The Effect of ESP Text Type on Iranian First-Year Medical Students' Language Use Strategies and Test-Taking Strategies[1]

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Abstract

Medical students need to read a plethora of English texts; still relatively little attention is paid to how they should deal with these texts in terms of certain strategies (e.g., language use strategies vs. test-taking strategies) under different contexts (e.g., testing vs. non-testing). The present study investigates the specific language use strategies involved in reading two text types, namely English for General Purposes (EGP) and English for Medical Purposes (EMP), in testing and non-testing situations. The population of this study included 136 first-year medical college students attending an English for Medicine 1 course. Data were collected through questionnaires and retrospection protocols. The findings revealed that both cognitive and metacognitive strategies were used in dealing with EGP and EMP texts, with no significant difference between them. On the contrary, in test-taking situations, the participants made use of language learner strategies, test management strategies, and test-wiseness strategies in dealing with test items of EGP and EMP texts, and test-takers of subject-specific medical texts as opposed to their general counterparts benefited more from these strategies. The findings of this research can help improve the quality of teaching English especially for those students whose major is not English, but rather English for specific purposes.

Resumen

Los estudiantes de medicina necesitan leer una gran cantidad de textos en inglés; todavía se presta relativamente poca atención a cómo deben tratar estos textos en términos de ciertas estrategias (p. ej., estrategias de uso del lenguaje frente a estrategias para tomar exámenes) en diferentes contextos (p. ej., evaluación frente a no evaluación). El presente estudio investiga las estrategias específicas de uso del lenguaje involucradas en la lectura de dos tipos de texto, a saber, inglés para fines generales (EGP) e inglés para fines médicos (EMP), en situaciones de evaluación y no evaluación. La población de este estudio incluyó a 136 estudiantes universitarios de medicina de primer año que asistían a un curso de Inglés para Medicina 1. Los datos fueron recolectados a través de cuestionarios y protocolos de retrospección. Los hallazgos revelaron que se utilizaron estrategias tanto cognitivas como metacognitivas al tratar con textos EGP y EMP, sin diferencias significativas entre ellos. Por el contrario, en situaciones de evaluación, los participantes hicieron uso de estrategias de aprendizaje de idiomas, estrategias de gestión de exámenes y estrategias de experiencia con pruebas al tratar con elementos de prueba de textos EGP y EMP. Quienes trabajaron con textos médicos, a diferencia de sus contrapartes generales, se beneficiaron más de estas estrategias. Los hallazgos de esta investigación pueden ayudar a mejorar la calidad de la enseñanza del inglés, especialmente para aquellos estudiantes cuya especialidad no es el inglés, sino el inglés para propósitos específicos.

Introduction

As far as second language (L2) or foreign language learning and teaching are concerned, the term *strategies* refers to conscious moves made by L2 learners to learn or use L2. There have been different classifications of strategies put forward in literature (Cohen et al., 2001; Oxford, 1990). According to Ali and Razali (2019), the reading process involves a variety of strategies that can help the reader understand the text, and these are broadly classified as cognitive (e.g., predicting, planning, asking questions, etc.) and metacognitive strategies (e.g., problem-solving, global reading, support reading strategy). Overall, the use of strategies has such a decisive role in the success or failure of L2 learners that Naiman et al. (1978) believe the range and number of strategies used by successful L2 learners are significantly greater than those of poor L2 learners.

Literature Review

The literature in second language reading has witnessed an expansion of interest in studying L2 reading strategy use. Studies include those dealing with different groups of learners (Babapour et al., 2019; Block, 1986), students of different disciplines (Ahmed, 2020), different types of instruction (Ajideh et al., 2018), learners with a learning disability (Klingner & Vaughn, 1996), individual differences (Anderson, 1991), online

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situations (Brun-Mercer, 2019; Park et al., 2014; Shang, 2017), text structure (Grabe & Stoller, 2019; Wu & Alrabah, 2020), text type (Shokouhi & Jamali, 2013), type of learning (Pirsl et al., 2013), task type (Barkaoui et al., 2013), textbooks (Akbari, 2015), setting (Daguay-James & Bulusan, 2020; Krekeler, 2006), and enhanced learning environments (Dreyer & Nel, 2003). Apart from these, some studies (Kashkouli et al., 2015) have also investigated L2 learners' test-taking strategies. However, to the best of our knowledge, few, if any studies have so far, been conducted on how different text types (EGP vs. EMP) and different contexts (testing vs. non-testing) may affect the way medical students, whose foreign or second language is English, adopt specific strategies (Chou, 2013; Larouz & Kerouad, 2016; Popescue, 2010). To date, text types have been defined differently by different scholars (see Biber, 1989; Lee, 2001; Paltridge, 1996). The definition used in this study is the one offered by Paltridge who sees text types as a group of texts sharing not only surface-level lexicogrammatical or syntactic features (Biber's "internal linguistic features"), but also rhetorical patterns. This is of great importance considering the fact that these medical students need to read a large number of English texts, but relatively little attention is paid to how to deal with them. Applying strategies in reading for general and specific purposes can be rewarding for both teachers and language learners. It can help them truncate the process and a prevent waste of time and energy, respectively.

