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Reading Strategies Used by Undergraduate University General Education Courses for Students in US and Qatar

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ABSTRACT

This study assessed the metacognitive awareness of reading strategies of undergraduate university students in US and Qatar in reading academic materials. To achieve this, the participants were administered the Metacognitive Awareness of Reading Strategies Inventory (MARS). The inventory consists of three groups of reading strategies, namely global reading strategies, problem-solving strategies, and support reading strategies. It was given to 127 students (mean age = 21.03 years) in US and 134 students (mean age = 19.78 years) in Qatar enrolled in university general education courses. Descriptive statistics was applied in the data analysis. US and Qatar students were overall highly aware of metacognitive reading strategies, and the groups of strategies that were most used were problem-solving strategies, followed by global reading strategies, and then support reading strategies. The five strategies with the highest use were problem-solving strategies.

University students, and especially those who are enrolled in undergraduate general education courses, are required to read large amounts of academic texts. However, many students enter university unprepared for this

kind of reading (Ay, 2009). It is stated in Dreyer (1998) that these students often have weaker reading strategy knowledge and lack the strategies needed to successfully comprehend texts. Reading can be defined as a social and interactive process and a personal activity (Wallace, 1992). Ransom (1978) described reading as a conversation between the writer and the reader. In addition, Williams (1996) outlined that reading is a process through which one looks at and understands a written text. Nevertheless, reading is a complex process and students usually have difficulties in constructing meaning from written texts (Grabe & Stoller, 2002). In the reading process, readers use reading strategies such as forming hypotheses, test predictions and use their knowledge of vocabulary and language to construct meaning (Carrell, 1989; Zhang, 2001). However, students too often approach reading tasks with no idea of why they are studying or what they are supposed to learn (Kletzien & Bednar, 1988). In terms of learning, the main goal for reading is comprehension and everything else is a means to this end (Goldenberg, 2011), where comprehension is the ability to go beyond the words to understand the ideas in a text and the relationships that exist between those ideas (McNamara, 2007). Similarly, Palani (2012) stated that reading is a process of identifying and comprehending the text, which involves thinking, evaluating, judging, imagining, reasoning and problem solving. Reading strategies, on the other hand, are the actions readers take to support their comprehension process (Yoshikawa & Leung, 2020). In other words, reading strategies are the actions implemented to draw meaning out of a text (Garner, 1987). Additionally, Singhal (2001) further detailed that reading strategies are how readers perceive a task, how they comprehend what they read and how they respond to challenges in reading comprehension. According to Tercanlioglu (2004), readers can confront and overcome some comprehension difficulties by applying reading strategies to their reading process.

In recent years, the focus has shifted from the use of “reading strategies” to the “metacognitive awareness of reading strategies.” Metacognition can be defined as knowledge regarding the self-thinking process and consciousness of organizing the self (Aydin & Ayranci, 2018; Bruning, Schraw, Norby, & Ronning, 2004; Driscoll, 1994). Metacognition in reading is awareness of individuals regarding self-learning, learning processes, and providing feedback to themselves, such as reflecting on one’s reading for understanding (Anderson, 2002; Mokhtari & Reichard, 2002; Pinninti, 2016). Furthermore, metacognition in reading refers to the knowledge of the readers’ cognition about reading and the self-control techniques used when monitoring and balancing text comprehension (Ahmadi, Ismail, & Abdullah, 2013; Alexander & Jetton, 2000; Guthrie & Wigfield, 1999; Pressley, 2000; Pressley & Afflerbach, 1995). Recent trends

in reading comprehension emphasized the role of metacognitive awareness of the readers' cognitive processes while reading (Fitrisia, Tan, & Yusuf, 2015; Hong-Nam, Leavell, & Maher, 2014; Pinninti, 2016; UKessays, 2018). For example, research findings demonstrated that metacognitive awareness of reading strategies contributes to reading comprehension and that highly proficient or skilled readers tend to use reading strategies more than less skilled readers (Anastasiou & Griva, 2009; Mohseni, Seifoori, & Ahangari, 2020; Mokhtari & Reichard, 2002; Rajoo & Selvaraj, 2010; Sheikh, Soomro, & Hussain, 2019; Sheorey & Mokhtari, 2001; Tavakoli, 2014; Zhang, 2002). Although Rajoo and Selvaraj (2010) suggested that readers who use reading strategies may not have an awareness of their use. However, Carrell (1989) stressed that a reader's awareness about their weaknesses as a reader provides them with the opportunity to develop their own methods to overcome difficulties while reading.

