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A TELL-Based TBLT in ESP Courses: Focus on Undergraduates' Metacognitive Reading Comprehension Strategies

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Abstract

Achievements of either CALL or TBLT methods especially in ESP courses in a globalized world demand TELL-based TBLT and online tasks to be appropriately designed and applied to ESP programs. Thus, 87 ESP learners were assigned as the control (ESP+TBLT) and experimental (ESP+TELL+TBLT) groups in this investigation. A metacognitive reading strategies questionnaire was modified and translated by the researchers. Moreover, a Computer Attitude questionnaire was employed to check the experimental participants' interest in learning via technology. Data analysis was conducted via SPSS 24. Their metacognitive reading comprehension strategies were analyzed via a set of mixed between-within subjects' analysis of variance (*SPANOVA*). Results revealed that there was a significant interaction between treatment method and time, i.e., both groups revealed a change in metacognitive reading strategies score across time, though the control group performed negatively, showing a slight decrease. The findings also indicated that while a mean difference was mathematically observed between the control and experimental groups in terms of metacognitive reading strategies, such a difference was not considered statistically significant. That is, there was no significant difference in the strategies for both groups, yet the experimental group revealed an increase in the mean scores. The experimental participants did not reach any significantly different level for metacognitive reading strategies compared to their control-group counterparts. Nonetheless, since SAMT material was instructed to learners during one academic semester, this study implied a single academic semester was not adequate time to work on and improve the learners' metacognitive reading comprehension strategies.

Keywords: ESP; Globalization; Metacognitive Reading Comprehension Strategies; TBLT; TELL

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1. Introduction

The growth of globalization has increased the prominence of English as a worldwide language. Therefore, it is vital to design ESP (English for Specific Purposes) courses which enable learners of non-English majors to become appropriately proficient in order to communicate with people with different language abilities and in various parts of the globe. Therefore, English cannot escape the realm of globalization and consequently, TEFL and ESP cannot remain uninfluenced by the notion of Globalization.

Moreover, students can be assisted to acquire sufficient English language abilities via a feasible means, that is, the integration of technology into ESP curriculum design. Though the fruitful outcome of such approaches rests to some extent on how the teachers are knowledgeable and proficient in computer-assisted language learning contexts.

Although there has been a rising interest in conducting research on CALL and using technology in EFL classrooms, there is still a gap in introducing technology to ESP courses and integrating technology in such contexts. As Alrasheedi and Capretz (2015) mentioned, this could be attributed to lack of instructors' knowledge and training and how to efficiently make apply technology in their classrooms. It is, therefore, crucial to assist instructors in their professional development to employ technology effectively in their classrooms (Corbeil & Valdes-Corbeil, 2007; Ozdamli & Uzunboylu, 2015).

Due to the growing use of technology in language learning, and ESP programs in the current globalizing and globalized world, learners are no more confined to indoor classroom settings. In addition, learners are equipped with mobiles and other technological devices and have digital literacy, also known as digital competency or digital competence. Hence, technology-mediated TBLT and online tasks should be designed to be appropriately employed in ESP courses. There is a beneficially reciprocal interrelationship between technology/ TELL and TBLT framework. They mutually contribute to one another. There is a good deal of literature on cases employing technological instruments to improve language teaching and learning. Investigations have also been carried out to explore the feasibility and efficiency of technology-integrated tasks, online tasks, task design and online task design, and technology-mediated TBLT (see Böhlke, 2003; Ducate & Lomicka, 2008; Elola & Oskoz, 2008; Hwang, 2008; Kitade, 2006; Kötter, 2003; Lai & Zhao, 2006; Mak & Coniam,

2008; Ortega, 2009b; Pellettieri, 2000; Rankin, 2008; Salaberry, 2000; Smith, 2003; Sotillo, 2000; Stockwell and Harrington, 2003; Thorne, 2003; Toyoda & Harrison, 2002; Yamada, 2009).

Hence, the main target of conducting this paper was to study the effectiveness of TELL-based ESP course taught via TBLT in terms of metacognitive reading strategies. Thus, the upcoming research question was asked in this study:

What pattern of metacognitive reading strategies do Iranian university students employ when reading for specific purposes and as a result of TBLT via TELL?

Regarding the research question, this null hypothesis was made:

There is not any discernible pattern of metacognitive reading strategies that Iranian university students employ when reading for specific purposes and as a result of teaching through TBLT via TELL.

2. Theoretical Background

The global electronic communication, the Internet, is believed to be the most distinct property of the current image of globalization. One of the most controversial issues in Applied Linguistics is the globally increasing use of English in the era of globalization. Being an international language of communication, English is inevitably enriching the whole universe in a way that globalization is believed to be vitally associated with the growth of this language (Kumaravadivelu, 2006; Pennycook, 2010; Salverda, 2002; Yano, 2004). Since every individual is unique in the perspective, people view globalization from different aspects and they perceive it differently. In brief, all aspects of people's lives, i. e., economy, culture, values, norms, are more and more tangibly interrelated than ever. ELT is an instrument for global communication. Therefore, English is regarded as a neutral tool for interactive communication.

2.1. Computer-Assisted Language Learning

CALL has been dealt with differently by different scholars (Bax, 2003; Lamy & Hampel, 2007). EFL contexts have been making great use of emerging Internet technologies (Bottino, 2004). Various scholars employed a different term denoting the application of any form of technology to teaching and learning, though, according to the relevant literature (Davies, Otto, & Ruschoff, 2013), there is no exactly claimed date for the emergence of the term CALL in pedagogy.

2.2. ESP

Hutchinson and Waters (1987) assumed ESP as an approach to language teaching where the decisions on method and content are based upon the students' reason for learning _ i.e., needs analysis. As well, selecting appropriate materials and content is another important factor in ESP courses. As Hutchinson and Waters (1987) stated, the suitable material should be selected according to various engaging texts and activities which provide a variety of skills. Moreover, creating a motivating learning environment is another leading factor during. A positive learning atmosphere plays a crucial role in order to attain the course objectives. Therefore, such an encouraging learning context can create a pleasant experience for both instructors and students.

