Student teachers' perceived use of online reading strategies

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ABSTRACT

Effective use of reading strategies has been recognized as an important means to increase reading comprehension. Many English as a Foreign Language (EFL) or English as a Second Language (ESL) studies have produced lists of paper-reading strategies (e.g. having a purpose for reading; using context clues)**.** In contrast, few studies have investigated *online* reading (i.e. reading on the internet) strategies**.** The purpose of the present study was to investigate the Online Reading Strategies of Omani EFL university first-year students and senior student teachers. The Survey of Reading Strategies (SORS) (Sheorey & Mokhtari 2001) was adapted for use in this study. This Survey classifies reading strategies into three categories: *global, problem solving, and support* strategies. Results showed a statistically significant difference between fourth-year students and first-year students only in global strategies. This was consistent with findings of other studies, which showed that high-proficient readers use more global strategies than low-proficient readers do. Moreover, first-year students reported using more support strategies than senior students did. There was no statistically significant difference with reference to gender in either group.

Keywords: online reading strategies, cognitive and metacognitive strategies, internet and reading, gender and reading strategies.

INTRODUCTION

Reading, for EFL/ESL learners, is the most important skill to master in order to ensure success in academic learning and to make greater progress in other areas of language learning (Carrell 1989). Hence, the effective use of reading strategies has been recognized as an important means to increase reading comprehension (Huang et al 2009). As a result, many EFL/ESL studies have produced lists of paper-reading strategies, e.g. using typographical features; adjusting reading speed; monitoring; identifying main ideas; predicting (e.g., Anderson 1991; Cohen 1998; Sheorey & Mokhtari 2001). In contrast, few studies have investigated *online* reading strategies (e.g., Anderson 2003; Coiro & Dobler 2007; Huang, Chern, & Lin 2009) and the effects of strategy use on different levels of reading comprehension (Brantmeier 2005).

Research indicates that metacognitive awareness of reading strategies significantly contributes to second or foreign reading ability (Sheorey and Mokhtari 2001). If students are consciously aware of the various cognitive and metacognitive strategies that they can employ, they can learn to choose the appropriate strategies that can enable them to construct meaning from texts they are reading. According to Sheorey and Mokhtari (2001), cognitive strategies are the actions and procedures readers use while working directly with the text (e.g. guessing the meaning of unknown words, and re-reading the text for improved comprehension). Metacognitive strategies are those intentional, carefully planned techniques by which learners monitor or manage their reading (e.g. previewing the text as to its length and organization, or using typographical aids and tables and figures). Sheorey and Mokhtari (2001) classify metacognitive reading strategies into three categories: *Global, Problem-solving and Support strategies*. *Global strategies* are intentional and carefully planned by learners to monitor their reading, such as having a purpose in mind, previewing the text, checking how text content fits its purpose, noting text characteristics like length and organization, and predicting or guessing the text's meaning. *Problem-solving strategies* are the actions that readers employ while they are working directly with the text, especially when the text becomes difficult; these strategies include guessing the meaning from unknown

words, adjusting one's reading rate, visualizing the information read, resolving conflicting information, and rereading the text to improve comprehension. *Support strategies* are what readers use to aid comprehension, such as using a dictionary, taking notes, highlighting textual information, or translating from one's mother tongue to the target language.

Metacognitive knowledge of learning strategies enables students to perform better and learn more. Students who know about the different kinds of strategies for learning, thinking and problem solving will be more likely to use them. Students who know their own strengths and weaknesses can adjust their own cognition and thinking to be more adaptive to diverse tasks and, thus, facilitate learning (Amer 2006). It is noteworthy that metacognitive knowledge seems to be related to the transfer of learning, that is, the ability to use knowledge gained in one setting or situation in another (Bransford et al. 1999). According to Sheorey & Mokhtari (2001, p. 433), "the reader's metacognitive knowledge about reading includes an awareness of a variety of reading strategies and that the cognitive enterprise of reading is influenced by this metacognitive awareness of reading strategies".