Based on the above research studies, metacognitive awareness of reading strategies provides teacher educators and practicing teachers with practical suggestions for struggling readers to help increase their awareness and application of reading strategies while reading. However, there are limited measures to assess students' metacognitive awareness and perceived use of reading strategies while reading for academic purposes. Although there have been efforts to develop metacognitive awareness of reading strategies inventories that are satisfactory from a measurement perspective. Mokhtari and Reichard (2002) developed a reliable and valid self-report measure, the Metacognitive Awareness of Reading Strategies Inventory (MARSİ), which was designed to assess students' awareness and perceived use of reading strategies as they read academic or school-related materials. It was also designed to help students increase their metacognition and to be more strategic in their approach to reading. MARSİ involves three groups of reading strategies (Mokhtari & Reichard, 2002), which are exploring global reading strategies, problem-solving strategies, and support reading strategies. Global reading strategies can be thought of as generalized or global reading strategies aimed at setting the stage for the reading act (for instance, setting purpose for reading, activating prior knowledge, checking whether text content fits purpose, predicting what the text is about, confirming predictions, previewing text for content, skimming to note text characteristics, making decisions in relation to what to read closely, using context clues, and using text structures to enhance reading comprehension). Problem-solving strategies address localized and focused problem-solving or repair strategies that are used when problems develop in understanding textual information (for instance, reading slowly and carefully, adjusting reading rate, paying close attention to reading, pausing to reflect on reading, rereading, visualizing

information read, reading text out loud, and guessing meaning of unknown words). Support reading strategies check the reader's use of support mechanisms and tools aimed at sustaining responsiveness to reading (for instance, taking notes while reading, paraphrasing text information, revisiting previously read information, asking self-questions, using reference materials as aids, underlining text information, discussing reading with others, and writing summaries of reading). Vandergrift (2002) mentioned that MARSİ is important in reading comprehension because learning tasks can be overseen, regulated, directed, or reflected into the learning process. However, Mikulecky (2008) indicated that these three groups interact and provide support to each other when constructing meaning from text. For instance, students' prior knowledge, experience, and beliefs are organized in classes or schemata. Each schema is connected to others in a complex mental network. As the reader notices particular concepts in a text, they match that information with background knowledge and can then create a version of the text's meaning.

Considering the important role of metacognitive awareness of reading strategies in reading comprehension and the recent research in this area and since reading is crucial in academic contexts, it is of interest to investigate the metacognitive awareness of reading strategies of students in general education courses. Therefore, the present study was designed to assess the metacognitive awareness of reading strategies used in a cohort of US and Qatar university students while reading academic material (textbooks, journal articles, class handouts, etc.). These university students were enrolled in general education courses which were required to fulfill degree requirements; and reading in these courses is needed in order to successfully learn course content and gain access to new information. With strong reading abilities, students make greater progress in all academic areas (Anderson, 2002). However, despite the importance of metacognitive awareness, there is hardly any research throughout the literature that has investigated metacognitive awareness of reading strategies in general education courses or that resembles the current one conducted in US and Qatar settings. Metacognitive awareness researchers (e.g., Anderson, 2002; Mokhtari & Sheorey, 2002; Yuksel & Yuksel, 2012) recommended more research in this area to define the metacognitive awareness of reading strategies. This study fills a gap in the literature because where (Anderson, 2002; Mokhtari & Sheorey, 2002; Yuksel & Yuksel, 2012) studies investigated metacognitive awareness with different populations and with various reading goals. The latter research is also different from this study because it studied second language teaching and learning; for example, Yuksel and Yuksel (2012) studied Turkish university students attending English (as a foreign language) teaching program. Reading material developers and lesson planners may benefit from the outcomes

of this study in enhancing student learning in reading comprehension when designing and incorporating activities into reading materials that use a wide variety of reading strategies. It is also believed that teacher educators and instructors may find the results of this study as practical suggestions to help learners increase their awareness and use of reading strategies (Mokhtari & Sheorey, 2002). Based on previous research studies and considering the need to conduct this study, this research seeks to answer the following question: What metacognitive awareness of reading strategies do the students under this study report while reading academic texts?

