

The Perceived and Actual Use of Metacognitive Reading Strategies by the UAE High School Students

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Abstract

This study explored the systematic use of metacognitive reading strategies by the UAE high school students when reading in English and Arabic. The study explored the reported/perceived strategies use (n=390), the actual/real-time use of reading strategies (n=10) and the difference between the perceived and real-time use in the two languages. Results showed that the students reported using all the strategies in the reading survey, quantitative and qualitative results supported that more strategies were used in Arabic than in English, the participants relied heavily on translation in reading the English text. Moreover, no evidence of strategies transfers from L1 to L2. The study recommended a direct and systematic teaching and learning of reading strategies for the UAE high school students.

Keywords: *Reading strategies, metcognitive reading, Arab students, English-Arabic reading, UAE high school students, systematic learning*

Introduction

Although there are an overwhelming number of studies on various aspects of foreign language reading, there is very little research carried out on the metacognitive knowledge and reading strategies of Arabic native speakers. At present, there is no study that investigated the metacognitive knowledge and reading strategies of Arabic native speakers students at secondary or high school level and most studies focused on proficient ESL/EFL proficient readers (Alsheikh, 2009; Alsheikh & Mokhtari, 2011; Malcolm, 2009; Mokhtari, 2008). Therefore, this study tried to examine the use of metacognitive reading strategies by the UAE high school students when reading in English and Arabic.

Reading strategies are of great value because they are interwoven into the fabric of the readers' cognitive development. For example, Thorndike (1917) hypothesized that reading is a form of reasoning which involves metacognitive activities such as planning, checking, evaluating, understanding, and monitoring. These metacognitive activities and behaviors could be systematically learned through a series of regimented, thought-out steps that lead to specific achievements or desired outcomes (Al-Shammari and Yawkey, 2011). Some researchers found that systematic teaching and learning of the use and the awareness of metacognitive reading strategies improve reading comprehension (Boulware-Gooden, Carreker, Thornhill and Joshi, 2007; Paris, Wasik and Tuner, 1996; Takallou, 2011). For example, Takallou (2011) found that the two experimental groups which received instruction in planning and self-monitoring outperformed the control group in the reading comprehension test; the study also found that the experimental groups' awareness of metacognitive strategies significantly increased after instruction. Additionally, Al-Shammari

and Yawkey (2011) investigated innovative systematic learning practices in students' learning settings. The study found positive gain in students learning pertinent to specific automaticity of desired practices and improvements in achievement consequently. In this regard, reading strategies investigation has been seen as a way of gaining invaluable insights into the nature of the reading monitoring which allows readers to judge whether comprehension is taking place and to take compensatory action accordingly (Block, 1992; Chamot & O'Malley, 1996; Mokhtari & Sheorey, 2008). Moreover, a number of empirical investigations have established a positive relationship between metacognitive strategies and reading comprehension (Mokhtari & Sheorey, 2008; Pressley & Afflerbach, 1995; Zhang & Wu, 2008). These researchers found that the strategies the readers use when interacting with printed materials play an important role in comprehension. Others found that good readers used reading strategies more often than poor readers (Chamot & El-Dinary, 1999; Lau, 2006; Zhang, 2009). Interestingly, Phifer and Glover (1982) warned us of taking students' words while reading because the students did not consistently apply the metacognitive strategies they professed to use.

Literature Review

Flavell (1978) defined metacognition as "knowledge that takes as its object or regulate any aspect of any cognitive endeavor" (p. 37). This definition considered two dimensions of cognitive ability which are knowledge of cognition and the regulation of cognition. In this study, metacognitive refers to systematic reading endeavors concerning the reader's cognitive processing during reading and the regulation of cognition processes. Additionally, some researchers pointed to a general inconsistency in using two terms, skills and strategies (Afflerbach, Pearson & Paris, 2008). Afflerbach et al., (2008) indicated that reading skills are "automatic actions that result in decoding, comprehension and fluency" while reading strategies are "deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meaning out of text" (p.11).

