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Integrating Technologically-Enhanced Self-Regulated Strategies into Writing English as a Foreign Language Classes

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ABSTRACT

This study aims to investigate the influence of technologically-enhanced (i.e., NetSupport School) self-regulated strategies (i.e., wrapper activity, think aloud and reciprocal teaching) on learners' achievement in the writing section of the TOEFL iBT (TOEFL Internet-based Test) and to explore the change in learners' self-regulated learning skill levels as a result of the technologically-enhanced self-regulated strategies training. Thirty-nine TOEFL iBT candidates who were studying TOEFL iBT writing preparation course were chosen as the participants of the study. The research design of this study is based on intervention in which pretests and posttests were administered before and after the technologically-enhanced self-regulated strategies training. Also, the Online Self-regulated Learning Questionnaire (OSLQ) was used to assess the effect of the intervention on students' self-regulated learning skill levels. Based on the data obtained, it was found that students' scores in the TOEFL iBT Writing Task and their self-regulated learning skills considerably improved as a result of the technologically-enhanced self-regulated strategies training.

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Keywords:
Self-regulated learning, technology-enhanced instruction.

Introduction

As the educational paradigm of the *21st Century* suggests, the learner should be at the heart of the learning and teaching process in any instructional contexts of any educational fields (Jacobs, 2010; Steffens, 2007). The need to enable learners to become autonomous and to approach the learning process as a meaningful, constructive and life-long learning process is also highlighted in the new legislations presented in the Declaration of Bologna (González & Wagenaar, 2003). Similarly, the importance of learner-centeredness and learning how to learn a foreign language is given utmost attention by researchers in the field of language teaching. For instance, it is argued that there is a need for more emphasis on the role of learners rather than the traditional teacher-centered external stimuli learners are exposed to in their environment (Nunan, 1988; Tudor, 1996; Jacobs & Farrell, 2001; Banks, 2000; Sumie, 2001).

The world of English language teaching (ELT) necessitates a move from teacher-centeredness to learner-centeredness enabling learners to participate and negotiate actively in meaningful interactions so that they can interpret and construct meaning by themselves (Breen & Candlin, 1980). Likewise, the Common European Framework (2001), the guideline used to describe achievements of foreign language learners in Europe and in many other countries, underlines the importance of a foreign language learning pedagogy in which learners take the responsibility of their own language learning process. The learner-centered approach also believed to pave the way for learner autonomy (Cotteral, 2000) led many researchers

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to think of ways to teach learners how to become autonomous language learners responsible for their own learning actions by means of *learner training* defined by Tudor (1996, p. 37) as follows:

Learner training could be defined as the process by which learners are helped to deepen their understanding of the nature of language learning, and to acquire the knowledge and skills they need in order to pursue their learning goals in an informed and self directive manner.

In the same vein, the concept of language learning strategies emerged in 1990s as "behaviors or actions which learners use to make language learning more successful, self-directed, and enjoyable" (Oxford, 1989, p. 235). These strategies can be grouped under three main categories as cognitive, metacognitive and socio-affective strategies (O'Malley et al., 1985). However, Dörnyei (2005) suggests that the term *language learning strategies* should replaced by the term *self-regulation* on account of the difficulty in envisaging these strategies and what they contain. From his perspective, although self-regulation is considered to be synonymous with strategy, it is different in that self-regulation in the instructional contexts is a "multidimensional construct, including cognitive, meta-cognitive, motivational, behavioral, and environmental processes that learners can apply to enhance academic achievement" (p.191).

Self-regulated learning has recently gained a lot of attention in foreign language education in such a way that there is a tendency among researchers to contemplate that learners who are able to undertake the responsibility of their own learning process are more likely to become autonomous, and thus successful language learners (Hauck, 2005). Embodying vital constructs, such as genuine and autonomous learning (Bronson, 2000), self-regulated learning is described by Pintrich (2000, p. 453) as "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and contextual features of the environment". Zeidner, Boekaerts and Pintrich (2000) claim that self-regulation incorporates motivational, behavioral, affective and cognitive dimensions offering learners opportunities to adjust their actions and goals to achieve the desired outcomes in light of changing environmental situations and conditions. Self-regulated learning regarded by Paris and Winograd (2001) as a type of learning enabling learners to describe how they handle problems, use strategies, analyze their progress and construct meaning based on the results of their efforts is considered as a very important goal to achieve by language teachers (Healey, 2002).