Apart from the type of text, the context in which the students read the texts has a profound bearing on how they respond to them. In fact, the strategies employed by readers of English for General Purposes (EGP) and English for Medical Purposes (EMP) in testing situations and non-testing situations may be different. According to Cohen (1998),

> language use strategies include four types, namely retrieval strategies (used to call up language material from storage), rehearsal strategies (used for rehearsing target language structures), cover strategies (used to create the impression of having control over the material when there is not), and communication strategies (used to convey a message that is both meaningful and informative for the listener or the reader). (pp. 4-9)

When these strategies are applied to language test tasks, they are known as test-taking strategies. In fact, test-taking strategies originated from the concept of language test which is defined as "characteristics and formats and/or test-taking situations to raise test scores" (Millman et al., 1965, cited in Ritter & Idol-Maestas, 1986, p. 50).

Kashkouli and Barati (2013) studied how task-based assessment affected the choice of test-taking strategies adopted by Iranian adult EFL learners at three different proficiency levels. According to their results, the three proficiency groups had a distinct pattern in the strategies they used while reading. Nourdad and Ajideh (2019) investigated the relationship between test-taking strategies and reading test performance and found that there was a positive relationship between test-taking strategies and reading test performance and that successful, moderately, successful, and unsuccessful test-takers differed in their use of cognitive and metacognitive strategies. In their study on the validity of the English section of the Entrance Exam for TEFL PhD programs in Iran. Nikneshan and Barati (2019) found that the most commonly used strategies by all applicants with different proficiency levels were *Monitoring* and *Evaluation*.

Despite the scholarly attention paid to test-taking strategies in language testing and language use strategies in language teaching in recent years, the vast majority of these studies have focused on such issues as type of test items and learner proficiency (Kim & Chon, 2014), transferring test-taking strategies from L1 to L2 (Koda, 2007), and learners from different cultures and linguistic backgrounds (Fairbairn & Fox, 2009). However, again there has been a lack of research on the examination of how readers of EMP and EGP texts use different test taking strategies while reading these texts in testing or non-testing contexts. Therefore, this study seeks to provide answers to the following questions:

> 1. What is the effect of text type (i.e., EGP texts vs. EMP texts) on Iranian first-year medical students' language use strategies (i.e., cognitive and metacognitive)?

> 2. What is the effect of text type (i.e., EGP texts vs. EMP texts) on Iranian first-year medical students' test-taking strategies (i.e., test management strategies, language learner strategies, and test-wiseness strategies)?

Methods

Participants

The population of this study included 136 first-year college students majoring in Medicine attending the English for Medicine 1 course at Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran and Abadan University of Medical Sciences, Abadan, Iran. The reason these two universities were selected was because sampling in this study was done using convenience sampling method. The sample was selected from among those students who had taken and passed the compulsory General English course in which they are supposed

to have already learned explicit reading skills, such as scanning, skimming, making inferences, working with graphs and tables, annotating and highlighting, and recognizing context clues. It should be noted that according to the syllabus of the General English course for university students, some reading skills should be taught and learned; however, to guarantee the participants' knowledge of these skills, the Nelson proficiency test series 200A (Fowler & Coe, 1976) containing 25 multiple-choice vocabulary items and cloze-test sections was administered. This was designed in a way so as to check the participants' familiarity with some skills such as skimming, scanning, etc. As far as the reliability of the test was concerned, it was piloted on 30 students who were similar to the participants of the study.

In order to select the participants, those who were able to pass the test with a score with one standard deviation (SD) below and above the mean score of the test were considered to be potential participants of the study. After administering the test, 136 students were invited to participate in the present study. Prior to commencement of the study, the invited students were briefed on the objectives of the study and were assured that their information would remain confidential and that they could withdraw from the study at any time. Afterwards, the students sat a reading comprehension test. The purpose of this reading test was two-fold: first, it was intended to ensure of the participants' knowledge of the reading skills, second, it was run to categorize the participants to low-achievers and high-achievers. For the ease of implementing the research protocol, the participants were organized into two groups, namely the high-achievers and low-achievers based on the scores they received on the tests; this is because the learners' reading proficiency level in a second language has a direct bearing on their strategy use according to Cohen et al (2001). To this end, those medical students who scored higher than mean were classified as high achievers (N=78) and those who scored less than mean were grouped as low achievers (N=58). The participants were aged 18 to 25 years and included both males (N=72) and females (N=64). It should be noted that six participants did not take part in this study due to personal problems. Therefore, the sampling process was convenient since we selected the students from an accessible population.

Instruments

The present study used the instruments listed below to gather the needed data to meet the objectives of this study.