With the increasing use of the internet, online reading has become a major source of input for EFL/ESL readers because it provides them with authentic language input. Nowadays, the Internet plays an increasingly important role in the lives of EFL/ESL readers. The Internet has entered our classrooms faster than books, television, computers or any other technology for information and communication (Leu, 2002, p. 311). More and more EFL/ESL learners are engaged in online learning tasks (e.g., Bikowski & Kessler 2002; Sutherland-Smith 2002).

As Coiro (2003) indicates electronic texts introduce new supports as well as new challenges that can have a great impact on an individual's ability to comprehend what he or she reads. Electronic texts are typically nonlinear, interactive, and inclusive of multiple media forms. Each of these characteristics affords new opportunities while also presenting a range of challenges that requires new thought processes for making meaning (Coiro 2003). According to Preece (1993) electronic texts are characterized by their richness and depth of the information they provide through nodes or chunks of information that are linked together. Hence, readers are involved in a constant decision making process regarding their reading order and the sources of information they need to use (Leu and Reinking 1996). Thus, it is necessary to make EFL/ESL learners consciously aware of online reading strategies. Acquiring the strategies of reading electronic texts is fundamental for lifelong learning (Amer 2004). Recent research indicates that students who lack the strategies of electronic reading are easily frustrated when they interact with text resulting from an Internet search because they are not instantly gratified in their rapid search for immediate answers and may adopt a "snatch and grab philosophy" not apparent in print text environments (Sutherland-Smith 2002, p. 664). They often make hasty, random choices with little thought and evaluation (Eagleton 2001, p. 3).

Reading strategies research shows that most of what we know about hypertext and hypermedia reading comes from studies conducted in English as a first language (L1) (Akyel and Ercetin 2009). Chun (2006) points to the lack of research investigating online cognitive and metacognitive processes involved in EFL/ESL reading. Moreover, it is difficult to generalize the results of these studies because they used different instruments (e.g. think-aloud protocols; survey, portfolio) and different methodology (i.e. quantitative vs. qualitative). It is noteworthy that the studies conducted on reading strategies concluded that reading strategies used by learners in print are transferable to online reading whether in ESL (e.g. Akyel and Ercetin 2009, Konishi 2003, Elshair 2002) or in L 1 (e.g. Bland 1995, Foltz 1993). Although these strategies may seem similar, they may be used for different purposes. For example, one may predict what will happen next in a printed text. In online reading, prediction may involve predicting the content of nodes, thus clicking on relevant nodes (Duke et al. 2006).

According to Poole (2009), although females tend to be more active strategy users than males, research on reading strategy use suggests that there is a gender gap in second language (L2) reading proficiency that needs to be filled in many settings where English is taught and learned. Hence, the present study aimed to address this issue, i.e. do online reading strategies used by firs-year and fourth-year student teachers vary due to gender?

RESEARCH QUESTIONS

Thus, to investigate the use of the internet for EFL students a quantitative study was designed to investigate the online reading strategies of Omani EFL first-year and fourth-year student teachers. The comparison of first-year and fourth-year student teachers may shed light on the influence of the length of the students' preparation programme on the acquisition of reading strategies. The study addresses the following three questions**:**

1) How often do first-year and fourth-year student teachers use online reading strategies?
2) To what extent do the online reading strategies of first-year students differ from the online strategies of fourth-year students?
3) Do online reading strategies used by first-year and fourth-year students vary due to gender?

METHOD

Sample: Participants consisted of 123 first-year student teachers (27 % were male n=22 and 73 % were female n= 101) and 97 fourth-year student teachers (40 % were male n=41 and 60 % were female n= 56). The average age of first-year students was 19 years whereas it was 23 for fourth-year students. Both groups studied at the College of Education, at a government university in Oman. These students were prepared to be EFL teachers.