As a result, it would be fair to suggest that language learners should be taught how to be self-regulated. There have been many studies proving that self-regulated learning can be taught and improved by pedagogical interventions (Schunk, 2005; Ching, 2002; Rozendaal, Minnaert, & Boekaerts, 2005; Perels et al., 2005), and one of the mostly preferred way of training language learners to improve their self-regulated learning skills is technology-enhanced language learning environments such as ePortfolios, blogs, Wikis, virtual environments, personal learning environments and Web 2.0 (Bartolomé & Steffens, 2011). As there have been several studies providing evidence for the positive effects of technology enhanced learning on self-regulated learning skills (Chang, 2007; Lynch & Dembo, 2004; McManus, 2000), the current study has the major objective to investigate the influence of technologically-enhanced (i.e., NetSupport School) self-regulated strategies (i.e., Wrapper Activity, Think aloud and Reciprocal teaching) on learners' achievement in the writing section of the TOEFL IBT exam and to explore the change in learners' self-regulated learning skill levels as a result of the technologically-enhanced self-regulated strategies training.

Self-Regulated Learners

To achieve foreign language learning goals, language learners must set their goals, plan and monitor their learning process, choose and apply their learning strategies and assess their learning outcomes; in other words, they are expected to become self-regulated learners (Yigzaw & Fentie, 2013; Afflerbach et al., 2008). Referring to the definitions in the introduction part, characteristics of self-regulated language learners are explained by Zimmerman (1990, p. 4) as follows:

> ... approach educational tasks with confidence, diligence, and resourcefulness. They are aware of when they do or do not know something. They seek out information when

needed and follow the necessary steps to master it. When they encounter obstacles such as poor study conditions, confusing teachers, or abstruse text books they find a way to succeed.

As also claimed by Zimmerman and Schunk (2008), when compared to poor self-regulators, good self-regulators can set better learning goals, apply more effective learning strategies, create a more productive learning atmosphere, do not hesitate to seek assistance when needed, spend more learning effort, adapt strategies better, and can set new goals when the existing ones are successfully achieved. Self-regulated learners can also focus on the lessons more effectively as they are self-motivated and are capable of reasonably coping with negative emotional experiences (Miltiadou & Savenye, 2003). Besides, these learners are believed to be life-long learners (Zimmerman, 2002; Wirth & Leutner, 2008) and to have a higher level of motivation (Ley & Young, 1998; Chung, 2000). Having self-satisfied beliefs is another characteristics held by self-regulated learners (Camahalan, 2006; Cleary & Zimmerman, 2004). Furthermore, they can also relate new information to their existing information and arrange the presented material, and thus can organize their own learning process (Bland, 2005). As similarly argued by Ertmer & Newby (1996), such learners have the awareness of the skills and knowledge they have or are lack of and can apply suitable strategies to learn what they are in need of learning. As a result of all these characteristics, the academic achievements of self-regulated learners are generally found to be higher than those who are not self-regulated enough (Lan, 1996; Ley & Young, 1998; Cross & Paris 1988; Zimmerman & Schunk, 2001). On the contrary, unless learners know how and when to use self-regulatory strategies effectively, they may fail or feel anxious in the learning process (Fulk & Brigham, 1998; Kurman, 2006). Therefore, it is advisable that learners should be familiarized with the idea of self-regulated learning and should be oriented towards self-regulation. For the pre-mentioned reasons, learners should be trained by means of self-regulated learning strategies that are discussed in the following part of the study.

Self-regulated Learning Strategies Taught in This Study

There are various self-regulated learning strategies including self-assessment, mind-mapping, wrapper activity, think aloud, questioning and reciprocal teaching (Joseph, 2010). Considering the context and the purpose of the study, the strategies used in the current study are *wrapper activity* involving self-assessment questions to complete before and after the completion of a task or an assignment (Laskey & Hetzel, 2010), *think aloud* requiring the teacher to describe his/her thought process while solving a problem and r*eciprocal teaching* which necessities the learner to teach the new material to his/her classmates (Joseph, 2010).