Several researchers have identified many metacognitive strategies involved in reading (Mokhtari & Reichrad, 2002; Mokhtari & Sheorey, 2008; O'Mally, & Chamot, 1990) such as setting a purposes for reading, identifying the important aspects of the text and focusing attention on the main aspects of text rather than trivia (see Mokhtari & Sheorey, 2008). The effectiveness of reading strategies suggested that there is a relative closeness between strategic reading and the control over cognitive process. Mokhtari and Sheorey (2008) gave an extensive description of the process of developing the Survey of Reading Strategies (SORS). This survey includes three categories: The Global Reading Strategies (GLOB), which are well-intended, carefully-planned strategies by which leaners monitor their reading (e.g. set a purpose for reading, previewing the text, using typographical aids); Problem Solving Strategies (PROB), which are localized, focused procedures used when readers encountered difficult reading materials (e.g. guessing the meaning of unknown words, rereading the text to improve comprehension); the Support Reading Strategies (SUP) (e.g. using a dictionary, taking notes and underlying the text) are basic support mechanism intended to aid the reader in comprehension (see Mokhtari & Sheorey, 2008, p. 51).

Reading in L1 and L2

Reading in a second language is difficult. For example, Koda (2007) emphasized that reading in L2 is more complex than reading in L1 because L2 reading is multifaceted construct that

entails a number of sub-skills and needs continuous adjustments in order to accommodate for different demands that second language imposes. Koda (2007) stressed the notion of “linguistic distance” which is self-evident between any two languages in structural similarities and differences. These differences could be attributed to phonological, syntactic, semantic and pragmatic reasons. For example, Jimenez, Garcia, and Pearson’s (1995, 1996) studies of Latino students revealed that explicit knowledge of the relationship between Spanish and English facilitates bilingual students’ reading comprehension while unknown vocabulary was an obstacle to reading comprehension for the bilingual children. Jimenez et al. (1996) also found that Latino/Latina students uniquely transferred information across languages, translated from Spanish to English and they openly accessed cognates when they read. Thus the closer the language, the easier the processing demands and vice versa (Koda, 2007). For this reason, some researchers suggested that Arabic native speakers have some reading problems due to the “linguistic distance” between Arabic and English (Fender, 2008; Koda, 2007; Perfetti, & Dunlap, 2008). Additionally, there is a general acceptance among researchers that systematic learning of linguistic is indispensable for successful reading in L2 which may trigger the general controversial issue of the relative contributions of L2 proficiency and L1 reading ability with regard to strategy transfer. Although most researchers agree on the skills transfer of first language to second language, they disagree on “how” and “when” this transfer occurs. For example, Clarke (1979) emphasized that unless second learners reach a certain competency or a “threshold” in the target language, the transfer of skills and strategies is impossible or short-circuited.

Some studies investigated the use of metacognitive strategies in first and second language (Feng & Mokhtari, 1998; Kong, 2006; Zhang and Wu, 2009). For example, Feng and Mokhtari (1998) and Kong (2006) investigated the reading strategies of Chinese students while reading in English and Chinese. The results of these studies revealed that the strategies were used more frequently when reading in English than in Chinese. Additionally, Zhang and Wu (2009) found that Chinese senior high school used Global Reading Strategies, Problem Solving Strategies and Support Reading strategies at a high-frequency level. Furthermore, Sheorey and Mokhtari (2001) found that both native and non-native readers display awareness of nearly 30-targeted strategies and regardless of their reading ability the participants gave more importance to Problem Solving Strategies, Global Reading Strategies and Support Reading Strategies respectively.

Recently, few studies investigated the differences of metacognitive strategy use among Arabic bilingual and trilingual readers (Alsheikh, 2009; Alsheikh, 2011; Malcolm, 2009; Mokhtari, 2008). For example, Mokhtari (2008) investigated the reading strategies of three multilingual readers (Arabic, English and French). The study revealed that the perceived use of reading strategies was quite similar for the three participants. The study also found that the three participants used more reading strategies in their least proficient language(s) and fewer strategies in the languages in which they were more proficient. A similar study conducted by Alsheikh (2011) to compare the reading strategies use of three advanced multi-literate and trilingual readers (Hausa, English and French). The study found that the three multilingual readers demonstrate high awareness of reading strategies; they deploy more reading strategies in their second and third language than in their first language; the most proficient readers deploy a wider range of strategies than the least proficient reader who relies heavily on translation. Additionally, Malcolm (2009) compared the reported academic reading strategy use of medical students in Bahrain University with different English proficiency levels. The study found that overall all the participants reported high use of strategies, and significant

