The Effect of Using Smartphones and Social Media on Teaching Medical English Writing

(A Case Study of Premedical College Students at Sudan University of Science and Technology)

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Abstract:

The purpose of this study is to investigate the effect of smartphones and social media on medical students' writing as well as the impact of these smart tools on the subjects' attitudes towards this skill. This research adopts a within-subject design with a sample composed of 36 male and female students registered in the premedical college at the Sudan University of Science and Technology during the second term of the academic year 2015-2016. During the First Phase of study, the subjects were taught the first six units of a book entitled English for Medicine using the traditional face-to-face method. During the Experimental Phase, however, the subjects were taught the next six units of the book following a Blended approach where favorite social media such as WhatsApp and other applications were used to enhance the learning and teaching process .To check the effect of the smartphone applications, the subjects were given two writing tests . The results showed that the students' performance in writing had significantly improved after they were allowed to use their smartphones to aid their learning process. To measure the subjects' attitudes towards writing, an Attitude Survey was used. The data generated through this survey showed that the use of smart tools side-by-side with the traditional face-to-face teaching method had positively impacted the students' attitudes towards learning medical English writing as it had already done with their writing ability. These results suggest that smartphone applications can provide a strong support while teaching medical English writing to pre-medical students. The study ends up with some recommendations and suggestions to encourage more implementation of modern technology and smart tools to enhance and revitalize the teaching and learning of medical writing.

Keywords: smartphones, learning ability, blended learning, WhatsApp, attitudes towards learning, medical English, social media.

ملخَّص البحث:

هدفت هذه الدراسة إلى معرفة تأثير استخدام الهواتف الذكية والوسـائط الاجتماعيـة على مستوى أداء طلاب السنة التمهيدية في مهارة الكتابة الطبيـة بالإضـافة إلى تحديـد مـدى تأثير هذه الأدوات الذكية على توجه الطلاب نحو هذه المهارة. عينة الدراسة مكونـة مـن ٣٦ طالباً وطالبة مسجلين في الكليـة التمهيديـة بجامعـة السـودان للعلـوم والتكنولوجيا خـلال الفصل الدراسي الثاني للعام الدراسي٢٠١٥-٢٠١٦. خلال المرحلـة الأولى مـن الدراسـة، تم تدريس الوحدات السـت الأولى مـن كتـاب بعنـوان اللغـة الإنجليزيـة للطـب باسـتخدام الطريقة التقليدية وجهًا لوجه. لكن خلال المرحلة التجريبية، فقد درسـت الوحـدات السـت التالية من نفس الكتاب باتباع نهج مدمج حيث تم استخدام الوسـائط الاجتماعيـة المفضـلة لدى الطلاب مثل الواتساب لدعم عملية تعليم الكتابة الطبية. للتحقق مـن تـأثير تطبيقـات الهواتف الذكية على مستوى اداء الطلاب، فقد خضـعوا لاختبـارين لقيـاس مهـارة الكتابـة لديهم. أظهرت النتائج أن أداء الطلاب في الكتابة قد تحسن بشكل ملحوظ بعد أن سمح لهم باستخدام هواتفهم الذكية للمساعدة في عملية تعلم الكتابة. أما لقياس مواقف الطلاب تجـاه الكتابة، فقد تم استخدام استقصاء المواقف حيث أظهرت البيانات التي تم الحصول عليها مـن خلال هذا الاستقصاء أن اسـتخدام الأدوات الذكيـة جنبًا إلى جنـب مـع طريقـة التـدريس التقليدية، قد أثر بشكل إيجابي على اتجاهات الطلاب نحو تعلم الكتابة الإنجليزية الطبية. هذه النتائج تشير إلى أن تطبيقات الهواتف الذكية يمكن أن توفر دعما قويـا أثنـاء تـدريس الكتابـة الطبية الإنجليزية للطلاب في مرحلة السـنة التمهيديـة. ختمـت الدراسـة بـبعض التوصيـات والمقترحات لتشجيع المزيد من التطبيقات التكنولوجية الحديثة والأدوات الذكية لتعزيز تعلـم الكتابة الانجليزية الطبية.

كلمات مفتاحية: الهواتف الذكية، القدرة علـى الـتعلم، الـتعلم المـدمج، اللغـة الإنجليزيـة الطبية، وسائل الاتواصل الاجتماعية.

Introduction:

Medical language is a special language made up of a huge body of words and terms, that have been collected from different languages to be used by medical doctors and students in their field of specialization and for their daily on-ward communication. Medical students in particular are required to master this special language with its unique jargons and eccentric terminologies to secure their success in this important field of study. Definitely, this would make it necessary for them to spend a long time and to exert much effort studying to remember the medical terms and the specialized expressions particular to medicine and medical practice (O'Dowd, 2008). Traditional learning techniques including note taking and memorization basically acquired through face-to-face mode of instruction, do not efficiently engage students in active learning that can help them to learn medical English with its special terminology and its unique expressions. In fact, the out-dated strategies practice based on face-to-face instructional methods are classified as one of the reason why students have low achievement scores in medical English in general and in writing medical reports in particular (Banafi, 2016). There is a need, therefore, to seek more innovative and effective teaching approaches and techniques to teach this essential subject to medical students. This could be realized through integrating new e-learning strategies into traditional educational methods. Online networking which provides a vast opportunity of communication through smartphones and their varied applications has great potential opportunities and there are expectations that this type of networking tools will supplement or even supplant traditional methods of teaching and learning English (Banafi, 2016). Recent studies have found that social and academic network sites and platforms are suitable educational tools and that these platforms are being increasingly used and accessed through smartphones to handle medical education issues. In fact, many Arab countries have adopted smartphones and their applications in one way or another and indorsed this technology into their teaching

practice (Banafi, 2016). Quite recently, it is noticed that Arab learners and younger generations, in particular, have become more familiar with smartphone applications and use them to exchange information and engage in online discussions of different topics. This fact gives a message that these younger generations would be more expert in dealing with these smart online tools and use them professionally and perhaps positively to execute important educational tasks. Hence, the researcher has become interested in the practical uses of smartphones and felt optimistic that guided application of this platform will provide a solution for the problem of teaching medical English in general and its writing in particular. Indeed, of all language skills, writing is commonly rated as the most demanding and the most difficult to master. Medical educators and language teachers even in America complain that their students have limited writing abilities and struggle to write medical reports that convey their thoughts and ideas on different medical issues (Unzueta, 2011.). If this is the case with native speakers of English, one could easily imagine how nonnative speakers of this language would suffer when it comes to learning medical writing.

In this study, the researcher works with individuals at the University of Science and Technology in Sudan to test the efficacy of using a blended learning approach that combines face-to-face teaching with smartphone technology in teaching medical English writing .