In this study, these strategies are incorporated into NetSupport School, a technologically-enhanced language learning environment. As supported in the literature (Schunk & Zimmerman, 1998; Steffens, 2006; Beishuizen et al., 2007; Chang, 2007; Winters et al., 2008), a self-regulated learning atmosphere can best be created through the use of technologically-enhanced language learning environments. As nicely stated by Schunk and Zimmerman (1998), "an area that lends itself well to self-regulation is *distance learning*, where instruction originates at one site and is transmitted to students at distant sites" (p. 231-232). Another term recently appeared as a result of the influence of internet and computers on ELT is technologically-enhanced learning. According to the report published by TEL Committee, University of Texas (2004, p. 6), "Technology enhanced learning leverages technology to maximize learning within an environment of sound course design that can offer students the options of time, place, and pace and emphasizes different learning styles." Because of being portable, socially interactive, immediate and multimodal, technologically-enhanced learning has recently started to have an impact on the field of foreign language education (Warschauer, 2001). This learning pedagogy is known to be used by teachers to provide more visually stimulating course material, to address a wider variety of learning styles, incorporate authentic materials found on the internet, promote on-line communication in the target language, encourage cultural comparisons and provide learners with more opportunities to achieve success in foreign language writing, reading, speaking and listening skills (Ghasemi, Hashemi, & Bardine, 2011). In addition, it was highlighted that technologically-enhanced language learning motivates learners (Gallego, 1992) and helps them to have a good command of basic language skills (Taylor, 2006). Another reason why an online platform was used during the self-regulated strategy training in the present study is that technology is believed to motivate learners, support life-long learning and increase flexibility (Salaberry, 2001).

As pointed out by Bartolomé & Steffens (2011), there are many technologically-enhanced language learning environments that can be used to teach language learners self-regulated learning skills such as ePortfolios, blogs, Wikis, virtual environments, personal learning environments and Web 2.0. Among these, ePortfolios have the capacity to register and save learners' activities and products as well as the teachers' feedback, blogs are used as personal diaries while Wikis can be applied to provide feedback about students' work. In addition, virtual environments such as Second life can be effectively used to teach self-regulated learning strategies (Aydın, 2013), and the Personal Learning Environments in which learners create their own working space are regarded as helpful when it comes to self-regulated strategy training. The NetSupport School used as the online platform in the current study is explained on the official website of this software as follows:

> NetSupport School is the class-leading classroom software solution, providing teachers with the ability to instruct and visually/audibly monitor, as well as interact with their students, individually, as a pre-defined group or to the whole class. Rising to the challenge and requirements of today's modern classroom NetSupport School provides the ability to deliver lesson content, simultaneously monitor all student PCs and work collaboratively, ensuring that complete student attention and focus is maintained at all times. There are no hidden extras, all features are included as standard including a customised testing suite, dedicated technician console, digital student revision aids, lesson planning tools and the option for teachers to reward students for good effort.

According to Bartolomé and Steffens (2011), in any of the online platforms used to teach self-regulated learning skills, learners should be encouraged to plan their own learning activities by also helping them to plan and manage their time. Besides, they should receive appropriate feedback from the learning environment regarding their activities they are involved in so that they can monitor their learning progress. Finally, to evaluate their own learning outcomes, learners should be given criteria and an evaluation space including the recordings of results. By paying attention to these suggestions made Bartolomé & Steffens (2011), the NetSupport School was used in this study as the online environment where the *wrapper activity*, *think aloud* and r*eciprocal teaching* self-regulated language learning strategies are introduced to a group of TOEFL iBT students in their writing classes. The reason why writing was focused in the study is that as maintained by several researchers (Graham & Harris, 1997; Grabe & Kaplan, 1996), it is necessary to incorporate self-regulatory strategies into writing classes. Also, as found by many researchers (Chamot & Kupper, 1989; De La Paz & Graham, 2002; Helsel & Greenberg, 2007), strategy training was found to yield positive effects on students' writing skills.

