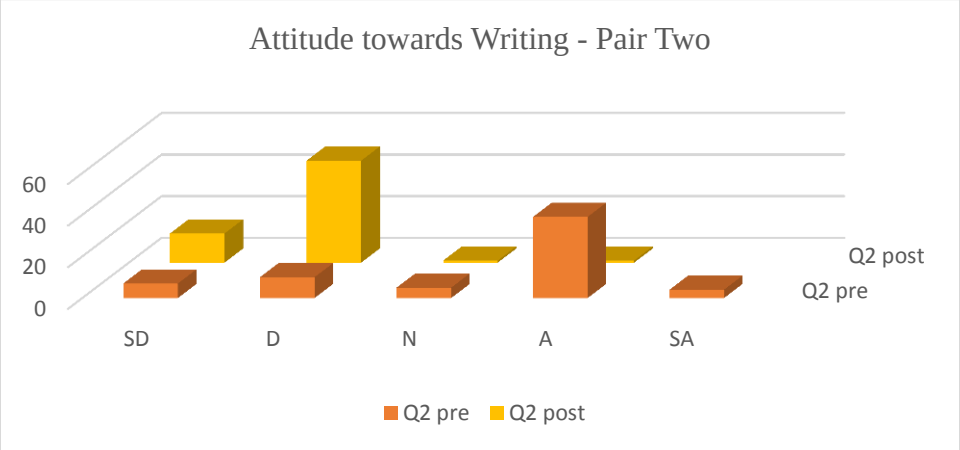

Figure 75. Students' pre-post attitude towards writing – pair two (PPT instruction)

The results of pair 3 showed a remarkable change between the mean values before PPT prewriting instruction (*M* = 2.63, *SD* = 1.04) and after it (*M* = 1.91, *SD*= .50). Also, the findings indicated a significant difference in attitude at P≤ .05, *t* (64) = 4.60, P= .00. The 95% confidence interval for the difference is between .41 and 1.04. Thus, students who didn't like to write in English to communicate their ideas before the PPT treatment became motivated to write after displaying the prewriting activities in the PowerPoint slides (See figure 76).

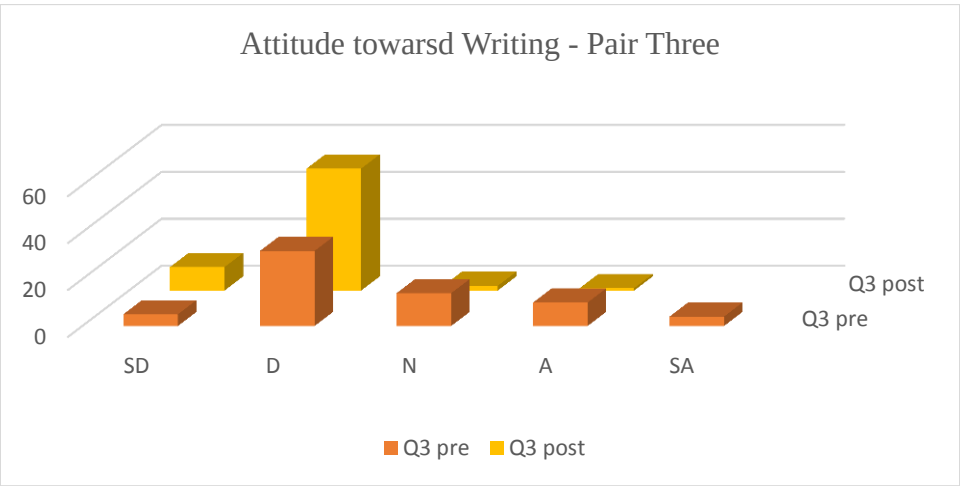

Figure 76. Students' pre-post attitude towards writing – pair three (PPT instruction)

The results of pair 4 indicated a significant difference in attitude at P≤ .05, *t* (64) =5.23, P= .00 with mean values (*M* = 4.58, *SD* = .71) before PPT prewriting instruction and (*M* = 4.05, *SD* = .50) after it. The 95% confidence interval for the difference is between .33 and .74. As figure 77 indicates, the majority of students strongly agreed that they felt nervous when they couldn't find the proper vocabulary words to express their ideas before the PPT treatment, while they agreed that the topic-related words made them less tense when they write after the PPT treatment.

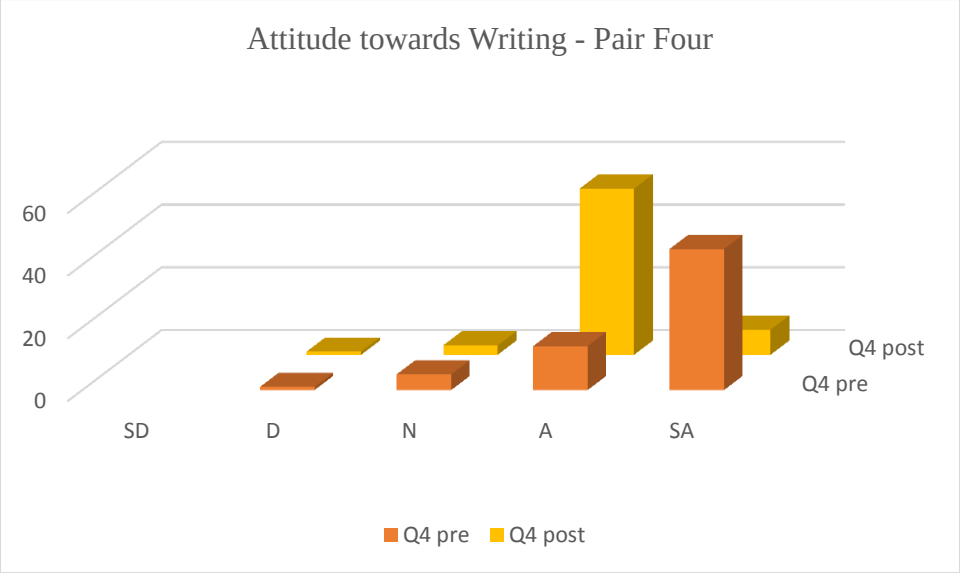

Figure 77. Students' pre-post attitude towards writing – pair four (PPT instruction)

The results of pair 5 didn't showed a change between the mean values before PPT prewriting instruction (*M* = 4.10, *SD* = .90) and after it (*M* = 1.91, *SD*= .50). Also, it showed a significant difference in attitude at P≤ .05, *t* (64) = 18.54, P= .00. The 95% confidence interval for the difference is between 1.95 and 2.42. This means that students no more suffer in finding topic-related vocabulary words as shown in figure 78.

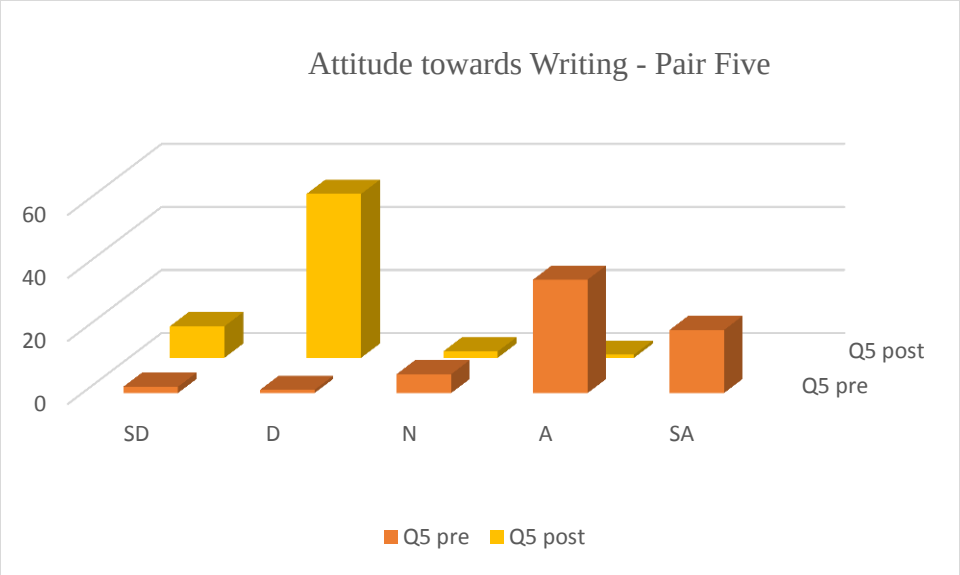

Figure 78. Students' pre-post attitude towards writing – pair five (PPT instruction)

The results of pair 6 indicated a significant difference in attitude at P≤ .05, *t* (64) = 17.10, P= .00 with mean values before PPT prewriting instruction *M* = 4.20, *SD* = .96 and after it *M* = 1.90, *SD*= .50. The 95% confidence interval for the difference is between 2.04 and 2.58. Therefore, students were able to support their ideas well in writing after the PPT prewriting instruction (See figure 79).

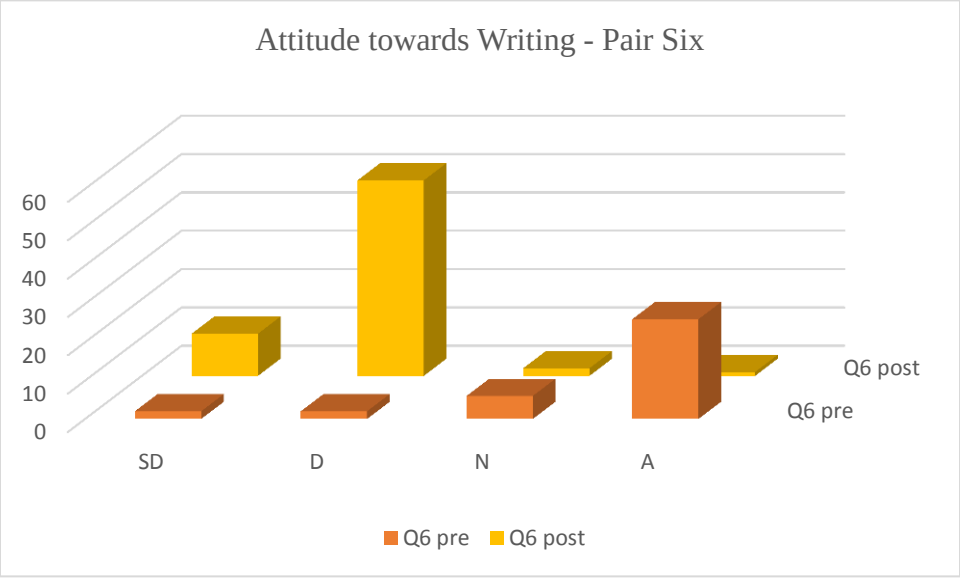

Figure 79. Students' pre-post attitude towards writing – pair six (PPT instruction)

The results of pair 7 indicated a change between the mean values before PPT prewriting instruction (*M* = 3.05, *SD* = 1.44) and after it (*M* = 2.05, *SD*= .50) as well as a significant difference in attitude at P≤ .05, *t* (64) = 5.38, P= .00. The 95% confidence interval for the difference is between .63 and 1.37. Hence, students who had negative attitude towards writing before the PPT treatment showed positive attitude towards writing after the PPT prewriting instruction as shown in figure 80.

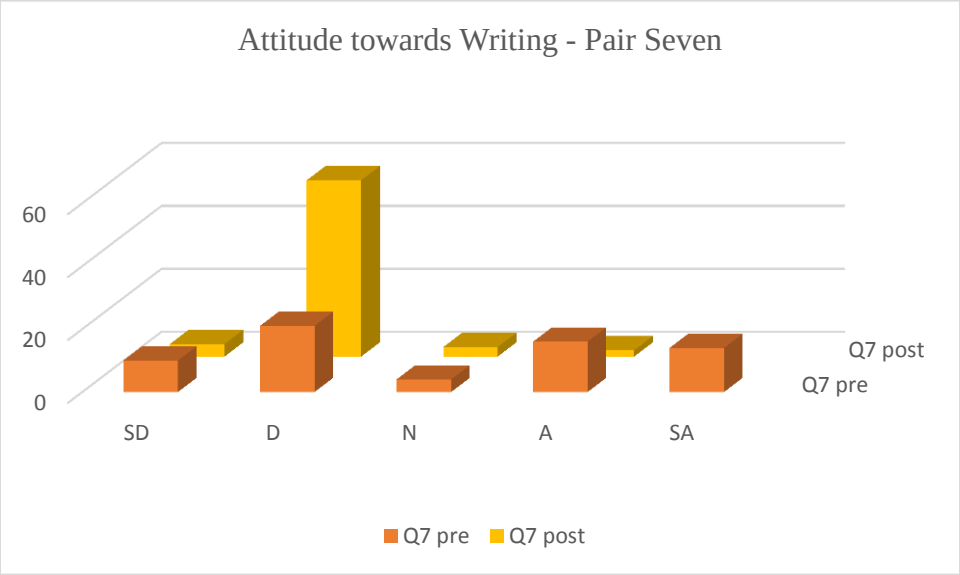

Figure 80. Students' pre-post attitude towards writing – pair seven (PPT instruction)

The results of pair 8 indicated a substantial change between the mean values before PPT prewriting instruction (*M* = 4.03, *SD* = .90) and after it (*M* = 1.91, *SD*= .61), and they revealed a significant difference in attitude at P≤ .05, *t* (64) = 15.81, P= .00 as well. The 95% confidence interval for the difference is between 1.86 and 2.40. Thus, students no more take much time to write down their ideas in English after the PPT treatment as they used to do before it (See figure 81).

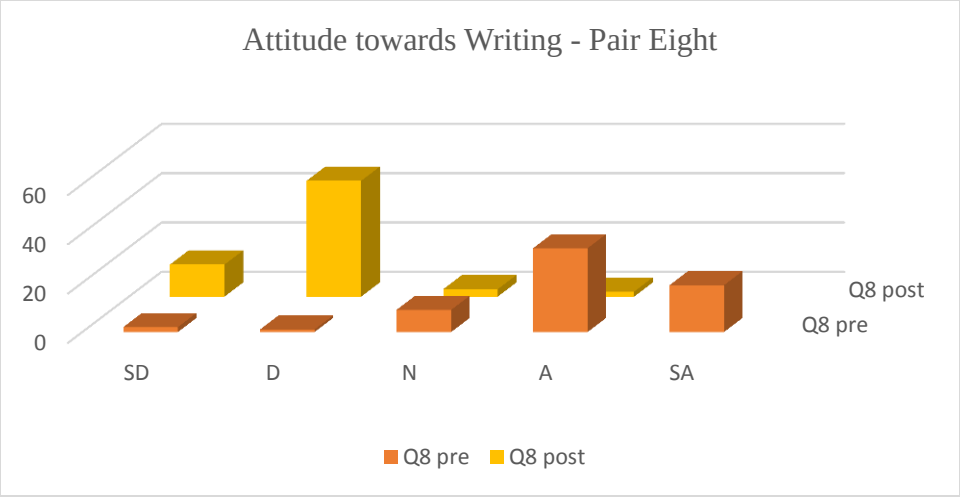

Figure 81. Students' pre-post attitude towards writing – pair eight (PPT instruction)

The results of pair 9 indicate a change between the mean values before PPT prewriting instruction (M = 3.30, SD = 1.23) and after it (M = 4.05, SD= .65), and they, also, showed a significant difference in attitude at P≤ .05, t (64) = -4.00, P= .00. The 95% confidence interval for the difference is between -1.13 and -.38. As indicated in figure 82, a lot of students agreed that writing in English is a burden to them, and some disagreed on that before the PPT treatment. However, the students' attitude changed after the PPT treatment since the majority of students agreed and some of them strongly agreed that they no more view writing as a burden to them.

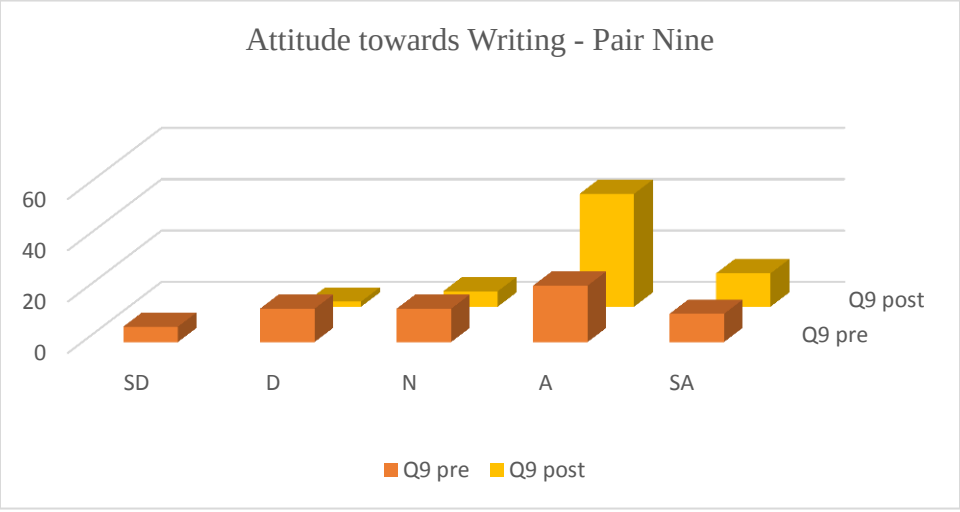

Figure 82. Students' pre-post attitude towards writing – pair nine (PPT instruction)

The results of pair 10 indicated a significant difference in attitude at P≤ .05, *t* (64) =-7.29, P= .00, and a substantial change in the mean values before PPT prewriting instruction (*M* = 2.90, *SD* = 1.17) and after it (*M* = 4.14, *SD*= .53). The 95% confidence interval for the difference is between -1.61 and -.97. As figure 83 shows, some students agreed that the writing period is a boring one and others disagreed on that before the PPT treatment. Nevertheless, almost all students agreed or strongly agreed that they no more view writing as a boring activity when the PowerPoint presentations were used as prewriting instruction.

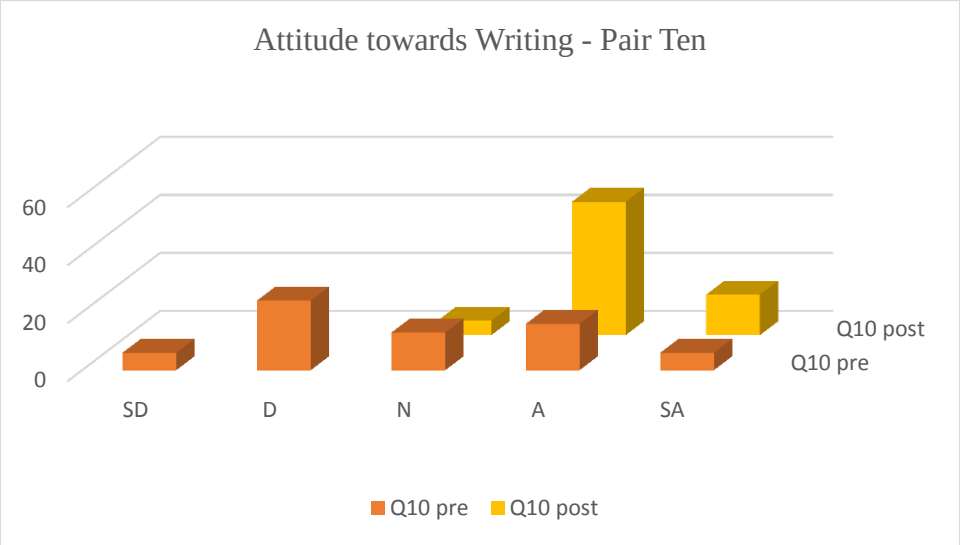

Figure 83. Students' pre-post attitude towards writing – pair ten (PPT instruction)

The results of pair 11 showed a remarkable change between the mean values before PPT prewriting instruction (*M* = 3.52, *SD* = .99) and after it (*M* = 1.90, *SD*= .50) with a significant difference in attitude at P≤ .05, *t* (64) = 13.68, P= .00. The 95% confidence interval for the difference is between 1.40 and 1.87. Thus, students no more get lost when they start writing in English after the PPT treatment as they used to do before it (See figure 84).