Strategy questionnaires

A variety of research methods have been commonly used in the literature to examine language use strategies. For example, using retrospection, think-aloud protocols, diaries, and questionnaires is commonplace in second language learning literature (Kung, 2017). Our questionnaire included Oxford's Strategy Inventory for Language Learning (1990), as well as strategies enumerated in Cohen et al. (2001). As far as learning strategies were concerned, we used the classification put forward by O'Malley and Chamot (1990) which involves metacognitive (items 1, 2, 3, and 4) and cognitive (items 5- 17) strategy use for reading. (See Appendix 1)

Checklist of test-taking strategies

The participants were provided with a checklist of test-taking strategies to mention what strategies they used while answering the reading comprehension tests. We prepared this checklist based on Cohen's (1998). However, since this checklist was based on a multiple-choice format, we consulted Cohen (2006) and changed the format into short-answers (yes or no). The strategy questionnaires can be found in Appendix 2.

Fog readability formula

The fog readability formula, (Perry & Stewart, 2005) was used to evaluate the difficulty level of the medical articles. Using this formula, the consistency between the English text and the proficiency level of the participants was found. Fog formula is a tool to evaluate and analyze the material and aims to evaluate the extent of the text to be understood and read. There are some steps to calculate the fog formula. This formula rests upon the premise that simple structured short sentences achieve a better score than long complex sentences.

Reliability and validity of the instruments

The strategy inventory for language learning (SILL) is a 50-item inventory used to assess language learning strategies. We used 17 items that were most related to the reading skill. This scale is scored on a 4-point Likert from never or never apply to me (1) to always or always apply to me (4). This scale included six

dimensions of memory strategy (nine questions), cognitive strategy (fourteen questions), metacognitive strategy (nine questions), emotional strategy (five questions), social strategy (seven questions) and compensation strategy (six items). In the Oxford (1990) study, Cronbach's alpha coefficient was reported in the range of 67 to 95 percent. The reliability of the test and its retest in a study in Iran was reported to be .78 (Riazi & Rahimi, 2005). Mohammadi and Alizadeh's (2014) study confirmed the 6-dimensional factor structure of this scale in Iranian context. Also, good test-retest reliability was reported for all dimensions of SILL (i.e., cognitive strategy: .81; metacognitive strategy: .92; compensation strategy: .85; emotional strategy: .87; memory strategy: .79; and social strategy: .84)

The checklist used in this study consisted of three sections and ten Yes/No items. The first part tested was management strategies (five items), the second part was learning language strategies (three items), and the third part was test awareness strategies, which consisted of two items. This checklist was used in a similar study (Chou, 2013) and the results were satisfactory in terms of validity and reliability. In the present study, before using this checklist, we sought experts' opinions, and they approved it. In order to assure the reliability of the reading comprehension tests and Nelson proficiency test series, the tests were piloted on a representative group (N=30). The Cronbach's alpha was calculated to check the internal consistency of the tests. Results showed proper internal consistency of all three tests (N= 30, reading comprehension tests: a=.86, and Nelson proficiency test series: a=.79). The content validity of the tests, they were checked by the experts and required changes were made.

Procedures and data collection

In order to make sure that the students were homogenous in terms of their English reading proficiency, a reading comprehension test was run at the beginning of the study. Another purpose of this test was to divide the participants into low achiever and high achiever groups. Then, the participants were asked to respond to the questionnaire on the reading strategy used for English for general-purpose articles. The reason why this type of strategy use was explored was that the participants at this point had not taken any English course requiring them to read specific purpose texts, and thus they would report the strategies they use while reading general purpose texts.

The participants were asked to answer short-answer reading comprehension questions based on two English for general medical purpose (EGP) texts. The articles were chosen in a way so that the difficulty level of the articles corresponded to the students' reading comprehension proficiency level of general texts. The readability of the articles was checked using the fog readability formula.The readability indexes of the articles were calculated to be 8 and 7, respectively. According to the guidelines of the fog formula, scores between 7-8 are ideal, and those above 12 are too difficult to be read by most people.

Based on the checklist questions, they then answered a checklist and reported what went on their minds during the test-taking process. Four months later when their course was over, the same students answered the questionnaire on reading strategy use but this time for English for specific medical purpose (EMP) texts. Again, the participants were asked to answer reading comprehension questions of two EMP texts. The reason for using two texts was that, first, including a large number of texts in one single reading comprehension test would affect the retrospection process due to imposing cognitive loads on the readers. One the other hand, if we had used only one text, our reading test would have been biased in terms of the topic of the text. We did not use multiple-choice questions and used short-answer items instead since the former involves the risk of devising unreliable distractors (Hughes, 2003). However, this made the process of generating the questionnaires more difficult since the wide majority of the test-taking strategies available in the literature are devoted to multiple-choice items. We either removed specific test-taking strategies from the questionnaires or modified certain items to apply to short-answer questions to resolve this problem.

The participants then answered the corresponding short-answer checklist and reported their experience during the test-taking process, based on the checklist questions.

The reading skills to elicit the participants' comprehension in both EGP and EMP were: finding the main idea of paragraphs, scanning for details, guessing the meaning of unknown vocabulary items from context, and comprehending sentences. These skills were selected since they were supposed to have been taught in the General English course that the students had already passed. The limited number of skills was aimed to avoid threats to test reliability.