Research Questions and Hypotheses

The positive relationship between self regulation and academic performance has been proven in math education, primary education and science education; still, studies dealing with the relationship between self-regulation and the achievement in learning English as a Foreign Language (EFL) among university-level language learners are very negligible (İnan, 2013). Thus, aiming to incorporate self-regulated learning into a technologically-enhanced learning environment, the study is expected to fill the gap in the literature. In line with the purpose of the study, the following research questions are formulated:

1. What is the effect of technologically-enhanced, i.e., NetSupport School, self-regulated strategies, i.e., Wrapper Activity, Think aloud, Reciprocal Teaching, on EFL learners' writing skills in TOEFL IBT?
2. What is the effect of technologically-enhanced, i.e., NetSupport School, self-regulated strategies, i.e., Wrapper Activity, Think aloud, Reciprocal Teaching, on EFL learners' self-regulated learning skill levels?

Based on the above-mentioned research questions, the following null hypotheses were developed:

1. Technologically-enhanced self-regulated strategies do not have any statistically significant impact on EFL learners' writing skills in TOEFL iBT.

2. Technologically-enhanced self-regulated strategies do not have any statistically significant impact on EFL learners' self-regulated learning skill levels.

Method

Generally, studies aiming to reveal the influence of technology on learners' learning process are designed in the form of experimental studies comparing the control group receiving traditional instruction while the experimental group is subjected to technologically enhanced language learning intervention (Tamim, Bernard, Borokhovski, Abrami, & Schmid 2011; Chapelle & Jamieson, 1989). Thus, the research design of this study is based on intervention in which a certain method or treatment is expected to influence one or more outcomes (Fraenkel & Wallen, 2003). A pretest writing task was given before the treatment and a posttest writing task was applied following the treatment to be able to evaluate the influence of self-regulated strategies such as Wrapper Activity, Think aloud, Reciprocal Teaching integrated into the writing classes offered in NetSupport School to prepare students for the TOEFL IBT exam. Moreover, the Online Self-regulated Learning Questionnaire (OSLQ) developed by Barnard et al. (2009) was used to assess the effect of the treatment on students' self-regulated learning skill levels before and after the training. Data collected by means of OSLQ as well as pre and post tests combined multiple data collection methodologies, and thus the triangulation of the research design was achieved (Denzin, 1978) to find clearer answers to the research problems (Creswell & Plano Clark, 2011).

This research was carried out with 39 TOEFL iBT candidates participated in the present study. Participants were selected from TOEFL iBT candidates who were preparing themselves for the TOEFL iBT exam at an Institute of Higher Education. All participants were selected based on the score obtained in the placement test held as the entrance placement test by the institute. The age range of participants was between 19 and 26 years old.

Procedures

As for the present study, three types of self-regulated tasks, namely *wrapper activity, self-assessment and reciprocal teaching*, were selected. At the beginning of the study, all TOEFL iBT candidates, who were studying TOEFL iBT writing preparation course, were invited to participate in an introduction meeting through which the NetSchool Support software was introduced and an instructive session on how to use it was held. Based on the curriculum designed by the institute, ten sessions of 90 minutes were considered for TOEFL iBT writing task (I) preparation course. In the first session, a mock test of TOEFL iBT writing task (I), as run by Longman TOEFL iBT software, was given to all participants. Additionally, students were given the Online Self-regulated Learning Questionnaire (OSLQ).

Based on the principles of self-assessment task, the teacher set three goals for the participants while he was teaching the course materials. As the first goal, he asked the students to write an introduction paragraph as the first paragraph of the essay based on the pattern given by him. Students assumed responsibility for the setting of their learning goals and also for monitoring of those targets. In sessions 2 and 3, participants were supposed to work on writing an introduction paragraph and evaluate themselves based on the criteria given by teacher through self-assessment section of NetSchool support software (fig. 1).