Statement of the problem:

Arab students of English often face greater difficulty in attaining appropriate writing levels in this language. "One reason for this is their native language (Arabic) being generically different from English" (Omar, 2016, p. 55). Another reason for the low performance of these Arab students in English writing; however, "is due to lack of using proper techniques and suitable methods to teach this skill" (Omar, 2016, p.56). Actually, the use of poor

traditional teaching approaches has a negative impact on the students' English proficiency in general and on their writing performance in particular. This low performance in English is bound to reflect negatively on students' academic achievement. Graham (2006) notes that students who do not learn to write well are at a disadvantage throughout their academic period of study. At college level, Graham says where English is a medium of instruction, weaker writers are at risk; they are less likely to be able to express their learning to their instructors who often assess their performance through writing. Hence these students may fail their courses and consequently suffer academic delay, or even worse, failure and dismissal from college. To avoid such tragic consequences, English language instructors and educators are urgently invited now to look into this problem and develop or find teaching techniques and methods that may help Sudanese students of medicine improve their English writing proficiency.

Need for the study:

Selwyn (2012) states that research into online networking has proved that smartphones and their use as social media platforms have modified the nature of college students' needs and views towards learning. She claims that these smartphones with their website-links do not only serve as a means for long-range informal communications, but can also be used as an effective tool in education. Social and academic network sites are accessible through smartphones and these can be used by students and educators to exchange academic information, conduct instructive reviews and surveys, post questions, and share knowledge with peers (Bere, 2012). A few years ago, Tap Scott and Williams (2007) report that the new generation of learners are not content to be passive consumers of knowledge, they are strongly motivated by a desire for choice, convenience, customization, and they insist on designing, producing, and distributing knowledge products among themselves. Ulbricht (2011) believes that members of the Net Generation use the Web differently, and they learn differently. So

when they start their university education, says Ulbricht, traditional values on how to develop knowledge or how to acquire it conflict with their currently acquired values. Indeed, many of the teaching techniques that have worked for decades do not work anymore now because new students learn differently as Ulbricht explains. Members of The Net Generation are used to contact each other, work together, execute several tasks simultaneously, and they use the Web to perform these tasks and to ultimately acquire knowledge. So this current study is badly needed to meet the expectations of the current generations who want to use more advance techniques such as social media in their learning process. This study, therefore, attempts to investigate the effectiveness of using smartphone as a current innovative learning platform to enhance teaching (The Net Generation) the writing skill. The study is also needed to highlight the attitudes of this generation towards writing after using modern technology.

Hypotheses of the study:

Through the use of smartphones and social media to teach writing, it is hypnotized that:

1- Students' writing performance will improve significantly.

This hypothesis is based on the assumption that using smartphone with its wide range applications provides real support for new information, help to focus attention, organize information, select relevant vocabulary and offer a reminder and feedback, and help in revision and correction of written tasks .

2- Students' attitudes towards writing will become more positive.

This hypothesis is based on the assumption that these E-learning tools create an enjoyable learning atmosphere that enhances meaningful learning within stress-free atmosphere. Hence they serve to enhance individualized mode of learning, prevent frustration and boredom, and eventually improve performance and attitudes towards learning.

Questions of the study:

This research is intended to answer two main questions:

1- What is the effect of using smartphone and its different applications on students' medical writing achievement?

2- How does the use of smartphone impact medical students' attitudes towards learning writing?

Significance of the Study:

This research is significant as it attempts to investigate the impact of smartphone and its various applications on medical students' writing performance at the University of Sudan for Science and Technology .It is significant as it checks the validity of using technology in a Sudanese setting. This study also tries to figure out how the attitudes of medical students in this region towards writing can be modified through the use of these smart tools in teaching this essential language skill.

Review of Literature:

The importance of writing

Attewell (1998) refers to writing as a way of life and as a sign of literacy saying that it is one of the most important inventions in human history. She explains that writing is a means to acquire and support knowledge, confirming that it is an important mode of communication through which life experience and personal views can be documented and shared. At another level, Graham and Perin (2007) describe writing as skill that draws on the use of signs to accomplish a variety of goals. They affirm that writing is a means of extending and reinforcing knowledge. They claim that writing acts as an effective tool for expressing personal experiences or reflecting on others' views.

Academic writing:

In the academic arena, Bere (2012) notes that the ability to write well becomes increasingly important as students move up

their educational ladder, and go from the secondary to post-secondary education. In this stage, she says, writing represents a key element that determines students' success. This is because students are generally required to express their learning in writing and on the basis of their written responses, their academic achievement is evaluated.

Singh (2003) acknowledges that academic writing is more demanding than other types of writing; it involves selection of particular items of vocabulary or terms to form sentences and phrases following conventional patterns to create essays or to write reports. Furthermore, academic writing needs prior knowledge of the topic of writing genre with its rules and writing format (Bere (2012). Generally, this type of writing is more developed than informal writing which one practices when he/she interacts with friends through personal letters or text messages. Academic writing has a particular purpose and it is composed in a more organized and coherent manner.

In spite of the importance of academic writing, many scholars and researchers admit that teaching and learning this skill is a complex and cumbersome process. Other researchers confirm that teaching writing is just as complicated as writing itself (Graham and Perin, 2007).

As a teacher of writing, the researcher acknowledges the difficulty and complexity of teaching English writing. This is clearly reflected in the scores of students in writing achievement tests. However, it should also be admitted that the traditional methods which are widely adopted in teaching this skill, in this part of the world, is one of the major causes for the poor level of the students' achievement in writing.

Effective writing teaching requirements:

Effective writing teaching requires the use of assistive devices to support and maintain the learning of this skill (Ulbricht, 2011). It is not enough for the teachers of writing to be highly qualified, but

that their practices of instruction follow scientific based research and that they use the right teaching tools and aid to facilitate and enhance the teaching of this skill. Graham and Perin, (2007) specify the major principles of effective writing instruction. These involve providing support for recognition through (presentation), support for strategic learning through (the use of proper teaching and learning tools) and support for affective learning through (engagement and encouragement). Use of smartphones and social media, according to Banafi (2016) provides the teacher with tools and strategies that help him/her to adhere to all of the above principles, recommended by Graham and Perin, (2007), for effective teaching of writing.

Use of social media in teaching writing:

Thorne (2003) claims that social media applications can be utilized, in today's world, as a platform to meet the challenges of tailoring learning environment that fit the needs of individuals who belong to todays' cyber world (The Net Generation). Smartphones with their different applications represent an unlimited opportunity to integrate the innovative and technological advances offered by online learning with the contribution offered in the best of the traditional face-to-face learning approach. As a result, this form of mixed approach or blended learning provides teachers and educators with a variety of educational tools to design courses that meet students' needs while taking into consideration their learning level and selecting the right technologies to allow them to get engaged and, hence, learn effectively (Thorne, 2003).