Data Analysis

After collecting the required data, the results were summarized using descriptive statistics such as mean ± SD. The results of tests administered to participants during this study were then analyzed using the SPSS software, version 19. We used Wilcoxon signed-rank test to compare the students' reading strategy while reading EGP and EMP texts. Using descriptive statistics, the checklist data related to the EGP and EMP reading comprehension tests were compared. The participants' answers to the checklist and their retrospective self-reports were transcribed, translated, and codified into similar categories. To put it differently, similar strategies were classified into similar categories.

Results

The effect EGP and EMP texts on medical students' metacognitive and cognitive strategies

As one of the objectives of this study, we sought to examine the medical students' specific language use strategies while reading EGP and EMP texts in non-testing contexts. Therefore, we used a questionnaire to elicit the strategy used while reading EGP and EMP texts in terms of both cognitive and meta-cognitive strategies.Table 1 provides a detailed description of the questionnaire data related to the meta-cognitive strategies used while reading EGP and EMP texts.

Strategy	1. Previewing text before reading				2. Using specific parts of the text for guessing the meaning				3. Choosing a reading place to help concentration				4. Plan, monitor, and check			
Response	**EGP**		**EMP**		**EGP**		**EMP**		**EGP**		**EMP**		**EGP**		**EMP**	
	f	p	f	p	f	p	f	p	f	p	f	p	f	p	f	p
Never	4	3.07	5	3.85	0	0	2	1.54	15	11.55	22	16.92	13	10	10	7.69
Rarely	19	14.62	30	23.08	10	7.69	16	12.31	9	6.92	10	7.69	62	47.70	39	30
Frequently	66	50.77	60	46.15	41	31.54	39	30	34	26.15	36	27.69	37	28.46	61	46.92
Always	41	31.54	35	26.92	79	60.77	73	56.15	72	55.38	62	47.70	18	13.84	20	15.39

Table 1: Metacognitive strategies used in EGP and EMP texts

The metacognitive strategies used to evaluate the participants' mental state while reading EGP and EMP comprised four out of 17 items of the used questionnaire. According to the statistics presented in Table 1, the first item among metacognitive strategies is *previewing text before reading*. As shown in Table 150.77% of the participants stated that they frequently made use of *previewing text before reading* in reading general English texts, while for EMP texts, 46.15% of the participants frequently made use of this strategy. Among the participants, 31.54% in EGP group always used *previewing text before reading*. In EMP 23.08%, rarely made use of this strategy, whereas 14.62% of the students reading EGP texts rarely used *previewing text before reading*. About 3.85% of the participants never this strategy in EMP group. 3.07% of the participants in EGP group, on the other hand, stated that they never made use of this strategy while reading English for general purposes. Totally, the participants in EMP and EGP groups claimed that they pay attention to the content in general, equally.

As far as the second metacognitive strategy (*using specific parts of the text for guessing the meaning*) was concerned, 60.77% of the participants in EGP group and 56.15% of the participants in EASP group claimed that they always used this strategy. Around 30% of the participants stated that they frequently made use of this strategy. Surprisingly, none of the participants in EGP group chose "never" in response to the frequency of using this strategy. Overall, the participants in EMP made use of this strategy more than the participants in EGP.

The next metacognitive strategy was *choosing a reading place to help concentration*. In response to this item, 55.38% of the participants in EGP group stated that they always use this strategy, while 47.70% of the participants in EASP group always made use of this strategy. Furthermore, 26.15% of the participants stated that they frequently used this strategy in dealing with EGP. For 16.92% of the participants of EMP texts, and for 11.55% of the participants in EGP group, *it was not important to choose a place to concentrate*. Finally, 6.92% of the participants in EGP group rarely paid attention to this as opposed to 7.69% of the participants in EMP group.

Planning in advance, monitoring to see how the reader does, and then checking the amount of understanding was the next metacognitive strategy used by the participants in EMP and EGP groups. In response to this

item, 46.92% of the EMP participants frequently made use of this strategy, while 28.46% of the participants in EGP group frequently used this strategy. 47.70% of the participants in EGP group rarely used this strategy, while in 30% of the situations the EMP group rarely used this strategy. Roughly equal percentage of the participants in EMP and EGP always and never used this strategy.

In order to test the hypothesis of whether there is a significant difference between the readers of EGP and EMP texts in terms of their use of metacognitive strategies, Wilcoxon signed-rank test was administered on each category, and the results are shown in Table 2.

Test item	Z	Asymptotic significance (2-tailed)
EGP1 EMP1	.000	.792
EGP2 EMP2	.000	.946
EGP3 EMP3	-1.54	.813
EGP4 EMP4	-2.45	.981

Table 2: Results for Wilcoxon signed-rank test for EGP and EMP texts (metacognitive reading strategies)

As shown in Table 2, no significant difference is found for any of the four metacognitive strategies regarding the purpose of the text (EGP vs. EMP). So far, the metacognitive strategies used by the participants in dealing with EMP and EGP in non-test situation have been elaborated on. The following section will elaborate on the cognitive strategies used by the participants in EMP and EGP.