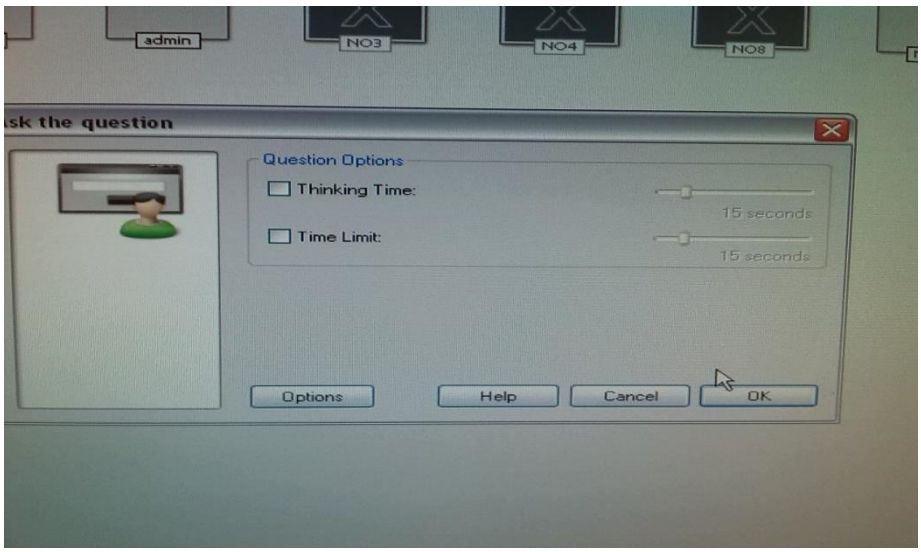


Figure 1. Ask the question section of netschool support software

The same procedure was followed for writing Body paragraphs and Conclusion paragraph as needed for developing a complete essay over sessions 3 to 10. Regarding the wrapper activity, the teacher gave assignments to the students at the end of each session and asked them to complete their homework and send them to him through email. Also, some self-assessment questions were assigned to be completed before and after doing the homework. Concerning the last type of self-regulated task used in the current study, i.e. reciprocal teaching, the teacher asked three of the students who were superior to others to use NetSchool support software to teach new materials to the fellow students. They did so by means of NetSchool support software (Figs. 2 & 3).

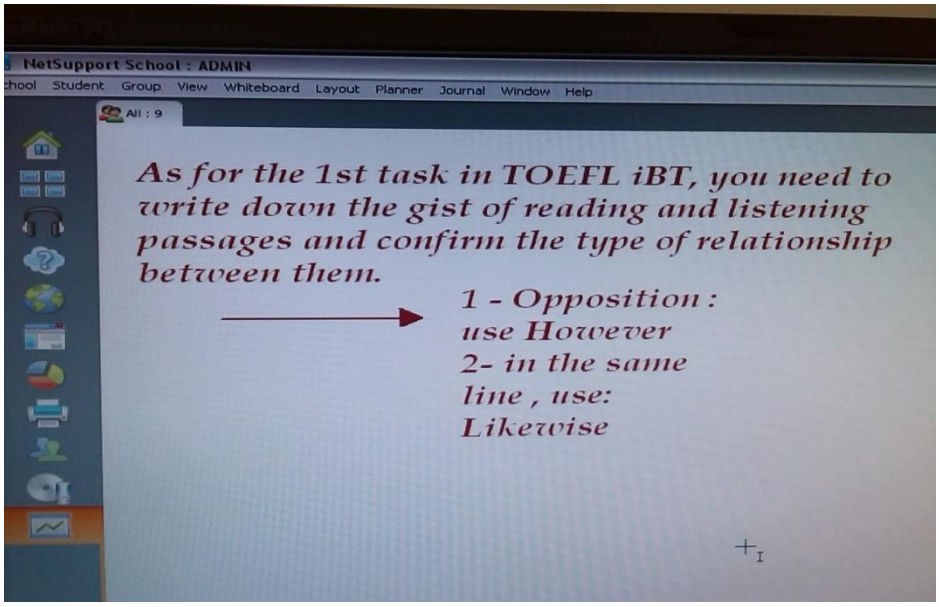


Figure 2. Teaching TOEFL iBT task 1

Some of the low-ability learners expressed their happiness since through using the software, they were not exposed to the fear of being laughed at. All three sections of the course, i.e. writing an introduction paragraph, writing body paragraphs and writing a conclusion paragraph, were taught using the above-mentioned self-regulated tasks. Finally, all participants were asked to take a posttest, which was identical to the pretest. Moreover, the Online Self-regulated Learning Questionnaire (OSLQ) was regiven at the end to see how much the level of self-regulation has changed from its first administration.

