Employing Reading and Writing Computer-Based Instruction in English as a Second Language in Elementary Schools

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Abstract

The emergence of technology has greatly contributed to the shift in teaching reading and writing in a second language. It has created more effective opportunities for second language learners to improve these skills. This study investigated how elementary school teachers in the United Arab Emirates use computers to teach ESL reading and writing. It also sought to explore the kinds of strategies that teachers use to encourage students to use technology for learning these two skills. The study involved 186 ESL elementary school teachers. In addition to the questionnaire, a focus group interview was conducted with selected teachers. Both quantitative and qualitative procedures were used to analyze the data. The overall findings revealed that technology might play crucial role in assisting students to learn reading and writing skills. Other significant results revealed that technology helped teachers in assigning extracurricular activities and communicating with students. Based on the study's results, a number of recommendations were drawn.

Keywords: Reading, Writing, Literacy, Computer, Technology

1. Introduction

Nowadays, in the booming of educational technology and the proliferation of software programs and materials, teachers and students are expected to develop their computer literacy and use technology for teaching and learning reading and writing. Thus, teachers have started to think of the effectiveness of technology and how it might support and enhance student learning. Teachers are the key figures in any changes, so it is very important to examine their perceptions and attitudes in order to offer them the appropriate assistance and guarantee the success of any innovation in education (Ertmer et al., 2010). Holding positive attitudes is very important for the integration of technology in teaching and learning literacy (Fang, 2010). Recently, the Ministry of Education and the Abu-Dhabi Educational Council in the United Arab Emirates (UAE) have taken a major initiative to introduce technology to assist teaching and learning in all schools all over the country. Integrating technology to promote effective teaching and learning is the focus of the current UAE's educational policy. Thus, In UAE schools, technology literacy is now a necessity for all teachers in all disciplines. Therefore, it is essential that all teachers understand its importance and how to integrate it in their everyday practice.

However, there are some challenges as well as exciting opportunities for ESL reading and writing teachers in this new age of computer-based reading and writing and electronic source texts. Succeeding in meeting these challenges and making the most use of available opportunities, teachers need to acquire a deeper understanding of what is expected of learners in regard to computer-based reading and writing activities (Hirvela, 2005). Hence, teachers should act as a role-model because their e-learning perceptions and e-learning behavior are critical for students' use of e-learning, such as using computers for instructional purposes (Mahdizadeh, Biemans, & Mulder, 2008; Albirini, 2006). Motivated by the limitations of studies in the integration of technology for teaching and learning literacy and in line with the current shift in using technology in UAE's schools, this study is intended to investigate how elementary school teachers use computers to teach reading and writing.

2. Literature Review

Recently, computers have become powerful tools and important resources in the area of literacy (reading and writing). Technology is found to enhance better teaching and learning environments. A number of researchers ascertain that utilizing computers in classrooms has shown to have a positive impact on educational outcomes, especially students' performance (Varvel& Thurston, 2002; Finn & Inman, 2004; Kiser and Craven, 2009). Technology offers ESL teachers with a tremendous assistance in teaching ESL reading and writing. The emergence and development of computers has influenced the ways in which ESL reading and writing are taught. The use of technology can enhance students' motivation and attitudes and assist them in improving reading and writing skills. The abundant resources on the World Wide Web have offered great assistance in teaching reading and writing in a second language. Hence, administrators and teacher educators in different parts of the word including the UAE have continuously offered assistance to ensure that teachers have the ability of integrating technology as an instructional tool (Alghazo, Alsawaie, and Al-Awidi, 2010; Zhao, 2003). However, the integration of technology as an instructional tool may challenge not only teachers' beliefs but also their attitudes. Teachers' perceptions of computer's relevance are perhaps affected by their previous technology experience. Teachers may feel uncomfortable with computers as a result of their lack of technology knowledge and skills and this might lead to a lack of confidence and anxiety when dealing with computers (Teo et al, 2009; Chen, 2008; Finley & Hartman, 2004; Asan, 2003).If teachers anticipate that they will not be able to achieve the desired outcomes of integrating technology due to constraints imposed by personal or contextual factors, they will be more likely to terminate their initiation or not even undertake it at all.