2.3. ESP + CALL/TELL

Applying Computer Technology to educational contexts, in particular, to EAP and ESP settings, has been investigated recently. A study was carried out by Khanifar, et. al. (2012) in which they reviewed current approached and their positive impacts and the role that technology plays in education. Atai and Dashtestani (2013) examined the students' viewpoints regarding the Internet in EAP programs for undergraduates studying civil engineering (CE) in Iran. The data analysis demonstrated most EAP teachers and the students positively viewed the Internet. As mentioned, a number of investigations have shed light on CALL in Iranian ESP and EAP contexts.

2.4. ESP + TABL

In the increasingly globalized world, English has been attended to more than before, both as a global language of technology and science. At tertiary education, in particular, English has been considered to play a significant role, which has led the practitioners and instructors to more focus on improving English language learning and teaching of ESP purposes in order to make university students ready to successfully encounter their English subject-specific texts and deal with globally subject-related issues.

2.5. TBLT + TELL

Considering the afore-mentioned terminology in the literature, Technology-Enhanced Language Learning (TELL) has been adopted for the purpose of this dissertation. Task-based Approach or Task-Based Language Teaching (TBLT) has been viewed as greatly influential and promising in EAP and ESP contexts for its upsides. TBLT causes learners to deal with real-life activities known as tasks improving their target language proficiency. It is also believed to be a learner-centered approach, and mostly meaning-focused, all indicating its appropriateness for ESP programs.

2.6. TBLT

There is a sufficient literature on theoretical rationale for TBLT. Learning via performing activities or tasks suggests that TBLT is an implicit instruction (Rahimpour, 2008). That is, TBLT provides and engages learners with a context in which they develop L2 ability as opposed to other former approaches which were heavily resting on explicit instruction of language structures (Long, 1985). The Willis (1996, 2012) task-based framework would be adopted for the purpose of this study. As proposed by Willis (1996, 2012), teachers go through three phases in order to offer a task-based course: the *pre-task* phase, the *task cycle*, and the *language focus*.

2.7. Task

The term ‘task’ enjoys many definitions provided by different researchers and scholars. However, a ‘task’ is generally believed to be a product-based activity getting students involved in fulfilling activities and encouraging them to draw a connection between what they learn from the classroom content and how such learning can be employed outside the classroom context (Norris, 2009). As mentioned by Willis (1996), tasks are activities in which target language is utilized by the student for a communicative goal to reach an output.

Oral or written, productive or receptive skills together with different cognitive skills can be developed via the use of different tasks. However, tasks can actually be designed to improve any of the four language skills, while most tasks involve more than just one single skill.

Besides, considering the problems ESP students have faced, a study was carried out by Islami Prasetyaningrum (2018) in order to check the TBLT effects on ESP learners’ reading comprehension. The findings of

this study revealed that implementing TBLT could improve participants' reading comprehension.

As mentioned earlier, Willis's framework (1996, 2012) for TBLT would be employed in this investigation. Therefore, to utilize it in an online environment for the experimental group, the second stage of the framework which is task cycle would be done individually by the learners at home and tasks would be delivered to the teacher in an online context, i.e., LMS. The pre-task and post-task stages would be carried out in the face-to-face, though technology-assisted, classroom through the researcher-teacher and learners' interactions.

According to the literature, there is a positive relationship between reading comprehension and metacognitive strategies. The results of such empirical investigations revealed that the strategies employed by readers when dealing with printed texts play a significant part in reading comprehension both in L1 and L2. Furthermore, other studies indicated that successful readers make more use of reading comprehension strategies than unsuccessful readers (Alsheikh, 2011; Mokhtari & Sheorey, 2002).

As mentioned by Brown (1980), though metacognition is approximately a new notion, the skills with which it is associated have been identified. To name only a few, according to Dewey (1938) and Thornlike (1917), reading includes metacognitive activities like planning, checking, evaluating, understanding, monitoring, and reasoning. It is in line with Goodman's view (1976). He stressed that readers must go through hypothesis-testing against the 'screens' of meaning by asking themselves if the texts they are interacting with makes sense. Therefore, reading comprehension is recognized as problem-solving activities in the relevant literature (Desmet, & Duyck, 2007; Hosenfeld, 1977; Olshavsky, 1976-1977). One approach to deeply delving into the very nature of reading comprehension is the study of reading strategies used by readers (Stevenson, Schoonen, & Glopper, 2003). According to the relevant literature, many metacognitive skills in reading have been recognized by scholars (Brown, 1980; Mokhtari & Reichrad, 2002). The identified metacognitive skills were the purposes of the reading, identifying the important aspects of the text and focusing attention on the main aspects of the text rather than unimportant points (Brown, 1980). As Block (1992) stated, reading ability is increasingly affected by a number of elements in the context of L2 reading. The current study also aimed at exploring the reported use of metacognitive reading strategies employed by ESP

learners taught via TBLT in an online learning environment. Mehri Ghahfarokhi and Tavakoli (2020) investigated the effectiveness of technology-mediated reading comprehension tasks to enhance autonomy and metacognitive strategy use of Iranian participants in a reading comprehension course. The findings of their investigation displayed that TELL-based TBLT positively affected learners' autonomy and metacognitive strategy use as opposed to the traditional explicit reading comprehension programs.

The present investigation was thought to be significant in assessing the effectiveness of technology-integrated ESP courses taught via TBLT. The information gathered from the questionnaires could be employed to improve ESP programs that could fulfill their objective which is to empower students to handle English subject-specific texts without much trouble. Therefore, the findings of this paper would help decide on the most suitable course content and design engaging online ESP tasks which are recognized as being appreciated by the learners, together with design task-integrated online ESP courses for future. To put it in a nutshell, a TELL-based just-in-case ESP setting, a la Salmani Nodoushan (2020a), is one where all such preliminaries of a TBLT method are encountered, i.e., an ESP course can efficiently blend and contextualize the task-based syllabus and technology (i.e., ESP + TBLT + TELL).