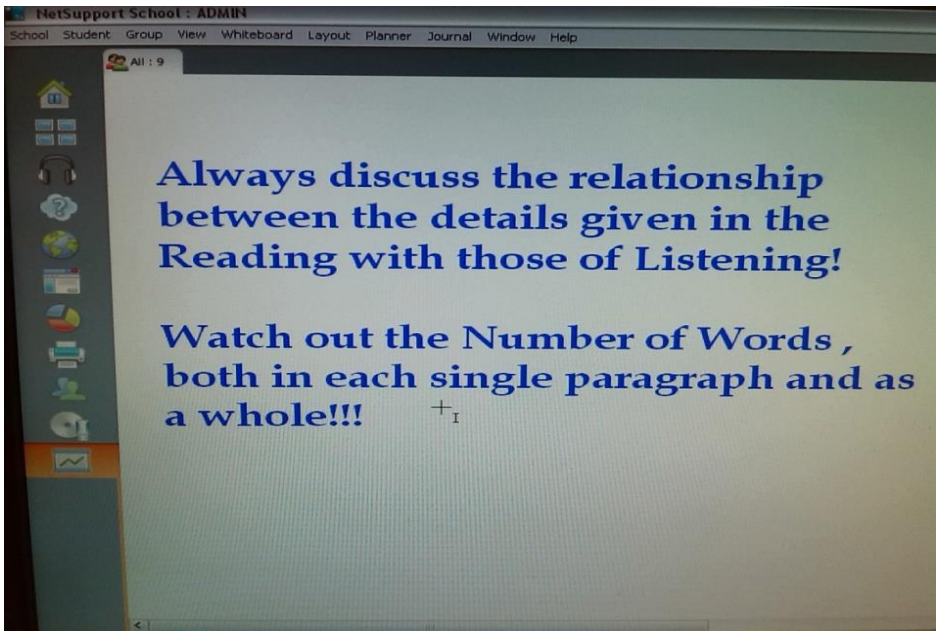


Figure 3. Teaching TOEFL iBT task 1

Data Analysis

The first hypothesis of the present study reads that technologically-enhanced self-regulated strategies do not have any statistically significant impact on EFL learners' writing skills in TOEFL iBT. The results of gain score and independent sample t-test for experimental group are as follow:

Table 1. Descriptive statistics for gain scores of TOEFL iBT writing task (I)

	group_main	N	Mean	Std. Deviation
Gain Score	Pretest	39	13.45	21.13492
	Posttest	39	27.51	22.15576

Table 1 shows the descriptive statistics for gain score in pretest and posttest. As can be seen, the mean score of TOEFL iBT Writing Task (I) in pretest was 13.45 while it increased to 27.51 in posttest. The data were analyzed using gain score procedure. The independent samples t test, run to compare the gain scores in TOEFL iBT Writing Task (I), was found significant, t (68) = 71.73, p= .00001, Eta squared = .12 which is a large effect. The difference between the mean of TOEFL iBT Writing Task (I) from pretest to posttest was statistically significant, t (68) = 71.72, p= .00001, with a quite large effect size (Eta squared = .23). This means that the null hypothesis is rejected and participants' scores improved significantly from pretest to posttest.

The first hypothesis of the present study was tested using SPANOVA as well. In order to answer the first research question more accurately, a mixed between-within-subjects analysis of variance, also called SPANOVA, was performed across two time periods (pretest, and posttest). There was a significant interaction between Time and Group, Wilks' Lambda = .61, F (3, 61) = 27.37, p < .0001, partial eta squared = .42. There was also a substantial main effect for Time, Wilks' Lambda = .21, F (2, 56) = 131.63, p < .0001, partial eta squared = .64. The main effect for Group was found statistically significant, F (23,153) = 43.73, p = .02, partial eta squared = .43, suggesting a benefit group. According to Cohen (1988, pp. 284 -7), .01 eta squared shows small effect, .06 shows moderate effect, and .13 represents a large effect size. The results indicate that participants' scores considerably improved from pretest to posttest, meaning that the corresponding null hypothesis was rejected.