Perhaps, at the beginning, teachers might view the integration of technology into their teaching as a distractor which "consistently destabilizes the established routines of classroom life including norms of time and space" (Somekh, 2008, 452). Additionally, highly experienced teachers, who have been following certain procedures for a long time, might not appreciate the idea of introducing new elements into their classes, such as the integration of technology in their teaching. Thus, the practice of senior teachers may negatively influence the integration of instructional technology by novice teachers (Abbott & Faris, 2000; Hazzan, 2003). In a study in this line, Hazzan (2003) investigated new high school mathematics teachers' attitudes toward the use of instructional technology in their teaching. The findings indicated how the attitudes and perceptions of teachers, who have been in the profession for a long time, may discourage new teachers from integrating instructional technology in their classes.

In order to assist these teachers to change, we have first to consider their past knowledge, self-efficacy and pedagogical beliefs because all these elements appear to interact with the existing cultures (Ertmer & Ottenbreit-Leftwich, 2010; Lim, 2010). Providing opportunities for teachers to witness how the new practice benefits their students, might be one of the best approaches to convince them to accept the new change and put it into practice. The results of a relevant study by Ottenbreit-Leftwich (2007) asserted that when teachers witness the positive effect of technology on their students' performance, they become more encouraged to continue trying other types of technology in their classes. Despite all the negative factors, there is no doubt that teachers have continued to increase their personal and professional uses of computers (Ertmer & Ottenbreit-Leftwich, 2010; Van Braak, Tondeur, & Valcke, 2004). Evidence from the literature has shown that teachers continue to change their perceptions and attitudes toward technology integration. In a study within the UEA's context, Almekhlafi and Almeqdadi (2010) reported that male and female teachers have high positive perceptions of their competencies and abilities to use instructional technology in their teaching. Teachers confirmed that they continue to integrate technology in their classes despite the existing problems they continuously face.

Also, in a large scale study within the same context, Ismail, Almehklafi and Amekhlafy (2010) found that teachers' perceptions were associated with enthusiasm to introduce technology into their classes and to continue learning about it.

Researchers within the literacy area reiterate that teachers can no longer avoid the use of instructional technology to teach reading and writing. In their article about using technology to support expository reading and writing in science classes, Montelongo and Herter (2010) indicated that science teachers can no longer only depend on their textbooks to provide students with practice in reading and writing. Effective practices can be guaranteed when technology is integrated for teaching those two important skills. Reading, writing, and vocabulary represent the core skills for acquiring and learning all types of knowledge in all its forms (McKeown, Beck and Blake, 2009). However, it might be difficult to teach elementary school students to read and write expository texts in science.

In this regards, Montelongo and Herter (2010) highlighted the importance of using technology to expose students to a variety of expository texts. For example, they argued that the presentation of "the sentence completion task" by using technology can prepare the students for the technology booming era of the 21st century. The use of these exercises can even be made more interactive by placing them on an Internet webpage in order to enable the learners to play more active roles and get continuous feedback on the spot (Taylor et al. 2002).

Research conducted in different parts of the world showed different findings regarding the use of instructional technology in teaching literacy. In their paper about promoting academic literacy with technology, Warschauer et al. (2004) provided case studies of two schools in California that have successfully made use of high-technology environments. Their research effort was a collective one as it included researchers from outside the institutions and educators from within the sites in order to assist in identifying and documenting the exemplary practices. The researchers used standard qualitative methods, including observations, interviews, and collection of artifacts with an emphasis on digital documentation of best practices. It was found that both schools show dedication to effective use of technology to enhance students' literacy. The results of this practice were amazing as they demonstrate quality student products, learners' commitment and high standardized test scores. The reasons behind this success in both sites are related to the school-wide commitment to excellence and encouragement for promoting interactive classroom communities. Based on their results, the researchers argued that new technologies are extraordinarily valuable tools to facilitate the process of teaching and learning literacy. The use of computers can provide support for intensive and extensive reading and writing activities. In schools, technology is introduced as a powerful tool for assisting language students, including students with lower language proficiency to enhance their reading, writing and thinking skills, which may eventually contribute to academic literacy (Warschauer, 2003; Warschauer et al., 2004).