3. Method

This study was basically a mixed-methods research (MMR) adopting a pre-test post-test design with control and experimental groups. The metacognitive reading strategy questionnaire used before the treatment and after the treatment was called the pre/posttests here. The variables to be studied included TELL-based TBLT approach to an ESP course, which was the IV, and metacognitive reading comprehension strategies for ESP texts as the DV.

3.1. Participants

Totally, 87 (*N*=87) undergraduates in Electrical Engineering at Isfahan University of Technology (IUT) were nominated as the participants in this research using the convenience sampling method. Two ESP courses for the students of four sub-majors of Electrical Engineering offered at IUT were taught by the first author of the study. Hence, the learners signing up for this ESP course were randomly classified into control and experimental groups. The control group (*n*=45) received the ordinary ESP

course offered by the Language Center at IUT and instructed through the task-based language teaching (TBLT) by the researcher teacher. The experimental group (*n*=42) also received the same ESP course, again offered by the Language Center at IUT and instructed by the researcher via TBLT. Nevertheless, they enjoyed both ordinarily established class sessions and online sessions covering reading online ESP tasks as specifically designed for the purposes of this investigation. Actually, the experimental group took part in in-person and virtual sessions, called blended learning environment (Table 1).

Table 1. *Between-Subjects Factors*

		Value Label	N
Groups	1.00	TBLT (Control group)	45
	2.00	TBLT + TELL (Experimental group)	42

They were all homogenous regarding their general language proficiency determined through a standard proficiency test, namely, Nelson [*t*(85)=1.714; *sig.*=090] (Table 4). The normality of observations in Placement test scores in both control and experimental groups were evaluated via Kolmogorov-Smirnov test, the findings of which are shown in Table 2.

Table 2. *Result of Kolmogorov-Smirnov test*

Group	*Variable*	*Statistics*	*Df.*	*Sig.*
Control	Placement test	.127	45	.066
Experimental	Placement test	.097	42	.200*

*This is a lower bound of the true significance

Based on Table 2, the p-value of Kolmogorov-Smirnov test in both groups under study was greater than 0.05. Hence, no evidence of abnormality of observations was observed**.**

Table 3. *Levene test results in homogeneity analysis of pre/post-test scores between the two groups*

Variable	Time	*Statistic*	*df1*	*df2*	*Sig.*
Placement test		.894	1	85	.347

According to Table 3, and based upon the result of Levene test, in the scores of the placement test, the assumption of homogeneity of data variance between control and experimental groups was not rejected ($p < 0.05$). Thus, the variance of the data was homogeneous in both groups.

Table 4. *Descriptive indicators for placement test scores in the two groups and independent t-test results in comparing the mean scores of the placement test between the two groups*

	Descriptive Statistics					Independent samples t-test		
Group	N	Minimum	Maximum	Mean	Std. Deviation	t	Df	Sig.
Control	45	15.00	36.00	26.47	6.18	1.714	85	.090
Experimental	42	10.00	36.00	24.24	5.93			

Based on the findings of Table 4, on the placement test, scores were observed in the range of 15 to 36 with an average of 26.47 ± 6.18 in the control group, and in the range of 10 to 36 with an average of 24.24 ± 5.93 in the experimental group.

According to the outcomes of independent samples t-test, the assumption that the mean scores of the placement test were the same between the control group ($M = 26.47$, $S = 6.18$) and experimental group ($M = 24.24$, $S = 5.93$) was not rejected (that is, $t(85) = 1.714$, $p = .090$), hence, the groups in this investigation were homogeneous.

3.2. Instruments

3.2.1. Questionnaires

Two sets of questionnaires were used in this study as follows:

3.2.1.1. Metacognitive Reading Strategies Questionnaire (i.e., MRSQ) originally developed by Anderson (2003) was used to find about any possible pattern of strategy use. This questionnaire contains 42 items falling into three general categories of metacognitive strategies; namely, a) global; b) problem-solving; and c) support strategies on a five-point Likert scale.

3.2.1.2. Computer Attitude Questionnaire (i.e., CAQ Ver 5.14 4/97) is composed of 6 parts, i.e., totally 67 items, on a four-point Likert scale (SD= Strongly Disagree; D= Disagree; A= Agree; SA= Strongly Agree). Just 20 items were applied for the purpose of this investigation. This

questionnaire was initially administered to participants selected for the experimental group to ensure that they were interested in employing computers for learning purposes.

Since the Persian versions of this questionnaires are not available, the researchers used translation-back-translation process to translate the English version of the questionnaires to Persian. The questionnaires were translated into Farsi by two experts so as to compare their opinions and make sure about the ultimate translated version. Then, one translated version went through the validation process using translation-back-translation in order to make sure whether the content of the questionnaires was kept.

For the purpose of this paper, each questionnaire was piloted in a group of 40 respondents (*N*=40), all of whom were excluded from the chief population of the study. Then the reliability of two utilized questionnaires, namely Metacognitive Reading Strategies and Computer Attitude, were examined via calculating Cronbach's alpha coefficient. As observed in Table 5, Cronbach's alpha coefficients for both of the questionnaires employed in this research were greater than 0.7 (i.e., 0.804 for Metacognitive Reading Strategies Questionnaire; and 0.777 for Computer Attitude Questionnaire), denoting the appropriate reliability of these research measurement instruments.