Method

Participants

The study was conducted at two public universities, one in the east coast of the United States, and the other one in Qatar, an Arab state in eastern Arabia and an independent country. The undergraduate volunteer participants were one hundred twenty-seven students (mean age = 21.03 years, SD = 4.25, age range = 18 to 40) in the US university; and one hundred thirty-four students (mean age = 19.78 years, SD = 2.03, age range = 18 to 30) in the Qatar university. Both cohorts were attending general education classes. Of the US participants, 60.6% were females, while 72.8% of the Qatar participants were females. Also, of the US participants, 48.8% students were in their first year, 15% of them were in their second year, 20.5% of them were in their third year, and 15.7% of them were in their fourth year of a four-year undergraduate program. Similarly, of the Qatar participants, 56% of students were in their first year, 19.4% of them were in their second year, 12.7% of them were in their third year, and 11.9% of them were in their fourth year of a four-year undergraduate program. With respect to the ethnic background of US participants, this study involved 52% African American, 15% Asian-Caucasian American, 7% Hispanic or Spanish Speaking, and 26% who did not self-identify. Of the Qatar participants, 8% of them reported they were Qatari's, whereas 92% of them were from seventeen other nationalities (India, Pakistan, Bangladesh, Iran, Philippines, Indonesia, US, Canada, Britain, South Korea, Sweden, Turkey, Afghanistan, Jordan, Spain, Sri Lanka, and Bulgaria). Some of the general education courses at the participants university in Qatar are offered in two versions based on the language of instruction, this being Arabic and English. Depending on student needs, they enroll in either the English or Arabic version of the course. In this study, all of the Qatar participants were enrolled in the English version of general education courses. These students were mainly non-native

speakers of Arabic living in Qatar, which is why they were enrolled in the English version of the general education courses.

Measure and Procedure

For this study and in order to answer the research question, the Metacognitive Awareness of Reading Strategies Inventory (MARSİ) developed by Mokhtari and Reichard (2002) was used to collect data on students' awareness of metacognitive reading strategies when reading academic materials. MARSİ consists of three strategy subscales: Global Reading Strategies (GLOB), Problem-Solving Strategies (PROB), and Support Reading Strategies (SUP). MARSİ was designed to assess adolescent and adult readers' metacognitive awareness and perceived use of reading strategies while reading academic or school-based texts. MARSİ is reported to have good reliability and validity (Mokhtari & Reichard, 2002). There are 30 items in MARSİ to which the participants responded using a five-point Likert scale inventory, 1 (never or almost never do this), 2 (do this only occasionally), 3 (sometimes do this), 4 (usually do this), 5 (always or almost always do this). Students were asked to read each statement in the inventory and circle the number that applies to them, indicating the usage of the reading strategy in the statement. The higher the number, the more the use of the particular strategy is reflected. Thirteen items of MARSİ assess global reading strategies and 8 items assess problem-solving strategies, whereas 9 items assess support reading strategies. For scoring MARSİ, the procedure proposed by Mokhtari and Reichard (2002) was used. They provided a key to interpreting the mean for each item and overall item ratings of MARSİ. They considered a mean of ≤ 2.4 as low usage, $2.5 - 3.4$ as medium usage, and ≥ 3.5 as high usage. Descriptive statistical (means and standard deviation) and *t*-test procedures were carried out in this research using SPSS to determine the usage of reading strategies used by the students under study.

Results

The internal consistency reliability coefficient of the 30-item inventory (MARSİ) was 0.90 for the US participants, and 0.89 for the Qatar participants. In examining reading strategy awareness and use among students on the MARSİ scale, which ranges from 1 to 5 (1 = low strategy use; 5 = high strategy use), the three criteria use of means as suggested by Mokhtari and Reichard (2002) were used: high (mean 3.5 or higher), medium (mean = 2.5-3.4), and low (mean 2.4 or lower). The students' responses were examined in terms of MARSİ's individual strategies, subscales, and overall use. Descriptive statistics of overall use are presented

Table 1. Descriptive statistics of metacognitive awareness of reading strategies subscales and overall use.