Strategies	Texts	Responses		N (%)	
		Never	Rarely	Frequently	Always
5. Using a dictionary	EGP	3(2.31)	31(23.85)	35(26.92)	61(46.92)
	EMP	9(6.92)	10(7.69)	46(35.39)	65(50)
6. Writing definitions of unknown words	EGP	10(7.69)	29(22.31)	55(42.31)	36(27.69)
	EMP	5(3.85)	23(17.69)	57(43.85)	45(34.61)
7. Translating English into Farsi	EGP	20(15.39)	34(26.15)	47(36.15)	29(22.31)
	EMP	21(16.15)	21(16.15)	43(33.08)	45(34.62)
8. Reading the article several times	EGP	17(13.08)	23(17.69)	56(43.08)	34(26.15)
	EMP	8(6.15)	13(10)	51(39.23)	58(44.62)
9. Combining pieces of information	EGP	12(9.23)	34(26.15)	38(29.23)	46(35.39)
	EMP	6(4.61)	25(19.23)	45(34.62)	54(41.54)
10. Visualizing information in the text	EGP	13(10)	54(41.54)	39(30)	24(18.46)
	EMP	5(3.85)	31(23.84)	39(30)	55(42.31)
11. Skimming first, careful reading next	EGP	6(4.61)	56(43.08)	38(29.23)	30(23.08)
	EMP	2(1.54)	51(39.23)	46(35.39)	31(23.84)
12. Looking for graphs, images, or statistical facts	EGP	5(3.85)	50(38.46)	36(27.69)	39(30)
	EMP	4(3.07)	30(23.08)	56(43.08)	40(30.77)
13. Connecting information with past experiences	EGP	6(4.61)	31(23.84)	44(33.85)	49(37.70)
	EMP	5(3.85)	33(25.38)	37(28.46)	55(42.31)
14.Using previous knowledge	EGP	2(1.54)	18(13.84)	57(43.85)	53(40.77)
	EMP	3(2.31)	12(9.23)	43(33.08)	72(55.38)
15. Guessing meanings of unknown words	EGP	7(5.38)	38(29.23)	41(31.54)	44(33.85)
	EMP	3(2.31)	18(13.84)	51(39.23)	58(44.62)
16. Making ongoing mental summaries of the reading	EGP	24(18.46)	43(33.08)	51(39.23)	12(9.23)
	EMP	17(13.08)	27(20.77)	63(48.46)	23(17.69)
17. Making predictions about happens next	EGP	7(5.38)	66(50.77)	33(25.39)	24(18.46)
	EMP	20(15.39)	29(22.31)	63(48.46)	18(13.84)

Table 3: The cognitive strategies adopted by readers of EGP and EMP texts

Table 3 shows the cognitive strategies used by medical students while dealing with EMP and EGP texts. The first strategy *was using a dictionary.* From the respondents, 50% of the participants stated that they always made use of this strategy while dealing with EMP text, while in reading EGP texts 46.92% of the participants claimed always to use the dictionary to get a detailed meaning of words. Comparison between EMP and EGP readers in terms of dictionary usage showed that EGP readers *rarely* use this strategy in 23.85% of situations, while in EMP cases only in 7.69% of situations they stated that they *rarely* use this strategy. 35.39% of the participants in EMP group claimed that they frequently use this strategy. However, in 26.92% of the cases, the participants in EGP group claimed that they frequently use this strategy.

Writing down the definitions of unknown English words was a strategy of choice for the EMP readers compared with EGP readers. Among the EMP readers, 34.61% stated that they always use this strategy, while in 27.69 %, the EGP readers tended to use this strategy. The reason for this may be the fact that students of EMP care more for the unknown words, which leads to complete understanding of the text. In fact, content is important for EMP readers.

As the next category of cognitive strategies, *translation* was chosen to be always used in 34.62% of situations by EMP, while 22.31% of the participants while reading EGP, always used this strategy. However, in reading both EASP and EAGP texts, the participants chose the item frequently roughly equally. *Reading an article for several times* was the next cognitive strategy and 44.62% of the participants stated that they always use this strategy in understanding EASP texts, while in reading EAGP 26.15% of participants said that they always made use of this strategy. About 43.08% of the respondents stated that they frequently read an EGP article several times, while 39.23% of the participants frequently read an EMP article more than once.

Among the participants, 41.54% stated that they *always connect the text to their previous experience* in understanding EMP texts, but in dealing with EGP articles, 35.39% of the participants always made use of this strategy. Of the participants, 29.23% stated that they frequently *use their past experience* in reading EGP texts, while in reading EMP articles, 34.62% of the respondents said that they frequently use this strategy. In *using previous knowledge*, the participants, in general, claimed that they use this cognitive strategy more in EMP than EGP. *Guessing meaning from context* was used more by the participants for EMP compared with EGP. *Making mental summaries* was used more frequently in comprehending EMP compared with EGP texts. *Predicting what will happen* was chosen to be used more frequently in reading EMP than EGP articles.