Table 5. *Cronbach's alpha coefficient in calculating the reliability of the questionnaires*

Questionnaire		**N of Items**	**Cronbach's Alphaa**
Metacognitive Reading Strategies:	Global strategies	18	.726
	Problem-solving Strategies	9	.743
	Support Strategies	15	.741
	Overall	42	.804
Computer Attitude		20	.777

3.2.2. Materials

A course book, entitled 'English for Electrical Engineering' by SAMT publication, suggested by the Language Center was employed in both control and experimental groups since the participants were all undergraduate students and had to go through the course book, midterm and final exams required by the authorities.

3.3. Procedure

The undergraduate learners majoring Electrical Engineering at IUT enrolled for the ESP courses. They all passed the General English course in previous semesters. For the purposes of this paper, 87 students (*N*=87) enrolling for their ESP class in the 2nd semester in 2018-2019 academic year were recruited and assigned to control (*n*c=45) and experimental (*ne*=42) groups. They were initially assessed to guarantee their homogeneity in terms of general English language proficiency.

For the experimental group, the course book published by SAMT was taught. There were tasks selected or designed by the researcher teacher, which were used to present the teaching materials. The tasks were supposed to be carried out in an online environment, which is infrastructurally available at IUT's website. The students received the task-based instruction. The same learning materials were redesigned by the researcher to fit J. Willis' (1996) task-based framework (pre-task, task cycle, and language focus) and pica et. al.'s (1993) framework. The tasks employed in the current study were brainstorming, ordering, problem solving, information-gap, jigsaw tasks, etc. Participants were needed to engage in real-work/highly-contextualized interaction to perform the tasks (Weigand, 2018). As well, for the control group the similar materials were delivered via TBLT method in traditional in-person classroom settings. This was done to find about the effect of TBLT alone so that a better image could be depicted for the hybrid mode of delivery as practiced for the experimental group. The instructional materials were presented in almost fourteen 100-minute sessions for both groups. Classes were all instructed by the researcher herself to guarantee consistency.

After running pilot study on the two-questionnaire applied for the purpose of this investigation, the *Computer Attitude Questionnaire* (CAQ) was merely administered to the participants in the experimental group in order to make sure about their willingness to learn via technology. Also, the questionnaire supposed to measure the participants' metacognitive reading strategy use was completed by the learners in both control and experimental groups before and after the treatment so that any variations in these qualitative variables could be measured.

Students in the experimental group were briefed on the norms of behavior and standards at the beginning of the instructional period. The first session was meant to help them 1) fine-tune their learning in the online environment and 2) solve any potential problems.

At the end of the semester, the two groups completed the Reading Metacognitive Strategies Questionnaire. A set of mixed between-within subjects' analysis of variance (*SPANOVA*) was applied to analyze the gathered data.

4. Results

4.1. Results of the metacognitive reading strategies questionnaire (MRCSQ)

This section is investigating the hypothesis proposed in the current study (i.e., **H:** There is not any discernible pattern of metacognitive reading strategies that Iranian university students employ when reading for specific purposes and as a result of teaching through TBLT via TELL).

The two groups' performances were compared through *SPANOVA* to find out whether they had achieved differentially in terms of their metacognitive reading comprehension strategies. In this investigation, Time (i.e., pre-test versus post-test) was a factor; grouping (i.e., experimental versus control) was another factor. As such, the researcher had to find both the between subjects and the within subjects' effects; hence, *SPANOVA.*

A mixed between-within subjects' analysis of variance (*SPANOVA*) (See Pallant, 2020) was hence carried out to analyze the influence of TBLT versus TBLT + TELL intervention methods on the metacognitive reading strategies of the participating ESP students. This was done to check if there were main effects for participant groups and time; the group-time interaction was also measured. The goal was to show if the change in metacognitive reading strategies across time was statistically different for the two participant groups.

Although sphericity is not an issue where a research design contains two participant groups tested on merely two occasions (Field, 2018) _ that is, a control group and an experimental group tested in a pre- and post-treatment_ the researcher checked for sphericity to see whether this assumption had been violated. To check for the homogeneity of intercorrelations _ i.e., to see if for each of the levels of the between-subjects variable (i.e., type of treatment) the pattern of intercorrelations among the levels of within-subjects variable (i.e., time) were the same _ Box's *M* statistic was checked. The findings displayed that Box's *M* statistic with the *alpha* level of 0.05 was not significant (i.e., that the *p* level was greater than 0.05). In other words, Box's *M* statistic tests the null hypothesis that the observed covariance matrices of the dependent

variables are equal across groups. Table 6 exhibits the results and displays that this assumption was met (*Sig*. = 0.064).

Table 6. *Box's Test of Equality of Covariance Matrices*

Box's *M*	7.449
F	2.419
df1	3
df2	1541697.435
Sig.	.064

Design: Intercept + Treatment
Within Subjects Design: Time

Since Box's *M* statistic was significant, it was essential to report the Mauchly's test of sphericity table (Table 7). As stated earlier, Mauchly's test of sphericity tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix. The Greenhouse-Geisser or Huynh-Feldt values reported in this table may be used to adjust the degrees of freedom for the averaged tests of significance.

Table 7. *Mauchly's Test of Sphericity*

					Epsilon		
	Mauchly's *W*	χ^2	***df***	***Sig.***	**Greenhouse-Geisser**	**Huynh-Feldt**	**Lower-bound**
time	1.000	.000	0	.	1.000	1.000	1.000

As Table 7 shows, the Epsilon values are 01.00, so there is complete sphericity, and this assumption has not been violated.