Subscale	US, <i>n</i> = 127		Level of Use, US	Qatar, <i>n</i> = 134		Level of Use, Qatar
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	
Global Reading Strategies	3.36	0.21	Medium	3.54	0.27	High
Problem-Solving Strategies	3.84	0.30	High	3.94	0.31	High
Support Reading Strategies	3.22	0.27	Medium	3.52	0.23	High
Total (Overall)	3.45	0.35	High	3.64	0.32	High

Key to means: 3.5 or higher = High; 2.5 – 3.4 = Medium; 2.4 or lower = Low. Source: Mokhtari and Reichard (2002).

in Table 1. The most use of the metacognitive awareness of reading strategies was found to be problem-solving strategies, followed by global reading strategies, and then support reading strategies for both the US and Qatar participants. In the problem-solving strategies, students pay closer attention to reading when the text gets difficult. They then read the text aloud to help them understand, followed by rereading and visualizing the information read with reflection on the process, which increases their understanding. With respect to global reading strategies, students set purpose for reading and activating prior knowledge. They then preview the text for content and predict what the text is about, followed by decision making on what to read closely to enhance reading comprehension. In support reading strategies, which were picked less by the participants, students take notes while reading and use reference materials like dictionaries to understand and underline or circle information in the text to help them remember. Readers then use paraphrasing or restating the ideas in their own words and read aloud when the text and reading materials become difficult to understand. In terms of quantitative values, according to the overall mean of reading strategy use, 3.45 for the US participants and 3.64 for the Qatar participants, both cohorts of participants were at a “high” level of awareness about their reading strategies. When total scores of each subscale are considered, it can be said that US participants made use of reading strategies with a “medium” to “high” level awareness. In the case of Qatar, it can be said that Qatar participants made use of reading strategies with a “high” level of awareness. Table 1 also shows that the highest mean score of 3.84 for the US participants and 3.94 for the Qatar participants is for the problem-solving strategies subscale, which aims to identify how participants tend to solve problems they encounter while reading. Accordingly, problem-solving strategies were the strategies that participants make use of the most. The mean score of 3.36 for global reading strategy subscales and 3.22 for support reading strategy subscales for US participants were relatively close to each other, and also the mean score of 3.54 for global reading strategies and 3.52 for support reading strategy subscales for Qatar participants were

close to each other. This means that global and support reading strategies were used on an almost equal basis.

There was not a statistically significant difference between female and male students in their self-assessed metacognitive awareness of reading strategies for US participants ($t = -0.005$, $p = 0.996$) and likewise in Qatar participants ($t = -0.122$, $p = 0.904$). Therefore, gender may not have meaningful influence on participants' metacognitive awareness level of reading strategies. Additionally, there was not a statistically significant difference between fourth-year students and first-year students in metacognitive awareness of reading strategies in the case of US participants ($t = -0.400$, $p = 0.692$). Fourth-year students and first-year students showed a statistically significant difference on global ($t = -2.914$, $p < 0.05$) and support ($t = -3.484$, $p < 0.05$) reading strategies in the case of Qatar participants. Hence, fourth-year students reported more strategy use in general education courses.

Using descriptive statistics, Table 2 outlines all 30 inventory items, their resulting itemized mean scores, standard deviation, and their corresponding reading strategies. For US participants, the means of individual strategy items ranged from 2.78 to 4.21, indicating a medium to high use of reading strategies according to the established strategy use criteria. US participants' reading strategy awareness also showed that 13 of the 30 reading strategies were used at a high usage level (mean ≥ 3.5), 17 at a moderate usage level (mean between 3.48 and 2.78). None of the reading strategies in the inventory were reported at a low usage level (mean values ≤ 2.4). For Qatar participants, the means of individual strategy items ranged from 3.16 to 4.34, indicating a medium to high use of reading strategies. Qatar participants' reading strategy awareness showed 20 of the 30 reading strategies were used at a high usage level (mean ≥ 3.5), 10 at a moderate usage level (mean between 3.45 and 3.16). None of the reading strategies in the inventory were reported at a low usage level (mean values ≤ 2.4). Overall, based on the means of individual strategy items in this study, there is a reasonable awareness of all the reading strategies. Each strategy in the inventory had a mean score above 2.78 for US participants and 3.16 for Qatar participants.

Tables 3 and 4 illustrate the five most and the five least reading strategies used by US and Qatar students in general education courses. According to the overall means in Table 1 of MARSIS subscales, the problem-solving strategies were the most used reading strategies based on students' self-assessed metacognitive awareness of reading strategies. When the five most used and five least used reading strategies were analyzed, the five highest means belonged to problem-solving strategies, while the five least means belonged to global and support reading strategies for both cohorts of participants. Of the 30 items included in the inventory,

Table 2. Item descriptive statistics of metacognitive awareness of reading strategies.