differences in reported use of metacognitive strategies in general and some strategies related to translation from English to Arabic with the freshman and low English proficiency group used more translation strategies and less use of strategies than the upper year students. Finally, Alsheikh (2009) investigated the metacognitive reading strategies in Arabic and English by proficient Arabic Native speakers who study in some Midwestern universities. The results of the study revealed that the participants were aware of the 30 strategies in the SORS. The results also revealed statistical differences in the reported and actual use of the strategies; the participants reported and actually used more strategies in English than in Arabic. The participants also did not often translate when they actually read texts in English.

Despite the overwhelming number of studies on various aspects of second and foreign language reading, there is no research that the author is aware of that investigated the metacognitive knowledge and reading strategies of the UAE high school students or those in a poor input environment (Zhang, 2001). Particularly, the participants in this study read in lexically, orthographically, semantically two different languages, and with different proficiency levels. A careful study of the metacognitive knowledge and strategies use of the UAE students will help to better understand how they read in Arabic and English. Therefore, the study explored three interrelated questions:

1. Are there any significant differences in the reading strategies that the UAE students report using when they read academic materials in English and Arabic?
2. What specific reading strategies do UAE high school students actually use when reading in each of the two languages?
3. What is the difference between the strategies that the students reported and the ones they actually used in reading across the two languages?

Method

Participants

The participants of this study were United Arab Emirates high school students from 32 schools in the seven Emirates (states) which constitute the country union. From the pool of 390 students who completed the reading surveys in English and Arabic, ten were randomly selected to participate in the think aloud Protocol. The sample consisted of 390 high school students, 137 (32.6%) were male, and 253 (64.2%) were female. The participants' age ranged from 15-18-year old. In terms of grade level, 52 (13.3%) were in tenth grade, 103 (26.4 %) were in eleventh grade, and 235 (60.3%) were in twelfth grade. The students' skills self-rating (reading, writing, speaking and listening) was generally higher for Arabic than English.

Materials

All the participants completed the Survey of Reading Strategies (SORS) (Mokhtari & Sheorey, 2002) which measures the metacognitive awareness and strategy use of students who are native and non-native speakers of English when reading academic and nonacademic materials. The SORS uses a 5-point Likert scale. The instrument was field-tested extensively with diverse student populations including native and non-native speakers of English and was

found to have well established psychometric properties including validity and reliability data (Alpha = .93), which are described in Mokhtari & Reichard (2002).

Reading Passages: Two expository reading passages in English and Arabic were used in the study. These passages were selected from magazines that are similar to academic materials used in schools. The readability of the passages was judged by a Flesch Kincaid readability formula for English and a group judgment for Arabic by having group members rating the readability for the Arabic text. The passages' readability was estimated to be around the 10-12th grade level. The English passage: *A city Profile, Al Ain: The garden city of the gulf*, is an expository text in Al Ain Times (Dec, 2006) which gives some descriptive details and information about Al-Ain city. The Arabic passage: *The new secondary school reform terrorizes Students: The Students: We will be scapegoats for the disadvantages of this reform*, is an expository text written by Eikram Yousif (Dec, 2006) which dealt with the new reform in the education system and examinations in the UAE and the students' reaction to it.

Data collection: All the participants completed a background questionnaire and the Survey Of Reading Strategies (SORS) one in English and another in Arabic respectively. Additionally, a subsample of ten participants were randomly selected to participate in the second part of the study which featured a think-aloud protocol. The constant comparative method analysis, an analytical scheme that was first developed by Glaser and Strauss (1967) and later refined by Lincoln and Guba (1985) was used to identify the reading strategies and extract instances of strategies used in the think aloud. The clustering and grouping of patterns that share certain configurations, which were given in Miles and Huberman (1996), were also used. Three judges helped in analyzing the think aloud to establish an interrater reliability. The Kappa statistic revealed a substantial agreement (0.80). The data was analyzed and coded, the categories properties were integrated, categorical concepts were formulated and the content behind the categories was provided using the SORS strategy categories as a general guide.