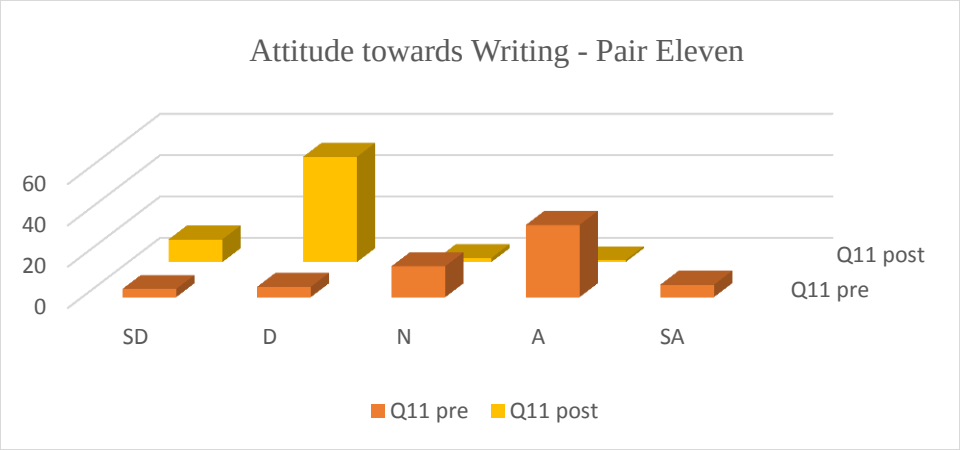

Figure 84. Students' pre-post attitude towards writing – pair eleven (PPT instruction)

The results of pair 12 indicated a considerable change between the mean values before PPT prewriting instruction (M = 3.50, SD = 1.11) and after it (M = 1.90, SD= .53) and a significant difference in attitude at P≤ .05, t (64) = 9.44, P= .00. The 95% confidence interval for the difference is between 1.26 and 1.94. As displayed in figure 85, a lot of students either agreed or strongly agreed that they like to learn all language skills except writing and others disagreed. However, such an attitude changed after the PPT treatment, for almost all students disagreed or strongly disagreed on that.

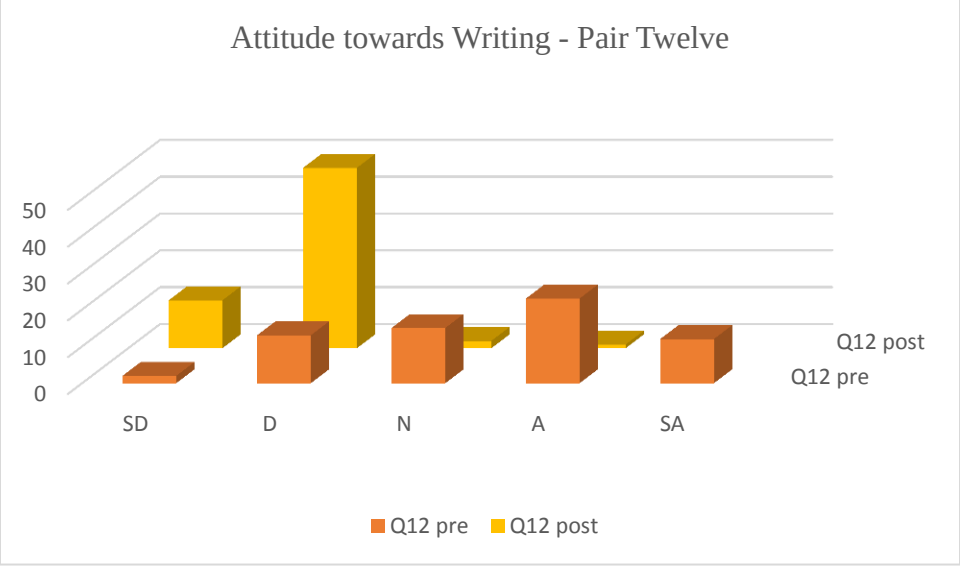

Figure 85. Students' pre-post attitude towards writing – pair twelve (PPT instruction)

The results of pair 13 showed no change in examine the mean values before PPT prewriting instruction (*M* = 2.50, *SD* = .92) and after it (*M* = 4.05, *SD*= .65), and it didn't reveal any significant difference in attitude at P≤ .05, *t* (64) = -11.93, P= .00. The 95% confidence interval for the difference is between -1.83 and -1.31. Accordingly, students continue to disagree that they feel confident when thy write in English (See figure 86).

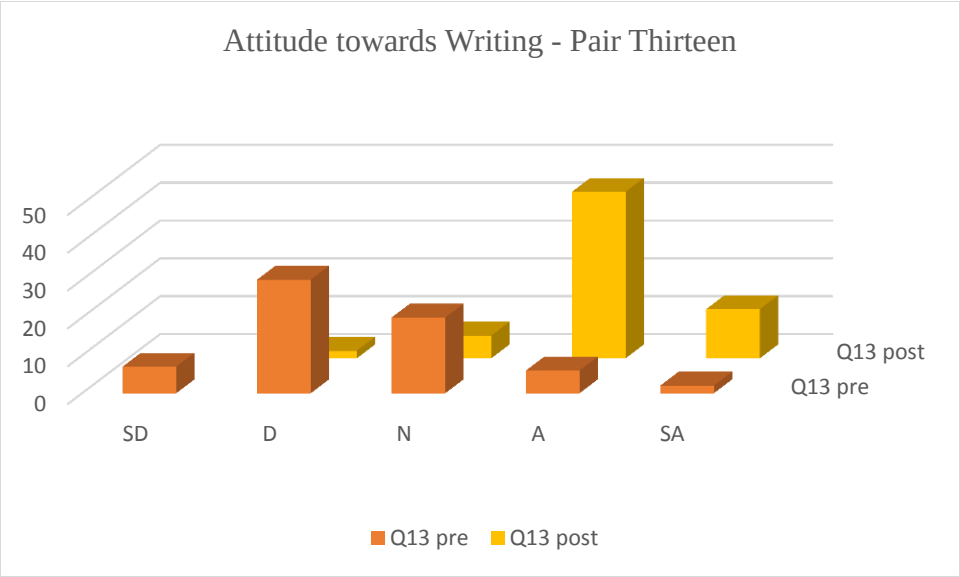

Figure 86. Students' pre-post attitude towards writing – pair thirteen (PPT instruction)

The results of pair 14 exposed neither a change in the mean values before PPT prewriting instruction (*M* = 3.58, *SD* = .97) and after it (*M* = 4.09, *SD*= .58) nor a significant difference in attitude at P≤ .05, *t* (64)= -3.30, P= .002. The 95% confidence interval for the difference is between -.82 and -.20. This indicates that students continue to believe that they can't develop their ideas well in English as displayed in figure 87.

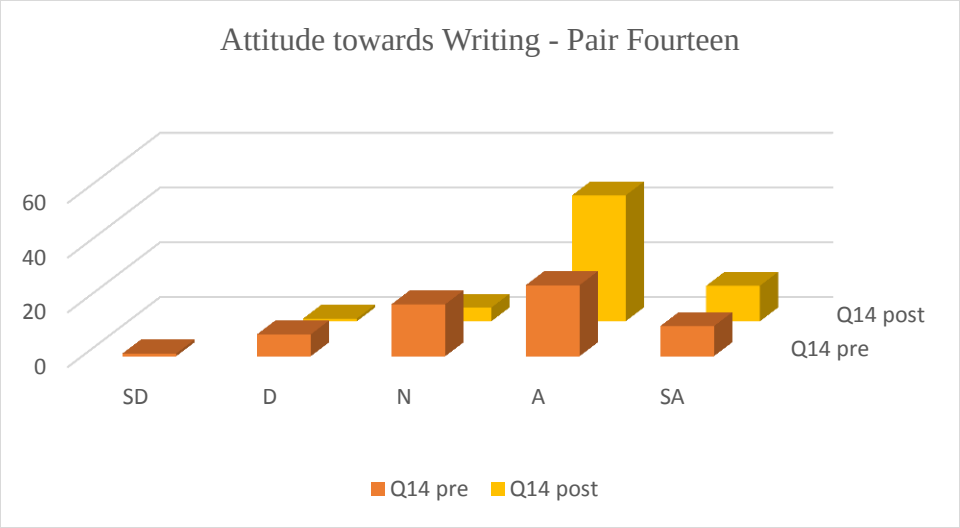

Figure 87. Students' pre-post attitude towards writing – pair fourteen (PPT instruction)

The results of pair 15 indicated a noteworthy change between the mean values before PPT prewriting instruction (M = 3.22, SD = 1.33) and after it (M = 4.11, SD= .62) and revealed a significant difference in attitude at P≤ .05, t (64) =-5.12, P= .00. The 95% confidence interval for the difference is between -1.24 and -.54. Nonetheless, figure 88 shows a shift towards more negativity in students' attitude after regular treatment, for more students didn't approve that writing their thoughts in English is a relieving activity.

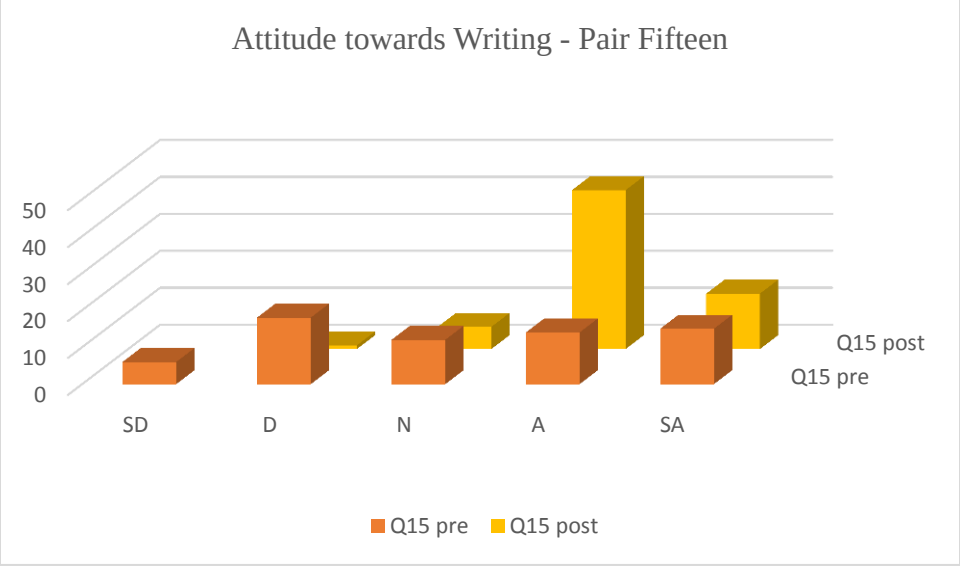

Figure 88. Students' pre-post attitude towards writing – pair fifteen (PPT instruction)

In brief, PowerPoint prewriting instruction led students to adopt favorable attitudes towards writing. Thus, the Alternative Hypothesis "The use of PowerPoint presentation in pre-writing instruction promotes the attitudes of EFL secondary students towards writing" was retained.

Table 52

Descriptive Statistics of Student Attitude towards Writing regarding PPT Treatment

		N	*M*	*SD*
Pair 1	Writing in English is an enjoyable class activity	65	2.52	1.05
	Writing in English becomes an interesting activity after the PowerPoint pre-writing instruction	65	4.08	.62
Pair 2	I try to avoid the writing tasks in the English class	65	3.35	1.15
	I try to avoid the English writing tasks after the PowerPoint pre-writing instruction	65	1.83	.52
Pair 3	I like to write in English to communicate my ideas	65	2.63	1.04
	I am not motivated to write even after the pre-writing activities in the PowerPoint slides	65	1.91	.50
Pair 4	I feel nervous when I can't find the proper vocabulary words to express my ideas	65	4.58	.71
	The topic-related words I learned from the PowerPoint presentations make me less tense when I write	65	4.05	.50
Pair 5	When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities.	65	4.10	.90
	When I write, I panic to remember the topic-related vocabulary words discussed in the PowerPoint pre-writing instruction	65	1.91	.50
Pair 6	I feel tense during writing when I can't support my main ideas	65	4.20	.96

	It's difficult for me to support my ideas well in writing after the PowerPoint pre-writing instruction	65	1.90	.50
Pair 7	I like to use English when writing my diary	65	3.05	1.44
	I worry about writing down my ideas even after the PowerPoint pre-writing instruction	65	2.05	.50
Pair 8	I waste much time to think of what I have to write about	65	4.03	.90
	I take much time to write down my ideas in English even after the PowerPoint pre-writing instruction	65	1.91	.61
Pair 9	Writing in English is a burden to me	65	3.30	1.23
	I no more view writing as a burden to me after the PowerPoint pre-writing instruction	65	4.05	.65
Pair 10	I consider the writing period as the most boring among English periods	65	2.90	1.17
	I no more view writing as a boring activity when the PowerPoint presentations are used as pre-writing activities	65	4.14	.53
Pair 11	I get lost when I start writing in English	65	3.52	.99
	I get lost when I start writing in English even after the PowerPoint pre-writing instruction	65	1.90	.50
Pair 12	I would like to learn all language skills except writing	65	3.50	1.11
	I would like to learn all language skills except writing even after the PowerPoint pre-writing instruction	65	1.90	.53
Pair 13	I feel confident when I write in English	65	2.50	.92
	I feel confident of what I write about after the PowerPoint presentations	65	4.05	.65
Pair 14	I never seem able to develop my ideas well	65	3.58	.97

	I can develop my ideas well after the PowerPoint pre-writing activities	65	4.09	.58
Pair 15	I like seeing my thoughts on paper	65	3.22	1.33
	I feel relieved when I write my thoughts in English after the PowerPoint pre-writing instruction	65	4.11	.62

Table 53

Paired Samples Test of Student Attitude towards Writing regarding PPT Treatment

		Paired Differences		t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference				
		Lower	Upper			
Pair 1	Writing in English is an enjoyable class activity - Writing in English becomes an interesting activity after the PowerPoint pre-writing instruction	-1.85	-1.26	-10.45	64	.000
Pair 2	I try to avoid the writing tasks in the English class - I try to avoid the English writing tasks after the PowerPoint pre-writing instruction	1.24	1.80	10.83	64	.000
Pair 3	I like to write in English to communicate my ideas - I am not motivated to write even after the pre-writing activities in the PowerPoint slides	.41	1.04	4.60	64	.000
Pair 4	I feel nervous when I can't find the proper vocabulary words to express my ideas - The topic-related words I learned from the PowerPoint presentations make me less tense when I write	.33	.74	5.23	64	.000

Pair 5	When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities. - When I write, I panic to remember the topic-related vocabulary words discussed in the PowerPoint pre-writing instruction	1.95	2.42	18.54	64	.000
Pair 6	I feel tense during writing when I can't support my main ideas - It's difficult for me to support my ideas well in writing after the PowerPoint pre-writing instruction	2.04	2.58	17.10	64	.000
Pair 7	I like to use English when writing my diary - I worry about writing down my ideas even after the PowerPoint pre-writing instruction	.63	1.37	5.38	64	.000
Pair 8	I waste much time to think of what I have to write about - I take much time to write down my ideas in English even after the PowerPoint pre-writing instruction	1.86	2.40	15.81	64	.000
Pair 9	Writing in English is a burden to me - I no more view writing as a burden to me after the PowerPoint pre-writing instruction	-1.13	-.38	-4.00	64	.000
Pair 10	I consider the writing period as the most boring among English periods - I no more view writing as a boring activity when the PowerPoint presentations are used as pre-writing activities	-1.61	-.97	-7.29	64	.000
Pair 11	I get lost when I start writing in English - I get lost when I start writing in English even after the PowerPoint pre-writing instruction	1.40	1.87	13.68	64	.000
Pair 12	I would like to learn all language skills except writing - I would like to learn all language skills except writing even after the PowerPoint pre-writing instruction	1.26	1.94	9.44	64	.000

Pair 13	I feel confident when I write in English - I feel confident of what I write about after the PowerPoint presentations	-1.83	-1.31	-11.93	64	.000
Pair 14	I never seem able to develop my ideas well - I can develop my ideas well after the PowerPoint pre-writing activities	-.82	-.20	-3.30	64	.002
Pair 15	I like seeing my thoughts on paper - I feel relieved when I write my thoughts in English after the PowerPoint pre-writing instruction	-1.24	-.54	-5.12	64	.000

Quantitative Findings of Research Question 7

Research question 7: What are the attitudes of EFL secondary students towards the use of Interactive Whiteboard in pre-writing instruction?

Attitudes of the participants in the experimental group with respect to the use of IWB in pre-writing instruction were examined by the use of a questionnaire with a five Likert scale for the responses. Responses of the participants were analyzed using descriptive statistics.

Data Analysis of EFL Student Attitude towards the Use of IWB Pre-writing Instruction Questionnaire

Participants' attitudes towards the use of IWB in pre-writing instruction were inspected using 9 questionnaire items with a five Likert scale for the responses. Overall mean score, standard deviation, frequency and percentage of the nine questionnaire items were examined and analyzed using SPSS. The question items Q3, Q4, Q6, Q7 & Q9 were stated positively, while question items Q1, Q2, Q5 & Q8 were stated negatively. As table 54 shows, almost all the participants strongly disagreed or disagreed that they considered the prewriting activities using the Interactive Whiteboard a waste of time (M= 1.48, SD= .53). Also, 43% of the participants strongly disagreed and almost half the participants disagreed that the pre-writing activities in the

Interactive Whiteboard made them less active in the class. Moreover, all the participants either agreed (69%) or strongly agreed (31%) that they felt enthusiastic while using the Interactive Whiteboard in the pre-writing instruction. Similarly, almost all participants reported that using the Interactive Whiteboard encouraged them to participate more than before in the writing class (*M*= 4.31, *SD*= .50), and they agreed (66%) or strongly agreed (31%) that the activities in the Interactive Whiteboard stimulated their background knowledge about the writing topic. As to whether participants prefer the traditional prewriting activities than the activities in the Interactive Whiteboard, 35% of the participants strongly disagreed and 62% disagreed on that. Furthermore, all participants either agreed (83%) or strongly agreed (17%) that they became more alert to the class discussion when the interactive Whiteboard was used. When asked whether the class became too noisy when the Interactive Whiteboard was used, almost all the participants strongly disagreed (26%) or disagreed (72%) on that. Regarding the responses of the last question, the majority of students agreed or strongly agreed that they enjoyed leaving their seats to share in doing the activities on the Interactive Whiteboard (*M*= 4.03, *SD*= 0.64). Graphic findings are displayed in figure 89.

In conclusion, the findings of the data analysis of the question items indicated that the participants expressed positive attitude towards the use of the Interactive Whiteboard in prewriting instruction.