Stevenson Hackett (2009) investigated whether the use of computer can promote four year old students' emergent literacy skills. In this study, 198 pre-school students from California were included and they were divided into control and treatment group. Each child was allowed to use WERP-1 software for twelve minutes Per-day for five days a week. Results show that the use of WERP-1 software helped promote the early reading development of the treatment group. They found that the treatment group demonstrated more progress in letter recognition between the pre and mid-year assessments than did the control group. Specifically, progress was spotted in sound identification between the mid-year and final assessments in favor of the treatment group. Furthermore, the treatment group demonstrated more progress in their ability to copy symbols between the pre and post assessments than did the control group. However, statistically significant differences were not found between the two groups regarding to students' ability to write their names or identify colors.

In a study about computer-based reading and writing across the curriculum, Hirvela (2005), reported the results of two case studies of L2 writers. Two South Korean students, who came to study and probably work in the States, participated in the study. Data were collected in different ways, namely by interviews, log-in sheet to record all computer-based reading and writing work for their courses, accessing web-site to do course work, follow-up interview questions. The study reported the results of those undergraduate ESL students whose computer-mediated literacy activities varied considerably from course to course. Interestingly, the two students were found to possess primarily different preferences in terms of modes of expression (informal or formal), knowledge telling and knowledge transforming, different relationships with the computer as a tool for doing writing and reading assignments and disciplines' requirements for reading and writing. After highlighting those differences, Hirvela (2005) indicated that computers-related needs and writing cannot realistically be dealt with within the context of the ESL writing courses. Teachers from different disciplines need to take care of those needs in collaboration with ESL writing teachers.

In a study within the African Context, Dreyer and Nel (2003) investigated the effectiveness of the format and structure of a strategic reading instruction element of an English for Professional Purposes (EPP) course offered within a technology-based environment. They used a strategy questionnaire, a TOEFL test and two reading comprehension tests to gather data from all first year ESL students who were taking the EPP course. It was found that students who followed the strategic reading procedures with the rich-technology environment scored higher marks on three reading comprehension tests than their colleagues who did not receive the same treatment. The results of this study confirm that students may continuously benefit and improve their reading skills when they are exposed to a rich technology environment.

A number of researchers have also argued in favor of the use of technology and its potential in developing student language skills (Warschauer et al., 2004; Varvel & Thurston, 2002; Finn & Inman, 2004; Kiser &Craven, 2009).

3. Research Questions

1. How do teachers' experiences impact the use of computers in ESL reading instruction?
2. What is the effect of experience on teachers' employment of strategies to encourage students to use computers in ESL reading?
3. How do teachers' experiences impact the use of computers in ESL writing instruction?
4. What is the effect of experience on teachers' employment of strategies to encourage students to use computers in ESL writing?

4. Method

4.1 Participants

This study investigated the views of ESL teachers regarding the use of computers in teaching reading and writing in elementary schools. A hundred and eighty six male and female English teachers participated in the study. A total number of 119 females and 67 males responded to the questionnaire. Later, all subjects were classified into two groups. Group 1 included all teachers who have already taught ESL in elementary schools for five years or less and group 2 included those teachers with more than five years of experience in teaching the language. Most of the participants were from Al-Ain's elementary schools (103) as most of the questionnaires were distributed and collected by prospective English teachers, who were doing their teaching practice in these schools during the time of conducting the study. Only a selected number of teachers (21) participated in the focus group interview.

4.2 Instruments

Having searched the relevant literature, the researchers developed two main instruments for collecting the relevant data. These instruments included a questionnaire and a focus group interview. The questionnaire was constructed in the light of the research questions and objectives of the study. The four sections of the questionnaire were developed and organized in accordance with the nature and sequence of the four research questions. After developing its initial version, the questionnaire was reviewed and evaluated by a number of educators in the Faculty of Education in the UAE University. The questionnaire was pilot-tested with 18 teachers to unveil any problems or ambiguities and to enable the researchers to take the necessary measures for refining it. The initial draft included 54 items but later it was shorten into 39 items in accordance with the referees' comments and suggestions. The questionnaire used a five-point Liker scale extending from 5 (always) to 1 (never). Cranach Coefficient Alpha Formula was used to compute and ascertain the reliability of the questionnaire and the value was found to be 0.86.

Similarly, the focus group interview questions were developed by the researchers and given to a group of university educators to check if they are suitable to generate more information from a number of participants to support the data collected by the questionnaire. The final version only included six questions divided equally to elicit information about both reading and writing skills. The focus group interviews served to assist the researchers in consolidating what was obtained through the questionnaire.