Results

The Reported Use or the Perceived Use of strategies

To find out about the reported or perceived use of strategies, the students' responses were examined for the individual strategies as well as for the three categories or subscales of the Survey of Reading Strategies (SORS) in English and Arabic. As Table 1 shows, the means of individual strategies reported show that the participants have a fairly high level of awareness of reading strategies when they read in Arabic. The mean strategy use ranged from a high of 3.96 to a low of 2.49 when reading in Arabic (overall $M = 3.43$; $SD = .54$). Similarly, the means ranged from a high of 3.13 to a low of 2.34 when reading in English (overall $M = 2.77$; $SD = .63$). The observed difference in the overall strategy means reported for the two languages was statistically significant ($t(26.2)$, $p < .000$).

The students' responses were examined using the three SORS categories. The averages for these categories revealed a moderate to high strategy usage. So, when the UAE high school students read in both languages, they reported using the Problem Solving Reading Strategies, followed by Global Reading Strategies and Support Reading Strategies. The differences between the uses of strategies in the two languages were statistically significant for the three

categories: the Problem Reading Strategies ($t(27.5) p < .000$); the Global Reading Strategies ($t(25.3) p < .000$) and the Support Reading Strategies ($t(17.8) p < .000$).

Insert Table 1 about here

Real-time or Actual Use of Strategies when Reading in English and Arabic

In the second part of the study, qualitative data were collected from the ten purposefully selected participants who participated in the second phase of the study. The data revealed the strategies that the participants (Creswell, 2012) used in real-time or actual reading in the two languages. The strategies that were actually used were compared to the ones reported as being used. As a general rule, a strategy was counted if it occurred four or more times by different participants to establish a reliability of instance occurrences. Additionally, pseudo names were given to the ten participants in data transcription.

Table 2 lists the strategies that were used by the ten participants when they actually read the passage in English and Arabic. A close examination of the data presented in Table 2 shows that the participants used some of the strategies and didn't use others. Collectively, the participants used a total of 10 strategies when reading the English text. Of these 10 strategies, there were two Global Reading Strategies, six Problem-Solving Strategies, and two Support Reading Strategies.

Global Reading Strategies: An analysis of examples of the think-aloud transcripts showed that the participants used two Global Reading Strategies. These strategies are: "Using prior knowledge", and "Determining what to read closely". Here is an example of exact words in using these two strategies which were used by 6 participants:

Shamsa: [... Muscat is a very beautiful city ... and I know it is few hours' drive away ..Yes that is true, but Muscat in this part is said to be...Ok ..Ok I know now]

Problem-Solving Strategies: An analysis of the transcripts shows that the participants used six out of eight of the Problem Solving Reading Strategies". These strategies are: "Reading slowly and carefully", "Trying to stay focused on reading", "Adjusting reading rate", "Paying close attention to reading", "Re-reading for better understanding", and "Guessing meaning of unknown words or phrase". The participants used most of the Problems Solving Strategies when they read the English text. Overall, they were careful when they read the English text. For example, five participants employed a variety of strategies in trying to make sense of the English text. Most revolved around vocabulary and using contextual clues to resolve the unknown words "guessing meaning of unknown word or phrase" can be found in the following example:

Fatima: [I don't know how this word "home" is used here? But that seems to be a home for the university (University Home) what does it mean?... yes, the university is located there....]

All the participants employed "reading slowly and carefully", "try to stay focused in reading", "adjusting reading rate", "pay close attention to reading", and "re-reading for better

understanding” to increase the likelihood of comprehension when the text became difficult. The following example illustrates the use of these strategies:

Sabha: [So, let me reread the sentence again. “*It uses the ancient but efficient non-mechanized “falaj” irrigation systems*”. Ok, it means that the word “*falaj*” has the same meaning in Arabic and English]

Support Reading Strategies: Transcripts analysis shows that the participants used only two Support Reading Strategies: “Translating from English to Arabic”, and “Thinking of information in both languages” which were used excessively by all of the participants:

Ali: [Physical characteristics of the city are dominated (*yisaitir*) “it means dominated” by major road and streets net [*shabaka kitut yanni*] “it means streets net”]

An examination of the data presented in Table 2 shows that the participants used a total of 14 strategies when reading the Arabic text. Of these 14 strategies, there were six Global Reading Strategies, five Problem-Solving Strategies, and three Support Reading Strategies.