It is quite saddening to note that traditional approaches are still widely used and adopted to teach English and other subjects in this part of the world. Umar (2016) highlights the shortcomings of the traditional approach that relies on limited teaching modes and resources, saying that using one teaching channel may not provide students with sufficient learning opportunities such as involvement, interaction, and resources that meet the students' academic needs. A mixed or a blended learning (BL) approach is the best alternative

for this issue as it can lead to successful learning outcomes through provision of a variety of learning platforms and modes. Singh (2003) states that BL depends on integrating various modern tools with face-to-face instruction to allow teachers to create different activity types using, online learning, and self-paced learning approach.

During the past decade, smartphone applications have emerged to play the most vital role in moulding peoples' thinking, behaviour and mode of life. The smartphone plays this important role through a number of applications that include Twitter, Facebook, Hash tag, and WhatsApp just to mention a few. These applications seem to have gradually become the most popular and the most widely used in communication and for education purposes. In the following sections, some of these applications will be discussed since they represent the main focus of this study.

WhatsApp:

WhatsApp is a popular smartphone application used by over 480 million users across the world (Bere, 2012). It is based on the idea of using instant messages on a mobile application for communication. This idea is adopted by an American Company which spent $8 million to develop this application until it was launched in 2009 to allow sending and receiving personal and group messages and calls. The main reason that this application becomes popular is its low cost and the possibility to have instant conversations with friends in relatively private settings (Barhoumi, 2015). According to Bere (2012), WhatsApp can be used as an educational tool because it has the following features:

a) Allows users to share videos, messages, photos, and recordings using a multimedia platform.

b) Offers students and teachers the chance to create chat groups of 50 members or more.

c) Provides easy download of the application that can be used on all phone brands.

d) Allows users to save offline messages when their phones are off.

e) Provides students and teachers with free access as long as they have a Wi-Fi connection.

f) The application can be used without having to insert a username or password each time the application is opened.

Facebook:

Willemse (2015) finds that the Facebook is an application that can boost students' reflective skills, something that is important for dealing with theoretical and practical issues. The author also finds that students who have different experience levels of learning using the Facebook discussion can all benefit from its application in language learning. Students' writing that reflects on this application shows that Facebook is beneficial for combining theoretical and applied knowledge in formal and informal settings. In addition, this application makes it possible to reach different learning resources, and to get assistance from other students or from their teachers.

Smartphones in Higher Education:

The use of social media has become a popular phenomenon in universities as it is found to increase students' engagement through discussion and to encourage sharing knowledge using various synchronous or asynchronous tools including short messages, videos, audio, and images (Echeverría, et al, 2011). Smartphones can be used as an instructive tool in the online community in a way that allows students to contact each other using group discussion after class. This application provides students with opportunities to maximize their learning time and allows them to catch up with class material instead of being forced to drop the course due to situations that force them to miss classes. Smartphones also make the learning

experience more informal and can lead to increased students' self-confidence even in cases of hesitant, shy learners (Attewell, 2004).

Jeong (2007) claims that most higher education institutions are willing now to use the smartphone as a teaching medium. The use of this tool for educational purposes proves its efficacy in improving learning different academic subjects and skills including English writing. Browne et al. (2015) conduct a study which reveals that Spanish learners benefit from the use of smartphone when learning English language skills. Furthermore, the study reports an increase in students' desire and interest in learning language. In Saudi Arabia, Amry (2014) finds that Smartphones influence students' learning performance positively. The results of her study shows that educational technology can significantly influence academic and educational processes and lead to higher students' scores in achievement tests. She also reports that the students feel more comfortable when using this application for learning.

Smartphones and Medical Education:

Currently, most medical students have smart devices that allow them to learn at all times (Browne et al. 2015). The use of smartphones in teaching medicine and medicine-related subjects has increased over the last decade as medical students and staffs come to realize that some mobile applications could enhance learning different medical topics and skills. Indeed, smartphones contain applications that allow students to read e-textbooks, store medical videos that develop skills, and allow downloading clinical reference guides (e.g. PubMed). They also have medical calculators (e.g. for TIMI Risk Index, Infusion Rate, Drug Dose calculations), disease dictionaries (e.g. Oxford), and medical terminology flash cards (Anderson, 2006). Anastopoulou et al. (2012) assure that mobile phones are very helpful in teaching medical students about health routine and habits. In this regard, medical students can use their mobile devices to record their patients' daily intake of sugars,

protein, fats, fibre, and water. Such data are imported into the system that calculates and analyses patients' data and presents the results graphically along with suggested adjustments.

Browne et al. (2015) assess the attitudes of 52 medical teachers towards using smartphone for teaching purposes. The findings of the study reveal that this smart tool is a supplement element that accelerates and facilitates the learning process.

In another study, Johnston et al. (2015) use Facebook as an official learning tool for medical students from 8 a.m. to 8 p.m. for 19 weeks. The data analysis shows that Facebook can help to store communications and allow medical students to engage in conversation with one another. This application platform is designed to allow for simple communication and this feature has helped to make it an effective teaching and learning tool.

Raiman et al. (2016) study 19 students taking surgical medicine at the Princess Alexandra Hospital via WhatsApp. The teaching process begins with an introductory session where the teacher explains WhatsApp and its features to the students. The group meets weekly in person and on WhatsApp to discuss course topics. These meetings are run using the medical school's expectations for structure and content of a Problem Based Learning (PBL) feedback session. The study findings show that WhatsApp has the potential to ease communication between doctors and students. It motivates students and, hence, creates learning opportunities and improves understanding and learning while also distributes learning resources instantaneously and equally.

New trends in teaching and engagement activities:

Teaching and learning used to depend on the traditional methods which involve teacher-centred instruction where teachers play the major role in leading class activities while students are the receivers of the instruction. Researchers have recently focused some studies on the idea of "spoon-fed approach" where the teacher is the only one responsible person for class learning (Comrie,

2015). Such studies find that this traditional approach in which the teacher acts all alone in the class as a fountain of knowledge and his/her students act as passive recipients of instruction is barren and frustrating (Omar 2015).

Some of these studies recommend that teachers should provide learning experience in risk-free settings and provide continuous positive feedback to students for greater chances to develop writing skills (Brown, 2011). Other researchers in the west propose that teachers should provide step-by-step instruction for struggling writers (Kajder, 2005). Others claim that building positive classroom experiences for learning is of paramount importance for learning writing successfully (Brown, 2011). However, a wide spectrum of research has investigated and recommended the use of online programs and nominated Social Media Network Tools as a new trend to augment the teaching of various writing skills (Parker, 2013).