Table 54

Descriptive Statistics of Students' Attitude towards the Use of IWB in Prewriting Instruction

		SD	D	N	A	SA	*M*	*SD*
Q1	f	35	29	1			1.48	.53
	%	53.8	44.6	1.5				
Q2	f	28	35	1	1		1.62	.60
	%	43.1	53.8	1.5	1.5			

Q3	f					45	20	4.31	.47
	%					69.2	30.8		
Q4	f				1	43	21	4.31	.50
	%				1.5	66.2	32.3		
Q5	f		23	40		1	1	1.70	.58
	%		35.4	61.5		1.5	1.5		
Q6	f		1	1		43	20	4.26	.57
	%		1.5	1.5		66.2	30.8		
Q7	f					54	11	4.17	.38
	%					83.1	16.9		
Q8	f	17	47			1		1.77	.52
	%	26.2	72.3			1.5			
Q9	f		2	6		45	12	4.03	.64
	%		3.1	9.2		69.2	18.5		

Note: f: Frequency %: Percentage SD: Strongly disagree D: Disagree N: I don't know A: Agree SA: Strongly agree *M*: Mean *SD*: Standard Deviation

Q1: I consider the prewriting activities using the Interactive Whiteboard a waste of time
Q2: The pre-writing activities in the Interactive Whiteboard make me less active in the class
Q3: I feel enthusiastic while using the Interactive Whiteboard in the pre-writing activities
Q4: Using the Interactive Whiteboard encourages me to participate more than before in the writing class
Q5: I prefer the traditional pre-writing activities than the activities in the Interactive Whiteboard
Q6: The activities in the Interactive Whiteboard stimulate my background knowledge about the writing topic
Q7: I become more alert to the class discussion when the Interactive Whiteboard is used
Q8: The class becomes too noisy when the Interactive Whiteboard is used
Q9: I enjoy leaving my seat to share in doing the activities in the Interactive Whiteboard

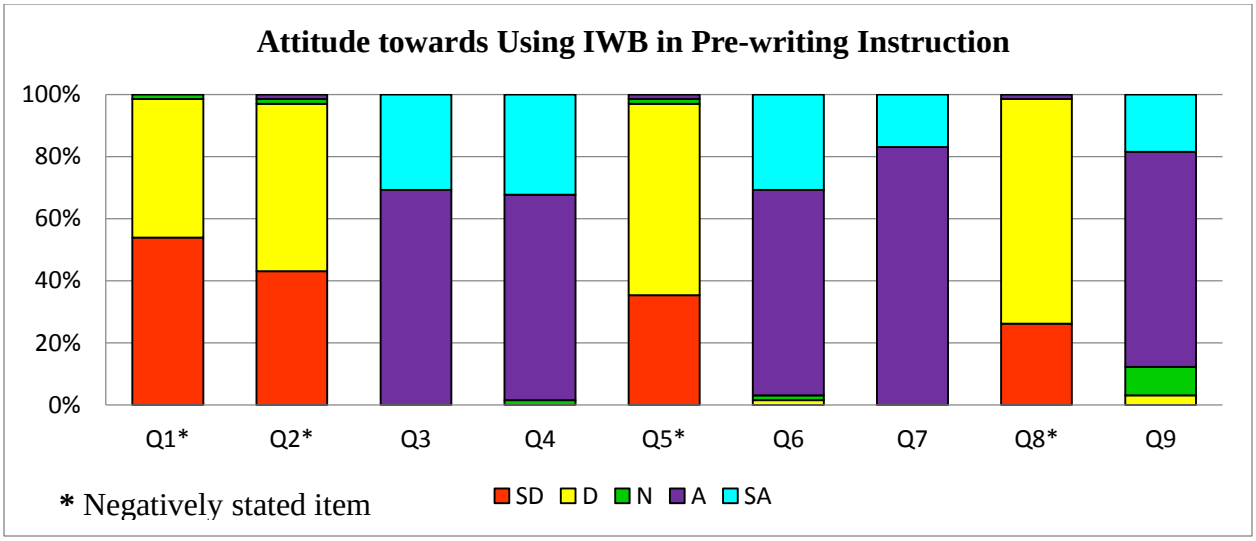

Figure 89. Attitude of Students towards using IWB in pre-writing instruction

Therefore, the seventh alternative hypothesis that secondary EFL students have positive attitudes towards the use of Interactive Whiteboard in pre-writing instruction was retained.

Quantitative Findings of Research Question 8

Research question 8: What are the attitudes of EFL secondary students towards the use of the PowerPoint presentations in pre-writing instruction?

Attitudes of the participants in the experimental group with respect to the use of PPT in prewriting instruction were examined by the use of a questionnaire with a five Likert scale for the responses. Responses of the participants were analyzed using descriptive statistics.

Data Analysis of EFL Student Attitude towards the Use of PPT Pre-writing Instruction Questionnaire

Participants' attitudes towards the use of PPT in pre-writing instruction were inspected using 8 questionnaire items with a five Likert scale for the responses. Overall mean score, standard deviation, frequency and percentage of the eight questionnaire items were examined and analyzed using SPSS. The question items Q1, Q2, Q6, Q7 & Q8 were stated positively, while question items Q3, Q4 & Q5 were stated negatively. As table 55 shows, almost all the

participants strongly agreed (26.2%) or disagreed (70.8%) that using the PowerPoint presentation in prewriting activities increases their degree of concentration. Also, 16.9% of the participants strongly agreed and 80% of them agreed that they became more eager to listen to their friend's comments and ideas when the PowerPoint presentations were used in prewriting activities. When asked whether they became busy looking at the pictures, images and different fonts and colors displayed in the PowerPoint slides rather than focusing on the ideas and how they are developed, almost all the participants either strongly disagreed or disagreed on that (*M*= 1.88, *SD*= .38) . Similarly, almost all participants either strongly disagreed (23.1%) or disagreed (75.4%) that they felt bored when the PowerPoint presentations were used in the prewriting activities, and they strongly disagreed (26.2%) or disagreed (72.3%) that the visual images used in the prewriting activities in the PowerPoint presentations were not related to the writing topic. As to whether participants considered the use of PowerPoint presentations an efficient way to prepare them for the writing task, 35.4% of the participants strongly agreed and 61.5% agreed on that. Furthermore, all participants either agreed or strongly agreed that they felt excited during the prewriting activities in the PowerPoint presentations (*M*= 4.22, *SD*= .45). As to the responses of the last question, almost all the participants strongly agreed or agreed that the prewriting activities in the PowerPoint presentations were better than the conventional ones (*M*= 4.32, *SD*= .50). Graphic findings are displayed in figure 90.

In conclusion, the findings of the data analysis of the question items indicated that the participants expressed positive attitude towards the use of the PowerPoint presentations in prewriting instruction.

Table 55

Descriptive Statistics of Students' Attitude towards the Use of PPT in Prewriting Instruction

		SD	D	N	A	SA	*M*	*SD*
Q1	f			2	46	17	4.23	.50
	%			3.1	70.8	26.2		
Q2	f		1	1	52	11	4.12	.48
	%		1.5	1.5	80.0	16.9		
Q3	f	9	55	1			1.88	.38
	%	13.8	84.6	1.5				
Q4	f	15	49	1			1.78	.45
	%	23.1	75.4	1.5				
Q5	f	17	47	1			1.75	.47
	%	26.2	72.3	1.5				
Q6	f			2	40	23	4.32	.53
	%			3.1	61.5	35.4		
Q7	f			1	49	15	4.22	.45
	%			1.5	75.4	23.1		
Q8	f			1	42	22	4.32	.50
	%			1.5	64.6	33.8		

Note: f: Frequency %: Percentage SD: Strongly disagree D: Disagree N: I don't know A: Agree SA: Strongly agree *M*: Mean *SD*: Standard Deviation

Q1: Using the PowerPoint presentation in pre-writing activities increases my degree of concentration

Q2: I become more eager to listen to my friend's comments and ideas when the PowerPoint presentations are used in pre-writing activities

Q3: I become busy looking at the pictures, images, and different fonts and colors displayed in the PowerPoint slides rather than focusing on the ideas and how they are developed.

Q4: I feel bored when PowerPoint presentations are used in the pre-writing activities

Q5: The visual images used in the pre-writing activities in the PowerPoint presentation were not related to the writing topic
Q6: I consider the use of PowerPoint presentations an efficient way to prepare me for the writing task
Q7: I felt excited during the PowerPoint presentations in the pre-writing activities
Q8: The pre-writing activities in the PowerPoint presentations are better than the conventional ones

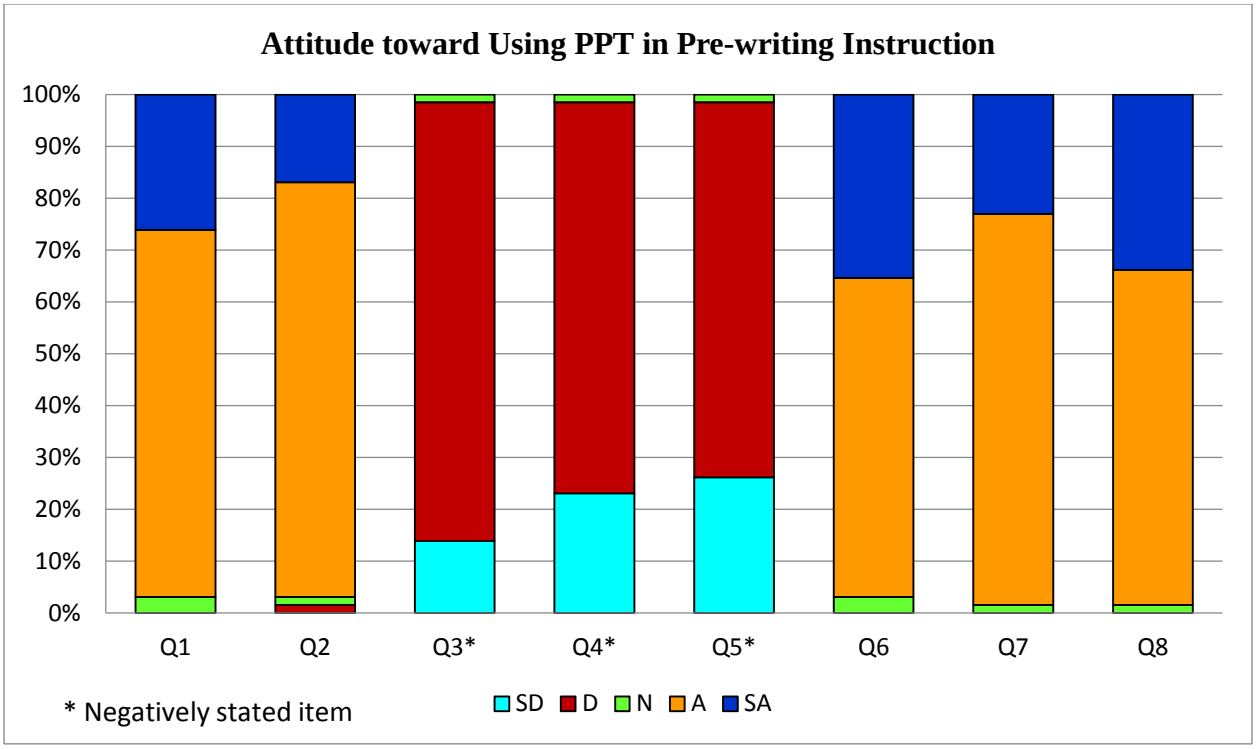

Figure 90. Students' attitude towards using PPT in pre-writing instruction

As a result, the eighth alternative hypothesis that secondary EFL students have positive attitudes towards the use of the PowerPoint presentation in pre-writing instruction was retained.

Qualitative Findings

Qualitative findings were collected from a PMI inventory filled by each participant in the experimental group. Participants expressed their personal views on using the IWB and PPT in the English Writing class. Indeed, they were asked to state what they found Plus, Minus, and Interesting after experiencing the IWB and PPT pre-writing instruction.

Another source of collecting qualitative data was the interviews carried out with teachers of the experimental group. The interview consisted of two major sections: Guided questions and open ended questions. The first part was the guided questions which consisted of 20 yes/no question items: 10 items examined teachers' views about whether the participants find the use of IWB pre-writing instruction helpful, and 10 items asked teachers if their students find the use of PPT pre-writing instruction valuable. The second part of the interview comprised two open-ended questions that inspected the teachers' opinions about the efficacy of the IWB pre-writing instruction in generating an engaging and enjoyable environment in the writing class and in curbing students' apprehension while writing their essays. Similarly, the other two open-ended questions queried teachers about the efficiency of the PPT pre-writing instruction in augmenting the students' motivation and interaction in the writing class and in plummeting students' apprehension while writing their essays.

Data Analysis of the PMI Inventory

The results of the content analysis of qualitative data from the PMI inventory about the participants' experience with the IWB and PPT revolved around three aspects of interest: benefits, drawbacks, and interesting aspects of the IWB and PPT.

Data analysis of the PMI inventory with respect to the use of IWB in pre-writing instruction.

The results of the content analysis of qualitative data from the PMI inventory with respect to the use of IWB in pre-writing instruction proved the significance of using the IWB in pre-writing activities as many students in the experimental group highlighted the efficacy of the IWB activities in facilitating the writing task and expressed their positive perception of this experience.

When asked what they found "Plus" in using the IWB in pre-writing activities, the participants wrote the following: " IWB enabled me to understand abstract and complicated concepts in a smooth way", "IWB allows me to grasp the ideas in a better way", " It helps me in understanding the topic discussed easily", "It simplifies complicated ideas as they appear very well-organized", "I enjoyed learning new vocabulary words as I wrote directly on the board and checked the spelling and the meaning by getting linked to dictionary.com.", "The good thing is that I was able to receive feedback on my responses through a rewarding sound", "the video displayed makes me remember details about the main character, and thus describe him in a better way", "dragging vocabulary words to the correct semantic cluster allows me to recall a lot of vocabulary when writing my essay", "ideas become more organized when we filled them in graphic organizers and got rewarding sounds to assure correct answers", "some activities aroused my curiosity to know the correct answers as they were hidden and I became so excited to go to the board and reveal them", "I learned a lot of vocabulary words and ideas and was able to use them properly when I was asked to describe the pictures displayed.", "using 'drag and match', 'revealer', and 'magnifier' provoked me to think and aroused my suspense to know the correct answers", "rearranging scrambled words or text triggered me to think deeply and in an organized way", "I felt that I gained much ideas about the topic that I like to express in my essay", "the linked videos and visuals made me understand complicated ideas better", "The IWB makes learning easy, for we can surf the internet to find any vocabulary word or idea related to our discussion very quickly.", "The graphics used allowed me to recall the ideas discussed when writing my essay", and "It helps me focus more on the lesson because I shared in the word games and activities practiced in the class".

On the other hand, the study participants highlighted some drawbacks of the use of IWB. They noted the following: “Sometimes, it wasted time due to recurrent cut in electricity”, “technical problems appeared when some students clicked a wrong button by mistake while dragging the correct answer”, “One time we needed to repeat an activity because students forget to save their answers when there was an unexpected interruption of electric current”, “At few times there was much noise in the class because most students wanted to go to the board and work on the board”, and “we weren’t able to access the internet sometimes due to weak internet connectivity”.

As to the “Interesting” aspect of using the IWB in pre-writing instruction, the participants’ comments were as follows: “I didn’t feel bored because of the pictures, activities, and videos used”, “I liked going to the board and using the pen”, “we got so excited when the teacher started to spot light on part of the hidden picture, and we all started to share in the discussion and describe what we see to identify the character in the hidden picture”, “I enjoyed writing on the board when I came up with a new idea about the topic raised", "I feel encouraged to think a lot about the topic to find an idea in order to go and write it with the pen on the board.”, “I was motivated to participate in the discussion because everybody was sharing.”, “I felt enthusiastic to drag the vocabulary word and place it in the proper blank to get the clapping sound”, “The audio elements and the visuals made the writing period fun and enjoyable”, “The use of pictures and images triggered my background knowledge about the main topic”, “The IWB made us all actively attentive and involved in solving the pre-writing activities”, “It makes the writing class more enjoyable”, “The exciting thing is that we received feedback on our responses in an entertaining way”, “Its screen provides clear vision, and I enjoyed choosing the font color I like to write on the board”, “It’s really practical and saves time since it’s easy to shift

from one flipchart to another", "I felt enthused to use the 'eraser' in the vocabulary activity", "Solving some exercises on the IWB by ourselves gave us self-confidence and made us feel that we are playing the role of the teacher sometimes", and "It created a stress-free atmosphere which made me more engaged in the whole class discussion."

Data analysis of the PMI inventory pertaining to the use of PPT in pre-writing instruction.

Content analysis of qualitative data from the PMI inventory regarding the use of PPT in pre-writing instruction indicated the efficacy of using the PPT in pre-writing activities, for the students in the experimental group underscored the value of the PPT as a pre-writing instructional tool and conveyed their positive attitude towards it.

The participants determined numerous benefits for using the PPT in pre-writing instruction. Their comments were as follows: "PPT shows clear images on a specific topic", "it helps student visualize ideas", "students grasp the ideas in an organized way", "I become more attentive because of the colors, animated pictures, and videos", "the display of images and the questions asked by the teacher on them help me in generating a lot of ideas on the topic", "discussing the visuals in the slides with the class enabled me to come up with more ideas and practice more vocabulary words on the topic", "I can remember the ideas easily while writing because the same font, font color, and animation were used for all the major ideas", "classifying the vocabulary words under the proper category helped me a lot in recalling thematic words while writing", "my thoughts become more organized after the PPT because major as well as minor ideas were displayed in bulleted lists in the slides", "arranging ideas and vocabulary words in charts and webs allows me to grasp them easily", " the way ideas and vocabulary words were assembled in the PPT slides helps me to get a logical sequence of ideas while writing", "the

visuals used in the PPT slides provoked my thoughts", "describing the visuals and commenting on the videos hyperlinked to the slides with the class make me rich in ideas and vocabulary words on the writing topic.

Conversely, the participants identified some shortcomings for using the PPT in pre-writing instruction. They marked the following: "turning on the LCD and connecting it to the computer takes some times", "waiting some time for a video to open because of weak internet connectivity", "I prefer to go to the board and write on it rather than just share in discussion on what's shown in the slides", and "time was wasted when one time the electric power was off suddenly".

As to the "Interesting" aspect of using the PPT in pre-writing instruction, the participants' remarks were as follows: "we were all engaged in discussing the visuals displayed", "the font colors, images, animations, and videos were really attractive", "I didn't feel bored as I used to be in a writing class", "I become motivated to share my ideas with respect to the visuals with the class", "I feel highly enthusiastic when the teacher shows us a picture in a slide and ask us to comment on it", "the PPT pre-writing discussion makes me ready to write about the writing topic", "I like sharing ideas with others in an organized way" and "the writing class becomes more fun when the PPT is used".

Content analysis of qualitative data from the PMI inventory showed that the participants in the experimental group valued the IWB and PPT pre-writing instruction, for they considered that they equipped them with the essential ideas and vocabulary words required to express their thoughts properly in essay writing. Moreover, they regarded the writing class as more joyful, engaging, and interactive and described the writing act as free of or of little apprehension after using the IWB and the PPT in pre-writing instruction. Concisely, the findings of the PMI

inventory concurred with the quantitative findings of the questionnaire on the performance of the participants after the IWB and PPT pre-writing instruction and the questionnaires of the participants' attitudes towards IWB and PPT and of their attitudes towards writing.

Data Analysis of the Interviews

The results of the interviews with the three teachers of the experimental group comprised the results of 20 yes/no question items and four open ended question items en bloc for each teacher. These results embraced content analysis of 10 yes/no question items and two open ended question items pertaining to the use of IWB in pre-writing instruction, and content analysis of 10 yes/no question items and two open ended question items regarding the use of PPT in pre-writing instruction.

Data analysis of the interviews pertaining to the use of IWB in pre-writing instruction.

The findings of the content analysis of the 10 yes/no question items revealed the following: The three teachers pointed out that when the IWB pre-writing instruction was conducted, students were much more interactive than traditional pre-writing instruction; students were motivated to share in the IWB activities even those who used to be passive before; students were encouraged to leave their seats and use the IWB, enjoyed the videos displayed, and didn't feel bored; students asked less questions on the meaning of topic-related words in English while writing their essays because as one teacher stated students acquired a lot of topic-related words while practicing them in the IWB activities and because some visuals were instrumental in explaining key vocabulary words, so students become more able to express their thoughts in English without referring to the teacher every now and then. The three teachers, also, believed that key ideas were clarified through the visuals used, so students felt comfortable and no more

appear confused while writing their essays. However, one teacher considered that very few students felt less tense than before, but still not comfortable to an extent that the factor of writing apprehension disappeared completely.