#	Item	US, <i>n</i> = 127 <i>M</i> <i>SD</i>	Qatar, <i>n</i> = 134 <i>M</i> <i>SD</i>
<i>Global Reading Strategies</i>			
1	I have a purpose in mind when I read	3.55 1.05	3.90 0.99
2	I think about what I know to help me understand what I read	3.77 0.99	3.94 1.02
3	I preview the text to see what it's about before reading it	3.51 1.27	3.45 1.20
4	I think about whether the content of the text fits my reading purpose	3.31 1.20	3.50 1.01
5	I skim the text first by noting characteristics like length and organization	3.20 1.35	3.16 1.28
6	I decide what to read closely and what to ignore	3.29 1.30	3.61 1.08
7	I use tables, figures, and pictures in text to increase my understanding	3.24 1.26	3.51 1.21
8	I use context clues to help me better understand what I'm reading	3.63 1.10	3.24 1.17
9	I use typographical aids like bold face and italics to identify key information	3.20 1.33	3.22 1.32
10	I critically analyze and evaluate the information presented in the text	3.17 1.03	3.33 1.12
11	I check my understanding when I come across conflicting information	3.57 1.07	3.82 0.94
12	I try to guess what the material is about when I read	3.13 1.16	3.85 1.02
13	I check to see if my guesses about the text are right or wrong	3.16 1.26	3.45 1.25
<i>Problem-Solving Strategies</i>			
1	I read slowly but carefully to be sure I understand what I'm reading	3.83 1.01	4.03 0.97
2	I try to get back on track when I lose concentration	4.21 0.81	4.11 1.01
3	I adjust my reading speed according to what I'm reading	3.67 1.12	4.04 1.05
4	When text becomes difficult, I pay closer attention to what I'm reading	4.02 1.06	4.12 1.03
5	I stop from time to time and think about what I'm reading	3.57 1.13	3.33 1.14
6	I try to picture or visualize information to help remember what I read	3.90 1.01	3.78 1.06
7	When text becomes difficult, I re-read to increase my understanding	4.17 0.99	4.34 0.91
8	I try to guess the meaning of unknown words or phrases	3.33 1.21	3.76 1.17
<i>Support Reading Strategies</i>			
1	I take notes while reading to help me understand what I read	2.90 1.21	3.67 1.09
2	When text becomes difficult, I read aloud to help me understand what I read	3.60 1.24	3.60 1.30
3	I summarize what I read to reflect on important information in the text	3.25 1.13	3.52 1.12
4	I discuss what I read with others to check my understanding	2.78 1.27	3.22 1.10
5	I underline or circle information in the text to help me remember it	3.48 1.24	3.95 1.20
6	I use reference materials such as dictionaries to help me understand what I read	3.22 1.35	3.22 1.24
7	I paraphrase (restate ideas in my own words) to better understand what I read	3.46 1.13	3.51 1.17
8	I go back and forth in the text to find relationships among ideas in it	3.16 1.34	3.60 1.04
9	I ask myself questions I like to have answered in the text	3.09 1.27	3.40 1.18

Key to means: 3.5 or higher = High; 2.5 – 3.4 = Medium; 2.4 or lower = Low. Source: Mokhtari and Reichard (2002).

Table 3. Reading strategies being used the most and the least by US participants, $n = 127$.

<i>Strategy Most Used</i>	<i>Group</i>	<i>M</i>	<i>SD</i>
I try to get back on track when I lose concentration	PROB	4.21	0.81
When text becomes difficult, I re-read to increase my understanding	PROB	4.17	0.99
When text becomes difficult, I pay closer attention to what I'm reading	PROB	4.02	1.06
I try to picture or visualize information to help remember what I read	PROB	3.90	1.01
I read slowly but carefully to be sure I understand what I'm reading	PROB	3.83	1.01
<i>Strategy Least Used</i>			
I check to see if my guesses about the text are right or wrong	GLOB	3.16	1.26
I go back and forth in the text to find relationships among ideas in it	SUP	3.16	1.34
I try to guess what the material is about when I read	GLOB	3.13	1.16
I ask myself questions I like to have answered in the text	SUP	3.09	1.27
I take notes while reading to help me understand what I read	SUP	2.90	1.21
I discuss what I read with others to check my understanding	SUP	2.78	1.27

Key to means: 3.5 or higher = High; 2.5 – 3.4 = Medium; 2.4 or lower = Low. Source: Mokhtari and Reichard (2002).