Instrument: The Survey Of Reading Strategies (SORS) (Sheorey and Mokhtari 2001) was adapted for use in the present study. The revised survey tool was named the Online Survey Of Reading Strategies (OSORS) to distinguish it from the SORS. Each item was modified to include the phrase "online" each time a reading task was referred to (after Anderson 2003). The adapted (OSORS) consists of 34 items that measure metacognitive reading strategies. The items are subdivided into three categories: *global* reading strategies (17 items), *problem solving* strategies (8 items), and *support* strategies (9 items). The revised survey had an overall reliability (Cronbach alpha) of .82. The reported reliabilities for the three categories are: Global Reading Strategies, .76; Problem Solving Strategies, .60; and Support Strategies, .50. The present researchers acknowledge that the reliability of the *Support Strategies* category is relatively low. Mokhtari & Sheorey (2002) state that the SORS is scored on a five-point Likert scale in which scores of 2.4 or below demonstrate low strategy use, 2.5 to 3.4 show moderate strategy use, and 3.5 or above signifies high strategy use.

RESULTS

How often do first-year and fourth-year students use online reading strategies?

Table (1) shows that first-year students' overall use of online reading strategies is moderate (*M= 3.3)*. With reference to the three types of strategies, *problem-solving* strategies are of

high frequency (3.5) whereas *global* (*M= 3.3*) and *support* strategies *(M= 3.1*) are of medium frequency.

Regarding individual strategies, ten strategies (29 %) are of high frequency. These *ten top* strategies include: *4 global, 3 problem-solving, and 3 support* strategies. The other 24 strategies (71 %) are of medium frequency. They include: *13 global, 5 problem-solving, and 6 support* strategies. In contrast, the *ten bottom* strategies are of medium frequency. These include: *6 global, 2 problem-solving, and 2 support* strategies.

Table (1) also shows that fourth-year students' overall use of online reading strategies was of moderate frequency (*M= 3.3)*. With reference to the three types of strategies, *global* and *problem-solving* strategies were of high frequency (*M= 3.5)* whereas *support* strategies *(M= 3*) were of medium frequency.

With reference to individual strategies, 15 strategies (44 %) were of high frequency. Interestingly, these were *global* strategies. Eighteen strategies (53 %) were of medium frequency. They included: *13 global, 5 problem-solving, and 6 support* strategies. It was also interesting to note that only one strategy (3 %) (Item 5) was of low frequency. The ten top strategies were of high frequency and all were global. In contrast, the *ten bottom* strategies were of medium frequency. These included: *6 global, 2 problem-solving, and 2 support* strategies*.

Table 1: *Mean scores for Fourth-year (*4th*) and First-year (*1st*) students perceived use of online reading strategies*

	Global Strategies (17)	4th	1st
1	I have a purpose in mind when I read on line	4.2	3.1
3	I think about what I know to help me understand what I read on-line	3.7	3.4
4	I take an overall view of the on-line text to see what it is about before reading it	3.8	2.8
6	I think about whether the content of the on-line text fits my reading purpose	3.9	4
8	I review the on-line text first by noting its characteristics like length and organization	3.2	3.6
12	When reading on-line, I decide what to read thoroughly and what to ignore	3.5	3.4
14	When on-line text becomes difficult, I pay closer attention to what I am reading	3.7	3.8
15	I use tables, figures, and pictures in the on-line text to increase my understanding	2.7	2.7
17	I use context clues to help me better understand what I am reading on-line	3.4	3.2
20	I use typographical features like bold face and italics to identify key information.	2.7	2.6
21	I critically analyze and evaluate the information presented in the on-line text.	2.9	3
23	When reading on-line, I check my understanding when I come across new information.	3.5	3.4
24	I try to guess what the content of the on-line text is about when I read.	3.8	3.8
27	I check to see if my guesses about the on-line text are right or wrong	3.0	3.2
29	I scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.	3.9	3.4
30	I critically evaluate the on-line text before choosing to use its information	3.4	3.1