With respect to the findings of the two open ended questions, the three teachers believed that the use of the IWB pre-writing instruction helped in reducing the students' apprehension towards writing to a great extent because as one teacher stated that "the activities were very well devised that they provided students with key ideas and words needed to write their essays". Another teacher pinpointed that "the discussion held and the pre-writing activities enabled students to acquire ideas and vocabulary words adequate to develop the writing prompt"; she proceeded to say "I tried to ask students to make the activities that suit their type of learning to attain optimal acquisition of ideas and vocabulary words". The third teacher responded the following: "as a teacher, I was fully aware of the efficacy of the IWB as an educational tool and I tried to make optimum use of every instructional activity to motivate and engage all types of students, especially the low achievers and the passive ones", and "the IWB activities allowed most students to perform autonomously in writing. They no more feel apprehensive when they write". The three teachers also considered that the use of IWB pre-writing instruction was able to create an enjoyable and interactive environment in the writing class. One teacher commented on that by saying that "because the IWB was a novel technological tool to students, it grabbed their attention and make them more concentrative". Another teacher highlighted the interactive role of the IWB; she noted that "the IWB turned the writing class into fun. Students were enthused to come to the board to solve and receive feedback on their work without the interference of the teacher." The third teacher added the following "the IWB activities were very well planned that they addressed the multiple intelligences of the students. This motivated students to interact with

others and engage in the pre-writing activities, for they feel that they are able to participate in something they like and can do."

Data analysis of the interviews concerning the use of PPT in pre-writing instruction.

With regards to the semi-guided questions, content analysis of 10 yes/no question items showed that the three teachers perceived the PPT pre-writing activities as efficacious in enabling students to perform autonomously in writing their essays. The three teachers agreed that when the PPT pre-writing activities were carried out, students' interaction among each other increased; students were more motivated to participate in the discussion; they felt enthusiastic and less tense during writing; and they were attracted to the videos displayed. Moreover, the three teachers considered that PPT pre-writing activities didn't distract students by the colors, animation, or pictures used since, as one teacher noted, the PPT were well-designed in a way that consistent colors, font color and size, and animation were used for all main ideas and other homogeneous ones were used for minor ideas. Another teacher added that the ideas were very well organized, so this facilitated the way for students to learn them and become able to develop ample ideas on the topic and acquire sufficient vocabulary words to express their thoughts while writing their essays". All the teachers, also, believed that the visuals such as detailed concept maps were functional in explaining topic-related ideas and in clarifying topic-related vocabulary words, the thing which leads to better performance in writing.

As to the open ended questions, content analysis of two question items indicated that the three teachers viewed the PPT pre-writing instruction as a valuable technological aid in facilitating the writing process. They considered that "the PPT pre-writing instruction increased students' background knowledge and enriched their bank of vocabulary words on the topic raised", "the visuals used helped students in recalling key ideas and words while writing",

"students' critical thinking was triggered when the teacher asked them to comment on, criticize or evaluate a certain idea or picture displayed and relate it to the main topic raised", "students perform in stress-free environment during the PPT pre-writing instruction", "students take turns in sharing their views with the whole class to avoid having a chaotic discussion" and "students feel confident when they start writing their essays after the PPT pre-writing instruction."

Content analysis of qualitative data from the interviews indicated that the teachers of the experimental group highlighted the efficacy of the IWB and PPT pre-writing instruction in enhancing the written performance of the participants in the experimental group, curtailing the participants' apprehension towards writing, and creating an interactive and attention-grabbing classroom. Tersely, the findings of the interviews with the teachers were in accord with the quantitative findings of the questionnaire on the performance of the participants after the IWB and PPT pre-writing instruction and the questionnaires of the participants' attitudes toward IWB and PPT and of their attitudes toward writing. However, it is worth to mention that one teacher noted that mastery of IWB and PPT skills and the ability of the teacher in devising IWB activities and PPTs and exploiting the IWB and PPT distinctive functions properly are decisive elements in attaining their efficacy in the writing class and in affecting the students' attitudes.

CHAPTER 5: DISCUSSION

Introduction

The present study examined the effects of the Interactive Whiteboard and the PowerPoint presentation on the writings of EFL second secondary students, their attitudes towards writing, and their attitudes towards utilizing the IWB and PPT in pre-writing instruction. Verifying the efficiency of the IWB and PPT in foreign language classrooms could be highly significant from instructional as well as administrative prospects. At the instructional level, teachers will be triggered to integrate the IWB and PPT in their instruction. Moreover, they will feel the urge to undergo professional training so that they can attain optimal use of the IWB and PPT in their classes. At the administrative level, administrators will be enthused to provide the required facilities and professional training to their teachers. This study might be valuable for policy makers and stakeholders who will perceive the installation of the IWB into classrooms as an essential need so that they can facilitate the work modifications requested by the teachers in public schools and allocate necessary funds. The following research questions were addressed and analyzed in the current study:

1. Does the use of Interactive Whiteboard in pre-writing instruction improve the development of ideas in the writings of EFL secondary students?
2. Does the use of PowerPoint presentation in pre-writing instruction enhance the development of ideas in the writings of EFL secondary students?
3. Does the use of Interactive Whiteboard in pre-writing instruction lead EFL secondary students to use topic-related vocabulary words properly?
4. Does the use of PowerPoint presentation in pre-writing instruction lead EFL secondary students to use topic-related vocabulary words properly?

5. Does the use of Interactive Whiteboard in pre-writing instruction boost the attitudes of EFL secondary students towards writing?
6. Does the use of PowerPoint presentation in pre-writing instruction promote the attitudes of EFL secondary students towards writing?
7. What are the attitudes of EFL secondary students towards the use of Interactive Whiteboard in pre-writing instruction?
8. What are the attitudes of EFL secondary students towards the use of the PowerPoint presentations in pre-writing instruction?

This chapter includes a summary of the study procedures, discussion of the findings, implications, limitations, and future recommendations.

A Summary of the Study Procedures

The current research study investigated the written performance and attitudes of 134 participants from six classes in three public high schools in Beirut. The participants were divided into three control classes comprising 69 participants and three experimental classes involving 65 participants. Control classes received regular prewriting instruction, while experimental classes received IWB and PPT prewriting instruction. Both quantitative and qualitative data were collected for this study. Quantitative data comprised six essay writings, a questionnaire that investigated demographic information on the participants, and three 5 lickert scale questionnaires that studied the participants' views of their performance and their attitudes towards writing and the use of IWB and PPT in prewriting instruction. Qualitative data included PMI inventories that explored the participants' perceptions of what they find as Minus, Plus, and Interesting in using the IWB and PPT in prewriting instruction. Moreover, a semi-structured interview was conducted with the three teachers who carried out the IWB and PPT prewriting instruction in the

experimental classes. A series of independent t-tests and paired t-tests were used to determine whether the independent variables, IWB prewriting instruction and PPT prewriting instruction, have significant effects on the dependent variables, idea development and proper use of topic-related vocabulary in participants' essay writings. Descriptive statistics of the 5 lickert scale questionnaires and content analysis of the interviews and the PMI inventories were carried out to inspect the participants' performance, attitudes towards writing and attitudes towards the use of IWB and PPT in prewriting instruction as well as to cross validate quantitative findings.

Before carrying out the research study, official permission was taken from The Ministry of Education and Higher Education. It's worth mentioning that intermittent meetings with the teachers of the control and experimental classes were held to discuss the materials and procedures of implementing the regular as well as the IWB and PPT prewriting instruction before and during the execution of the research study.

Discussion of the Research Findings

Hypothesis 1

The first hypothesis "The use of the Interactive Whiteboard in pre-writing activities improves EFL students' development of ideas in writing" was retained. Data analysis of essay scores indicated that the participants who received IWB prewriting instruction outperformed those who received regular instruction. Participants in the experimental group were able to develop their ideas in essay writing much better than those in the control group. Likewise, descriptive statistics of the performance questionnaire showed the efficacy of the IWB prewriting instruction on the participants' performance in essay writing as viewed by the participants themselves. Further verification of these findings was offered by PMI inventories and interviews with teachers of the experimental group.

The present findings concur with findings of several preceding research studies. Marzano (2009) validated the usefulness of the IWB in elementary and secondary language, mathematics, and science classes by carrying out a large-scale project that involved fifty schools in USA. Higgins et al (2005) examined the impact of IWB on the achievement of 5th and 6th graders in various areas and found improvement in students' achievement especially in the area of language, and mainly in writing. Likewise, Lopez reached the conclusion that the IWB could improve students' performance in English Language Learning settings.

Kennewell (2006), in his turn, verified the efficacy of IWB instruction on students' ability to comprehend complex concepts. The IWB instruction addresses a number of senses – sight, hearing, and even touching, when students work on the board. This improves the performance of students who can't conceive abstract concepts. This study, also, corroborates with the study of Lee and Boyle (2004) who found out that IWB instruction enabled students to get higher scores on national tests in Australia. Likewise, Swan et al. (2008) reported significant gains in fourth and fifth graders' scores on state achievement tests in reading and math subjects. Similarly, Lewin, Somekh, & Stephen (2008) revealed that IWB instruction improved students' achievements in language and math in national tests. Thompson & Flecknoe (2003), also, reported significant progress in students' achievement in math resulting from IWB instruction. Along the same line, Kaya, Akçakın, and Bulut (2013) revealed a substantial effect of IWB on students' achievement in transformational geometry, and Zittle (2004) noted the positive influence of lessons with the IWB on elementary school students' achievements in geometry. Dhindsa and Emran's experimental study (2006) revealed significant performance in chemistry of college students taught via IWB. Amola's study (2007), also, showed the positive contributions of the IWB to students' achievement in Social Sciences. BECTA (2007)

determined a relative relation between students' achievement and the amount of time of students' exposure to IWB instruction.

Smith et al. (2006) hinted at the social dimension to learning via IWB which yields better learning and achievement. Indeed, IWB enhances learners' motivation, attention, emotions, self-concept, self-esteem, and social interaction in the learning environment where students exchange knowledge overtly and learn by making mistakes together. This is supported by the current research study as well as previous literature ((Kennewell & Beauchamp, 2007; Schmid, 2008; Smith et al., 2005; Armstrong et al., 2005). Levy's (2002) research proved that IWB-based lessons alleviate students' learning, for they make students more interested, engaging, and cooperative. The interactive nature of the IWB leads students to be more attentive and, consequently, able to understand better. If students interact with the board themselves, they can end up being autonomous learners and acquire higher order thinking skills (Walker, 2003). In the same vein, Glover et al. (2007) verified that the use of IWB in the K-12 classes increased students' interest and promoted higher levels of continual concentration due to the multimedia aspects of the IWB.

Several studies (Lamberth, 2012; Akbaş & Pektas, 2011; Chen, 2009; Smith et al., 2005) yielded no significant gains in students' achievement. This can be attributed to a failure in achieving a balance between interactivity and teacher-centered instruction (Glover & Miller, 2001). Another reason can be the fact that many teachers abandon some distinctive and interactive IWB when devising IWB lessons. This is due to their ignorance of them, lack of training on how to use them and implement them in instruction, and\or the fact they using such features in IWB flipcharts requires time (Miller, 2006). This means that a skillful teacher is the one who specifies when and how to use the IWB in instruction, for IWBs as mere technological

devices do not in essence lead to significant gains in learning. In the present study, the IWB lessons were devised in a professional way by the researcher and an IWB trainer who is a teacher of English language for more than ten years and an expert in IWB use. Moreover, teachers of the experimental classes were fully aware of the capabilities of the IWB. This really contributed in making proper use of the IWB capacities, and consequently, in the success of the IWB treatment. It is clear now that IWB has the ability to make a promising effect on learning and teaching at all educational levels if it is used in specific subject matter and context.

Briefly, the findings of the current study verified the effectiveness of IWB prewriting instruction in having eleventh graders develop their ideas better in essay writing.

Hypothesis 2

The second hypothesis "The use of the PowerPoint presentation in pre-writing instruction enhances the development of ideas in the writings of EFL secondary students." was retained. Data analysis of essay scores indicated that the participants who received PPT prewriting instruction achieved better scores in writing than those who received regular pre-writing instruction. Also, descriptive statistics of the performance questionnaire cross-validated the usefulness of PPT prewriting instruction in having the participants of the experimental group develop their ideas successfully in essay writing as the participants reported themselves. Furthermore, data elicited from PMI inventories and interviews with teachers of the treatment group ascertained the efficacy of the PPT prewriting instruction.

EFL writing has always been viewed as a challenging skill by students. This is because students feel lack of motivation, lack of self-confidence, and writing anxiety while writing. Holliday (1996) pointed out how students' negative attitudes towards essay writing made writing a difficult task for them. Along the same line, Bacha (2002) hinted at the negative impact of EFL

students' lack of motivation on their development of essay writing. Several researchers (Pajares 2003; Collins and Bissell 2004; Graham et al. 1993; Kear et al. 2000; Phinney 1991; Pajares and Johnson 1993; Peregoy and Boyle 2001; Raimes 1998) proved the mutual effect of students' attitudes, self-efficacy, motivation and apprehension on their achievements in writing. In their research studies, Collins and Bissell (2004) and Pajares (2003) validated the reciprocal relation between students' attitude and their writing performance. In the current research study, participants of both the control and experimental groups expressed negative attitudes towards writing and the majority of them got average to low scores in their essay writing before receiving PPT prewriting instruction. Using technological tools in learning and instruction creates an unperturbed environment which provokes students to learn, and consequently, improve their performance. This was illustrated with results of the present study; PPT prewriting instruction allowed participants in the experimental group to outperform their peers in the control group in their writing achievements and attitudes towards writing. Such findings jibe with previous research studies. Reinhardt (1999) inspected the efficacy of PPT with respect to students' performance in an "Introductory Psychology" course. Most Students reported that PPTs facilitated the comprehension of the course content, made the ideas of the lectures more organized, prevented them from being distracted from the content of the lectures, and contributed in clarifying the information. A smaller majority of the students conveyed that the PPTs allowed them to recall the main ideas of the lectures and to be more attentive. However, Reinhardt stated that some students felt asleep when the room was darkened. In the current study, teachers avoided such drawback by turning off half of the light lamps and keeping the other ones turned on in the classroom and by keeping the students alert by involving them all in the discussion and asking them questions every now and then. Loisel and Galer (2004), also, found out that PPTs

induced better comprehension of its content because the information discussed orally by the presenter is illustrated by a visual representation on a projector screen. Findings of the present study, also, corroborates with the results of Axtel, Maddux, & Aberasturi's (2008) study. Axtel, Maddux, & Aberasturi compared between the efficacy of lectures with PPT as a mode of presentation on one hand and that of lecture with overhead transparencies and lecture without visual presentation aid on the other hand regarding student recall of information. Results indicated lectures presented by PowerPoint slides were more effective in terms of student retention than the other two modes of presentation. Lavin, Korte, & Davies (2011) found out that the use of technology, including PPT, in business enhanced students' attentiveness, quality of notes taken, students' participation in class, and students' learning. Corbeil (2013) hinted at the efficiency of using PPTs in teaching grammatical structures with respect students' attentiveness due to the features and visual effects of the PPTs. This harmonizes by what students reported in the present research study. However, some researchers, especially Tufte (2003) believed that the PowerPoint displays information at a superficial level. In this research study, the teachers who used PPTs in prewriting instruction were careful to engage almost all students in analytical and interactive tasks and asked them to justify their answers. Indeed, teachers analyzed the bulleted ideas and interpret them when necessary.

In conclusion, the results of this study validated the efficacy of PPT prewriting instruction in enabling eleventh graders to develop their ideas better in essay writing.

Hypothesis 3

The third hypothesis "The use of the Interactive Whiteboard in pre-writing instruction leads EFL students to use topic-related vocabulary words properly" was retained. Data analysis of essay scores revealed that the participants who learned vocabulary words through IWB

prewriting instruction achieved better scores in writing than those who learned vocabulary words through regular pre-writing instruction. Such results were also evident in descriptive statistics of the performance questionnaire and were verified by data obtained from PMI inventories and interviews with teachers of the experimental group.

The findings of this study concur with what Chen (2009) noted about the value of IWB in facilitating acquisition of words due to its interactive nature. Schmid (2008) and Kennewell and Beauchamp (2007) hinted at the efficiency of IWB original activities which allow students to learn together on the board such as matching words to their analogous pictures in collaboration with their peers while being oriented by their teacher. In Martin's study (2007), most students credited the use of pictures and the sound in IWB flipcharts and pointed out how they made them understand better. Students can refer to electronic dictionaries and encyclopedias anytime they encounter a new word, and they can comprehend it in diverse contexts through sample sentences offered online. More importantly, students become able to conceive abstract terminologies through audio and visual materials displayed via IWB. Kaya, Akçakın, and Bulut (2013) considered that the interactive features of the IWB and its potential in addressing students of diverse learning styles allow students to recall information better and faster. When students interact with the board themselves, they become more motivated and attentive. Glover et al. (2007) affirmed that the multimedia facets of the IWB resulted in higher levels of attentiveness and concentration, and hence, better learning outcomes. Participants of this study who received IWB prewriting instruction practiced a variety of vocabulary activities devised to match diverse learning styles and to use the targeted vocabulary words contextually.

In a word, IWB prewriting instruction allowed eleventh graders to use topic-related vocabulary words in their essay writings properly.

Hypothesis 4

The fourth hypothesis "The use of the PowerPoint presentation in pre-writing instruction leads EFL students to use topic-related vocabulary words properly" was retained. Findings showed that participants who learned vocabulary words through PPT prewriting instruction performed better in writing than those who learned vocabulary words through regular pre-writing instruction. Similar findings appeared in descriptive statistics of the performance questionnaire and were validated by data collected from PMI inventories and interviews with teachers of the experimental group.

The results of this study corroborate with research literature which indicated how a setting of multisensory reinforcement optimizes learning and accelerates its pace. For instance, Murray-Harvey (1994) proved how technology meets students' individual differences and addresses their preferred learning styles for better learning outcome. Plass, Chun, Mayer, and Leutner (1998) proved how pictorial and written annotations led students to recall unknown vocabulary words better.

Chuo (2007) spotlighted the joint role of input, interaction and output in second language writing. Multimedia enhanced visual input boosts interaction and, thus, improves output. In this research study, PowerPoint presentations comprised text, audio, animation, colored images, interactive tasks, videos and others which triggered students to interact with the teacher or with themselves and, therefore, produced better learning outcome. Pre-writing instruction displayed vocabulary through multifaceted multimedia forms which involved students of different learning styles and, consequently, yielded optimal vocabulary acquisition. Many researchers (Wresch, 1993; Ghaleb, 1993; Chun, 1994; Sullivan & Pratt, 1996; Warschauer, 1996; Kramsch et al., 2000; Bloch, 2002; Hertel, 2003) found out a positive influence of technology on students'

performance and writing. Some of them studied the function of technology in enhancing different facets of writing such as content development, vocabulary, syntax, and others. The current research study highlighted the satisfactory contributions of PPTs in prewriting instruction to the enrichment of EFL students' bank of vocabulary through various multimedia presentation of glossary interpretations. This is confirmed by Chun and Plass (1993; 1996), Plass, Chun, Mayer, and Leutner (1998), Kost, Foss and Lexini (1999), Yoshii (2001), and Al-Seghayer (2001) who conducted several research studies that validated the efficacy of dual presentation types of vocabulary annotations (text + visual aids) on vocabulary learning. In the same vein, Kost et al. (1999) revealed the optimistic effect of dual annotation—textual and pictorial glosses on students' vocabulary acquisition. Underwood (1989), in his turn, highlighted the efficiency of visual memory on the learning outcome, for students became able to recall words better when they are matched with images. Along the same line, Nam (2010) pointed out that multimedia annotations (images and text) are more valuable to students than single-medium glosses. Gascoigne (2006) hinted at the fact that multimedia improves wide-ranging visualization of the content and can strengthen students' imagination and creativity. Moreover, findings of Newton (1995) proved that students' engagement in communicative and interactive tasks induced better acquisition of vocabulary words than mere oral discussion of these words. In the present research study, PPTs in prewriting instruction didn't only display interpretations and proper use of vocabulary words, but they also invited students to engage in communicative and collaborative activities that reinforce the acquisition of the targeted vocabulary words.