Integration of smartphones application into face-to-face teaching:

Due to advancements in technology, social networks have been created to foster web-based learning. It is clearly demonstrated that integrating mobile learning into classrooms face-to-face instruction can lead to significant changes in the traditional approach and yields much better results. Miller (2011), for instance, states that the use of social network tools can stand as strong support for teaching medical English writing. Other researchers find that social media tools can comfortably be used in different educational settings and that their use may have positive impact on students' learning outcomes (Cheston et al, 2013). In fact, different social networking sites not only work as tools that allow for long-range informal communication and association, but can be a method for learning based on input , output, and flexible social practices (Chen, 2013).

Bearing in mind the importance of writing for medical students, and the possibility of utilizing these smart tools to augment or reinforce the teaching of this crucial language skill, the researcher becomes interested in finding out whether the use of these techniques would have any effect in improving the writing ability of pre-medical students at Sudan University for Science and Technology. Furthermore, the researcher would like to find out if the use of such technology would have any influence on the students' attitudes towards writing.

Students' attitudes towards writing:

The ability to write clearly, consciously and efficiently is important to achieve academic success. However, many students have limited writing abilities and struggle to write compositions or reports that adequately convey their thoughts and ideas (Unezueta, 2009). Indeed, the writing process can be very difficult to master and actually, many students are classified as low achievers in this skill. This situation is quite frustrating and leads many students to develop negative attitudes towards this essential skill.

Nevertheless, educators can play a major role in helping students overcome this problem. For instance, teachers can provide students with interesting, authentic and meaningful writing experiences through the use of some innovative techniques (Chohan, 2011). When these types of experiences are provided for the students, they become more engaged and interested in their learning. According to Chohan (2011), writing is better learned when students are engaged, helped to organize their thoughts, and allowed to express their own experiences in stress-free environment. It is believed that utilization of modern E-learning tools could make this type of engagement quite possible.

Lancaster (2013) reports that when students have the chance to participate in writing workshops and use a variety of social media applications, writing becomes interesting, meaningful, creative and more enjoyable. Furthermore, when learners are

offered the opportunity to practice writing under stress-free conditions, they become more comfortable and confident in their writing process.

Seagraves, Thacker, &Young, (2005) confirm that teaching writing via non-traditional methods, such as social media platforms is stress-free and interesting because it gives the students' the opportunity to work on their writing tasks at their own pace and at the time that suits them best. The students also have the chance to seek help from others to whom they are linked in the cyber world to improve their writing performance. Lancaster (2013) assures that the use of smartphones applications in teaching is one way to create a learning atmosphere where students love writing. Through effective manipulation of these modern tools, teachers can prevent writing failure and students' frustration, and hence, these students are more likely to develop positive attitudes towards this skill.

Method of study:

Participants and setting

The participants of this study are the students of one group (group 4) which was randomly assigned to be taught by a qualified English language instructor who is also an expert in e-learning. This selected group was one of seven other groups that form the total population of the premedical students at Sudan University of Science and Technology. They were admitted to the college of medicine after they had completed their secondary education with high Grade Point Averages during the academic year 2014-2015. The researcher had no control over who of the students were going to be assigned to this class, as the academic coordinator of the English Language Department prepares all class lists. The total population of students in all groups was 239 male and female students. All members of this population were subjected to a placement test designed by the College of Languages and Translation. The number of students in each group ranged between 35 and 38.

Group 4 which constituted the sample of this study included 36 subjects (20 males and 16 females) with their scores in the placement test varying between (48%) and(59%). The majority of them were Sudanese nationals living in Khartoum, the capital city of the Sudan. Their ages range between 17 and 19 years, and they were all native speakers of Arabic except for two students who came from neighboring African countries. Each student had studied English for at least 6 years before joining the university.

The study took place in the Medical College premises at Sudan University of Science and Technology. This college has three two-story high buildings; each building encompasses 10 classrooms and laboratories. Classes are equipped with some educational aids and each class is designed to accommodate a maximum of 40 students. There is a desk for each student and a control desk for the instructor. The classes are well ventilated, well lighted and supplied with ceiling fans, but no air-conditioners.

Procedures:

This study (a within-subject-design) consisted of two phases. These were the **Baseline Phase**, and the **Experimental Phase**. It was carried out during the second term of the academic year 2015-2016. It began on the 5th of January 2016, and continued for fourteen consecutive weeks, with seven weeks for each phase .

Data sources and research material:

The study used two major instruments for data collection: a **Writing Rubric**, and an **Aattitude Survey**. The writing rubric is based on The Georgia Department of Education Scale. It was selected and modified by the researcher to assess the various components of medical writing.

The second instrument used in this study is the **Attitude Survey**. This survey was intended to measure the students' attitudes and feelings towards writing and their perceptions of the writing task. This survey was initially designed and validated by the

department of psychology at Khartoum University and used to measure students' attitudes towards language learning.

A few weeks before the study, the researcher got the necessary permissions to conduct this research. The selected group members were informed about the experiment and asked to sign a consent form showing their approval to take part in this study. This was done after the researcher had explained the possible benefits of the intervention. All necessary arrangements were made to see to it that the experiment would not disrupt the regular class timetable. The researcher made sure that all students had smartphones loaded with the necessary applications. The group members were then asked to start their intensive ESP program which was assigned 14 hours a week. Four out of these fourteen hours were ear-marked for teaching writing and the remaining 10 hours were allocated to teach other language skills, i.e., reading, listening, speaking and grammar.

The Baseline phase (weeks one to seven):

This began on the 5th of January 2016; after all necessary arrangements were made. This stage lasted for seven weeks during which the assigned instructor met twice each week with the participants and each meeting lasted for about 90 minutes. The meetings or sessions were scheduled on Mondays and Thursdays from 8.00 a.m. to 9.40 a.m. During this phase, the participants were taught the writing skill through the traditional face-to-face mode of instruction. The students were taught six units from a textbook entitled **English for Medicine**. These include: Unit: 1-Presenting complaints, Unit 2- Working in general practice, Unit 3- Medical instruction and procedures, Unit 4-Dealing with medication 5: Parents and young children, and Unit 6: Working in psychiatry., In teaching the writing part of each of these units, the instructor strictly followed the five stages commonly indorsed in teaching this skill. These stages are outlined as prewriting, drafting, revising, editing, and publishing (Miller, 2011). During the first session of

each week, the focus was on prewriting and drafting. This was done after the students had covered the listening, the reading and the speaking skills in previous sessions during the same week. Grammar and vocabulary together with relevant medical terminology were all covered before students came to deal with the writing skill. The writing procedures were carefully highlighted and continued in the second session of the same week. In this stage the students revise, edit and finally publish their writing assignment. All these stages were performed under the direct supervision of the instructor in a face-to-face mode of instruction. This process continued for the six weeks of the **Baseline phase**. In the l seventh week, a test which was intended to measure the students' writing ability was administered.