Table 4. Reading strategies being used the most and the least by Qatar participants, $n = 134$.

<i>Strategy Most Used</i>	<i>Group</i>	<i>M</i>	<i>SD</i>
When text becomes difficult, I re-read to increase my understanding	PROB	4.34	0.91
When text becomes difficult, I pay closer attention to what I'm reading	PROB	4.12	1.03
I try to get back on track when I lose concentration	PROB	4.11	1.01
I adjust my reading speed according to what I'm reading	PROB	4.04	1.05
I read slowly but carefully to be sure I understand what I'm reading	PROB	4.03	0.97
<i>Strategy Least Used</i>			
I use context clues to help me better understand what I'm reading	GLOB	3.24	1.17
I use typographical aids like bold face and italics to identify key information	GLOB	3.22	1.32
I discuss what I read with others to check my understanding	SUP	3.22	1.10
I use reference materials such as dictionaries to help me understand what I read	SUP	3.22	1.24
I skim the text first by noting characteristics like length and organization	GLOB	3.16	1.28

Key to means: 3.5 or higher = High; 2.5 – 3.4 = Medium; 2.4 or lower = Low. Source: Mokhtari and Reichard (2002).

for the US participants, the strategy, “I try to get back on track when I lose concentration,” which is one of the problem-solving strategies, was used the most and used at a high-usage level with mean = 4.21 and lowest standard deviation SD = 0.81 scores. Thus, the most used strategies of US students were the ones that increase their understanding of what is being read by getting back on track when they lose concentration, reading slowly, rereading, visualizing information to help remember it, and paying closer attention to read texts. On the contrary, the strategy, “I discuss what I read with others to check my understanding,” which is one of the support reading strategies, was used the least at a moderate-usage level with mean = 2.78 and one of the highest standard deviations SD = 1.27 scores. Hence, the least used strategies were the ones that help them in understanding read texts through guesses about the text and what the text material is about, taking notes while reading, going back and forth in the text to find relationships among ideas, and discuss what was read

with others. For Qatar participants, the strategy “when text becomes difficult, I re-read to increase my understanding,” which is one of the problem-solving strategies, was used the most and used at a high-usage level with mean = 4.34 and lowest standard deviation SD = 0.91 scores. So, the most used strategies were the ones that strengthen their understanding of what is being read by reading slowly, rereading, adjusting their reading speed, getting back on track when they lose concentration, and paying closer attention to read texts. On the contrary, the strategy, “I skim the text first by noting characteristics like length and organization,” which is one of the global reading strategies, was used the least and used at a moderate-usage level with mean = 3.16 and one of the highest standard deviations SD = 1.28 scores. Accordingly, the least used strategies were the ones that help them better understand what they read through using context clues, skimming the text, typographical aids like bold face and italics, using reference materials such as dictionaries, and discussing what was read with others.

Discussion

Research indicates that metacognitive reading strategy awareness enhances students’ reading comprehension, which is an important part in students’ learning (e.g., Meniado, 2016). However, many students have difficulty in constructing meaning from academic texts (Ay, 2009; Grabe & Stoller, 2002; Tercanlioglu, 2004). In this study, the metacognitive awareness of reading strategies of university students while reading academic materials was explored using MARSİ. The internal consistency reliability coefficient of MARSİ in this study was adequate and in line with other research findings (Hatami & Asl, 2017; Mokhtari & Reichard, 2002), suggesting that the reliability of the inventory was satisfactory. The overall mean score result indicated that US and Qatar students alike were aware of these reading strategies and used them at a high level. Hence, it might be said that the participants in this study were aware of these strategies and they used them often. This overall mean score result was consistent with the findings of Poole (2005) and Turhan and Ozer (2017) claiming that metacognitive reading strategies were used at a high level. The most used strategies in this study were problem-solving strategies, which are used to overcome comprehension challenges during reading, considering that these strategies are considered critical for comprehension. Followed by global reading strategies, which define the setting for reading, and then support reading strategies, which clarify text information using tools such as dictionaries, reading aloud, and going back and forth. The most used strategies were consistent with Yuksel and Yuksel (2012) study that showed a high usage of reading strategies; and indicated a predominant