Global Reading Strategies: An analysis of the transcripts showed that the participants used five Global Reading Strategies, which were: “Determining what I know prior to reading a text”, “Determining what to read closely”, “Analyzing and evaluating the text,” “Predicting or guessing text meaning,” “Previewing text before reading,” and “Confirming predictions”. When the participants started reading the title of the Arabic passage they tried to guess the content of the text. They also tried to make some predictions about the text, a strategy which was not used when they read the English text:

Khadeija: *After reading the title:* [We will be the scapegoats. It is true that they used us as sacrifice sheep, I meant we are sheep...I guess this is what the title suggests.....]

Relating prior knowledge to reading is one of the most used strategies, it was used by participants when they read the Arabic text. In fact, focusing on relating the Arabic passage to personal experiences emerged as a crucial strategy to better understand the Arabic text. For example, five of the participants tried to relate what they read in the Arabic passage to their personal experiences. Here is an illustrative example:

Mozza: [Oh!... I know this reform came as a shock to the students, in this new reform we don’t know how they assigned the grade? Where is the place of the exams? All those things are new to us... It means that everyday they change things and make new mandates....]

Most participants employed the strategies of: “Critically analyzing and evaluating the text”, “Determining what to read closely”, “Predicting or guessing text meaning”, and “Confirming predictions”. These strategies can be illustrated by the following example:

Dhafir: [This new school mandate forced us to look for tutors which added pressures on the students which means the students will have

additional load; having a teacher who doesn't know the subject very well and having a tutor.. unprecedented pressure and stress]

Problem Solving Reading Strategies: An analysis of examples of the think-aloud transcripts showed that the participants used four problem solving reading strategies. These strategies are: “Visualizing information read”, “Re-reading for better understanding”, “Paying close attention to reading” and “Pausing and thinking about reading”. Picturing or visualizing the text information was used by five of the participants when they read the Arabic text. The following example illustrates the use of this strategy:

Magid: [...I can depict the whole issue as if the students are rats and they conduct some experiments on them...yes that what it is...]

Most of the participants employed the “re-reading for better understanding”, “paying close attention to reading” and “pausing and thinking about reading” strategies. The following example depicts that:

Fatima: [what they say here] – she rereads- [Yes, if they made this changes gradually starting with 10th grade, it will be OK, but to start from the 12th grade, I think this was a wrong decision at a wrong time]

Support Reading Strategies: In reading Arabic text, the data showed that the participants used three support reading strategies. These strategies are: “Finding relationships among ideas in the text”, “Asking oneself questions” and “Paraphrasing for better understanding”. The following example illustrates the Support Reading Strategies:

Sabha: [....All these decisions...I think should be taken long time ago, but they made them only now, I mean we are suffering... but you know... God helps us...God helps us]

Insert Table 2 about here

The difference between the Perceived and the Actual use of the strategies

The quantitative data collected through the SORS survey for all 390 participants and the qualitative data collected through the think-loud protocol obtained from the 10 participants created a general profile of the reported use and the actual use of the strategies. The quantitative data revealed that the participants reported using more reading strategies when reading Arabic than when reading English. The results also showed preferences for Problem Solving Reading Strategies, Global Reading Strategies and Support Reading Strategies respectively. The qualitative data supports the quantitative data because when the 10 participants actually read texts in English and Arabic, they actually used more strategies in Arabic than in English.

Discussion

This study explored the metacognitive awareness and use of reading strategies by UAE high school students when reading in Arabic and English. The results revealed that when the 390 participants were asked to report what strategies they used when reading in Arabic and in

English; they reported that they were aware of all of the strategies used in the SORS instrument (see Table 1). The result also showed that the participants reported a fairly high use of the reading strategies which corroborated Zhang and Wu (2009). Additionally, the observed difference in the overall strategy means reported for the two languages was statistically significant ($t(26.2) p<.000$).