In this test, the students were asked to write a referral letter in which they referred a patient to a university hospital for further checkups and medical tests. The subjects were given 45 minutes to complete this task. Before they started doing their writing test, the participants were reminded to follow the writing procedures that they had studied during the previous weeks. More specifically, they were reminded to plan, draft, edit and revise their writing.

In the same session, the participants were given the writing **Attitude Survey**. This was a close-ended questionnaire intended to collect some information about the participants' perceptions and feelings towards writing before the smartphone intervention. This survey would be given to the participants once more at the end of the experiment.

The test papers were collected and handed over for evaluation. This was done by two qualified instructors using the writing rubrics chosen for this study. The raters were trained on how to apply the writing rubrics. Their inter-rater reliability was quite high reaching (83 %). Each participant's paper was scored twice, once by each rater. These scores were then averaged and recorded to represent the students' writing ability before intervention.

The Experimental phase:

This phase started in the eighth week of the term and lasted for seven weeks as well. Each week, the writing instructor meets twice with the students as before on Mondays and Thursdays from 8 to 9:40 a.m. During this period the students covered the rest of the units in the book.

Introduction of smartphone applications:

In the first meeting of this phase, the participants were carefully introduced to the idea of using smartphones and social media as educational tools to support learning writing. They were informed that they would be allowed to use these smart tools inside and outside their classrooms. The participants received this news with great enthusiasm and happiness. They were then asked to make sure that they had already uploaded some necessary applications on their smartphones. The applications recommended include the WhatsApp, Facebook, the Oxford Dictionary, The Spell Check, Google, Wiki, Free PDF books and articles, Vocab, Advanced Grammar, Proofreading and some other applications that could help in handling the writing process.

The teaching of writing was then resumed in its blended version format. During this phase the participants had studied the remaining units from the same book, **English for Medicine.** These include units Unit 7: Parents and young children, Unit 8: Working in psychiatry, Unit 9: Terminal illnesses and dying , Unit 10: Working in a team, , Unit 11: Renal, and Unit 12 : Coronary. .

The instructor followed the same steps in teaching the writing sections as it was the case during the **Baseline Phase**; however, the participants were given the freedom, this time, and encouraged to use their different smartphone applications to help them during the performance of their writing tasks and assignments.

In the first session of the **Experimental Phase**, the instructor illustrated how the participants could undertake the various stages

of the writing processes with support of smartphone applications during this phase. These processes were to be conducted through a number of stages:

In first meeting of this **phase**, the instructor made sure that all participants had their smartphones with WhatsApp Messenger already installed on them together with other applications such as as free PDF books and articles, Vocab, Advanced Grammar, that can be used to enhance the writing skill. The participants were instructed to create a group on WhatsApp called "**Medical Writing**". The instructor was a key member in this group, but the leader of the group was one of the students selected and nominated by his and her colleagues. Each week, the students had a specific topic to write about. The writing topic is commonly based on the unit covered in that week. This meant that the participants would come to write after listened to, read about, learned vocabulary relevant to the topic of the writing task. The writing topic is often given in the form of a title that specifies the issue to write about. Then each student in the group was asked to write his own ideas about the selected topics in the group. The students worked together and kept on generating ideas for the suggested topics. They were asked to exchange these views on the WhatsApp Group and use their different smartphones applications such as Google, Wiki, and others that could help them find words and more ideas to increase their knowledge of the designated topic. All these ideas and views were shared in the group and closely followed by the instructor who provides regular feedback, encouragement and support.

In the first session of each week, the concentration was on generating more ideas through using brainstorming and gathering information. These ideas were uploaded on the WhatsApp group. At this drafting stage, the students were informed that the mechanics and surface structure such as spelling, punctuation, and sentence construction should not be a subject of all their attention. The priority is for building knowledge and generating ideas. This stage was mainly focused on recording ideas on the WhatsApp

under the guidance of the instructor. This would continue to the end of the first session. Hence, the students were asked to resume their work outside the classroom and complete writing their drafts at home where they could manipulate their smartphones more freely and share their products with their colleagues.

In the second meeting of each week, the students finished the brainstorming process. Then they continued reviewing their drafts and required to go through the content of their writing, looking for improvement based on the instructions they received from the instructor before starting their writing process. The students had to clarify, add, delete, or even reformulate the whole draft in order to fit the intended purpose. At this stage, participants were encouraged to use their smartphones to share information and practice self-and-peer corrections.

In the same second session of the week, students were asked to purify their final drafts by examining the mechanics of writing, such as spelling, punctuation, writing format, grammatical rules, etc. At this stage students were genuinely encouraged to resort to their smartphones and use their different applications such as vocab, advanced grammar, spell checking and proofreading to improve their drafts.

In the last part of second session of each week, the students were asked to publish their writing tasks and share them on "**Medical Writing Group**" on WhatsApp. Each member of the group published his\her own paragraph in the group. After that the students practiced peer corrections for their final writing assignment under supervision of the instructor, and at the end of this session; the instructor discussed notes related to the students' writing mistakes especially those related to punctuation marks, use of linking words, and organization.

The post-test and the Attitude Survey:

At the end of this phase, i.e., in the seventh week, the participants are subjected to a test based on the topics covered in

the six units taught during the **Experimental phase**. In this test, the students were asked to write a three-paragraph essay in which they discuss the advantages and shortcomings of teamwork in a hospital setting.

Before they start doing their test, the participants were reminded to follow the writing procedures that they had studied during the previous weeks. More specifically, they were reminded to plan, draft, edit and revise their writing. They were also reminded of the importance of writing mechanics such as punctuation, correct spelling, use of suitable linking words, and proper organization.

The same procedures of evaluating the test given at the end of the **Baseline phase** were followed to assess the students' performance at the end of the **Experimental phase**. The students' scores were then averaged and recorded to represent the students' writing ability after the intervention.

In the same session, the writing **Attitude Survey** was administered once more. As mentioned earlier, this is a close-ended survey which aims to collect data about the participants' perceptions and feelings towards writing after the smartphone intervention to see if there were any changes in students' perception of writing which could be attributed to the intervention.

Data analysis:

To collect data for this study, the researcher used two instruments: a **Writing Rubric** and the **Attitude Survey**. The writing rubric, which was designed by the Georgia Department of Education, was indorsed, after some modifications, to evaluate the students' writing performance before and after the intervention. This rubric assesses the participants' writing in five areas: content, organization, word choice, sentence fluency and mechanics. Two well-trained raters assess the writing samples. Their inter-rater reliability is as high as (83%). In each writing component, a student could receive five grades for distinguished performance, four for

good performance, three for average, two for below average, and one grade for poor performance. The total score of each participant in each component could range from twenty to five. Percentage wise, each student's score could range between (100%) and (20%) in each component.