A look at the Multivariate Tests table (Table 8) revealed that the time-group intercept was significant. That is, there was a significant interaction between treatment method and time, Wilks' *Lambda* = 0.892, $F(1, 85) = 10.26$, $p = 0.002$, partial $eta^2 = 0.108$. Employing the commonly used guidelines proposed by Cohen's (1988) (0.01 = small effect, 0.06 = moderate effect, and 0.14 = large effect), the results of these analyses suggested a moderate to large effect size for time-group intercept. This implies two things: (1) both groups performed better on the metacognitive reading strategies questionnaire after receiving the intervention, and (2) the two groups differed in terms of metacognitive reading strategies in a statistically significant way. However, the picture is not that simple, and one also needs to inspect the main effects to make sure. A look at the

results revealed that there was also a moderate main effect for time, Wilks' *Lambda* = 0.945, $F(1, 85) = 4.927$, $p = 0.029$, partial $eta^2 = 0.055$, with both groups demonstrating an increase in metacognitive reading strategies score across the two time periods (see Table 4.18). Considering the commonly used guidelines proposed by Cohen's (1988) (0.01 = small effect, 0.06 = moderate effect, and 0.14 = large effect), the results of these analyses suggested an almost moderate effect size for time.

Table 8. *Multivariate Tests*

Effect		Value	*F*	df_h	df_e	*Sig.*	Partial Eta^2
Time	Pillai's Trace	.055	4.927[a]	1.000	85.000	.029	.055
	Wilks' Lambda	.945	4.927[a]	1.000	85.000	.029	.055
	Hotelling's Trace	.058	4.927[a]	1.000	85.000	.029	.055
	Roy's Largest Root	.058	4.927[a]	1.000	85.000	.029	.055
Time * Group	Pillai's Trace	.108	10.260[a]	1.000	85.000	.002	.108
	Wilks' Lambda	.892	10.260[a]	1.000	85.000	.002	.108
	Hotelling's Trace	.121	10.260[a]	1.000	85.000	.002	.108
	Roy's Largest Root	.121	10.260[a]	1.000	85.000	.002	.108

Computed using *alpha* = .05 (Exact statistic, Design: Intercept + Treatment, Within Subjects Design: Time)

Figure 1 demonstrates the difference in gains in metacognitive reading strategies scores across subject groups.

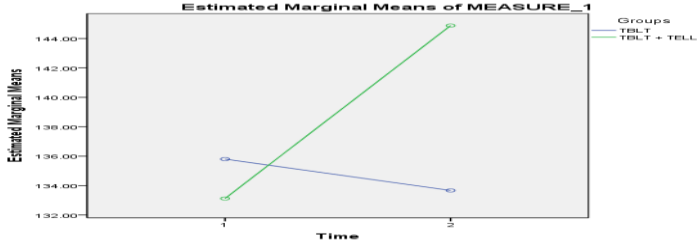

Figure 1 Comparison of gains in mean performance across subject groups.

Table 9 illustrates the descriptive statistics for the two groups over time. As Table 9 illustrates, the pre-test mean for experimental group was 133.119 whereas the post-test mean was 144.881; the pre-test mean for control was 135.8 while the post-test mean was 133.66. This indicates that

the control group had a slight decrease in metacognitive reading strategies scores also visualized in Figure 1.

Table 9. *Descriptive Statistics for Treatment Groups across Time*

	Groups	***M***	***SD***	***N***
Pre-test Score	Experimental	133.1190	20.64001	42
	Control	135.8000	16.88544	45
Post-test Score	Experimental	144.8810	19.21407	42
	Control	133.6667	17.70593	45

The mean change was mathematically noticeable, but the researcher had to check it for statistical significance; to this aim, the researcher looked at the data exhibited in Table 10. The main effect comparing the two types of interventions was not significant, $F(1, 85) = 1.617$, $p = 0.207$, partial $eta^2 = 0.19$, implying no significant difference in the effectiveness of the two teaching approaches (TBLT versus TBLT + TELL). In other words, there was no significant difference in metacognitive reading strategies scores for the TBLT and the TBLT + TELL groups. Through the guidelines suggested by Cohen's (1988) (0.01 = small effect, 0.06 = moderate effect, and 0.14 = large effect), the results of these analyses suggested a small effect size for the 'group' variable.

Table 10. *Tests of Between-Subjects Effects*

Source	**Type II Sum of Squares**	***df***	***M²***	***F***	***Sig.***	**Partial *Eta²***
Intercept	3255576.607	1	3255576.607	6657.204	.000	.987
Group	790.952	1	790.952	1.617	.207	.019
Error	41567.600	85	489.031			

Transformed Variable: Average
Computed using *alpha* = .05

4.2.Results of Computer Attitude Questionnaire (CAQ)

As mentioned before, a modified and translated version of a computer attitude questionnaire was used to figure out the experiment group learners' interest in using technology in educational programs. Table 11 indicates the highest and the lowest mean scores of the items included in the CAQ together with the mentioned items. Moreover, Table 12 denotes the mean score of the experimental group learners' responses (i.e., 54.64 ± 4.08). Furthermore, no one in the experimental group expressed lack of interest in using technology in education. More data analysis associated with CAQ will be discussed in detail as following:

As seen in Table 11, in the Computer Attitude Questionnaire, the lowest mean score was that of item 17, with a value of 1.74 ± 0.73, and the highest mean score was associated with item 7, with a value of 3.36 ± 0.73.

Furthermore, in response to item 17 (i.e., Using a computer is very frustrating), in 92.8% of the respondents, the answer was Disagreed and Strongly Disagreed, and 7.2% said Agreed and Strongly Agreed.

As well, in response to item 7, (i.e., I know that computers give me opportunities to learn many new things), in 9.5% of the respondents, the answer was Disagreed and Strongly Disagreed and 90.5% responded Agreed and Strongly Agreed.