use of problem-solving strategies and the least use of support strategies. The most used strategies were also in line with Mokhtari and Reichard (2002) study which indicated a moderate usage of reading strategies, and the most use of strategies was for problem-solving, followed by global and support reading strategies. In a different study, the order of reading strategy use was exactly the reverse. Their (Jafari & Shokrpour, 2012) findings showed that students were moderately aware of reading strategies and the most used strategies were support strategies, followed by global strategies, and then problem-solving strategies. In their (Kudeir, Magabli, Nasr, & Alkhawaldi, 2012) study on undergraduate students observed that problem-solving strategies were most commonly used at a high level, followed by the moderate use of support reading strategies, as well as a moderate use of global reading strategies. Berkowitz and Cicchelli (2004) underlined that learners might experience anxiety, confusion and low motivation while reading due to comprehension problems, and problem-solving strategies (Yuksel & Yuksel, 2012) might be used to overcome these problems. This may partially explain why problem-solving strategies were the most used in this study. The choice of global reading strategies as the next most used strategies might be interpreted as involving the activation of prior knowledge and preview text content (Sheorey & Mokhtari, 2001), which is something usually encouraged as a pre-reading activity in general education courses and the participants of the present study used these strategies. The results also indicated that support reading strategies (e.g., use of dictionaries, reading aloud, going back and forth, paraphrasing) were least used. The reason for the limited use of support strategies might be the participants' unwillingness to use these time-consuming strategies (Yuksel & Yuksel, 2012). Based on the means of individual strategy items in this study, there is a reasonable awareness of all the reading strategies. It can be understood that all reading strategies were used by participants at least with a "medium" level of awareness when involved with the task of reading academic materials. This result may be explained due to the participants being students in general education courses, which involve a large number of academic texts. In the case of gender differences, the results of the present study showed that there is not any statistically significant difference between male and female students in terms of strategy use. In consistent with this, Tavakoli (2014) study revealed that no significant difference existed between male and female language learners in the use of reading strategies. Also, other studies (Bhan & Gupta, 2010; Turhan & Ozer, 2017) claimed that gender did not play a crucial role in defining the metacognitive awareness of reading strategies. However, some studies revealed that females used metacognitive strategies more often than males (Arrastia, Zayed, & Elnagar, 2016; Lee, 2012). With respect to the reading strategies among first-year

students compared to those of fourth-year students, in the case of US participants, there was not a statistically significant difference between fourth-year students and first-year students in metacognitive awareness of reading strategies. Qatar participants showed a statistically significant difference on global and support reading strategies between fourth-year students and first-year students. Metacognitive awareness of reading strategies was higher for fourth-year students when reading, which suggests a growth in awareness. When comparing this finding to similar studies, it was found that more experienced medical students reported using only global reading strategies more frequently than new students on average (Malcolm, 2009). Likewise, the findings in Amer, Al Barwani, and Ibrahim (2010) study illustrated a statistically significant difference between fourth-year students and first-year students only in global reading strategies.

One of the implications that can be suggested for general education classes that require reading is raising students' awareness of metacognitive strategies for reading, which helps (Graham & Bellert, 2005) to overcome students' problems related to reading and comprehension. Instructors may also raise students' awareness of the most used reading strategies to assist them to become successful and effective readers. Akkakoson (2012) concluded that to enhance students' competence in reading, they should be taught reading strategies at schools. Additionally, while the participants in the present study had a medium to high level of metacognitive awareness of reading strategies as the inventory item means indicated, it can still be suggested that instructors in general education courses use academic material and design reading activities that provide students with an opportunity to explore these strategies or their own strategies in reading to make their learning more meaningful. This can be helpful as one of the distinctions between a good and a poor reader is that good readers tend to be better strategy users (Ajideh, 2009; Grabe, 2009). In light of the findings of this study, it is recommended to explore the relationship between metacognitive awareness of reading strategies and success in reading comprehension of academic materials. Longitudinal studies with different students who are studying in different disciplines are also needed to validate the results of the present study. As a limitation, MARSII required participants to self-report what they do while reading. However, participants might not mention what they actually do when responding to the statements in MARSII. For this reason, other means such as interviews can be used for more information on their reading strategies and to gauge the level of awareness. Another limitation is that students in this study were aware of reading strategies, but it is a possibility that they are unable to practice these strategies while they read for academic courses. While McLain, Gridley, and McIntosh (1991) expressed

that good readers, who have a metacognitive awareness of reading, are inclined to apply these strategies and can assist their understanding by using them. Hence, further research is needed to assess if students successfully apply these strategies for reading.

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