There were overall significant differences in strategy awareness among the participants when reading in English and Arabic (see Table 1). Specifically, participants reported using more strategies across the three categories the “Problem Solving Strategies”, “Support Reading Strategies”, and the “Global Reading Strategies” in Arabic than in English. The differences between the uses of the strategies for the two languages were statistically significant for these three categories. Furthermore, the think-aloud data showed that the ten participants used more strategies in Arabic than in English (see table 2). Additionally, both qualitative and quantitative data supported the reported and the actual strategy use by the participants. Specifically, subjects reported using more strategies in Arabic than in English.

The study revealed that the UAE high school students reported using and actually used more reading strategies when they read in Arabic than in English. This result is inconsistent with the study by Kong (2006) and Feng and Mokhtari (1998) and Alsheikh (2009) who found that more strategies were used reading the second language (English) than the first language by adult Chinese readers and Arabic readers respectively. A reason for that could be attributed to the level of proficiency. Students used in those studies were college students pursuing their study in the US with a higher level of proficiency than the students used in this study. This result also supported (Clarke, 1979) who believe that students must reach a certain level of competency for strategies transfer. Evidently the students in this study did not reach that level of competency or a “threshold” to transfer the strategies they used in their first language (Arabic) to the second language (English).

The results also showed that the students reported high level of strategies use where in actual practice they used fewer strategies especially in English. This discrepancy between the perceived and the actual use supports Phifer and Glover (1982) who found that students did not consistently apply the metacognitive strategies they professed to use. Additionally, the “Support Reading Strategies” were reported as used least by the participants and rarely used when the subjects read passages in both languages seems to be inconsistent with some of the results presented by Sheorey and Mokhtari (2001) who found that “ESL students attributed high value to Support Reading Strategies regardless of their reading abilities” (p.445). This inconsistency could be attributed to some factors including the types of students used, their native languages, and their reading abilities in those languages. The findings of this study also support Jimenez, Garcia, and Pearson (1995, 1996) who found that unknown vocabulary surfaced as an obstacle for the successful and less successful Latino readers when they read passages in English. It is evident from this study that unknown vocabulary presented a real challenge to the UAE high school students, especially in reading the English text. The results support Malcolm (2009) and Alsheikh (2011) who found that less proficient reader used more translation strategies.

Conclusion

This study measured the reported or perceived-use of reading strategies through a quantitative means using the SORS survey and the actual use or real time use by qualitative means using a think-aloud protocol. Both quantitative and qualitative data support that more strategies were used in Arabic than in English. Additionally, the results revealed that no evidence of strategies transfer from the students' first language to the second language. Furthermore, the students relied heavily on translation when they read the English text.

The findings of this study have some implications for teaching and research. For example teachers may need to raise students' awareness by giving systematic and direct teaching and training of strategies use (Boulware-Gooden et al., 2007; Paris et al., 1996; Takallou, 2011). Additionally, the Support Reading Strategies were the least reported and actually used strategies in both languages. Therefore, teachers must find ways to incorporate methods and ways to teach these strategies directly when teaching English to the UAE students. Additionally, future research should consider using texts with varied degrees of difficulty or comparing high and low proficient readers in their use of strategies to see if research yield different results.

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Table 1

Differences in reported reading strategy use by native Arabic speakers when reading in English and Arabic