4.3 Data Collection

This study adopted both qualitative and quantitative approaches. Data collection included both a questionnaire and a focus group interview. The questionnaire was administered to elicit relevant information to understand how ESL teachers utilize computers in teaching reading and writing. Follow up focus group interviews were conducted with a number of teachers to consolidate the data collected by the questionnaire. After distributing about 250 copies of the questionnaire, 186 copies were returned. Most of the returned questionnaires came from Al-Aim's elementary schools since many student teachers, who participated in the distribution and collection, were doing their training in that area. Later, a number of focus group interviews were conducted with a number of teachers (21) in five schools. The selection of those schools came as a result of selecting five student teachers to conduct the interviews. Those senior teacher trainees were offered a workshop about the process of conducting the interviews. A mock interview session was also conducted. Two of those focus group interviews were conducted by students with the help of one of the researchers. The researchers conducted the study and collected all the required data during the first semester of the school year, 2010-2011.

4.4 Data Analysis

Both quantitative and qualitative approaches were used to analyze the data collected by the two instruments. Data collected by the questionnaire were analyzed using SPSS 18.0 (the Statistical Package for Social Sciences) to obtain descriptive statistics and independent sample t-tests. The data collected via the focus group interviews were organized into themes. Later, the list of these themes was shorten by eliminating all those none recurrent patterns. Also, similar or semi-similar categories were put together to facilitate the process of analyzing only the necessary and relevant data to support the quantitative data obtained through the questionnaire. At the final stage, all teachers' responses were cumulatively analyzed for commonalities (Levin and Wad many, 2006). Following Creswell (2003) the interpretation of the quantitative five scale Liker questionnaire data was supported by the qualitative data obtained by the focus group interviews.

5. Results and Discussion

Table 1 presents A number of significant results of the 15 questionnaire items pertaining to the first research question that focused on the use of computers in teaching ESL reading in elementary schools*(How do teachers' experiences impact the use of computers in ESL reading instruction?)*. The overall mean scores for all items are 2.68 and 2.32 for group 1and group 2 respectively. This demonstrates clearly that there is no high overall mean score for both groups. The combined overall mean scores for the two groups range between 1.71 and 3.25. The t-test for the first items shows a statistically significant difference in favor of teachers with less than six years of teaching experience. Although the overall mean score (2.92) of the two groups is moderate, the significant difference between group 1 and group 2 shows how experience may influence teachers' attitudes toward the use of technology in teaching reading strategies. This difference might be attributed to the fact that newly graduated teachers are more enthusiastic to use computer as they had been exposed to the use of technology during their training. This result is similar to what Asan (2003) found in a study about technology awareness by elementary school teachers in Turkey. In her study she found that gender, years of teaching experience and school status play a significant role in either the use or none-use of computers in elementary schools. Her results also revealed that lack of hardware, lack of knowledge, lack of training or insufficient training opportunities and crowded classrooms represent those obstacles that hinder the use of computers by teachers. During the focus group interview a number of teachers asserted that technology is very important for their classes. A teacher indicated that: *"the presence of a computer is a must for me in every class. I feel sometimes I will not be able to teach my lesson and achieve my objectives if I don't use it in my presentation"*. The recurrent themes of the qualitative data were also in favor of group 1 as more teachers use computers in their teaching.

The result of item 3shows that newly recruited teachers use computers more than experienced teachers in giving feedback to students about their progress in reading. Another significant result (item5) indicates that teachers in group 1 prefer to teach reading as an individual activity. Nonetheless, teachers with more than five years of teaching experience prefer to teach reading as a whole class activity. A teacher with many years of experience said: *"using computers can help me, but I do not have time to arrange for my class to be held in the computer-lab. Also, following students while they are reading from the screen is very difficult and that needs time. Teaching the whole class together can save time and help me teach reading skills"*. This result might be attributed to teachers' experience, education and attitudes. The first group might have been exposed to reading as an individual activity when they were students and this is why they have developed a positive attitude toward this particular strategy. This result is supported by some teachers' claim about reading classes: *"we only enjoyed reading classes in the university when our teachers used computers and let us do exercises on computers. A computer makes reading easier"*. The above result is in accordance with one of the results of Bataineh and Baniabdelrahman (2006) about Jordanian EFL students' perceptions of their computer literacy.