Table 11. *Frequency distribution of responses to the items in the Computer Attitude Questionnaire (CAQ) for the experimental group*

	SD		**D**		**A**		**SA**		**Mean**	**SD**
	F	P	F	P	F	P	F	P		
Item 1	0	0.0	3	7.1	26	61.9	13	31.0	3.24	.58
Item 2	13	31.0	26	61.9	3	7.1	0	0.0	1.76	.58
Item 3	0	0.0	3	7.1	24	57.1	15	35.7	3.29	.60
Item 4	1	2.4	3	7.1	26	61.9	12	28.6	3.17	.66
Item 5	5	11.9	12	28.6	17	40.5	8	19.0	2.67	.93
Item 6	2	4.8	9	21.4	17	40.5	14	33.3	3.02	.87
Item 7	1	2.4	3	7.1	18	42.9	20	47.6	3.36	.73
Item 8	1	2.4	3	7.1	22	52.4	16	38.1	3.26	.70
Item 9	4	9.5	6	14.3	23	54.8	9	21.4	2.88	.86
Item 10	5	11.9	15	35.7	16	38.1	6	14.3	2.55	.89
Item 11	2	4.8	2	4.8	21	50.0	17	40.5	3.26	.77
Item 12	3	7.1	4	9.5	26	61.9	9	21.4	2.98	.78
Item 13	1	2.4	5	11.9	22	52.4	14	33.3	3.17	.73
Item 14	1	2.4	19	45.2	16	38.1	6	14.3	2.64	.76
Item 15	2	4.8	2	4.8	24	57.1	14	33.3	3.19	.74
Item 16	16	38.1	20	47.6	5	11.9	1	2.4	1.79	.75
Item 17	16	38.1	23	54.7	1	2.4	2	4.8	1.74	.73
Item 18	10	23.8	25	59.5	4	9.5	3	7.1	2.00	.80
Item 19	15	35.7	22	52.4	3	7.1	2	4.8	1.81	.77
Item 20	1	2.4	12	28.6	20	47.6	9	21.4	2.88	.77

As it can be observed in Table 12, among the 42 respondents in the experimental group, 38 people (90.5%) were at a medium level, and 4 people (9.5%) were at a high level in terms of attitude towards computers, and no one was at the low level. The mean score of the students' responses to the Computer Attitude Questionnaire was 54.64 ± 4.08.

Table 12. *Frequency distribution and mean score of answers to the Computer Attitude Questionnaire (CAQ) by respondents in the experimental group*

Variable	Level	Frequency	Percentage	Mean	Std. Deviation
Computer Attitude Questionnaire *(CAQ)*	Low	0	0.0	54.64	4.08
	Medium	38	90.5		
	High	4	9.5		
	Total	42	100.0		

5. Discussion and Conclusion

The current study aimed at investigating how an ESP course taught via a TELL-based TBLT approach can be more effective in enhancing the learners' metacognitive reading comprehension strategies than an ESP course offered in traditional in-person classroom contexts merely via TBLT. It was hypothesized that Iranian university ESP students' metacognitive reading strategies improve when they are instructed through TBLT + TELL approach.

These reposted findings in section 4 briefly suggest that:

1) the time-group intercept was statistically significant. In other words, there was a significant interaction between treatment method and time,

2) both groups performed differently on the metacognitive reading strategies questionnaire after the treatment, (i.e., the both groups revealed a change in metacognitive reading strategies score across the two time periods), though experimental group participants performed positively whereas control group performed negatively, i.e., the control group participants had a slight decrease in metacognitive reading strategies scores, and,

3) while a mean difference was mathematically observed between the control and experimental groups in terms of metacognitive reading strategies, such a difference was not considered statistically significant. In other words, there was no significant difference in metacognitive reading strategies for both groups, yet the experimental group revealed an increase in the mean scores. The size of the difference between the control and experimental groups was small (i.e., partial $eta^2 = 0.019$).

Therefore, the results of the study supported the hypothesis. That is, integrating TBLT with TELL can enhance ESP students' metacognitive reading comprehension strategies. Therefore, the TELL-based TBLT group revealed a rise in the learners' use of metacognitive reading strategies over the time. Hence, the results of the current paper are in step with claims about TBLT in EFL and ESP contexts (Garcí a-Ponce et al., 2018). On the other hand, implementing technology in both EFL and ESP contexts can enhance learners' use of metacognitive reading strategies, no matter participants are taught via TBLT or other methods in trend, which is in line with the claims that technology, in general, can motivate language learners via engaging them in the learning process (Chapelle, 2005; Stepp-Greany, 2002; Tavani & Losh, 2003).

In brief, the implementation of TELL can empower the teaching of English as a lingua franca, and this can help 'digital natives' and 'digital immigrants' as termed by Prensky (2001). In addition, the impacts of the COVID-19 pandemic have directed educators and universities to take advantage of online teaching, and the traditional in-person contexts where teachers and learners engaged in face-to-face interaction have confessed their inadequacy; the new image is digital, and everyone dealing with education will have to get equipped with mediated education driven by information technology. This can also make the new digital generation ready for 'mediated socialization' as Salmani Nodoushan (2021a) has discussed. It will also help them get ready for the abstract society which Popper (1945) and Bergson (1932) have openly explained.

However, it should be noted that this investigation was restricted in scope since the participants were only 87 ESP students from one department and one university in Iran, and only convenience sampling was employed. Thus, the outcome of this paper should not be generalized to every educational setting. In addition, SAMT course book was employed in this study. Hence, other research applying different course books, larger participant populations, and from different disciplines can be carried out in various parts of the world to check whether they yield similar results or they are culture bound. Briefly speaking, the output of this study indicates that TBLT + TELL can be valuable to increase ESP learners' metacognitive reading comprehension strategies in English, and universities and ESP educators may agree to avoid using dated GTM for ESP courses. It can also suggest universities to create the technological infrastructures required for classes to integrate traditional teaching and technology.

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References

Alrasheedi, M., & Capretz, L. F. (2015). Determination of critical success factors affecting mobile learning: A meta-analysis approach. Turkish Online Journal of Educational Technology, *14*, 41–51.

Alsheikh, N. (2011). Three Readers, Three Languages, Three Texts: The Strategic Reading of Multilingual and Multiliterate Readers. *The Reading Matrix, 11*(1), 34-53.