Results:

The objective of this action research is to investigate the effects of smartphone and social media applications on students' writing performance as well as their effect on the students' attitudes towards this essential language skill. Data were mainly generated through writing rubrics that evaluate students' writing sample's before they used their smart tools compared to their writing performance after they completed a seven-week period of intervention during which the subjects used smart tools to aid them in handling their writing tasks. Another instrument used to collect data for this study is the **Attitudinal Survey** which was intended to gather information about the participants' feelings towards writing before and after the intervention. The scores of the participants' in writing before and after they were permitted to use the smartphone applications are shown in **figure 1** below: The figure shows the participants' level of performance in the five components of writing according to the rubrics suggested by the Georgia Department of Education.
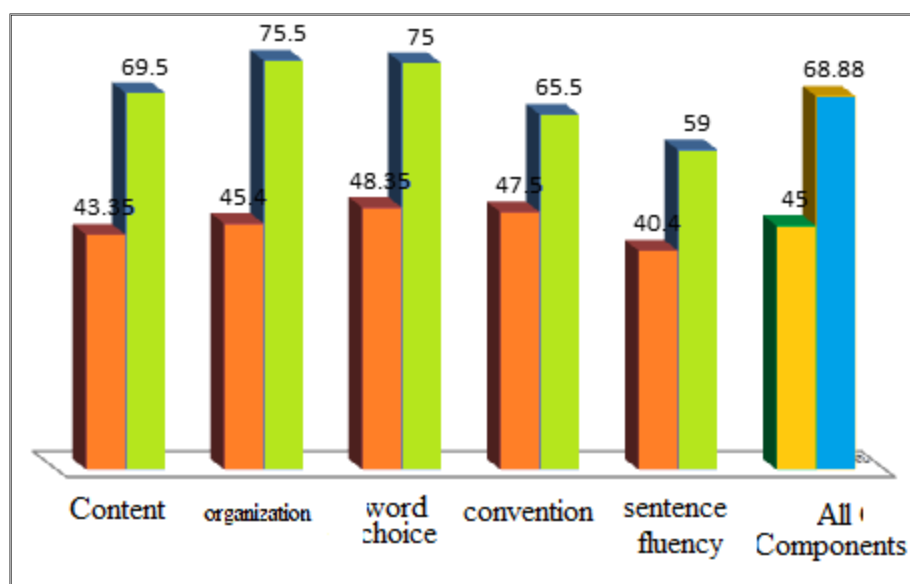
Without smartphones 🟥   with smartphone 🟩

Figure 1: A Graph for the mean scores in writing with and without smartphones intervention

The above graph reveals that the mean score for writing has increased in four of the five components of writing after the intervention; however, the maximum increase is found to be in organization reaching (75.5%) instead of (48%) ,followed by the score in word choice which reached (75%) instead of (48.5%). The overall mean score for writing after the participants had been allowed to use their smartphones increased significantly to approach (69%). It was only (45%) before intervention. The difference between the average scores in writing of students before and after they were permitted to use their smart tools is almost (24%).

However, for more accurate results, and to show if this difference is significant, a t-test is performed using SPSS computer program version 20.

Table (1): shows the Means, SD and T-value of the group before and after the students used their smartphones

Group	N	M	SD.	T-value	α-Co-eff.	Sig. level 0.01
Before intervention	36	45	1.84	7.073	.000	Sig. at 0.01
After intervention	36	69	0.83			

The data in the above table reveal that the obtained t-value is 7.073 which is well above the limit of 0.01 of significance. This means that there is a significant difference between the scores of students at the **Baseline** and after the **Experimental phase** in favor of the intervention.

This result can be cited to verify the major hypotheses of the study which states that students' writing ability will significantly improve as a result of using smartphone applications and social media to support their writing process.

This same result can be used to answer the main question of the study which inquires about the impact of using these smart tools on teaching writing to premedical college students at The Sudan University of Science and Technology. It is obvious that these tools have helped the students to improve their writing ability.

Results of the Attitude Survey:

As mentioned earlier, the **Attitude Survey** was administered twice once before and once after the participants were allowed to use their smartphones and social media applications while learning writing. Responses to the survey questions were compared and summarized in the table below:

Table 2: Results of the **Writing Attitude Survey**

NO.	Statement	Response		
1	How do you rate writing in terms of difficulty?	Easy	Difficult	Medium
	• Before using smartphones	12	17	7
	• After using smartphones	22	8	6
2	How do you feel when it is time for writing?	Excited	Nervous	Neutral
	• Before using smartphones	5	18	13
	• After using smartphones	25	5	6
3	Do you think writing is fun or boring?	Fun	Boring	Not sure
	• Before using smartphones	5	21	10
	• After using smartphones	24	4	8
4	Do you often try your best to accomplish your writing task?	Yes	No	Sometimes
	• Before using smartphones	12	11	13
	• After using smartphones	26	5	4
5	What is the most difficult part of writing for you?	Planning	Writing	Organizing
	• Before using smartphones	10	18	8
	• After using smartphones	12	13	11

The above data which were generated through the **Attitudinal Survey** can be used to verify the second hypothesis of this study which states that the use of smartphones and social media will positively impact the attitudes of students towards writing. This is clearly shown in the students' responses which had changed radically after they were allowed to use their smart tools as instruments to support their writing process. For instance, when the participants were asked to rate writing in term of difficulty, almost half of the participants ranked it as difficult, but when they were

asked the same question after the smartphone intervention (61%) ranked this skill as easy. At another level, when these students were asked about their feeling when it was time for writing, only (13.8%) of the participants said they felt excited when it was time for writing. However, after the intervention more than (69%) of the participants said they felt exited when it was time to write. Before the smartphones application, only (14%) said writing was fun and (58 %) said it was boring. This feeling towards writing had changed dramatically after the smartphone intervention and almost (67%) rate writing as fun and only (11%) said it was boring.

The above data can be cited to verify and accept the second hypothesis of the study which assumes that the use of smartphones and social media can positively impact the student's attitudes towards writing.

The same data can be used to answer the second question of the study which asks: "What is the impact of using smartphones on students' attitudes towards writing? Obviously, the use of smartphones and social media had a positive impact on students' attitudes towards writing as well as on their performance in this skill.

Discussion:

This study has shown that the use of smartphone applications and social media can act as an effective tool to teach English writing to medical students. In this study, it is clearly demonstrated that the use of these smart tools as social media platform has improved both the students' writing performance and their attitudes towards this important academic skill. However, to get the maximum benefit of this intervention, these tools should be used more carefully and wisely and in a creative manner. Students are more likely to benefit more by these tools if they are naturally and systematically blended and integrated into face-to-face teaching contexts. There are indeed many social media applications that could make learning much more interesting and fruitful.