In addition to gain score, independent t-test and SPANOVA, the first hypothesis of the current study was examined using paired sample t-test. As indicated in table2, there was significant difference in TOEFL iBT Writing Task (I) scores in pretest (M = 14.31, SD = 11.12).

Table 2. Paired samples statistics

		Mean	N	Std. Deviation
Pair 1	TOEFL iBT Writing Task (I) scores in Pretest	14.31	39	11.12
	TOEFL iBT Writing Task (I) scores in Posttest	27.45	39	12.17

Table 3 indicates that there is a statistically significant mean score gain from the pretest to posttest, t (41) = - 41.46, p < .0000. The results show that *TOEFL iBT Writing Task (I)* scores significantly enhanced from pretest to posttest.

Table 3. Paired sample test

		Paired Differences				
		Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	TOEFL iBT Writing Task (I) scores in pretest - TOEFL iBT Writing Task (I) scores in posttest	19.61	2.24	- 41.46	41	.0000

The results of paired sample test indicate that TOEFL iBT Writing Task (I) scores considerably improved from pretest to posttest. Accordingly, the results confirm that the corresponding null hypothesis was rejected. Norman (2010, p. 625-632) asserts that

> "Parametric statistics can be used with Likert scale, with small sample size, with unequal variances, and with non-normal distributions with no fear of coming to the wrong conclusion."

Therefore, considering the second hypothesis of the current study, i.e. technologically-enhanced self-regulated strategies do not have any statistically significant impact on EFL learners' self-regulated learning skill level, as Norman (2010) asserts we can utilize parametric test of Paired sample t-test. As indicated in table 4, there was significant difference in self-regulated learning skill level in pretest (M = 54.31, SD = 31.12).

Table 4. Paired samples statistics

		Mean	N	Std. Deviation
Pair 1	self-regulated learning skill level in pretest	54.31	39	31.12
	self-regulated learning skill level in posttest	47.45	39	32.17

Table 5 indicates that there is a statistically significant mean score gain from the pretest to posttest, t (61) = - 33.46, p < .0000. The results show that self-regulated learning skill level significantly enhanced from pretest to posttest.

Table 5. Paired sample test

		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
Pair 1	self-regulated learning skill level in pretest - self-regulated learning skill level in posttest	39.61	23.24	- 33.46	61	.0000

The results of paired sample test indicate that self-regulated learning skill level significantly enhanced from pretest to posttest. Thus, the results prove that the related null hypothesis was cast off. The second hypothesis of the current study was also tested using gain score procedure. The results of gain score and independent sample *t*-test for experimental group are as follow:

Table 6. Descriptive statistics for gain scores of self-regulated learning skill level

	group_main	N	Mean	Std. Deviation
Gain Score	Pretest	39	23.45	41.192
	Posttest	39	47.54	42.176

Table 6 shows the descriptive statistics for gain score in pretest and posttest. As can be seen, the mean score of self-regulated learning skill level in pretest was 23.45 while it increased to 47.54 in posttest. The data were analyzed using gain score procedure. The independent samples t test, run to compare the gain scores in self-regulated learning skill level, was found significant, t (88) = 81.78, p= .00001, Eta squared = .11 which is a large effect. The difference between the mean of self-regulated learning skill level from pretest to posttest was statistically significant, t (88) = 78.82, p= .00001, with a quite large effect size (Eta squared = .28). This means that the null hypothesis is rejected and participants' self-regulated learning skill level improved significantly from pretest to posttest.

Conclusion and Discussion

During the last few years, a major model transfer occurred in writing instruction at the worldwide level. Greater stress is being placed on teaching learners to think critically, communicate effectively, and solve problems (Rane-Szostak & Robertson, 1996). The blast of information, fast societal changes and the popularity of internet technology added impetus to this change. The need for individuals with critical powers to deal with, direct, and even lead this change is astonishingly escalating.