Name	Strategy	English (n=390)		Arabic (n=390)		t	Sig.<
		M	S.D.	M	S.D.		
GLOB1	Setting purpose for reading	2.89	1.23	3.60	1.20	16.3	<.000
GLOB2	Using of prior knowledge	2.88	1.13	3.63	1.09	16.8	<.000
GLOB3	Previewing text before reading	2.97	1.18	3.78	1.14	16.9	<.000
GLOB4	Checking how text content fits purpose	2.60	1.17	3.26	1.15	13.6	<.000
GLOB5	Noting text characteristics	2.52	1.24	3.13	1.28	11.1	<.000
GLOB6	Determining what to read closely	2.77	1.14	3.45	1.16	13.1	<.000
GLOB7	Using text features (e.g., tables)	2.93	1.20	3.67	1.18	15.4	<.000
GLOB8	Using context clues	2.62	1.17	3.30	1.22	12.1	<.000
GLOB9	Using typographical aids (e.g. italics)	2.77	1.23	3.46	1.29	12.6	<.000
GLOB10	Analyzing and evaluating the text	2.50	1.23	2.98	1.26	7.9	<.000
GLOB11	Checking understanding	2.86	1.21	3.53	1.22	11.8	<.000
GLOB12	Predicting or guessing text meaning	2.67	1.19	3.28	1.24	10.9	<.000
GLOB13	Confirming predictions	2.75	1.15	3.44	1.16	14.4	<.000
PROB1	Reading slowly and carefully	3.05	1.16	3.81	1.13	16.2	<.000
PROB2	Trying to stay focused on reading	3.13	1.20	3.86	1.24	15.8	<.000
PROB3	Adjusting reading rate	2.87	1.18	3.59	1.13	14.2	<.000
PROB4	Paying close attention to reading	3.08	1.18	3.87	1.21	16.9	<.000
PROB5	Pausing and thinking about reading	2.74	1.16	3.37	1.18	11.2	<.000
PROB6	Visualizing information read	2.98	1.17	3.67	1.17	13.7	<.000
PROB7	Re-reading for better understanding	3.12	1.19	3.96	1.13	15.4	<.000
PROB8	Guessing meaning of unknown words	2.83	1.22	3.55	1.26	13.7	<.000
SUP1	Taking notes while reading	2.54	1.30	3.06	1.40	11.2	<.000
SUP2	Reading aloud for better understanding	2.85	1.27	3.56	1.33	13.6	<.000
SUP3	Underlying information in the text	3.00	1.18	3.85	1.23	18.1	<.000
SUP4	Using reference materials	2.37	1.24	2.76	1.36	6.2	<.000
SUP5	Paraphrasing for better understanding	2.78	1.12	3.59	1.22	15.3	<.000
SUP6	Finding relationship among text ideas	2.60	1.20	3.22	1.23	10.8	<.000
SUP7	Asking oneself questions	2.73	1.21	3.41	1.18	12.7	<.000
SUP8	Translating from English to Arabic	2.34	1.37	2.49	1.37	2.1	<.038
SUP9	Thinking in both languages when reading	2.46	1.46	2.76	1.38	4.6	<.000
GLOB	Global Reading Strategies	2.75	.671	3.42	.599	25.3	<.000
PROB	Problem Solving Reading Strategies	2.98	.707	3.71	.646	27.5	<.000
SUP	Support Reading Strategies	2.63	.706	3.19	.653	17.8	<.000
ORS	Overall Reading Strategies	2.77	.632	3.43	.540	26.2	<.000

Table 2

Comparison of reading strategies used across the two languages

Strategy	English	Arabic
GLOB1 Setting purpose for reading	-	-
GLOB2 Using of prior knowledge	+	+
GLOB3 Previewing text before reading	-	+
GLOB4 Checking how text content fits purpose	-	-
GLOB5 Noting text characteristics	-	-
GLOB6 Determining what to read closely	+	+
GLOB7 Using text features (e.g., tables)	-	-
GLOB8 Using context clues	-	-
GLOB9 Using typographical aids (e.g. italics)	-	-
GLOB10 Analyzing and evaluating the text	-	+
GLOB11 Checking understanding	-	-
GLOB12 Predicting or guessing text meaning	-	+
GLOB13 Confirming predictions	-	+
PROB1 Reading slowly and carefully	+	+
PROB2 Trying to stay focused on reading	+	-
PROB3 Adjusting reading rate	+	-
PROB4 Paying close attention to reading	+	+
PROB5 Pausing and thinking about reading	-	+
PROB6 Visualizing information read	-	+
PROB7 Re-reading for better understanding	+	+
PROB8 Guessing meaning of unknown words	+	-
SUP1 Taking notes while reading	-	-
SUP2 Reading aloud for better understanding	-	-
SUP3 Underlining information in the text	-	-
SUP4 Using reference materials	-	-
SUP5 Paraphrasing for better understanding	-	+
SUP6 Finding relationship among text ideas	+	+
SUP7 Asking oneself questions	+	+
SUP8 Translating from English to Arabic	-	-
SUP9 Thinking in both languages when reading	-	-

(+) Indicates use of the strategy (-) Indicates absence of the strategy use