To conclude, PPT prewriting instruction enabled eleventh graders to use topic-related vocabulary words in their essay writings properly.

Hypothesis 5

The fifth hypothesis "The use of Interactive White Board in pre-writing instruction boosts the attitudes of EFL secondary students towards writing" was retained. Findings proved that participants who received prewriting instruction via IWB showed positive attitudes towards writing in contrast to their peers who received regular pre-writing instruction. This was illustrated by the results of the pre-post questionnaire on students' attitude towards writing and were further substantiated by data collected from PMI inventories and interviews with teachers of the experimental group.

Findings of this research study are in tune with previous literature. Albaaly (2010) verified that the use of IWB in a writing class had a significant role in alleviating Egyptian ESL students' attitudes towards writing. Several studies have revealed learning via IWB provoked students to be more attentive and engaged in learning, active participants in the class, and more interactive with their teachers, peers, and the IWB (Smith et al., 2005). The findings of various studies showed that the use of IWB made students more motivated, focused, and disciplined because they found it enjoyable and original (Levy, 2002). Moreover, when students become motivated, they like to continue on-task. Bryant and Hunton (2000) reached the conclusion that the interactive nature of the IWB induced them to be more engaged and positive towards the learning environment. Motivation, attention, and behavior represent an overall student attitude in the classroom. Hence, the higher the level of motivation, attention, engagement, and interaction is, the better the attitude towards learning is. This concurs with what the participants in this research study expressed in the questionnaire of student attitude towards writing and with the remarks of the interviewed teachers. Along the same line, prior studies supported the fact that students' interaction with IWB affects the influence of the IWB on students' attitudes. If students

interact with the board themselves, they will be familiarized with what they are learning, and consequently, will have favorable attitudes towards it. Glover et al. (2007) reported that IWB use in the K-12 classes augmented student interest. Lewin et al. (2008) highlighted the function of the IWB as an intermediary of interactions among the students themselves, between the students and the IWB and the teacher and student. The researchers found out that students were more motivated to demonstrate their knowledge of the content displayed via the IWB.

As the analysis of quantitative and qualitative data indicated, another important factor behind students' favorable attitudes towards writing is the ability of diverse functions of the IWB to address various student learning styles (Glover et al., 2007; Slay, Siebörger, & Hodgkinson-Williams, 2008). Indeed, Some students may encounter complications with a particular method of learning; thus, including a range of multimedia approaches in a lesson can attend to the needs of learners with varied learning modes (Somekh et al., 2007). In the same vein, Beeland (2002) appreciated such IWB potentiality and hinted at its ability to engage students in learning as well.

To sum up, eleventh graders showed favorable attitudes towards writing when the IWB was used in prewriting instruction.

Hypothesis 6

The sixth hypothesis "The use of PowerPoint presentation in pre-writing instruction promotes the attitudes of EFL secondary students towards writing" was retained. Findings evidenced that participants who received prewriting instruction via PPT showed favorable attitudes towards writing in contrast to their peers who received regular pre-writing instruction. This was backed up by the results of the pre-post questionnaire on students' attitude towards writing and were further confirmed by data collected from PMI inventories and interviews with teachers of the experimental group.

Findings of this research study harmonizes with previous studies which verified that students' levels of motivation, interest, and anxiety during writing embody their inclusive attitudes towards writing. In this study, students embraced positive attitudes towards writing because they felt interested and motivated to write due to learning via the PPT prewriting instruction. This concurs with what Hertel (2003), Kubota (1999), and Warschauer et al. (1996) indicated that technology assisted learning escalates students' motivation and boosts their attitudes towards writing. In like manner, Greenfield (2003) pointed out that students who got interested in the Computer Assisted Language Learning (CALL) class achieved significant improvement in writing. In the same way, Trokeloshvili and Jost (1997) proved that Japanese university students felt very motivated due to computer assisted learning. By the same token, Gousseva (1998) spotlighted the impact of CALL on spreading stress-free learning environment which led students to have favorable attitudes towards writing. Likewise, Butler-Pascoe (1997) emphasized the importance of computer technology in EFL instruction as it offers autonomous, cooperative, and supportive learning environments. Moreover, findings of Krajka's study (2000) showed that students got motivated and attracted and enjoyed the writing when technology was used. Other researchers (Fox, 1998; Muehleisen, 1997; Gitsaki and Taylor, 2001) hinted at the valuable contributions of computer technology to language instruction as it increases students' motivation, offers a plethora of interactive input which creates comfortable environs, and accordingly, boosts students' attitudes towards learning. in this research study, PPT prewriting instruction provided students with needed thoughts and vocabulary words through a mélange of interactive input which invited them to actively participate in the learning process. Thus, students no more felt apprehensive or anxious about what to write in their essays, and this made them adopt favorable attitudes towards writing.

As a whole, eleventh graders expressed positive attitudes towards writing when the PPT was used in prewriting instruction.

Hypothesis 7

The seventh hypothesis "Secondary EFL students have positive attitudes towards the use of Interactive White Board in pre-writing instruction" was retained. Findings demonstrated that participants who received IWB prewriting instruction conveyed positive attitudes towards the use of IWB in a writing. This was supported by results of the questionnaire on students' attitude towards the use of IWB in prewriting instruction and were more ascertained by data collected from PMI inventories and interviews with teachers of the experimental group.

Findings of this research study jibe with numerous former research studies. Albaaly (2010) examined the effect of the IWB on the Egyptian medical school students' attitudes and noted positive attitudes of students towards using the IWB in their writing class. Smith et al. (2005) reported that students viewed lessons with IWB as more enjoyable and interesting. Schuck and Kearney (2007) found out that students preferred learning through IWB because it is easy to use, and it has visual, interactive and digital features. Another factor behind students' positive attitudes towards the board is its ability to attend to students' multiple intelligences which made them more involved and interested in learning. (SMART Technologies, 2006; Kennewell & Beauchamp, 2007; Smith et. al., 2005). In the present study, students expressed that they liked IWB because it encouraged and engaged them in learning writing. This agrees with some literature (Akbaş and Pektas, 2011; Wallace, 2007; Smith et al., 2006; Wall et al.'s 2005; Walker, 2003) that spotlighted the powerful effect of IWB in augmenting learners' motivation, attention, emotions, self-concept, self-esteem, and social interaction in the learning environment. In the same token, Jennifer Lisi (2010) found out that students enjoyed using the

IWB in language classroom because they felt more motivated, attentive, and engaged due to its interactive nature. In Levy's (2002) study, Learning with an IWB was viewed more positively by some students because "they are more interested, and because teachers' explanations, multimedia resources and the large screen make subjects easier to understand" (p. 14). They, also, commented that learning via IWB is more enjoyable and interesting, for it allowed them to work collaboratively with their classmates and the teacher.

All in all, eleventh graders conveyed positive attitudes towards the use of IWB prewriting instruction in a writing class.

Hypothesis 8

The eighth hypothesis "Secondary EFL students have positive attitudes towards the use of the PowerPoint presentation in pre-writing instruction" was retained. Findings confirmed that participants who received PPT prewriting instruction revealed favorable attitudes towards the use of PPT in a writing class. This was reinforced by results of the questionnaire on students' attitude towards the use of PPT in prewriting instruction and were validated by data collected from PMI inventories and interviews with teachers of the experimental group.

Findings of this research study are in accord with former studies which confirmed that students conveyed positive attitudes towards the use of PPTs in classrooms. Gatlin-Watts et al. (1999) found out that majority of the participants favored to take a course with PowerPoint as a mode of instruction. Loisel and Galer (2004) examined students' attitudes towards using PPTs in an English course. They reported that students enjoyed the course and found it practical and engaging. Apperson, Laws and Scepansky (2006) investigated students' views towards employing PowerPoint in their class. Their research findings verified that students appreciated the organization and eagerness created by the PowerPoint supported classrooms. Lavin, Korte, &

Davies (2011) examined the use of technology in business courses. The results of their study indicated that technology, including the use of PowerPoint, had a positive effect on student preparation for class, student participation in class, student desire to take additional classes from the instructor or in the subject matter, and the overall evaluation of the course and the instructor. Along the same line, Tabatabaei and Bandari (2012) studied the attitudes of sixty MA freshmen TEFL students towards the effect of PowerPoint presentations on their behaviors. Students conveyed that they liked PowerPoint presentations because they made them more interactive in the class. Oommen (2012) inspected the perceptions of 50 learners regarding the use of PowerPoint presentations in a Preparatory Year English Program. Findings of their study revealed that learners preferred the use of PowerPoint Presentations as a mode of lecture delivery over traditional methods.

In summary, eleventh graders got favorable attitudes towards the use of PPT prewriting instruction in a writing class.

Implications

Findings of the present research study indicated the usefulness of the IWB and PPT in enhancing students' development of ideas and proper use of vocabulary words in essay writing. They, also, reported positive attitudes of students towards the use of IWB and PPT in prewriting instruction and towards writing when the IWB and PPT were used in the writing class. based on the aforementioned findings, the following implied issues are to be taken into account:

1. Both IWB and PPT prewriting instruction improved students' writing skills. Therefore, teachers are invited to integrate IWB and PPT in prewriting instruction to reach similar result.

2. It is worth to mention that prewriting instruction carried out in this study was devised in light of the CALL approach and the constructivist paradigm to EFL learning in addition to the process model of writing and students' modes of learning. Thus, in order to attain gains in students' achievements in a writing class, teachers should take into consideration the above mentioned issues when preparing IWB and PPT prewriting instruction.
3. It was noted from reviewed literature that several research studies didn't yield successful learning outcomes due to teachers' lack of training on professional use of IWB or PPT in the class, their inability to devise IWB and PPT lessons well, and/or their lack of experience in establishing learner-centered environment. This propelled the researcher to select teachers who made a series of workshops on the proficient use of technology (including IWB and PPT) in language classes and who are well known as EFL teachers with a minimum of ten years of teaching experience. Moreover, the researcher herself prepared IWB and PPT lessons with the assistance of an IWB trainer to guarantee the quality of the instruction. Furthermore, the researcher held intermittent meetings with the teachers in order to agree upon how to implement IWB and PPT prewriting instruction avoiding the aforesaid shortcomings. Accordingly, teachers should receive adequate training on how to prepare IWB and PPT lessons and how to use IWB and PPT efficiently before implementing IWB and PPT prewriting instruction in their writing classes.
4. Findings of this study revealed that students, even the low achievers and the passive ones, adopted positive attitudes towards writing and towards the use of IWB and PPT in prewriting instruction due to the interactive activities and to the fact that students were given space to work collaboratively with their classmates on the IWB and to actively

participated in discussions on what was displayed via PPT. Hence, teachers are requested to use IWB and PPT prewriting instruction with their students, especially passive learners and those who show high apprehension towards writing. However, teachers should make proper use of the potentials of IWB and PPT and provide ample opportunities for all types of students to participate in learning when implementing IWB and PPT prewriting instruction.

5. PMI inventories and interviews' findings, also, indicated that time was consumed at certain instances because of uncontrollable power outage and sporadic cut in internet connectivity, which is a common problem in Lebanon. For that reason, multimedia classrooms should be equipped with a supplementary source of electricity and provided with stronger internet routers in order to avoid such barriers.
6. One of the factors behind the success of the IWB and PPT prewriting instruction in this study is the aspect of novelty. The recent installation of IWB in Lebanese public schools and the integration of technology in them might have yielded in significant contributions to students' high levels of interest and engagement and their favorable attitudes. Thus, teachers are requested to involve students in innovative activities and tasks to prevent students from feeling bored when they got used to using technology in their classrooms.

Limitations of the study

Numerous limitations of the current research study can be noted. First, the present research study was carried out in three secondary public schools in Beirut, the capital of Lebanon. Although there are several more secondary schools in Lebanon, various constraints prevented their involvement in the current study. Indeed, some schools have IWBs, but they have not been installed yet. In other schools, IWBs were installed, but teachers had not received any

training on them. This meant that much time had to be spent to provide adequate training to EFL teachers to enable them to implement the IWB pre-writing instruction in addition to the fact that some teachers did not show any willingness to receive such training that would require extra time and effort. Similarly, there were LCD projectors in the majority of schools, but lots of teachers had not used them to display a PPT in their language classes before. Some teachers even did not know how to make or display a PPT, and most of these were not willing to learn how. It should also be taken into consideration that in some secondary public schools in Beirut, IWBs and PPTs were used in subject classes as math, geography, and sciences and not in EFL classes. Hence, the current study was restricted to the secondary public schools in Beirut in which IWBs and PPTs were used in the EFL classrooms taught by teachers who had already received sufficient training and attended seminars and workshops on the integration of technology in EFL classrooms, especially on the use of IWB and PPT.

Another limitation is that students were exposed to some IWB and PPT lessons due to several factors. First, all schools involved in the study had the IWB installed in one classroom, which was usually the media room, so some time was consumed from the instructional period to allow students to move to the media room. Additionally, such hindrance in accessibility reduced the number of the IWB and PPT lessons to allow teachers of other subject classes to use the media room. Moreover, the uncontrollable power outage and the intermittent weak internet connectivity caused continual interlude of instruction, and consequently, led to time consumption. Thus, IWB or PPT lesson took double the estimated time to be carried out.

A further limitation is that the present study took seven months to be carried out and any study conducted over a specific interval of time is a snapshot dependent on conditions occurring

during that time. Accordingly, a more longitudinal research study might have yielded different findings from the present one.

A final limitation is that the current study was conducted in secondary public schools. This means that a more extensive research study should be conducted in elementary and intermediate public schools as well as in private schools so that the findings of this study can be generalized.

Recommendations

The present research study was carried out at public schools in Beirut, the capital of Lebanon. Future research studies should be conducted in the remaining four Lebanese provinces: Mount Lebanon, The North, Beqaa, Nabatiye, , and The South to examine whether similar results will be yielded or not. Upcoming research should also be conducted in Lebanese private schools to explore if EFL students' performance and attitudes will improve as well by comparing between the public and private sectors with respect to the impact of the IWB and PPT on the writings and attitudes of EFL students. Moreover, this study was carried out with eleventh grade EFL students, so the results of the study can only be generalized to the eleventh graders. Other researchers can replicate this study with the same topic at different grades. They can also confirm the findings of this study if they conduct a similar study in a longitudinal manner. Besides, this study investigated the effects of IWB and PPT on the achievements and attitudes of sixty five EFL participants in writing classes; thus, the impact of PPT and IWB on EFL students' performance in other language skills can be examined and with a larger sample of participants. Indeed, the present study didn't explore if there is a difference in achievement and attitude between male and female participants; accordingly, the gender variable can be studied in further research.

Policy makers and stakeholders should perceive the integration of IWB and PPT into classrooms as a must so that they can facilitate the work modifications requested by the teachers in public schools. First, they should install an IWB and LCD projector in each classroom or at least in each floor of a public school so that teachers won't waste time moving students to the multimedia room in a different floor. Second, they should provide complete access to necessary resources and an immediate IT support for teachers so that they can implement an IWB or PPT lessons efficaciously. In addition, they should offer required funds to carry out sporadic training workshops for teachers on the effective integration of technology in classrooms. At the same time, administrators can, also, assist teachers in finding proper IWB materials and buying books that include suitable IWB activities and tasks.

Conclusion

The present study proved that the Interactive Whiteboard and the PowerPoint presentation are effectual in improving EFL students' achievements in writing and boosting their attitudes towards writing and towards the use of IWB and PPT in writing classrooms at Lebanese public schools. Indeed, the writing act which used to entail much apprehension and challenge for EFL students became an interesting and stress free task after using the IWB and PPT prewriting instruction. Thus, integrating IWB and PPT in prewriting instruction was successful in resolving one of the serious problems that Lebanese EFL students suffer from. However, it is worth to mention that to attain optimal learning outcomes, IWB and PPT should be properly integrated in the teaching/learning process in a way that promotes interaction and collaboration among students, addresses diverse individual learning needs and enables students to perform at the referential level as well as the inferential one. In other

words, Interactive Whiteboards and PowerPoint presentations become efficacious when used with clear-cut objectives and well-designed tasks and parallel to an appropriate pedagogy.

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APPENDIX A

Demographic Questionnaire

The following questionnaire is for research purpose only. All data will be aggregated and kept private by the researcher.

1. Are you a □ male □ female?

2. Are you a native speaker of English? □ Yes □ No

3. Have you lived in any country where English is the formal spoken language? □ Yes □ No

   If your answer is yes,

   a. how long have you lived there? _____

   b. how old were you when you lived there? _____

4. Have you studied English in a school where the English teacher was a native speaker?
   □ Yes □ No

   If your answer is yes,

   a. In which grade(s) were you in that school? _____

   b. For how many years have you studied there? _____

5. Is one (or more) of your family members a native speaker of English? □ Yes □ No

   If your answer is yes,

   a. Who is he/she? _____

   b. Do you communicate with each other in English? □ Yes □ No

6. Do you use the English language formally outside the school? □ Yes □ No

   If your answer is yes, how do you use it? _____

7. Are you enrolled in any program that teaches the English language? □ Yes □ No

8. Do you have a tutor that helps you to improve your English writing? □ Yes □ No

9. Do you do any English writing activities, games, or exercises via an educational website?

□ Always □ usually □ sometimes □ rarely □ never

10. Do you use any CDs to develop your English writing skill? □ Yes □ No

APPENDIX B

A Questionnaire on Student Attitude towards Writing

Please put a tick (√) under the number that best indicates your attitude towards writing in English

1 = Strongly disagree, 2 = disagree, 3 = I don't know, 4 = Agree, 5= Strongly agree

Student's Attitude towards Writing in English					
For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. Writing in English is an enjoyable class activity					
2. I try to avoid the writing tasks in the English class					
3. I like to write in English to communicate my ideas					
4. I feel nervous when I can't find the proper vocabulary words to express my ideas					
5. When I write, I panic to remember the topic-related vocabulary words discussed in the pre-writing activities.					
6. I feel tense during writing when I can't support my main ideas					
7. I like to use English when writing my diary					
8. I waste much time to think of what I have to write about					
9. Writing in English is a burden to me					
10. I consider the writing period as the most boring among English periods					

11. I get lost when I start writing in English.					
12. I would like to learn all language skills except writing.					
13. I feel confident when I write in English					
14. I never seem able to develop my ideas well					
15. I like seeing my thoughts on paper					

APPENDIX C

A Questionnaire on Student Attitude towards Writing after Regular Instruction

Please put a tick (√) under the number that indicates your attitude towards writing in English

1 = Strongly agree, 2 = Agree, 3 = I don't know, 4 = Disagree, 5= Strongly agree

Student's Attitude towards Writing in English					
For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. Writing in English is a pleasant class activity					
2. I try to avoid writing in English					
3. I choose to write in English to communicate my ideas					
4. I feel tense when I can't find the proper vocabulary words to express my ideas					
5. When I write, I feel stressed to find or remember the topic- related vocabulary words discussed in the pre- writing activities					
6. It's difficult for me to support my ideas well when writing in English					
7. I prefer to write my diary in English					
8. I take time to start writing in English					
9. Writing in English is a load on me					

10. I feel bored during the English writing period					
11. I become lost when I start writing in English					
12. I try to avoid writing in English					
13. Writing in English gives me a sense of confidence					
14. I can't develop my ideas well in English					
15. Writing my thoughts in English is a relieving activity					

APPENDIX D

A Questionnaire on Student Performance and Attitude after IWB and PPT Treatment

Directions: Please put a tick (√) under the number that indicates your views regarding each item in parts A, B, C, and D in the following questionnaire.