32	When reading on-line, I look for sites that cover both sides of an issue.	3.5	3.3
	Total of Global Strategies	**3.5**	**3.3**
Problem-solving strategies			
7	I read slowly and carefully to make sure I understand what I am reading on-line.	3.8	3
9	I try to get back on track when I lose concentration	3.7	3.6
11	I adjust my reading speed according to what I am reading on-line	3.6	3.4
16	I stop from time to time and think about what I am reading on-line	3.0	3.1
19	I try to picture or visualize information to help remember what I read on-line.	3.0	3.3
25	When on-line text becomes difficult, I re-read it to increase my understanding.	3.5	3.7
28	When I read on-line, I guess the meaning of unknown words or phrases	3.6	3.6
31	I can distinguish between fact and opinion in on-line texts	3.4	3.2
	Total of Problem-solving strategies	**3.5**	**3.5**
Support Strategies			
2	I take notes while reading on-line to help me understand what I read	3.1	3.7
5	When on-line text becomes difficult, I read aloud to help me understand what I read	2.3	3.4
10	I print out a hard copy of the on-line text then underline or circle information to help me remember it.	3.4	3.2
13	I use reference materials (e.g. an on-line dictionary) to help me understand what read on-line.	2.6	2.8
18	I paraphrase (restate ideas in my own words) to better understand what I read on-line.	3.0	3.5
22	I go back and forth in the on-line text to find relationships among ideas in it	3.3	3.2
26	I ask myself questions I like to have answered in the on-line text	3.1	2.9
33	When reading on-line, I translate from English into my native language	2.9	3.1
34	When reading on-line, I think about information in both English and my mother tongue	3.4	3.5
	Total of Support Strategies	**3.0**	**3.1**
	Overall mean of all strategies	**3.3**	**3.3**

To what extent do the online reading strategies of first-year students differ from the online strategies of fourth-year students?

Table (2) shows that there was a statistically significant difference between the means of first-year students and fourth-year students on global strategies only. There were no statistically significant differences between the means on problem solving and support strategies as well as the overall use of strategies. Besides, table (1) shows the differences between first-year and fourth-year students with reference to individual strategy use as mentioned above.

Table 2: *Differences between first-year students and fourth-year students*

Strategies	Group	N	Mean	SD	T	*P*
Global	First-year	123	3.30	10.42	2.59	.01
	Fourth-year	97	3.50	8.52		
Problem solving	First-year	123	3.52	5.20	.338	.735
	Fourth-year	97	3.50	4.89		
	First-year	123	3.17	5.22		

Support	First-year	123	3.17	5.22	1.426	.155
	Fourth-year	97	3.06	5.07		
Total	First-year	123	3.32	17.57		
	Fourth-year	97	3.38	15.26	.959	.339

Do online reading strategies used by first-year and fourth-year students vary due to gender?

Table (3) shows that there were no statistically significant differences between the means of first-year males and females on the three types of strategies as well as on the overall mean of strategies.

Table 3: *Mean scores for first-year male and female students*

Strategy	Gender	N	Mean	SD	T	p
Global	M	22	3.35	7.148	.412	.681
	F	101	3.29	11.031		
Problem Solving	M	22	3.54	4.455	.186	.853
	F	101	3.51	5.378		
Support	M	22	3.01	3.316	1.451	.149
	F	101	3.20	5.518		
Total	M	22	3.30	9.756	.190	.898
	F	101	3.32	18.890		

However, with reference to individual strategy use, table (5) shows that first-year female students tend to be more active strategy users than male students. Females used 19 strategies with high frequency. These included 15 global strategies, 3 problem-solving strategies, and 1 support strategy. Males, in contrast, used 14 strategies with high frequency. These included 9 global strategies, 2 problem solving, and 3 support strategies. In other words, females used significantly high frequency global strategies more than males. It was also interesting to see that females used no strategy with low frequency whereas males 3 strategies with low frequency. These differences might be due to general reading proficiency (Mokhtari & Sheorey, 2002).