This result demonstrated a significant impact for years of study experience on students' perceptions of their computer literacy. Experience can play a crucial role in students' and teachers' beliefs, attitudes and actual use of technology. Baek, Jung and Kim (2008) also found that experience can impact teachers' decision for using technology. Specifically, experienced teachers were found to use computers in response to external factors while teachers with limited experience chose to use technology voluntarily. All these results support the present study's findings which highlight that teachers with many years of experience try to avoid using computers in their teaching. Evidence for these results is also highlighted by the qualitative data. More teachers from group1 were found to be more positive about the use of computers in teaching reading.

Table 1. Computer-based reading instruction in a second language

Variables	*Overall-Mean*	*Group1 Mean*	*Group2 Mean*	*T-Test*
teach reading strategies in a second language	2.92	3.16	2.6	2.5*
utilize special computer software for teaching reading in a second language.	2.40	2.5	2.2	1.3
give feedback about students' progress in reading	2.61	2.9	2.2	3.3**
check students' reading assignments electronically	1.71	1.8	1.6	1.4
teach reading as an individual activity	2.59	2.8	2.3	2.2*
teach reading as a whole class activity	3.05	3.2	2.9	1.2
attract students' attention during reading classes	3.25	3.4	3.0	1.8
utilize games to improve students' reading skills	3.02	3.3	2.7	2.5*
help students become aware of the reading strategies they use	2.73	2.9	2.5	1.5
utilize E-books for teaching reading	2.09	2.2	2.0	0.8
utilize audio-books to help students improve their skills in reading aloud	2.12	2.3	2.0	1.4
utilize web sites to help improve students' reading skills	2.34	2.3	2.4	-0.6
assign different reading assignments according to students' language proficiency level	2.52	2.7	2.3	1.7
enhance more innovative teaching methods of reading	2.86	3.0	2.7	1.0
suggest extracurricular reading activities	2.63	2.7	2.4	1.4
Overall-mean	2.50	2.68	2.32	2.19

*Note. *p< 0.05   (Group1= teachers with less than 6 years of experience) (Group2= teachers with more than 6 years of experience)*

Table 2 shows results relevant to research question 2 *(What is the effect of experience on teachers' employment of strategies to encourage students to use computers in ESL reading?)*. The results of all items demonstrate no statistically significant differences between the two groups. The overall mean scores for both groups range between 1.31 and 2.15. The low overall mean scores and the t-tests indicate that both groups are not keen on encouraging students to use computer based-reading activities. The lack of this practice might be attributed to the unavailability of technology in schools in general and in each classroom in particular. In addition, young children in elementary school might not be able to use technology efficiently on their own or they might not have access to computers inside and outside the schools. It might also be due to time constraints during English classes. The attitudes of teachers might also play a crucial role in the absence of this practice. A female teacher stated: *"I know how to use a computer and I would love to use it, but I know the majority of my small students either don't have access to computers or they don't know how to use them. This is why I don't tend to waste time in using computers"*.

All the overall mean scores are less than 2 except the ones for items 2 and 5. The mean scores for item 2 (2.15) demonstrate that some teachers in both groups assign electronic reading homework and encourage students to use computer for doing their assignments. The results of item 5 also reveal that teachers in both groups assign extensive reading activities to be done by using computers outside the classroom. During an interview session a teacher asserted that computers help her assign extracurricular activities, *"I first ask my students if they have computers and Internet at home and then I assign reading tasks to be done at home, such as reading a short story. Computers help me assist my students to acquire and improve their reading strategies"*. Evidence can also be found in the results of the qualitative data, which reveal that almost the same number of teachers from both groups encouraged students to use computers. This highlights teachers' belief that computers should be made as an integral part of the entire curriculum. This is in line with what Pearson et al. (2005) concluded, "We believe the time has come to take technology more seriously as a component of middle-school literacy curriculum and pedagogy" (24). Li (2006) also argued that computer-based tasks can heavily impact the final product of students who should be always encouraged to do their work on computers.