1 = Strongly disagree 2 = Disagree 3 = I don't know 4 = Agree 5= Strongly agree

Part A: Student Performance during Writing when Interactive Whiteboards Are Employed in Pre-writing Activities					
For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. The pre-writing activities in the Interactive Whiteboard increase my knowledge about the writing Topic.					
2. The vocabulary activities in the Interactive Whiteboard were not related to the writing topic.					
3. I can develop my ideas better during writing because of the diagrams, charts, and webs displayed via the Interactive Whiteboard.					
4. I become more able to support the main ideas in my writings after the pre-writing activities used in the Interactive Whiteboard.					
5. The pre-writing activities in the Interactive Whiteboard help me in remembering the main ideas					

of the topic during writing.					
6. My bank of vocabulary is enriched with many words related to the writing topic due to pre-writing activities in the Interactive Whiteboard.					
7. I use vocabulary words more efficiently in my writing after the Interactive Whiteboard pre-writing activities.					
8. Practicing the pre-writing activities via the Interactive Whiteboard makes me get rid of the mental block that I used to suffer from when I start writing.					
9. The pre-writing activities in the Interactive Whiteboard distract me from developing my ideas during writing.					
10. I no more need much time to write down my ideas after the Interactive Whiteboard pre-writing activities.					
Part B: Student's Performance during Writing when PowerPoint Presentations Are Employed in Pre-writing Activities					
For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
11. The use of colorful webs and diagrams in the PowerPoint presentations helps me in organizing my					

thoughts.					
12. The vocabulary words practiced in the PowerPoint presentations make me more able to express my ideas properly during writing.					
13. The vocabulary words become mixed up in my mind during writing and after the PowerPoint presentations.					
14. The PowerPoint presentations allows me to recall the details of the main ideas in a better way during writing.					
15. I acquire more words relevant to the writing topic when they are displayed in colors and different fonts in the PowerPoint slides.					
16. I know exactly what to write about after the display of the PowerPoint presentations.					
17. Ideas become scrambled in my head during writing after the display of the PowerPoint presentations.					
18. I gain more ideas about the writing topic after the PowerPoint presentations.					
19. I still waste much time to start writing down my ideas even after the PowerPoint presentations.					
Part C: Student's Attitude towards Writing in English after Using Interactive Whiteboard in Prewriting Instruction					

For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. Writing in English is an engaging activity after the Interactive Whiteboard pre-writing instruction.					
2. I try to avoid the English writing tasks after the Interactive Whiteboard pre-writing instruction.					
3. I become motivated to write about what I learned in the Interactive Whiteboard pre-writing activities.					
4. I feel less anxious to find proper vocabulary when I write after Interactive Whiteboard pre-writing activities.					
5. When I write, I panic to remember the topic-related vocabulary words discussed in the Interactive Whiteboard pre-writing instruction.					
6. It's difficult for me to support my ideas well in writing after the IWB pre-writing instruction.					
7. I like to write in English after the IWB pre-writing activities.					
8. I need much time to start writing even after the Interactive Whiteboard pre-writing activities					
9. I no more view writing as a burden to me after					

doing the Interactive Whiteboard pre-writing activities.					
10. I consider writing a boring activity even when the Interactive Whiteboard is used in pre-writing activities.					
11. I get lost when I start writing in English even after the Interactive Whiteboard pre-writing instruction					
12. I would like to learn all language skills except writing even after the Interactive Whiteboard pre-writing instruction.					
13. I feel confident of what I write about after the Interactive Whiteboard pre-writing instruction.					
14. I can develop my ideas well after the Interactive Whiteboard pre-writing activities.					
15. I feel relieved when I write my thoughts in English after the Interactive Whiteboard pre-writing instruction.					
Part D: Student's Attitude towards Writing in English after Using PPT in Prewriting Instruction					
For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. Writing in English becomes an interesting activity					

after the PowerPoint pre-writing instruction.					
2. I try to avoid the English writing tasks after the PowerPoint pre-writing instruction.					
3. I am not motivated to write even after the pre-writing activities in the PowerPoint slides.					
4. The topic-related words I learned from the PowerPoint presentations make me less tense when I write.					
5. When I write, I panic to remember the topic-related vocabulary words discussed in the PowerPoint pre-writing instruction.					
6. It's difficult for me to support my ideas well in writing after the PowerPoint pre-writing instruction.					
7. I worry about writing down my ideas even after the PowerPoint pre-writing instruction.					
8. I take much time to write down my ideas in English even after the PowerPoint pre-writing instruction.					
9. I no more view writing as a burden to me after the PowerPoint pre-writing instruction.					
10. I no more view writing as a boring activity when the PowerPoint presentations are used as pre-					

writing activities.					
11. I get lost when I start writing in English even after the PowerPoint pre-writing instruction.					
12. I would like to learn all language skills except writing even after the PowerPoint pre-writing instruction.					
13. I feel confident of what I write about after the PowerPoint presentations.					
14. I can develop my ideas well after the PowerPoint pre-writing activities.					
15. I feel relieved when I write my thoughts in English after the PowerPoint pre-writing instruction.					

Part E: Student Attitude towards the Use of IWB in Pre-writing Instruction

For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. I consider the prewriting activities using the Interactive Whiteboard a waste of time.					
2. The pre-writing activities in the Interactive Whiteboard make me less active in the class.					
3. I feel enthusiastic while using the Interactive WhiteBoard in the pre-writing activities.					

4. Using the Interactive Whiteboard encourages me to participate more than before in the writing class.					
5. I prefer the traditional pre-writing activities than the activities in the Interactive Whiteboard.					
6. The activities in the Interactive Whiteboard stimulate my background knowledge about the writing topic.					
7. I become more alert to the class discussion when the Interactive Whiteboard is used.					
8. The class becomes too noisy when the Interactive Whiteboard is used.					
9. I enjoy leaving my seat to share in doing the activities in the Interactive Whiteboard.					
Part F: Student Attitude towards the Use of PPT in Pre-writing Instruction					
For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick in the appropriate column	**1**	**2**	**3**	**4**	**5**
1. Using the PowerPoint presentation in pre-writing activities increases my degree of concentration.					
2. I become more eager to listen to my friend's comments and ideas when the PowerPoint presentations are used in pre-writing activities.					
3. I become busy looking at the pictures, images, and					

different fonts and colors displayed in the PowerPoint slides rather than focusing on the ideas and how they are developed.					
4. I feel bored when PowerPoint presentations are used in the pre-writing activities.					
5. The visual images used in the pre-writing activities in the PowerPoint presentation were not related to the writing topic.					
6. I consider the use of PowerPoint presentations an efficient way to prepare me for the writing task.					
7. I felt excited during the PowerPoint presentations in the pre-writing activities.					
8. The pre-writing activities in the PowerPoint presentations are better than the conventional ones.					

APPENDIX E

Essay Rubric Scale

	Score	Level	Criteria	Comments
CONTENT		30-27	EXCELLENT TO VERY GOOD: knowledgeable – substantive – thorough development of thesis – relevant to assigned topic	
		26-22	GOOD TO AVERAGE: some knowledge of subject – adequate range – limited development of thesis – mostly relevant to topic, but lacks detail	
		21-17	FAIR TO POOR: limited knowledge of subject – little substance – inadequate development topic	
		16-13	VERY POOR: does not show knowledge of subject – non-substantive – not pertinent – OR not enough to evaluate	
ORGANIZATION		20-18	EXCELLENT TO VERY GOOD: fluent expression – ideas clearly stated / supported – succinct – well-organized – logical sequencing – cohesive	
		17-14	GOOD TO AVERAGE: somewhat choppy – loosely organized but main ideas stand out – limited support – logical but incomplete sequencing	
		13-10	FAIR TO POOR: non-fluent – ideas confused or disconnected – lacks logical sequencing and development	
		9-7	VERY POOR: does not communicate – no organization – OR not enough to evaluate	
VOCABULARY		20-18	EXCELLENT TO VERY GOOD:	

			sophisticated range – effective word/idiom choice and usage – word form mastery – appropriate register	
		17-14	GOOD TO AVERAGE: adequate range – occasional errors of word/idiom form, choice, usage but meaning not obscured	
		13-10	FAIR TO POOR: limited range – frequent errors of word/idiom form, choice, usage – meaning confused or obscured	
		9-7	VERY POOR: essentially translation – little knowledge of English vocabulary, idioms, word form – OR not enough to evaluate	
LANGUAGE USE		25-22	EXCELLENT TO VERY GOOD: effective complex construction – few errors of agreement, tense, number, word order/function, articles, pronouns, prepositions	
		21-18	GOOD TO AVERAGE: effective but simple construction – minor problems in complex constructions – several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions but meaning seldom obscured	
		17-11	FAIR TO POOR: major problems in simple/complex construction – frequent errors of negation, agreement, tense, number, word order/function, articles, pronouns, prepositions and/or fragments, run-ons, deletions – meaning confused or obscured	
		10-5	VERY POOR: virtually no mastery of sentence construction rules – dominated by errors – does not communicate – OR	

			not enough to evaluate	
MECHANICS		5 4 3 2	EXCELLENT TO VERY GOOD: demonstrate mastery of conventions – few errors of spelling, punctuation – capitalization, paragraphing GOOD TO AVERAGE: occasional errors of spelling, punctuation, capitalization, paragraphing but meaning obscured FAIR TO POOR: frequent errors of spelling, punctuation, capitalization, paragraphing – poor handwriting – meaning confused or obscured VERY POOR: no mastery of conventions – dominated by errors of spelling, punctuation, capitalization, paragraphing – handwriting illegible – OR not enough to evaluate	

APPENDIX F1

PMI Inventory (Using IWB in Pre-writing Instruction)

Please state what you find **positive**, **negative**, and **interesting** after using the **interactive whiteboard** in pre-writing activities by filling in the **Plus (+)**, **Minus (-)**, and **Interesting** sections respectively in the following table.

Plus (+)	**Minus (-)**	**Interesting**

APPENDIX F2

PMI Inventory (Using PPT in Prewriting Instruction)

Please state what you find **positive**, **negative**, and **interesting** after using the **PowerPoint presentation** in pre-writing activities by filling in the **Plus (+)**, **Minus (-)**, and **Interesting** sections respectively in the following table.

Plus (+)	**Minus (-)**	**Interesting**

APPENDIX G

Interview Protocol

Interviewee's name _____ Time of the interview_____

Part One: Structured Questions

Do you think that when the IWB prewriting activities were conducted	**Yes**	**No**
1. Students were more interactive with their classmates and teacher		
2. Students were motivated to share in the IWB activities		
3. Students were encouraged to leave their seats and use the IWB		
4. Students felt bored during writing		
5. Students enjoyed the videos displayed		
6. Students knew exactly what to write about in their essays		
7. Some key ideas were clarified through the visuals used		
8. Students asked less questions on the meaning of topic-related words in English while writing their essays		
9. Some visuals were instrumental in explaining topic-related words		
10. Students felt comfortable during writing		
Do you think that when the PPT prewriting activities were conducted		
11. Students' interaction among each other and the teacher increased		

12. Students were motivated to participate in the discussion		
13. Students felt enthusiastic to share in PPT activities		
14. Students were attracted to the videos displayed		
15. Some students became distracted by the colors, animation, or pictures		
16. Students appeared uninterested to write		
17. Visuals used were functional in explaining topic-related ideas		
18. Students learn adequate words to express their thoughts		
19. Students felt tense during writing		
20. Some visuals clarified topic-related vocabulary words		

Part Two: Open ended Questions

1. In your opinion, to what extent does the use of IWB pre-writing instruction help in reducing students' apprehension towards writing?
2. To what degree, do you think was the PPT pre-writing instruction able to lessen students' apprehension towards writing?
3. To what extent, do you think, was the use of IWB pre-writing instruction able to create an enjoyable and interactive environment in the writing class?
4. To what degree, in your opinion, can the use of pre-writing instruction enhance students' interest and engagement in the writing class?

APPENDIX H1

Boxplots of Pre-Posttest1 Scores (Ideas)