The findings of this study have particularly affirmed that smartphones technology can enhance students' active participation and engagement in learning inside and outside the classroom. Smartphones can provide students with an opportunity for practicing the language, for free, for a longer time that extends beyond classroom hours and helps these students to create more personal and intimate relationship between themselves and their instructors. These modern smart tools could give a chance for students to be more sociable and better learners, and give them an opportunity to relate their opinions to those of others.

The use of these smartphones by students during the **Experimental Phase** has obviously helped to enhance students' achievement in writing. The researcher believes that this happens because the instant messaging and feedback through smartphones make learning easier and resolve learning difficulties related to the learning process or to learning content. Omar (2016) assures that social interactions improve the effectiveness of learning and teaching and this advantage helps students to construct and share knowledge through social networking and eventually leads to positive attitudes towards learning. Gillingham and Topper (1999)

suggest that collaborative learning through social networking (Facebook, WhatsApp, etc.) will have positive impacts on the learning process and, hence, on students' attitudes towards learning and on their academic achievement.

In fact, the results of this study are supported by the cognitive learning theory which suggests that discussion among students, even on social networks, would have a cognitive value that provides the students with the opportunity to construct and share knowledge and then attain good results in academic tests. Online learning through discussion forums, says Chan (2005) improves the effectiveness of learning, solves learning difficulties and enables construction and sharing of knowledge, and these benefits seem to have been fully realized in this current study.

Gillingham & Topper, (1999) consider online learning techniques as effective tools both for developing an understanding of a concept and for enhancing cognitive performance of the students. Other researchers in this field confirm that social learning through discussion forums, mobile devices, and so on creates and fosters the modern learning communities (Rich & Hebert, 2004). It is taken for granted that online communication among students and their instructor , as it occurred in this study, has created an affective learning environment and helped to improve the study sample writing ability .

It is interesting to note that the results of this study agree with a number of other studies. Chief among these studies is the one by Abdul-Fatah (2015) who assures that mobile phones are important learning tools that contribute to the success of students in language learning. At another level, this study goes on to confirm Amry's (2008) research findings which highlight the importance of mobile device as a language learning tool and predicts that this modern device would soon supplement or even supplant traditional techniques and methods. This study is also in harmony with Riyanto (2013) who studies WhatsApp Messenger impact on students' achievement in foreign language learning. He finds out

that adopting WhatsApp in teaching and learning processes can improve language skills and help students to develop positive attitudes towards foreign language learning. .

Conclusion:

From the results of this research, it can be concluded that smartphones are modern effective instruments that could be used to develop the students' writing ability and help them to promote positive attitudes towards learning this essential skill. The use of such smart tools with a group of premedical students at the Sudan University of Science and Technology seems to have a significant positive impact on students' writing achievement as well as on their attitudes towards this skill. Indeed, it is found that the participants' mean score in writing has increased from (45%) to almost (69 %) with a difference of (24%). Advanced statistical analysis proved that this difference between the two mean scores is significant at 0.01. Furthermore, the participants' attitudes towards writing have changed dramatically. The students started to view writing as easy, exciting and interesting after they were given the opportunity and the freedom to use their smartphones inside and outside their classroom to back up their writing learning processes.

This finding highlights the importance of utilizing modern technology in teaching present time generations. Mobiles, in particular smartphones, which have become as essential elements of today's students' properties, are widely used now by almost all students in handling different affairs of their everyday life. In fact , these tools are used by todays' students for personal communications, entertainment, marketing, paying bills and more particularly in learning. These smartphones are easy to carry, and have the same functions as larger computer devices. Numerous applications can be uploaded on these phones that can help in English language learning. Thus, applications such as free PDF books and articles, vocab, advanced grammar, spell checking and proofreading can easily be used by current university students to back up their language learning process.

These important educational applications nominate the smartphone to become a distinguished academic, social and technological tool that may help in developing students' writing ability, provide a social platform for students' collaborative learning and interaction, improve their positive attitude towards the English language, build students' confidence and interest in writing, and , last but not the least, foster their autonomy. However, this move towards these innovative technological devices in teaching English is not without its shortcomings. As it is the case with other academic endeavors, this move comes with benefits and challenges, but these challenges should not hinder educators and language instructors from modernizing their language instruction techniques. These challenges can be addressed with proper planning, careful implementation and reflective assessment together with wise guidance and supervision that result in collaborative, meaningful interactions created in the cyber world (Shang, 2007). With the massive and radical changes brought by globalization and modernization in various aspects of human life, the arena of English language teaching has to adjust to the challenges and the demands of **The Net Generation** if it aims to be relevant and responsive to the needs of the 21st century learners.

Recommendations:

In light of the findings of the present study, the following specific recommendations can be forwarded to increase the benefits of using smartphones in teaching English writing to medical students. These may include:

1- Formally adopting smart tools and other technical devices as part of the language teaching programs and syllabus design. This policy may include a reward system to encourage effective and sustainable use of such technology.

2- Providing staff with a curriculum plan and instructional activities based on smartphones that allows for the implementation of social media in and outside the classroom to maximize learning opportunity for students.

3- Developing teachers' and students' technological knowledge based on the "Educational Technology Integration Framework." Such knowledge can be developed through regular training courses on how to utilize these smart tools in language learning and teaching.

4- Creating environments that allow students and faculty to integrate social media and face-to-face teaching into the training and learning environment by arranging regular work- shops and forums.

5- Conducting regular surveys that gather information about student and teacher attitudes towards technology and digital self-efficacy.

6- Creating Wi-Fi connections throughout the University and make it available round the clock for students' and teachers' use.

7- Adopting different smartphone applications in teaching other language skills like listening and speaking through exchanging learning materials between students and teachers.

8- While using smartphone technology to enhance their teaching practice, teachers should try to give students more choices, responsibilities and opportunities to interact freely with each other. Even though it is not easy for teachers to apply new activities and tools in the classroom, they should improve their technical skills and get familiar with the smart tool applications to meet these challenges and satisfy the needs of the Net Generation.

9- This study has dealt with a mixed sample of males and females and proved that smartphone applications are effective in teaching writing to all these subjects. Future research, however, needs to investigate the efficiency of such applications in teaching writing to each gender alone.

References:

– **Fattah,** S. (2015). The effect of designing a blended learning program for developing secondary school writing. PhD thesis, faculty of Education, Ain Shams University.

– **Amry, A.** (2014). The impact of WhatsApp on the achievement and attitudes of female students. European Scientific Journal, 10(22).

– **Anastopoulou, S., &** Wright, M. (2012). Creating personal meaning through technology-supported science across formal and informal settings. International Journal of Science Education, 34(2), 251-273.

– **Anderson.S.** (2006) "Modes of interaction in distance education: Recent developments and research questions"; Moore, M. G. &Anderson, W. G. (eds.), Handbook of Distance Education; Lawrence Erlbaum Associates, N. J.