Table 2. Encouraging students to use computer based-reading activities

	Overall-Mean	Group1 Mean	Group2 Mean	*T-Test*
do reading exercises in computer labs.	1.79	1.8	1.8	0.1
do their reading homework.	2.15	2.1	2.2	-0.2
read E-books in English.	1.96	1.9	2.0	-0.4
do online reading exercises.	1.80	1.8	1.9	-0.8
do extensive reading outside the classroom.	2.04	2.1	1.9	1.0
utilize electronic dictionaries while reading.	1.61	1.6	1.6	0.2
send their reading homework electronically.	1.31	1.3	1.3	0.2
Overall-mean	1.795	1.79	1.80	-.05

To answer research question 3 *(How do teachers' experiences impact the use of computers in ESL writing instruction?)*, results demonstrate that teachers in both groups use computers in a limited way to teach writing. The overall mean scores for both groups are very low as they range from 1.45 to 2.79 (see table 3). The t-tests demonstrate a couple of statistically significant differences in favor of the first group. The t-test for item 5 shows a statistically significant difference between the two groups. This result highlights the positive attitudes of group 1 toward the use of computers in sending feedback about writing assignments and/or communicating with students. This result may be explained in relation to a numbers of factors, such as previous training, attitudes toward technology, time constraints, access to facilities and computer literacy. Some teachers indicated during the focus group interviews that students need to use computers to write and reduce the use of a pencil/pen. One of the teachers highlighted the importance of using computers by saying: *"our students need to use computers to do their writing work because it is important for them. In the university they will need to do that, but I always teach my students handwriting and spelling"*. A similar result was found in Ihmeideh's (2010) study about preschool teachers' beliefs and practices regarding the use of computers in teaching reading and writing in Jordan. The finding demonstrated that there is a statistically significant correlation between teachers' beliefs and their perceptions of their practices. It means that preschool teachers' beliefs about the use of computers heavily depend on their perceptions of their teaching practice and/or experience.

Another significant result for item 7 shows that teachers with limited teaching experience use computers more than experienced teachers to attract students' attention and make the class a pleasant environment for learning. The analysis of the qualitative data also reveals that more teachers from group1 use computers for teaching writing. A teacher stated: *"When I was at the university, I used to put my laptop in my handbag and use it even to take class-notes"*. Another teacher followed on that by saying: *"I used computers when I was at the university, but here in this school you may waste time when arranging to use computers because you don't have computers for every student in the class and children don't have laptops like students in universities"*. Again, adopting this strategy for teaching writing might be influenced by those teachers' past experience when they were students learning the same skill. Their initial training for the profession might also contribute to their confidence in using computers to make the teaching and learning of writing a pleasant experience for children. In their study on what might influence Korean teachers to use technology, Baek, Jung and Kim (2008) found that there are a number of factors that can affect teachers' decision to utilize technology, such as responding to external requests and others' expectations. They argued that teaching experience has great influence on teachers' decision to use technology. One of their interesting results reveals that experienced teachers decide to use technology not to support teaching and learning but they decide to use computers in response to external factors. Teachers with little experience, on the other hand, were found to use technology voluntarily on their own will.

A further significant difference is highlighted by the t-test for item 8. Similarly, the difference in using computers for extra-curricular activity is in favor of group 1. This result demonstrates that newly graduated teachers are more likely to suggest extra-curricular computer-based writing activities. The use of this strategy by those teachers may reflect their awareness about students' future needs to use computers for writing different assignments. Again, this result is identical to the one found by Baek, Jung and Kim (2008) about the use of technology by teachers with limited experience. They found that those teachers with a few years of experience were willing to use computers as a result of appreciating its impact on instructional and learning outcomes.

Table 3. Computer-based writing instruction in a second language

Variables	Overall-Mean	Group1 *Mean*	Group2 *Mean*	*T-Test*
teach writing strategies in a second language	2.60	2.6	2.6	0.4
utilize special computer software for teaching writing	2.03	2.1	2.0	0.5
give feedback about students' progress in writing	2.39	2.6	2.1	1.9
check students' writing assignments electronically	1.45	1.5	1.3	1.5
send feedback and/or communicate with students about their writing assignments	1.94	2.2	1.6	2.8**
assign different writing assignments according to students' language proficiency level	2.21	2.4	1.8	1.9
attract students' attention during writing classes	2.79	3.1	2.3	3.3**
suggest extracurricular writing activities	2.48	2.7	2.1	2.4*
enhance more innovative teaching methods of writing	2.52	2.7	2.3	1.8
Overall-mean	2.21	2.42	1.99	2.48