Atai, M. R., & Dashtestani, R. (2013). Iranian English for Academic Purposes (EAP) stakeholders' attitudes toward using the internet in EAP courses for civil engineering students: promises and challenges. *Computer Assisted Language Learning, 26*(1), 21-38.

Bax, S. (2003). CALL –past, present and future, *System*, *31*(1), 13–28.

Bergson, H. (1932). *The two sources of morality and religion*. University of Notre Dame Press.

Block, E. (1992). See how they read: Comprehension monitoring of LI and L2 readers. *TESOL Quarterly, 26*, 319-343.

Breen, M. P. (1987). Contemporary paradigms in syllabus design, part I. *Language Teaching*, *20*(2), 81-91.

Böhlke, O. (2003). A comparison of student participation levels by group size and language stages during chatroom and face-to-face discussions in German. CALICO Journal. *21*, 67-88. Retrieved from https://www.calico.org/memberBrowse.php?Action= article &id=282

Bottino, R. M. (2004). The evolution of ICT_based learning environments: Which perspectives for the school of the future? British Journal of Educational Technology, *35*, 553–567.

Bracaj, M. (2014). *Teaching English for Specific Purposes and Teacher Training*. European Scientific Journal. Edition vol.10, No 2

Brown, A. L. (1980). Metacognitive Development and Reading. In R. J. Spiro, B. B. Bruce, & W. F. Brewer (Eds.), Theoretical Issues in Reading Comprehension (pp. 453-481). Hillsdale, NJ: Lawrence Erlbaum.

Chapelle, C. (2005). Computer-assisted language learning. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 743–755). Lawrence Erlbaum Associates.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Lawrence Erlbaum Associates.

Corbeil, J. R., & Valdes-Corbeil, M. E. (2007). Are you ready for mobile learning? Educause Quarterly, *30*, 51–58.

Davies, G., Otto, S.E.K., & Ruschoff, B. (2013). Historical perspectives on CALL. In M. Thomas, H. Reinders, & M. Warschauer (Eds.), Contemporary computer-assisted language learning (pp. 19–38). New York; London: Bloomsbury Academic.

Desmet, T., & Duyck, W. (2007). Bilingual Language Processing. *Language and Linguistics Compass 1*(3), 168–194, 10.1111/j.1749-818x.2007. 00008.x

Dewey, J. (1938). *Experience and education.* New York: MacMIllan/Collier.

Ducate, L., & Lomicka, L. (2008). Adventures in the blogosphere: From blog readers to blog writers. Computer Assisted Language Learning, *21*, 9-28.

Elola, I., & Oskoz, A. (2008). Blogging: Fostering inter-cultural competence development in foreign language and study abroad contexts. Foreign Language Annals, *41*, 421-444.

Garcí a-Ponce, E. E., Crawford, T., Lengeling, M. M., & Mora-Pablo, I. (2018). Complexity and likely influence of teachers' and learners' beliefs about speaking practice: Effects on and implications for communicative approaches. *International Journal of Language Studies, 12*(1), 125-146.

Goodman, K. S. (1976). Behind the eye: What happens in reading, In H. Singer & R. B. Ruddell (Eds.), *Theoretical model and process of reading* (pp. 470-496). Newark, Delaware: International Reading Association.

Harmer, J. (1991). The Practice of English Language Teaching. London: Longman.

Hosenfeld, C. (1977). A preliminary investigation of the reading strategies of successful and nonsuccessful second language learners. *System, 5*, 110-123.

Human Development Report 1999 (1999). Globalization with a human face. New York: UNDP and Oxford University Press.

Hwang, P. A. (2008). Linguistic characteristics in synchronous and asynchronous CMC. English Language & Literature Teaching, *14*, 47-66.

Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centered approach.* Cambridge: Cambridge University Press.

Islami Prasetyaningrum. D. (2018). Improving Agriculture Students' Reading Comprehension Through Task-Based Language Teaching (TBLT). *EnJourMe (English Journal of Merdeka): Culture, Language, and Teaching of English, 3(1),* 5-14.

Khanifar, H., Bordbar, H., Seraji, R., Ismaeily, M., NikAeen, M., & Atayi, M. (2012). Recognition of Access to Educational Technologies in theEducational System of Iran.*Journal of Basic and Applied Scientific Research, 2*(7), 7382-7392.

Kumaravadivelu, B. (2006). Dangerous Liaison: Globalization, Empire & TESOL. In J. Edge (Ed.), (Re) locating TESOL in an Age of Empire (pp. 1-26). USA: Palgrave MacMillan.

Kitade, K. (2006). The negotiation model in asynchronous computer-mediated communication (CMC): Negotiation in task-based email exchanges. CALICO Journal, *23*, 319-348. Retrieved from https://www.calico.org/memberBrowse.php?action=article&id=121.

Kötter, M. (2003). Negotiation of meaning and codeswitching in online tandems. Language Learning & Technology, *7*(2), 145-172. Retrieved from http://llt.msu.edu/vol7num2/ kotter/default.html

Lai, C., & Zhao, Y. (2006). Noticing and text-based chat. Language Learning & Technology, *10*(3), 102-120. Retrieved from http://llt.msu.edu/vol10num3/pdf/laizhao.pdf

Lamy, M., & Hampel, R. (2007). *Online communication in language learning and teaching.* New York: Palgrave Macmillan.

Long, M. H. (1985). A Role for Instruction in Second Language Acquisition: Task-based Language Teaching. In K. Hyltenstam, & M. Pienemann (Eds.), Modeling and accessing second language acquisition (pp. 77-99). Clevedon: Multilingual Matters.

Mak, B., & Coniam, D. (2008). Using wikis to enhance and develop writing skills among secondary school students in Hong Kong. System, *36*, 437-455.

Mehri Ghahfarokhi. M., & Tavakoli. M. (2020). The Effect of Technology-mediated Reading Comprehension Tasks on Autonomy and Metacognitive Strategy Use by Iranian EFL Intermediate Learners. *Journal of Modern Research in English Language Studies, 7(3),* 45-69.