However, this shift was not paralleled with a corresponding move in writing instruction practices. Writing classrooms are still subjugated by traditional classroom-based instructional methods that do not do much to improve writing comprehension principally at higher levels of processing required for international exams like TOEFL and or IELTS. As Katims & Harris (1997) argue, such intrusions cannot help learners obtain the knowledge, skills, and nature that are vital for life outside schools where self-management abilities are immediately necessary. It is no longer sufficient, as Eshel and Kohavi, (2003: 249-50) argue "to continually utilize knowledge that is acquired in a limited time and with the help of others for a long time. Learners need to continually adapt to new knowledge and skills throughout the stages of their life". This may not be realized until learners are provided with the skills and motivation to be self-regulated learners. The detonation of information, quick communal changes and the pervasiveness of internet technology added thrust to this change.

This efficacy of self-regulated writing instruction is based on nucleus traits of self-regulated writing that are naturally absent in traditional writing classrooms. First, self-regulated writing mixes components proven effectual in enhancing writing competence; namely-cognitive writing strategy, metacomprehension and motivation. Although each of these constituent has individual impact on enhancing writing achievement, the mutual interaction between these factors is more expected to increase the effect on writing predominantly at higher levels. As stated by Chung (2000), the mutual effect between motivation, cognition,

and metacognition is greater than their individual effects. This interaction is more likely to increase individual learners' involvement and engagement in writing. According to Guthrie and Wigfield (2000, p.408), this writing engagement "sparks learners' interests in different topics and boosts competence beliefs and intrinsic motivation". Similarly, Ruohotie (2002) asserts that as learners become more affianced in self-regulated writing, they become more involved in deeper problem-solving practices associated to analyzing situations, setting priorities, considering choices and options, making decisions, and evaluating consequences.

In addition, self-regulation tunes into individual differences among students. They proceed through the writing according to their own pace based on their abilities, preparedness and motivation. In this sense, they are more likely to be able to actively create an individualized learning environment, which, in turn, results in greater self-directness, increased internalization, and deeper cognitive processing (Zimmerman, 2002). This unleashes individuals' adaptive writing endeavors and triggers their critical writing powers. Furthermore, self-regulation, through simulating learning conditions outside the physical boundaries of the classroom helps ease transition from learned skills to authentic, more adaptive skills. In conventional EFL writing classrooms, learners work under the guidance and intervention of the teacher and the instruction is carried out in a patronizing manner in order to build up appropriate writing skills. The writing situation is different, however, when the EFL learner is called upon to deal independently in technologically-enhanced environment.

As stated before, the first hypothesis of the present study reads that technologically-enhanced self-regulated strategies do not have any statistically significant impact on EFL students' writing skills in TOEFL iBT. However, the results of gain score and independent sample *t*-test indicate that participants' scores considerably improved from pretest to posttest, meaning that the corresponding null hypothesis was rejected. In addition to gain score, independent t-test and SPANOVA, the first hypothesis of the current study was examined using paired sample t-test. The results of paired sample test indicate that TOEFL iBT Writing Task (I) scores considerably improved from pretest to posttest. Accordingly, the results confirm that the corresponding null hypothesis was rejected. The second hypothesis of the current study states that technologically-enhanced self-regulated strategies do not have any statistically significant impact on EFL learners' self-regulated learning skill level. The results of paired sample test indicate that self-regulated learning skill level significantly enhanced from pretest to posttest. Thus, the results prove that the related null hypothesis was cast off. The second hypothesis of the current study was also tested using gain score procedure. The difference between the mean of self-regulated learning skill level from pretest to posttest was statistically significant which means that the null hypothesis is rejected and participants' self-regulated learning skill level improved significantly from pretest to posttest.

In conclusion, considering the advantages of knowing self-regulated language learning strategies to learn a foreign language (Miltiadou & Savenye, 2003; Zimmerman, 2002; Wirth & Leutner, 2008; Chung, 2000; Camahalan, 2006; Bland, 2005; Kurman, 2006) and being aware of the opportunities technologically-enhanced language learning environments offer to language learners (Warschauer, 2001; Taylor, 2006; Salaberry, 2001; Steffens, 2006; Chang, 2007), we recommend that self-regulation and technologically-enhanced language learning go hand in hand to create a successful EFL classroom. This study has shown the close relationship between these two in learning foreign language writing, and thus there is a need for further research to investigate how effective technologically-enhanced self-regulated strategies in helping students learn other skills.

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