In table 4, the t-tests for all items of question 4 *(What is the effect of experience on teachers' employment of strategies to encourage students to use computers in ESL writing?)* demonstrate no statistically significant differences between the two groups' results. The overall individual items mean scores range from 1.36 to 2.19. The low mean scores in table 4 demonstrate that many teachers in both groups possess negative attitudes toward the strategy of encouraging students to use computers for doing writing activities. Assigning less computer-based writing tasks might be influenced by teachers' beliefs that using a pencil/pen can make writers feel that they have accomplished something. It might be also because those teachers learned to write by using a pen/pencil and they believe that their students can learn to write by using the same strategy. A teacher highlighted the importance of handwriting and spelling by saying: *"we all learned to write by using our hand. I don't believe that my students will learn to write quickly if I don't first teach them how to hold and control a pencil when they write. I also want to teach them the correct spelling and they will learn that when they write"*. Another teacher interrupted her and said: *"But I use computers to teach my students to write letters and also the pronunciation of those letters. There are many electronic exercises for spelling and I sometimes use them with my students"*. Limited access to computers and time constraints might have negatively contributed to the negligence of integrating computers in teaching writing.

The mean scores for all items are less than two except the one for item 3. The mean scores for item 3 are 2.21 and 2.14 for the first and second group respectively. This result indicates that some teachers in both groups assign electronic homework and encourage students to use computers outside the classroom. The analysis of the qualitative data also provides evidence that teachers in both groups ask students to use computers to do certain writing tasks. During an interview, some teachers asserted that it is very important for students in elementary schools to learn to do their homework by using computers. One of those teachers emphasized the importance of involving parents in assisting children to use computers by saying: *"When I give electronic homework I assume that parents will become aware that their children need to learn to use computers at home. I know that many of my students can't use computers but I think their parents will help them doing their homework"*.

In an article about using technology to support expository reading and writing in science classes, Montelongo and Herter (2010) argued that the use of computers can enhance better comprehension of reading texts and it can assist in elaborating writing in science classes by motivating students to access resources curiously and improve their final products. They concluded that technology obligates teachers to encourage students to take responsibility for their learning. In a similar study, Li (2006) highlighted the influence of word processing on the writing of ESL students and on writing assessment as well. It was found that student writers paid more attention to higher order thinking activities while reviewing their written work using computers. It was asserted that they did more careful revision on the computer and thus their computer-generated essays received higher scores than the hand-written ones. This result suggests that teachers should reconsider the impact of computers on students' written work. It also emphasizes the necessity of encouraging students to use computers to write their assignments.

Table 4. Encouraging students to use computer based- writing activities

Variables	*Overall-Mean*	Group1 *Mean*	Group2 *Mean*	*T-Test*
do writing exercises in computer labs	1.66	1.66	1.65	0.1
use word processing to write, revise and edit their work	1.97	1.95	1.96	-0.1
do their writing homework	2.19	2.21	2.14	0.3
use the electronic spell checker	1.78	1.67	1.95	-1.3
do online writing exercises	1.65	1.67	1.60	0.2
work cooperatively when doing computer-based exercises	1.78	1.79	1.75	0.2
use electronic dictionaries while writing	1.66	1.67	1.65	0.1
send their writing homework electronically	1.36	1.44	1.23	1.8
Overall-mean	1.745	1.75	1.74	.11

6. Conclusion

This study looked at the ways in which computers were utilized for teaching ESL reading and writing in elementary schools. It also investigated the strategies employed by teachers with different experiences to encourage students to use computers in learning ESL reading and writing. It used a combination of quantitative and qualitative procedures to collect the required data to answer the four research questions, namely a questionnaire and a focus group interview. The key results in general highlighted how computers were used to assist the teaching and learning of reading and writing in a second language. Some significant results together with the qualitative findings from the focus group interviews revealed that computers might facilitate elementary school teachers' work especially in assigning extracurricular activities and communicating with students. Other interesting results also highlighted the importance and instructional benefits of using computers by students. Although this research paper has contributed to understand how computers were utilized for teaching and learning reading and writing in a second language, further studies are still needed to examine how technology may be used effectively in teaching and learning ESL literacy. Studies might look at the efficient use of computers in improving the ways in which students learn to read and write.

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