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Items	Z	Asymptotic significance (2-tailed)
EGP5 EMP5	-.365	.715
EGP6 EMP6	.000	.947
EGP7 EMP7	-.354	.780
EGP8 EMP8	.000	1.000
EGP9 EMP9	-.231	.901
EGP10 EMP10	-.34	.984
EGP11 EMP11	-.354	1.000
EGP12 EMP12	-.535	.539
EGP13 EMP13	-.102	.908
EGP14 EMP14	.000	1.000
EGP15 EMP15	-.265	.323
EGP16 EMP16	-.351	.436
EGP17 EMP17	-.74	.345

Table 4: Results of Wilcoxon test for EGP and EMP texts (cognitive strategies)

According to the results presented in Table 7, the cognitive strategies were used more or less equally for EGP and EMP texts. In fact, according to this table, no significant difference was found in terms of using these strategies in EGP and EMP texts.

The effect EGP and EMP texts on medical students' test-taking strategies

As the second objective, we examined the medical students' test-taking strategies while reading EGP and EMP texts. To this aim, we asked the students to report the strategies they adopted while dealing with the reading comprehension questions based on a checklist adapted from Cohen (1998), with modifications made to the items and changing them from multiple-choice format to short-answer format. The checklist involved three sections, namely test management strategies, language learner strategies, and test-wiseness strategies. The results of the participants' responses are presented in Table 5 in percentages.

Strategies		Texts	Responses (%)	
			Yes	No
Test management strategies	1. Reading test items repeatedly to clarify a given answer	EGP	33.88	66.12
		EMP	75.22	24.78
	2. Going back to the text to make sure of a given answer	EGP	44.60	55.40
		EMP	59.48	40.52
	3. Relying on lexical items or synonyms to finding answers in the passage	EGP	47.96	52.04
		EMP	56.93	43.07
	4. Postponing certain test items	EGP	39.45	60.55
		EMP	62.11	37.89
	5. Modifying a given answer after answering other questions	EGP	48.76	51.24
		EMP	42.28	57.72
Language learner strategies	6. Creating a mental representation of the information given in the text	EGP	49.31	50.69
		EMP	52.39	47.61
	7. Thinking of an answer beforehand	EGP	39.25	60.75
		EMP	23.70	76.30
	8. Guessing tactfully from context	EGP	50.78	49.22
		EMP	49.21	50.79
Test wiseness strategies	9. Searching for answers according to the order of their appearance in the text	EGP	52.14	47.86
		EMP	48.50	51.50
	10. Using information given in other items as clues to answer a given item	EGP	48.43	51.57
		EMP	53.27	46.73

Table 5: Test taking strategies used while reading EGP and EMP texts

According to the results presented in Table 5, EMP texts required the students to opt for more test management strategies in comparison with EGP texts. More particularly, a larger number of medical students reported that while reading EMP texts, they *read the passage a couple of times*, *referred to the text after answering an item to make sure of that answer, used their knowledge of vocabulary items* and *synonyms for answering the test*, and for certain test items they *chose to postpone them momentarily*.

As shown in Table 5, 52.39% of the participants created a mental representation of the information in EMP texts, while in EGP test items, 49.31% made use of this strategy. On the other hand, 39.25% of EGP readers tended to devise answers prior to actually looking for the answers in the texts EGP test items. Similarly, 50.78% of the respondents tended to make educated guesses in answering EGP questions. Searching for answers according to the order of their appearance in the text was another strategy that was applied more to EGP test items compared with their EMP counterparts; however, EMP test items favored finding information from clues given in other questions.

Discussion

The present study was designed to investigate the specific language use strategies which are involved in reading both general and subject-specific medical articles in non-testing and test situations. According to our results, the medical students adopted both metacognitive and cognitive strategies while reading EGP and EMP texts, which was consistent with the results of a study by Daguay-James and Bulusan (2020) in which a high metacognitive awareness of reading strategies was observed in participants who were reading English academic texts. However, we also found that as far as the text type (EGP vs. EMP) was concerned, there was no significant difference in the use of metacognitive strategies. This was inconsistent with the results of Shokouhi and Jamali (2013) who reported that text type contributes to the readers' choice of the strategies and that metacognitive strategies were used more frequently among students reading expository texts compared with narrative texts. Of course, this difference in results could be attributed to the

fundamental textual differences in narrative and expository texts used in their study compared to the EGP and EMP texts used in our study.

It can be argued that, according to Oxford (1990), metacognitive methods involve pre-planning and post-evaluation of language learning practices to support the results of the present research. These approaches empower learners to monitor the learning process by helping them coordinate their efforts to prepare, organize and assess the performance of the target language. The first metacognitive strategy was *paying attention to content in general*. It was observed that EMP readers focus more on the content in general, the reason may be due to the fact that in EMP texts language is used as a tool of instruction and the content is delivered through language; therefore, for EMP readers understanding the content is of great value. This is confirmed by the results of a study by Pirsl et al. (2013) who suggested that two important aspects that are fundamental for teaching and learning ESP are autonomous learning and metacognitive strategies.

Using specific parts to help find the meaning as another metacognitive strategy was also used by both EGP and EMP readers; however, more than half of the participants claimed that they always use this strategy, it is possible to attribute the explanation for such assumptions to the fact that in each text, there are some contextual clues provided for comprehensibility of the texts. Examples of clues that make a text more fluent are the discourse markers, metadiscourse markers and cohesive devices. Clearly, all types of these textual features, exist in EGP as well as EMP texts. In addition, the cohesion of a text makes reasonable links between different parts of a text; therefore, the readers use this strategy to find meaning of the text.