– **Attewell, J.** (2005). Mobile technologies and learning. London: Learning and Skills Development Agency, 2 (4).

– **Banafi,N.**(2016) The Impact of Blended Learning on medical students' engagement and achievement with English language terminology .

– **Barhoumi, C. & Rossi, PG.** (2013). The effectiveness of the instruction oriented hypertext systems compared to direct instruction in e-learning environment. Contemporary Educational Technology, 4(4), 281-308.

– **Bere, A.** (2012). A comparative study of student experiences of ubiquitous learning via mobile devices, and learner management systems in a South African university. In 2012 Conference.

– **Berger, C.,**(2001). Wireless: Changing teaching and learning "Everywhere, Every time", Educes review, January/February, 2001, pp.58-59.

– **Brown, J.** (2011). Growing up: Digital: How the web changes work, education, and the ways people learn. Change: The Magazine of Higher Learning, 32 (2), 11-20

– **Brown, M**. (2011) Effects of graphic organizers on students' achievement in writing process. Online Submission to ERIC.

– **Browne, P**. (2015). Smart-phone and medical app use amongst Irish medical students: a survey of use and attitudes.

– **Chan, L.** (2005). Web CT revolutionized e-learning. UBC Reports, 51(7). http://news.ubc.ca/ubcreports/2005/05jul07/webct.html

– **Chen, L.** (2013). Improving teachers' teaching with communication technology. Journal of Educational Technology Systems, 40(1), 35-43.

– **Cheston, C**., & Chisholm, M. S. (2013). Social media use in medical education: a systematic review. Academic Medicine, 88(6), 893-901.Chicago

– **Chohan, S**. (2011). Any letter for me? Relationship between an elementary school letter writing program and students' attitudes, literacy achievement and friendship culture. Early Childhood Education 39(1) 39-50.

– **Comrie, C.** (2015). International student experience report. N/A.

– Echeverria, A., & Vasquez, A. (2011). Face-to-face collaborative learning supported by mobile phones. Interactive Learning Environments, 19(4), 351-363.

– **Gillingham, M.** G. & Topper, A. (1999). Technology in teacher preparation: Preparing teachers for the future. Journal of Technology & Teacher Education, 7(4), 303-321.

– **Graham, S.** (2006) Writing. In Alexander A. & P. Wine (Eds.) Handbook of Educational Psychology (pp. 457-477) Mahwah, NJ.

– **Graham, S. & Perin, D.** (2007) Writing next: Effective strategies to improve writing of adolescents in middle and high

schools; A Report to Carnegie Corporation of New York, Washington DC: Alliance for Excellence Education.

– **Jeong, W**. (2007). 'Instant messaging in on-site and online classes in higher education'. Educes Quarterly, vol. 1, 30-36.-392.

– **Johnston, M.** & Darzi, A. (2015). Smartphones let surgeons know WhatsApp: an analysis of communication in emergency surgical teams. The American Journal of Surgery, 209(1), 45-51.

– **Carpets, K.** (2003). Improving organizational skill through use of graphic organizers. MA Thesis. Saint Xavier University.

– **Kejdar, S**. (2005) Whole-class enquiry: Language Arts. Learning & Leading with Technology, 32 (8) 52-55.)

– **Lancaster, K**. (2013). An examination of using graphic organizers to teach writing: A case study. ELE 5900. Eastern Illinois University.

– **Markley**, D., & Jefferies, D.(2001) Guidelines for implementing a graphic organizer. The Reading Teacher, 54(4) 35-357

– **Marshy, M.** and Hemata-badi, S. (2011) Using teacher and student developed graphic organizers as a writing tool. Journal of Language and Translation (2) 79-88

– **Seagraves, R.** & Young L. (2005). The writing process: Three first grade teachers and their students reflect on what was learned. Reading Psychology. 26: 235-.

– **Miller, S. (2011**). Using graphic organizers to increase writing performance MA thesis

– . State University of New York at Fredonia.

– **O'Dowd, G. V.** (2008). Building a Medical Vocabulary: A Guide for Medical Students.

– **Omar, M. A.** (2014). An Investigation into the Reading Strategies of ESP Students in the College of Medical Sciences at Umm Al-Qura University. Umm Al-Qura University Journal of Languages and Literatures.

- **Omar, M. A**. (2016). Improving reading comprehension by using computer-based concept maps: A case study of ESP students at Umm-Alqura University. British Journal of Education, 3 (4), 1-20.

- **Parker, S.** (2013) The write way: graphic organizers and responses to literature writing. Unpublished MA thesis in Education. California State University, Sacramento.

- **Raiman, L.,** Ant -bring, R., & Mahmoud, A. (2016). WhatsApp messenger as a tool to supplement medical education for medical students on clinical attachment. BMC Medical Education, 17 (1),

- Ramble, P. & Chipunza, C.(2013). " Using mobile devices to leverage student access to collaboratively generated resources: A case of WhatsApp instant messaging at a South African university"..

- **Rich, S. & Hilbert,** K. (2004). Designing an online course for distance education course instructors and authors. Proceedings of the 20th Annual Conference on Distance Teaching and Learning. University of Wisconsin, Madison, Wisconsin, Aug 4-6, 2004.

- **Riyanto, A**. (July 2013). " English language Using WhatsApp Application". , Love for All, Hatred for None. Word Press, the Splendid Theme.

- **Rogers, J**. (2000). Communities of practice: A framework for fostering coherence in virtual learning communities. Educational Technology & Society, 3(3),

- **Scott, B. & Vitale, M.** (2003). Teaching the writing process to students with LD. Interventions in School and Clinic, 38(4), 220-226.

- **Selwyn, N.** (2012) 'Social media in higher education', The Europa world of learning.

- Serrate, K. (2012) Prewriting strategies and their effect on students' writing: htt://fisher pub.sjfc.edu/ education_.

– **Singh, H.,** (2003). "Leveraging Mobile and Wireless Internet", Retrieved 14, January 2005 from:

http://www.learningcircuits.com/2003/sep2003/singh.htm

– **Thorne, K.** (2003). Blended learning: How to integrate online and traditional learning, London: Kogan Page.

– **Ulbricht,** F., & Martens son, P. (2011) 'Special Issue on knowledge development and the Net generation'', International Journal of Socio-technology and Knowledge Development.

– **Unzueta, C**. (2011) .The use of computer graphic organizer for persuasive composition writing. PhD. Dissertation. Florida International University.

– **Willemse,** J. (2015). Undergraduate nurses reflections on WhatsApp use in improving Learning

– Williams, A., & Hancock, P. (2012). The impact of online lecture recordings on students' performance. Australasian Journal of Educational Technology, 28(2), 199-213.