Mokhtari, K., & Reichard, C. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology, 94*, 249-259.

Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education*, 25, 2-10.

Norris, J. (2009). Task-Based Teaching and Testing. In M. Long, & C. Doughty (Eds.), *The handbook of language teaching* (pp. 578–594). Malden, MA: Wiley-Blackwell.

Olshavsky, J. E. (1976-1977). Reading as problem solving: An integration of strategies. *Reading Research Quarterly, 12*, 654-674.

Ortega, L. (2009b). Task and technology in language learning: Elective affinities and (dis)encounters. Plenary delivered at the 3rd International Task-Based Language Teaching Conference. Lancaster, UK.

Ozdamli, F., & Uzunboylu, H. (2015). M-learning adequacy and perceptions of students and teachers in secondary schools. British Journal of Educational Technology, *46*, 159–72. doi:10.1111 /bjet.12136

Pallant, J. F. (2020). *SPSS survival manual: A Step by Step Guide to Data Analysis Using IBM SPSS*. Routledge.

Pellettieri, J. (2000). Negotiation in cyberspace: The role of chatting in the development of grammatical competence. In M. Warschauer & R. Kern (Eds.), Network-based language teaching: Concepts and practice. New York: Cambridge University Press, pp. 59-86.

Pennycook, A. (2010). English and globalization. In J. Maybin & J. Swann, (Eds.), *The Routledge companion to English language studies* (pp. 113-121). Routledge.

Pica, R., Kanagy, R., & Falodun, J. (1993). Choosing and using communication tasks for second language research and instruction. In S. Gass & G. Crookes (Eds.), *Task-based learning in a second language* (pp. 9-34). Multilingual Matters.

Popper, K. R. (1945). *The open society and its enemies*. Routledge.

Prensky, M. (2001). Digital natives digital immigrants. *On the Horizon, 9*(5), 1-6. doi: 10.1108/10748120110424816

Rahimpour, M. (2008). Implementation of task-based approaches to language teaching. *Pazhuhesh-e-Zabanha-ye Khareji Journal*, University of Tehran, *41*, 45-61.

Rankin, Y. A. (2008). Design and evaluation of massively multiplayer online role-playing games that facilitate second language acquisition (Unpublished doctoral dissertation). Northwestern University, Evanston, IL.

Salaberry, M. R. (2000). L2 morphosyntactic development in text-based computer-mediated communication. Computer Assisted Language Learning, *13*(1), 5-27.

Salmani Nodoushan, M. A. (2020a). English for Specific Purposes: Traditions, trends, directions. *Studies in English Language and Education, 7*(1), 247-268. doi: 10.24815/siele.v7i1.16342

Salmani Nodoushan, M. A. (2021a). Language and socialization? It is all about sociosemiotics. *Rivista Italiana di Filosofia del Linguaggio, 15*(2).

Salverda, R. (2002). Language diversity and international communication. *English Today, 18*(3), 3-11.

Sholeh, M., & Tahririan, M. H. (2010). A Summative Evaluation of ESP Courses in Iranian Universities: a Case Study of Engineering, Medical and Management Majors**,** an unpublished MA thesis.

Skehan, P., & Foster, P. (2012). Complexity, accuracy, fluency and lexis in task–based performance: A synthesis of the Ealing research. In A. Housen, F. Kuiken & I. Vedder (Eds.), *Dimensions of L2 performance and proficiency: Complexity, accuracy, and fluency in SLA* (pp. 199-220). John Benjamins Publishing Company.

Smith, B. (2003). Computer-mediated negotiated interaction: An expanded model. Modern Language Journal, *87*, 38-57.

Stevenson, M., Schoonen, R. & Glooper K. (2003). Inhibition or comprehension? A multidimensional comparison of reading processes in Dutch and English. *Language learning*, 53 (4), 765-815.

Stockwell, G., Harrington, M. W. (2003). The incidental development of L2 proficiency in NS-NNS email interactions. CALICO Journal, *20*, 337-359. Retrieved from https://www.calico.org/memberBrowse.php?action=article&id=326

Sotillo, S. M. (2000). Discourse functions and syntactic complexity in synchronous and asynchronous communication. Language Learning & Technology, *4*(1), 82-119. Retrieved from http:// llt.msu.edu/vol4num1/sotillo/ default.html

Stepp-Greany, J. (2002). Students perceptions on language learning in a technological environment: Implications for the new millennium. *Language Learning & Technology, 6*, 165-180.

Tavani, C. M., & Losh, S. C. (2003). Motivation, self-confidence, and expectations as predictors of the academic performances among our high school students. *Child Study Journal, 33*, 141-152.

Thorndike, E. L. (1917). Reading as reasoning: A study of mistakes in paragraph, *Journal of Educational psychology, 8*, 323-332.

Thorne, S. L. (2003). Artifacts and cultures-of-use in inter-cultural communication. Language Learning & Technology, *7*(2), 38-67. Retrieved from http://llt.msu.edu/vol7num2/ thorne/default.html

Toyoda, E., & Harrison, R. (2002). Categorization of text chat communication between learners and native speakers of Japanese. Language Learning & Technology, *6*(1), 82-99. Retrieved from http://llt.msu.edu/vol6num1/ toyoda/default.html

Weigand, J. (2018). Explicit instruction of form in a task-based learning environment. *International Journal of Language Studies, 12*(3), 31-54.

Willis, J. (1996). *A framework for task-based learning*. Longman Addison-Wesley.

Willis, J. (2012). *A framework for task-based learning*. Intrinsic Books E-books.

Yamada, M. (2009). The role of social presence in learner-centered communicative language learning using synchronous computer-mediated communication: An experimental study. Computers and Education, 52, 820-833.

Yano, L. (2004). World Englishes in 2000 and beyond. *World Englishes, 18*(3), 3-11.