In contrast, Table (4) shows that there were no statistically significant differences between the means of fourth-year males and females on the three types of strategies as well as on the overall mean of strategies.

Table 4: *Mean scores for fourth-year male and female students*

Strategy	Gender	N	Mean	SD	T	p
Global	M	41	3.48	7.003	.267	.790
	F	56	3.51	9.549		
Problem Solving	M	41	3.48	4.531	.074	.941
	F	56	3.49	5.190		
Support	M	41	3.10	4.535	.698	.487
	F	56	3.02	5.455		
Total	M	41	3.38	12.920	.059	.953
	F	56	3.38	16.890		

With reference to individual strategy use (Table 5), it was striking to see that fourth-year male and female students used strategies with almost identical frequency. For example, male students used 17 high frequency strategies, 16 medium frequency strategies, and 1 low frequency strategy. Female students, in contrast, used 18 high frequency strategies, 15 medium frequency strategies, and 1 low frequency strategy. It was also interesting to note that within the high frequency strategies, the number of each strategy type was almost identical: Male students used 12 global strategies, 3 problem-solving and 2 support strategies whereas female students used 12 global strategies, 4 problem-solving and 2 support strategies. It is also worth mentioning that both male and female students used the same low frequency strategy. This striking similarity might be explained by the fact that by the end of the 4-year study programme both male and female students became more homogenous since they were exposed to the same materials and learning experiences for four years.

Table 5*: Mean scores for first-year and fourth-year male and female students*

No	Strategy	1st Year		4th Year	
		M	**F**	**M**	**F**
1	I have a purpose in mind when I read on line	3.18	2.64	4.40	3.90
6	I think about whether the content of the on-line text fits my reading purpose	2.36	3.50	3.10	3.10
29	I scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.	3.50	3.81	3.70	3.70
4	I take an overall view of the on-line text to see what it is about before reading it	3.59	3.50	3.50	4.00
7	I read slowly and carefully to make sure I understand what I am reading on-line.	2.09	3.07	2.30	2.40
24	I try to guess what the content of the on-line text is about when I read.	3. 50	3.50	3.90	4.00
3	I think about what I know to help me understand what I read on-line	4.18	3.98	3.80	3.70
9	I try to get back on track when I lose concentration	3.23	2.97	3.10	3.30
14	When on-line text becomes difficult, I pay closer attention to what I am reading	3.64	3.63	3.70	3.60
11	I adjust my reading speed according to what I am reading on-line	3.18	3.23	3.20	3.50
28	When I read on-line, I guess the meaning of unknown words or phrases	3.36	3.50	3.50	3.60
12	When reading on-line, I decide what to read thoroughly and what to ignore	3.05	3.51	3.50	3.50
23	When reading on-line, I check my understanding when I come across new information.	2.86	2.81	2.80	2.50
25	When on-line text becomes difficult, I re-read it to increase my understanding.	3.86	3.88	3.60	3.70
32	When reading on-line, I look for sites that cover both sides of an issue.	2.45	2.85	2.80	2.60
10	I print out a hard copy of the on-line text then underline or circle information to help me remember it.	3.27	3.08	2.90	3.10
17	I use context clues to help me better understand what I am reading on-line	3.59	3.22	3.30	3.50
30	I critically evaluate the on-line text before choosing to use its information	3.59	3.50	3.10	3.00
31	I can distinguish between fact and opinion in on-line texts	3.14	3.50	3.30	2.80