Planning in advance, monitoring to see how the reader does, and then checking the amount of understanding was also used more frequently by EMP readers. The underlying reason may be the fact that in EMP texts, gaining a general picture of the text is of great value for the reader. It seems that EMP readers more often look for specific pieces of information and try to locate specific data; therefore,the general amount of understanding may not be as important for them as it was for EGP readers.

Furthermore, the cognitive strategies were used more or less equally for EGP and EMP texts in non-text situations. In fact, the Wilcoxon statistical technique depicted no significant difference in using these strategies for EGP and EMP texts. The most notable increases in strategy use were found in *using the dictionary, reading the article several times, taking note of new and unfamiliar words, and translating into the L1*. One of the cognitive strategies was *making use of dictionaries* towards which EMP readers showed more tendency. The reason may be found in the fact that using dictionaries can help readers find general meaning of words. In EGP texts, the readers are, more or less, familiar with special words; accordingly, they may refer to dictionaries less than EMP readers. Akbari (2015) argues that ELT course books as opposed to ESP books expect the learners to learn dictionary skills by themselves whereas ESP books have implicit dictionary-skills training. In addition, translation is a useful technique for general understanding of texts, that's why the strategy of *translation* was more often used by EMP readers, since they want to get a general picture of the text.

Similarly, *reading an article several times*, was the strategy used by EMP readers more frequently. This can be due to the fact that moving back and forth through the article text can lead to a more general understanding of the article. On the contrary, *using visualized information in the article* was more frequently used by EGP readers. EGP readers seem to make a more realistic link with text; therefore, they make use of every picture and table in the text. Furthermore, *connecting the content to the previous knowledge and experience* was also used more frequently by EGP readers. As noted, EGP texts deal with a variety of topics; therefore, using specific knowledge in comprehending them is important.

The context awareness of ESP by the participants and the sentence length influenced the cognitive information processing of the participants. Nevertheless, the participants switched to using test management techniques without the aid of dictionaries in the reading tasks, like reading test items multiple times, checking responses regularly, and referring to the easy questions before the difficult ones. Subjects began preparing, arranging, tracking and managing the processes of reading and evaluating the interpretation of the EMP documents, which revealed a degree of metacognitive usage of the technique that varied from their less regular use under non-testing conditions. In other words, to compensate for their lack of adequate language skills, they employed test management techniques. A similar finding was observed in Kashkouli et al. (2015) in which different participants' test performance was significantly affected by different test-taking strategies, with test-wiseness strategies being used significantly more frequently among low-proficiency test takers compared with other participants.

As readers start from clause meaning to the text comprehension, and, later on, focus on the elaboration level, context information and inference capacity are of utmost importance, according to Grabe and Stoller

(2019). In addition, the contextualization of the EMP texts and the construction of the situation to the student's own understanding involves the ability to coordinate, track, reevaluate, and apply techniques when necessary to compensate for comprehension dilemma. However, according to Baddeley et al. (2009), it is still unknown how much cognitive operation in the processing of metacognitive and executive function in working memory could be involved. However, Grabe and Stoller (2019) agree that students are selective in assessment and evaluation strategies. By noting that cognitive methods obey metacognitive guidelines, Oxford (2011) supports this view.

When reading the EGP articles, most of the students frequently used mental notes, relied on their summaries, and generated the answers more frequently in both testing and non-testing circumstances before looking for them in the EGP texts. According to the retrospective self-report results, the students found it more practical to rely on memorizing new data included in the EGP papers to visualize the text scenarios and link the new data to the background knowledge. Nevertheless, it was very difficult and sometimes impossible to connect new data with the schemes of the participants during taking the subject-specific tests.

The findings of this study support those of the study by Krekeler (2006), who reported that the Language for Specific Academic Purposes (LSAP) knowledge of reading test did not help international students in Germany to read the LSAP articles. Our findings, however, are contrary to the study of Barkaoui et al. (2013), in which they found no connection between the overall number of observed strategy uses, task types, and the test scores of Chinese undergraduate students.

The findings of the present study support the claims of Cohen (1998), who argues that, in a testing context, students tend to use language use strategies as a reaction to different test items.

Conclusion

This study was an attempt to shed more light on the issue of strategy-based instruction. In sum, the findings of the study revealed that both cognitive and metacognitive strategies are used in dealing with EGP and EMP texts, with no significant difference among them. On the contrary, in test taking situations, the participants made use of language learner, test wiseness, and test management strategies in dealing with EGP and EMP test items, while in general EMP test takers benefited more from these strategies.

Implications of the study

As test-takers, foreign language learners use a number of test-taking strategies without being conscious that they were using a specific kind of strategy and without recognizing that those techniques are in fact strategies or not. Therefore, it can be said that consciousness regarding strategy-use can help improve test taking ability of language learners. The findings of this study can help language learners gain a level of awareness of test taking strategies; knowing this fact is important for both language teachers and learners.