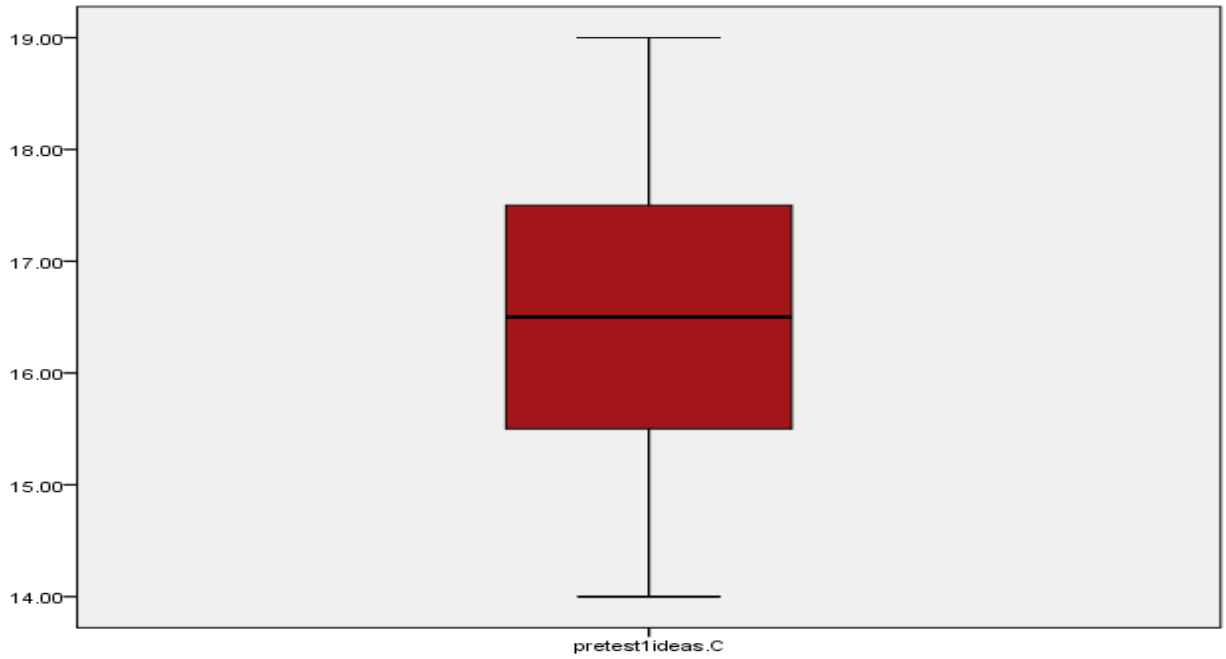

Figure 91: Boxplot of pretest1 (ideas) of the control group

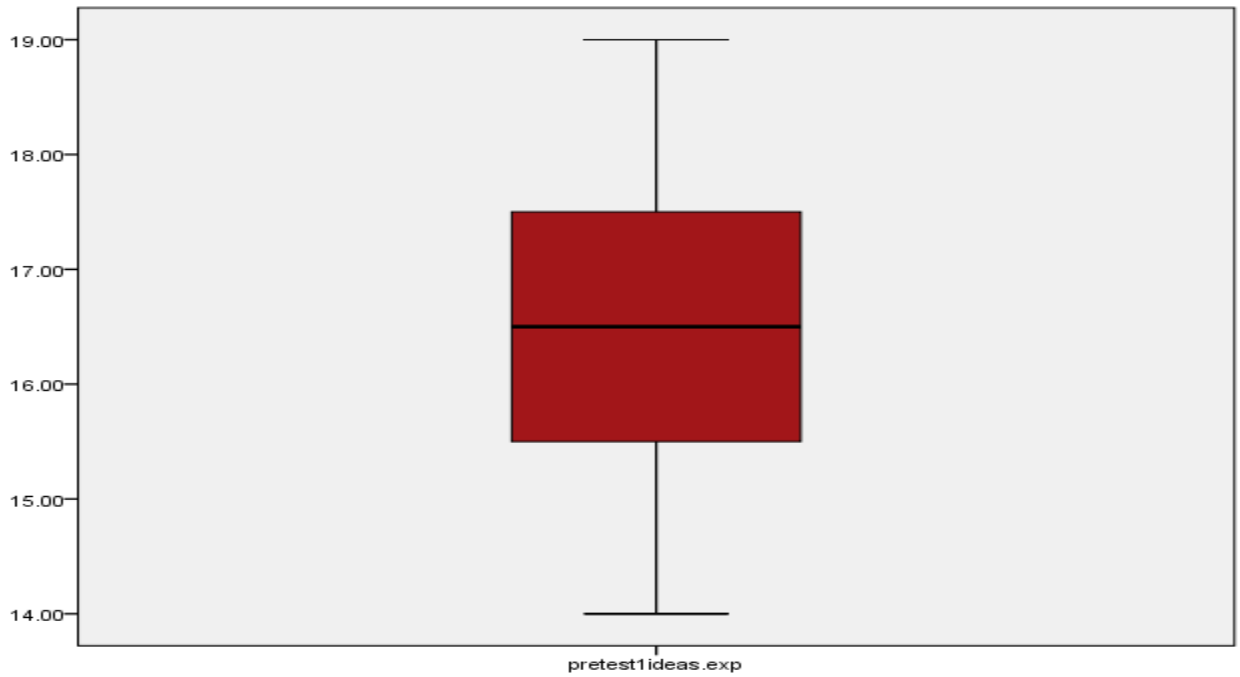

Figure 92. Boxplot of pretest1 (ideas) of the experimental group

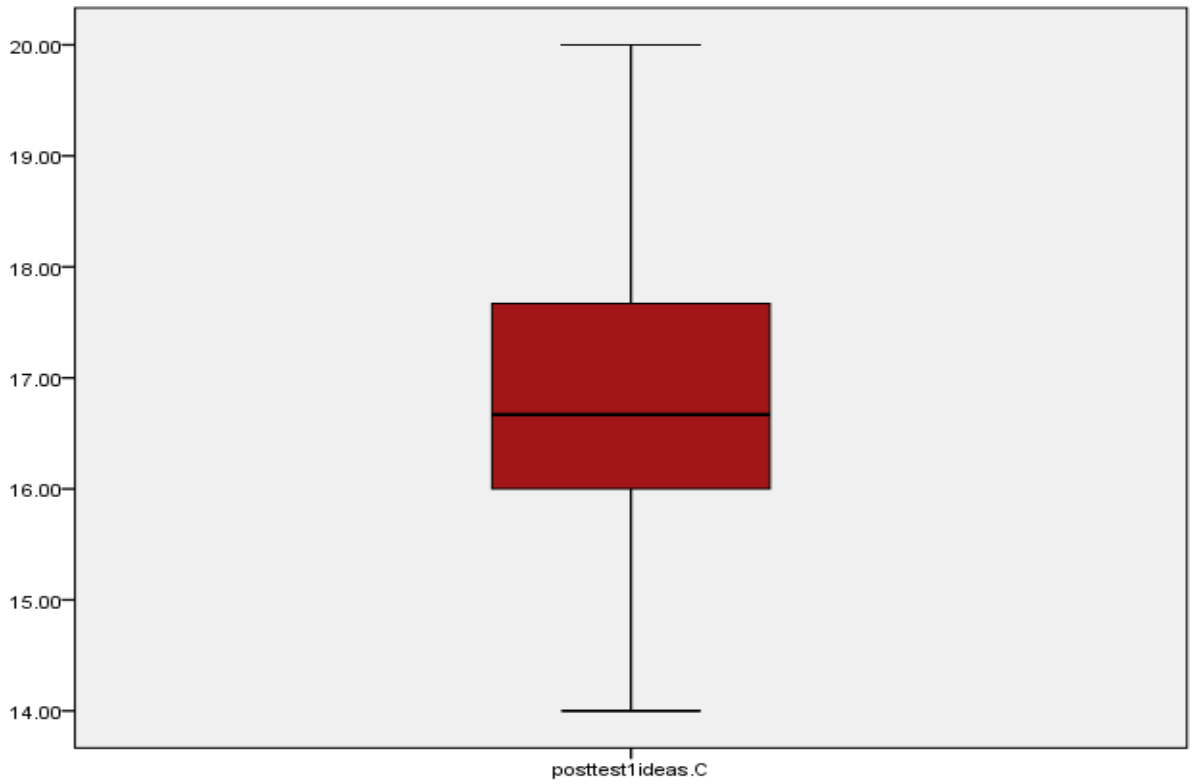

Figure 93. Boxplot of posttest1 (ideas) of the control group

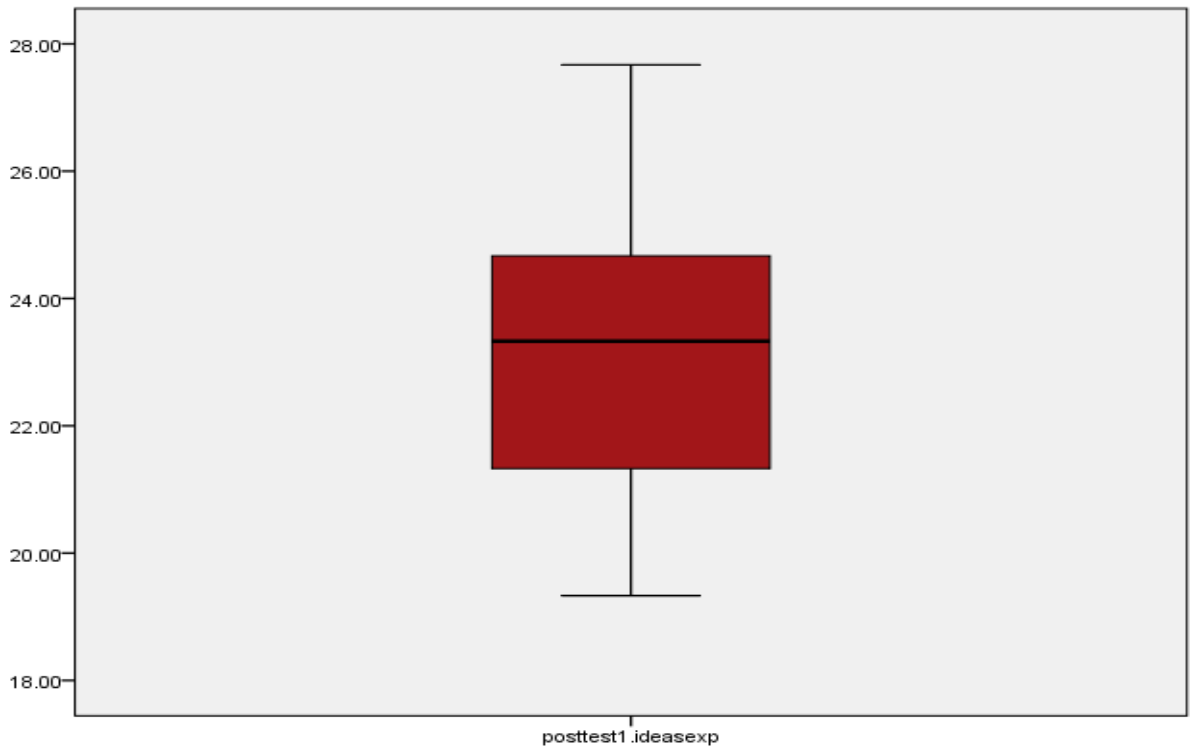

Figure 94. Boxplot of posttest1 (ideas) of the experimental group

APPENDIX H2

Boxplots of Pre-Posttest2 Scores (Ideas)

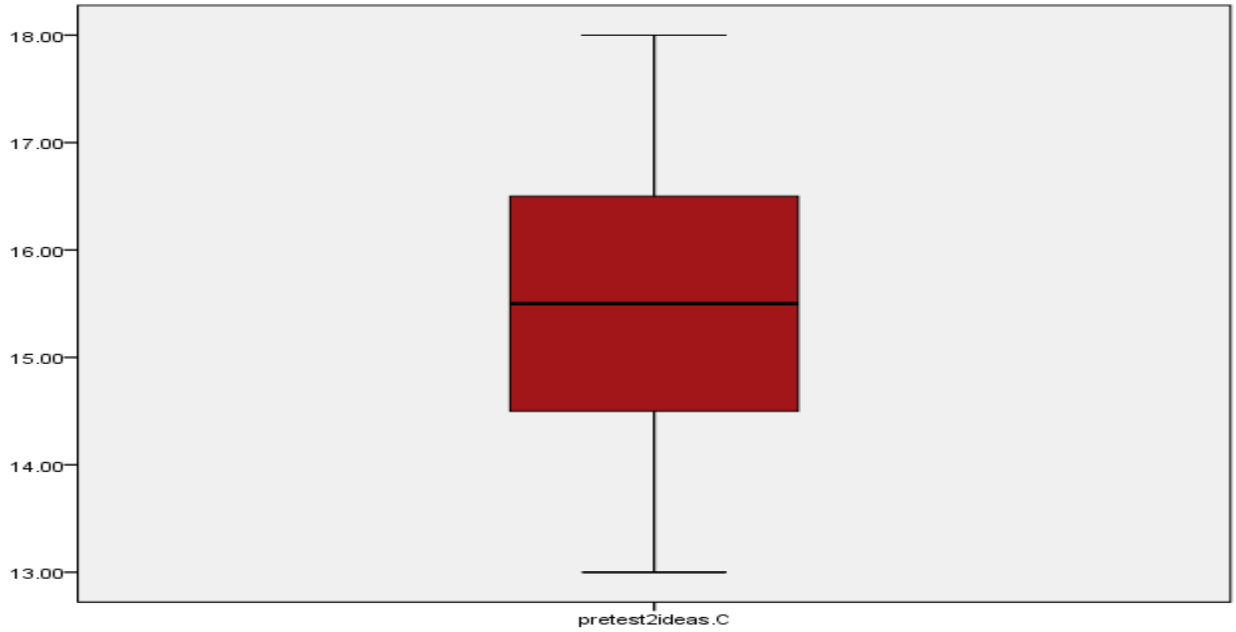

Figure 95: Boxplot of pretest2 (ideas) of the control group

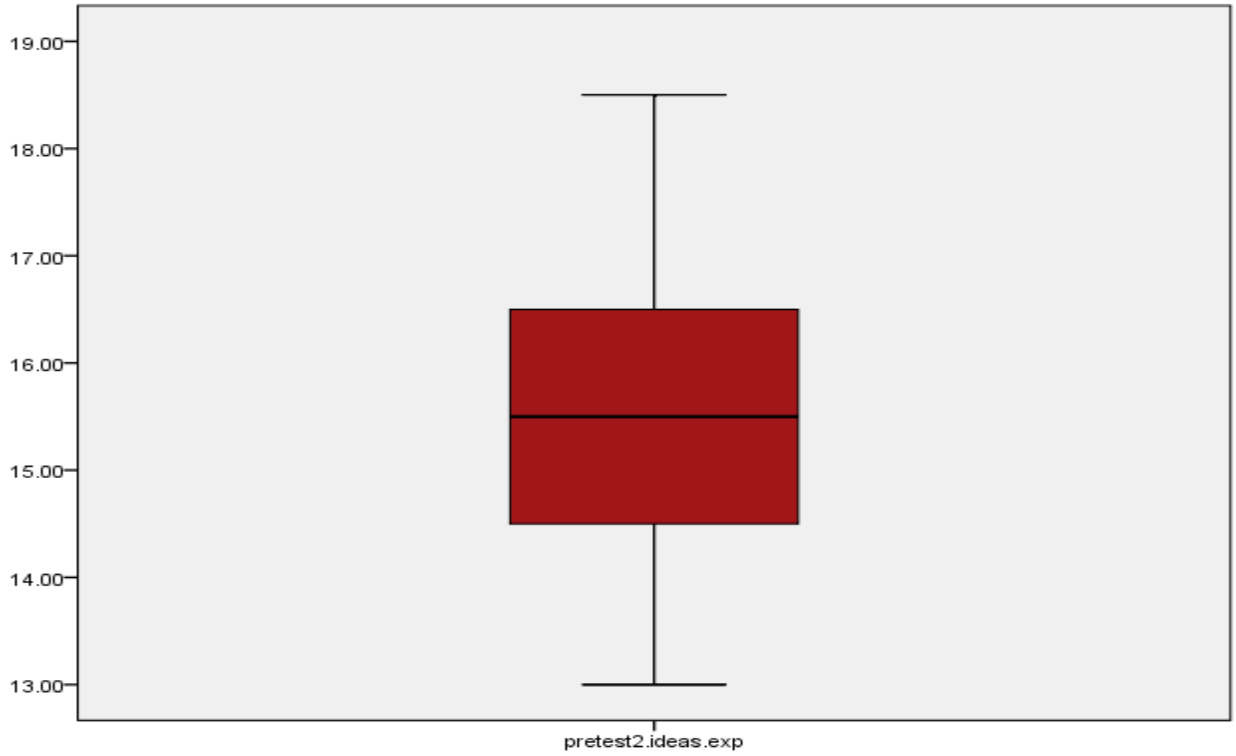

Figure 96. Boxplot of pretest2 (ideas) of the experimental group

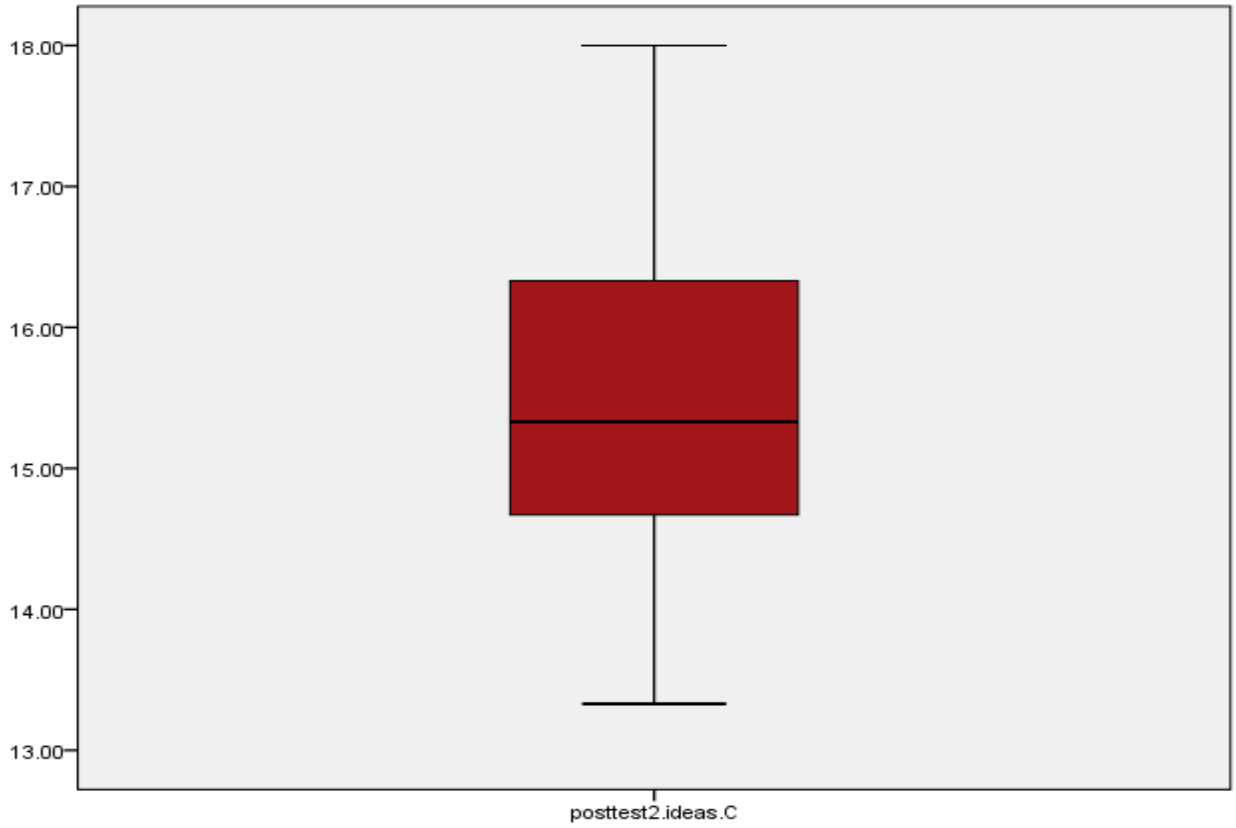

Figure 97. Boxplot of posttest2 (ideas) of the control group

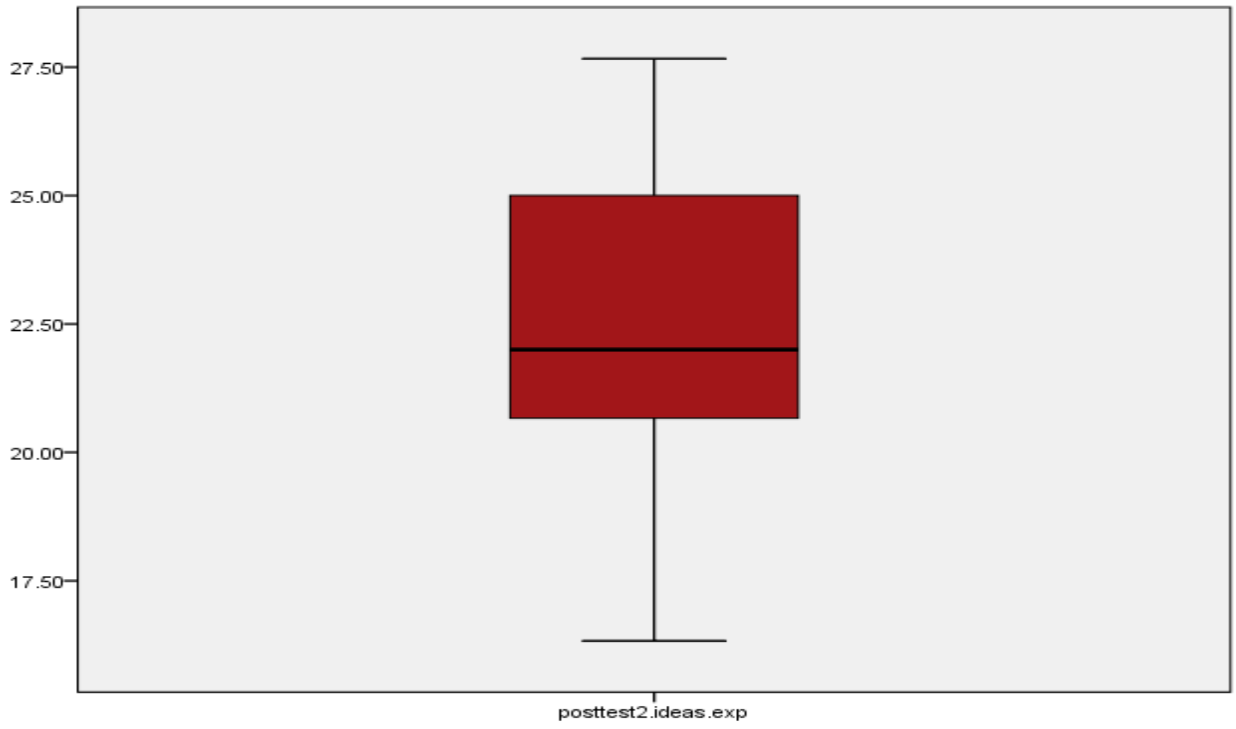

Figure 98. Boxplot of posttest2 (ideas) of the experimental group

APPENDIX H3

Boxplots of Pre-Posttest1 Scores (Vocab)