One way to involve learners during reading according to Mier (1984) is teaching them techniques to understand the text, which can be done by making learners active and engaging them in their own learning. In line with these findings, this study is significant in that it can help teachers active in teaching reading both to EMP and EGP decide whether to teach reading using those strategies used by teachers or using those strategies applied by the candidates or a combination of both.

Reading strategies, as mentioned above, have a positive relationship with students' comprehension of the content and organization of the text, That is to say, students can make sense of what they learn more easily by implementing suitable strategies. Reading techniques, therefore, constitute an essential aspect in second/foreign language learning. However, in spite of this fact, they are never addressed during textbook development, teaching and assessment, so students are in danger of misunderstanding, because they might misuse various strategies or at least use the same strategies for all kinds of readings. For EFL/SLA researchers and reading book developers for second/foreign language teaching purposes, the findings of the study are therefore important.

The literature on the knowledge of reading strategies suggests a need to improve our perception of readers about improving the reading strategies in order to transform them into active, "constructively responsive readers" (Pressley & Afflerbach, 1995). The findings of this study provide implications for reading researchers who wish to examine the readers' awareness of the process of reading and monitor reading comprehension and their use of strategies before, during, and after reading. The findings of the study can also provide insights for those institutes and practitioners engaged in holding preparatory courses for

language tests such as IELTS, by demonstrating the most frequently used reading to improve reading ability of candidates.

Limitations of the study

Even though the present research attempt was made to control the extraneous factors, there were a number of limitations that are enumerated here. A limited number of language learners participated in this study, and in order to gain more comprehensive results other populations can be called upon. The EGP learners were studying English for medicine with learners from other fields, the results may be different. A questionnaire with a limited number of items concerning cognitive and metacognitive strategies was used in the present study. Other studies can broaden the literature with other data collection instruments like observation. Finally, this study was conducted in a co-educational context, but our study failed to take into account the fact that gender can affect the results obtained.

Suggestions for further research

The study's primary objective was to probe the test-taking strategies in EMP and EGP situations. However, in order to complement the findings, further studies need to be conducted.

In this study only 136 learners were studied. Other studies can examine higher number of learners to check if similar results will be obtained.

While this study focused on test taking strategies and reading strategies of medical texts, other studies may broaden this line taking other types of texts such as narrative or expository texts into account. This study chose male and female students as the participants, it may also be interesting to see if test taking strategies vary across genders. The cultural background of test takers may affect the way they act in test sessions. Future researchers could look at cultural differences in test taking process. As the participants were all medical students, other studies can be conducted and investigate whether students of other fields of study like those who study hard sciences will use the same strategies in EGP or not. Different age groups with diverse educational backgrounds can be the participants of this study to see if they come up with the same results. For example another study can be conducted with other participants such as graduate students of TEFL.

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Appendix 1

Questionnaire of Reading Strategy Use for and EMP Reading
(Non-testing Contexts)

Circle the number that best describes your reading situation.

1 = never. 2 = rarely. 3 = frequently. 4 = always.

Metacognitive strategies

1. I paid more attention to content in general than in detail.

2. I paid attention to specific parts that helped me find the meaning of the passage.

3. I chose a place that helped me concentrate.

4. I planned in advance how I was going to read the text, monitor to see how I am doing, and then check to see how much I understood.

Cognitive strategies

5. I used a dictionary to get a detailed sense of what individual words mean.

6. I wrote down the definitions of unknown English words.

7. I translated the English words and sentences into Farsi.

8. I read an article several times until I understood it.

9. I combined pieces of information together.

10. I visualized information in the articles.

11. I skimmed an article first to get the main idea and then went back and read it more carefully.

12. I looked for tables, figures, pictures, or statistical data to help me understand the context.

13. I connected new information in the articles with my past experiences.

14. I used previous knowledge to help me understand the articles.

15. I guessed the approximate meaning by using clues from the context of the reading material.

16. I made ongoing summaries of the reading either in my mind or in the margins of the text.

17. I made predictions as to what would happen next.

Note. The two questionnaires—one for the EGP reading and the other for the EMP reading—were basically the same, except that the phrase "while reading the medical text" was added to each question in the EMP questionnaire. However, the questionnaires were combined together in Appendix 1 for reporting purposes. In the study, the questionnaires were administered separately.

Appendix 2

Checklist of Test-Taking Strategies for the EGAP and ESAP Reading Tests

Test Management Strategies

1. I read the questions more than twice for clarification.
    Yes
    No

2. I returned to the text passage to look for the answers frequently for confirmation.
    Yes
    No

3. I found the portion of the text that the question referred to through vocabulary and/or synonyms in the question and text.
    Yes
    No

4. I postponed dealing with an item until later.
    Yes
    No

5. I changed my answers after completing other questions.
    Yes
    No

Language Learner Strategies

6. I read the text passage first and made a mental note of where different kinds of information were located.
    Yes
    No

7. I tried to produce my own answer to the question before searching for the answer.
    Yes
    No

8. I made an educated guess.
    Yes
    No

Test-Wiseness Strategies

9. I looked for answers to questions in chronological order in the text.
    Yes
    No

10. I took advantage of clues appearing in other questions to answer the question.
    Yes
    No