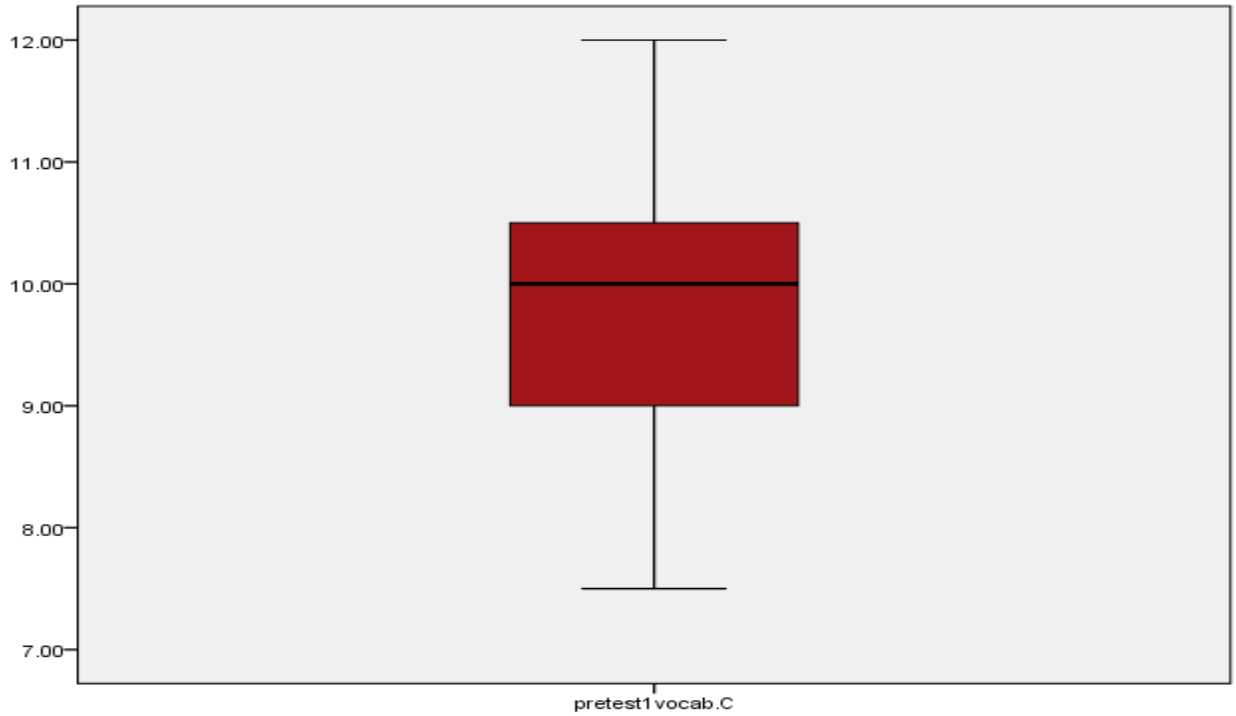

Figure 99: Boxplot of pretest1 (vocab) of the control group

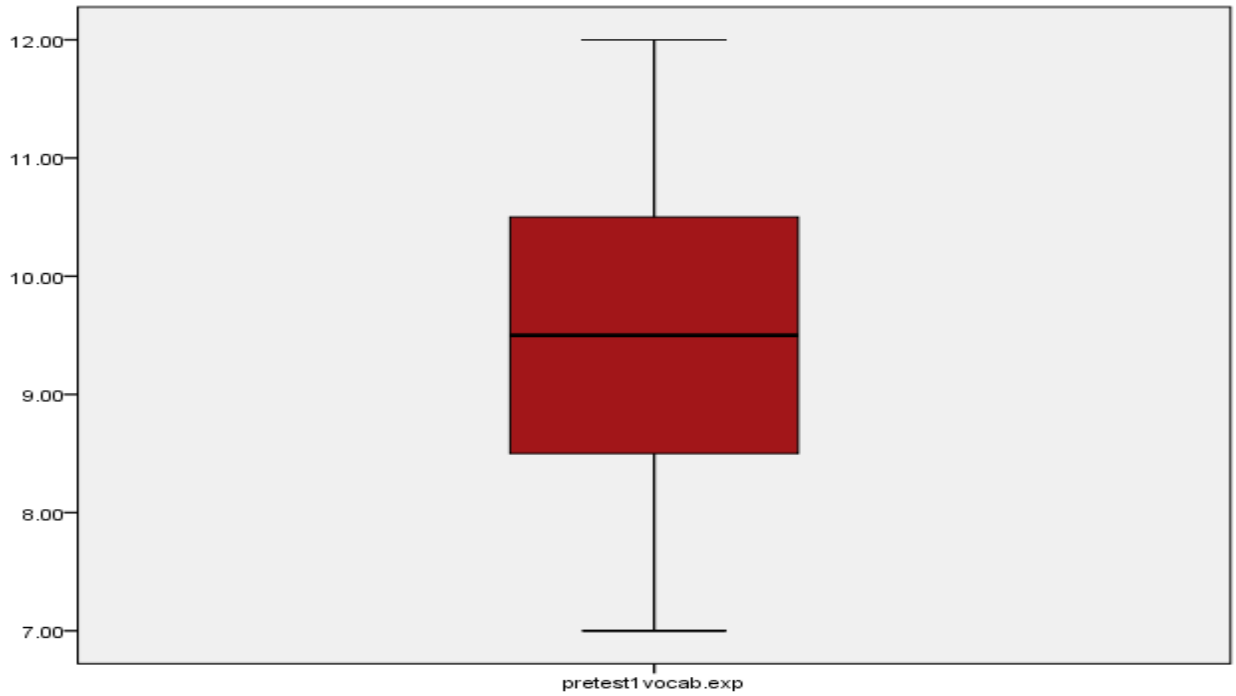

Figure 100. Boxplot of pretest1 (vocab) of the experimental group

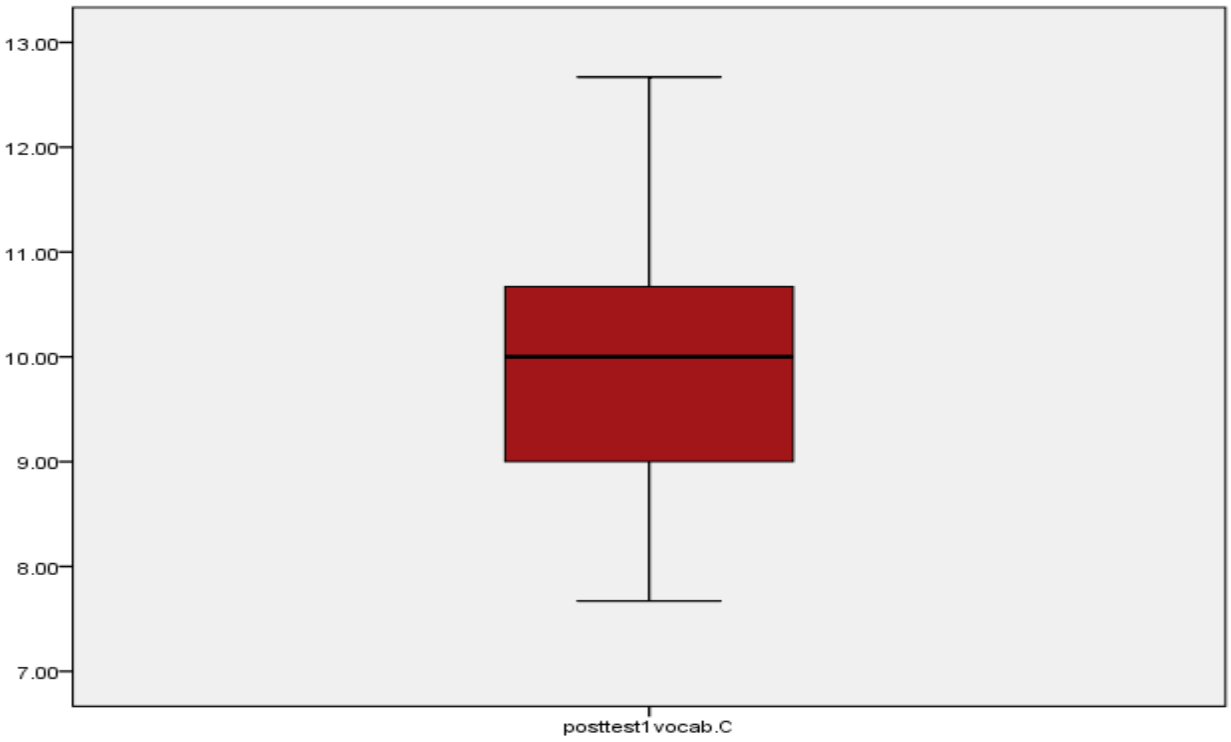

Figure 101. Boxplot of posttest1 (vocab) of the control group

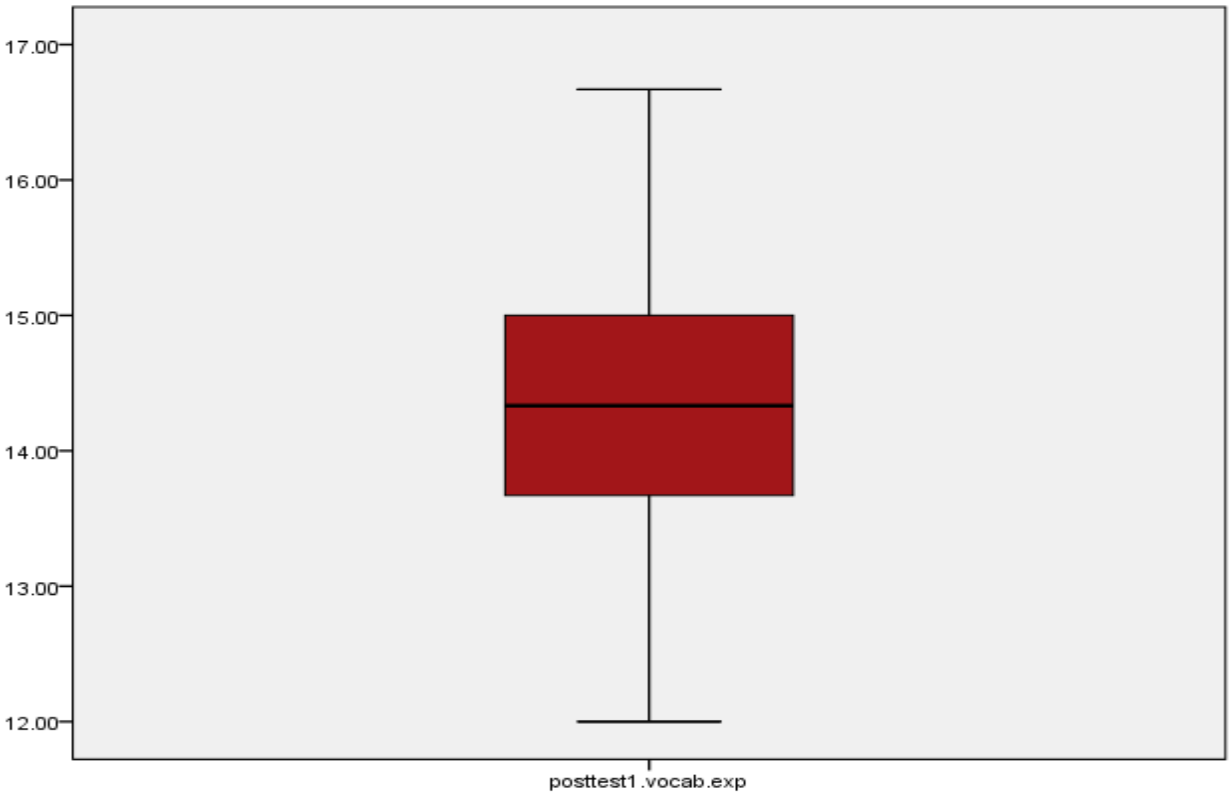

Figure 102. Boxplot of posttest1 (vocab) of the experimental group

APPENDIX H4

Boxplots of Pre-Posttest2 Scores (Vocab)

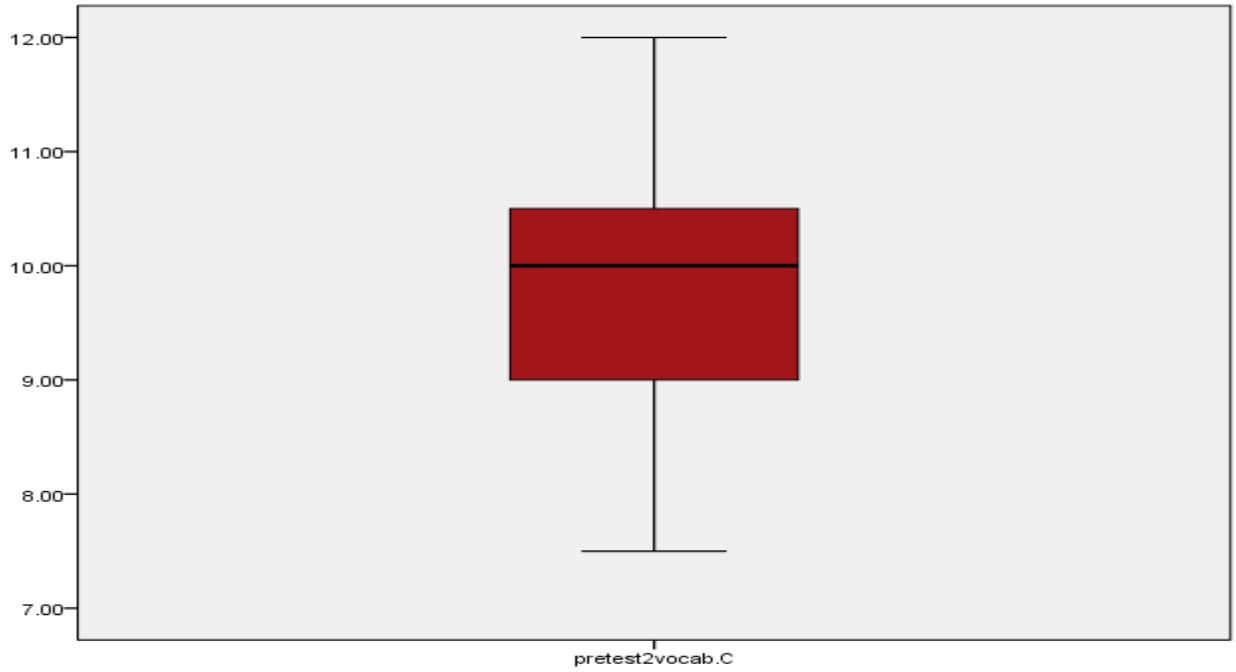

Figure 103: Boxplot of pretest2 (vocab) of the control group

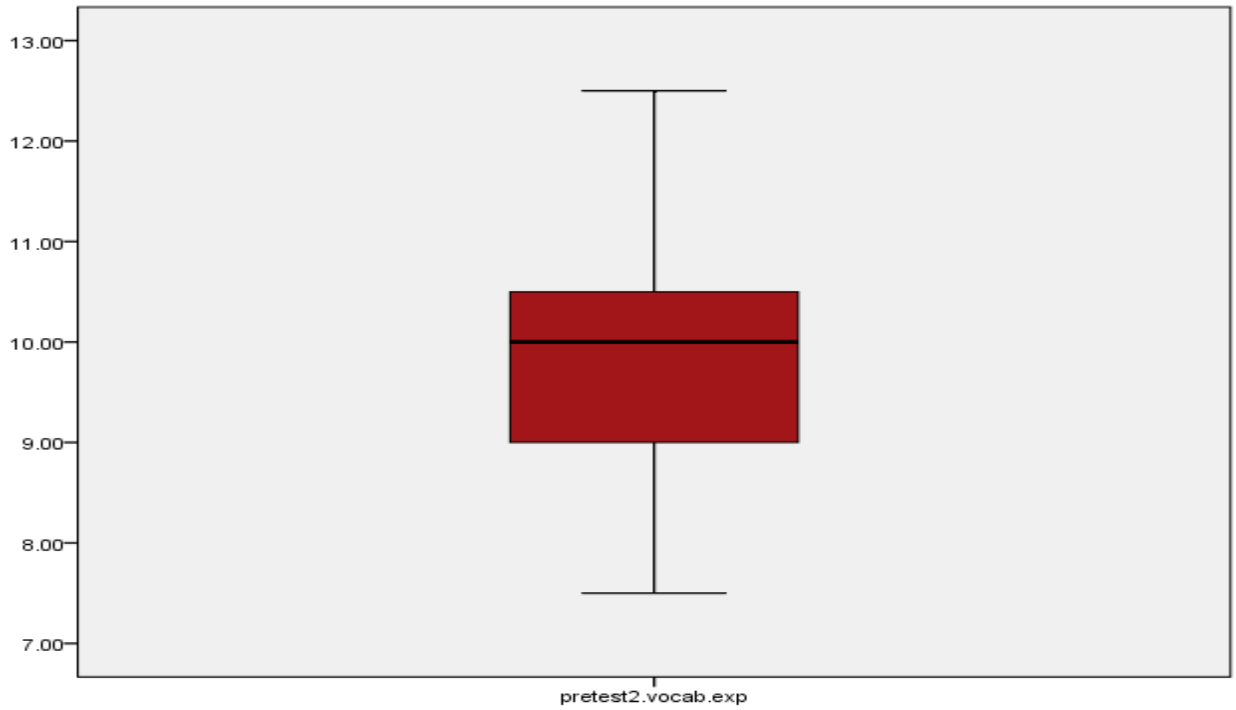

Figure 104. Boxplot of pretest2 (vocab) of the experimental group

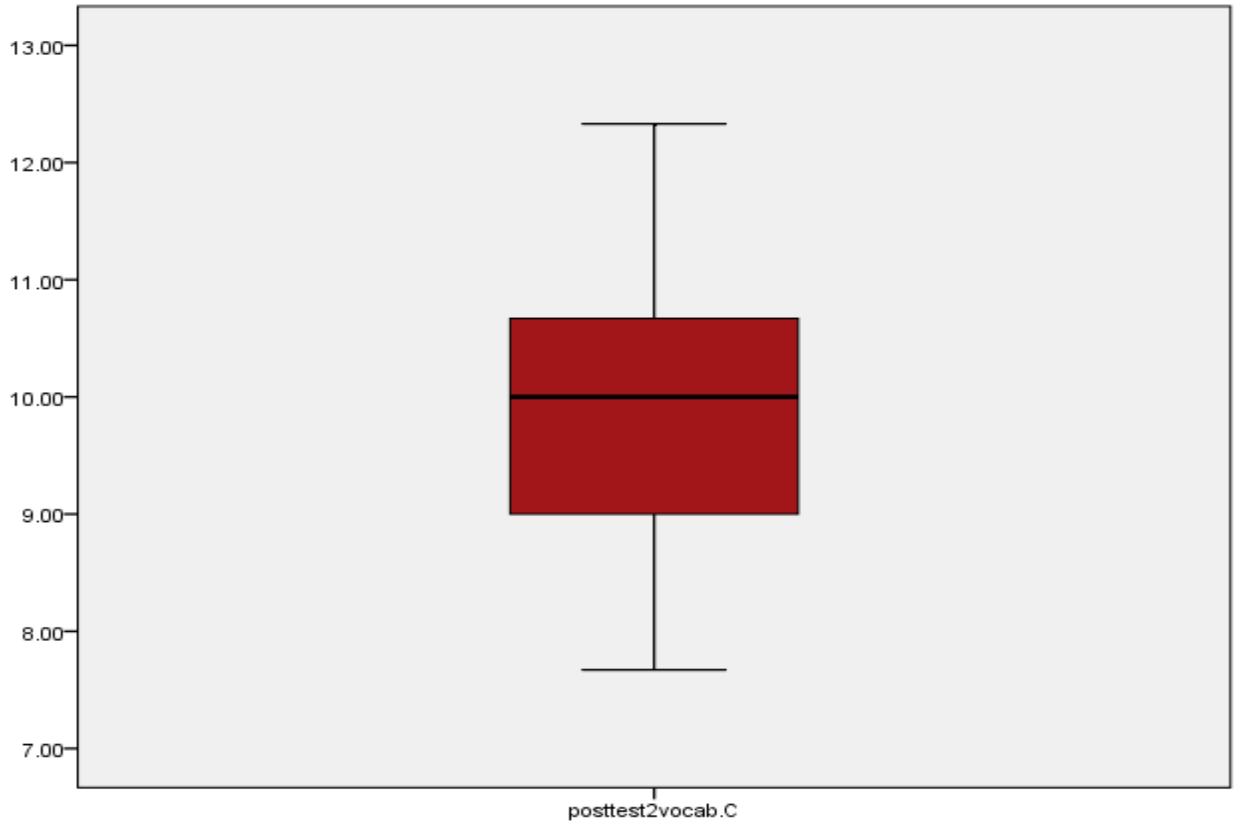

Figure 105. Boxplot of posttest2 (vocab) of the control group

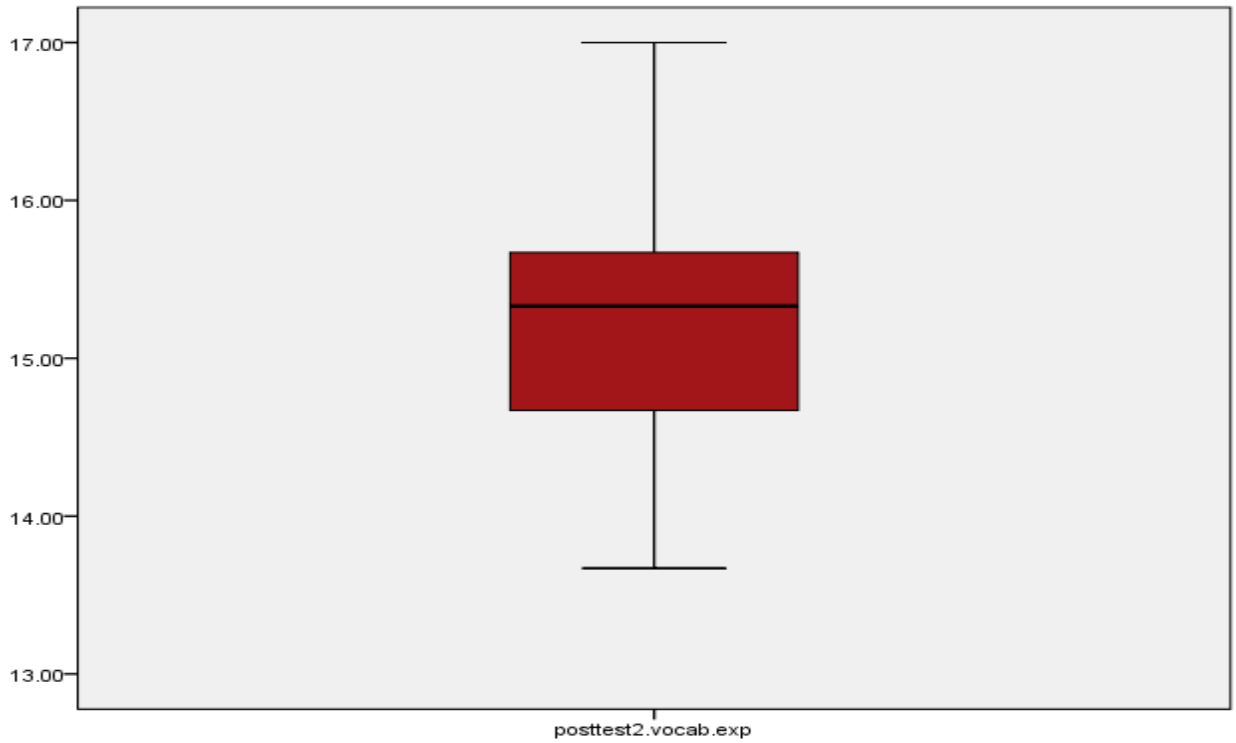

Figure 106. Boxplot of posttest2 (vocab) o of the experimental group