34	When reading on-line, I think about information in both English and my mother tongue	2.91	2.62	2.90	2.60
22	I go back and forth in the on-line text to find relationships among ideas in it	3.45	2.92	2.90	2.90
8	I review the on-line text first by noting its characteristics like length and organization	3.41	3.50	3.60	3.20
2	I take notes while reading on-line to help me understand what I read	3.64	3.42	3.50	3.50
26	I ask myself questions I like to have answered in the on-line text	3.68	3.85	3.80	3.80
16	I stop from time to time and think about what I am reading on-line	3.68	3.71	3.40	3.60
18	I paraphrase (restate ideas in my own words) to better understand what I read on-line.	3.14	2.93	3.10	3.10
19	I try to picture or visualize information to help remember what I read on-line.	3.05	3.50	3.50	3.00
27	I check to see if my guesses about the on-line text are right or wrong	3.91	3.62	3.50	3.60
21	I critically analyze and evaluate the information presented in the on-line text.	3.73	3.50	3.60	4.00
33	When reading on-line, I translate from English into my native language.	3.18	3.19	3.40	3.40
15	I use tables, figures, and pictures in the on-line text to increase my understanding	3.14	3.50	3.50	3.50
20	I use typographical features like bold face and italics to identify key information.	3.36	3.50	3.60	3.50
13	I use reference materials (e.g. an on-line dictionary) to help me understand what read on-line.	2.86	3.23	3.10	2.80
5	When on-line text becomes difficult, I read aloud to help me understand what I read	3.55	3.49	3.40	3.30

DISCUSSION

Although there was no statistically significant difference between first-year students and fourth-year students in the overall use of online reading strategies, there were some important differences between the two groups. First, there was a statistically significant difference between the two groups in the use of *global* strategies in favor of fourth-year students, i.e. fourth-year students used more *global* strategies than first-year students did. Second, with reference to individual strategy use, fourth-year students used noticeably more high frequency strategies than first-year students did (44 % and 29 % respectively). Third, fourth-year students' top ten strategies were all global. In contrast, first-year students' top ten strategies were a mixture of global (4), problem solving (3), and support strategies (3). Fourth, an interesting finding was that first-year students did not report use of any low frequency strategies. In contrast, fourth-year students reported one support strategy of low frequency, i.e. "When on-line text becomes difficult, I read aloud to help me understand what I read.' Reading research indicates that sounding out words (reading them aloud) while reading is a characteristic of bottom-up unskilled readers (Eskey 2005).

The results of the present study are consistent with the results of the few studies conducted on online reading strategies using the same instrument (e.g. Anderson 2003; Huang et al. 2009) or other instruments (e.g. Coiro & Dobler 2007; Huang et al. 2006). The results clearly indicated that high proficiency students (i.e. fourth-year students) use significantly more global strategies. Low proficiency students (i.e. first-year students), in contrast, use less global strategies and use more support and problem-solving strategies. Sheorey & Mokhtari (2001)

consider support and problem-solving strategies as metacognitive strategies (advanced planning and comprehension monitoring techniques) and cognitive strategies (the deliberate actions readers take when comprehension problems develop).

The striking similarity between fourth-year students and first-year students in the overall use of online reading strategies may be explained with reference to the recent reforms in the educational system in Omani schools. There has been an increasing use of learner-centered curricula and methods of teaching. Specifically, the English syllabus fosters conscious awareness of metacognitive reading skills. Thus, school graduates join the university possessing a good repertoire of metacognitive skills. On the other hand, much of the research into L2 reading strategies has concluded that mature readers of academic texts are generally aware of and report using a variety of strategies, regardless of language proficiency level (Malcolm 2009). Future research may investigate EFL readers' online behaviours while reading different texts online for different purposes.

With reference to gender, results showed no statistically significant differences between males and females in either group in the overall use of strategies as well as in the three categories. This result is consistent with the recent literature on gender and reading strategies which does not show greater strategy utilization for either males or females, although there have been relatively few studies on the subject (Phakiti 2003; Poole 2005; Sheorey & Mokhtari 2001). Thus, it is possible that with second language reading strategy use, gender differences are more related to task demands and contextual motivation than biology, as others have suggested is the case with other issues surrounding language use and gender (Ehrlich 1997).

CONCLUSION

Results showed a statistically significant difference between fourth-year students and first-year students only in global strategies. As has been indicated, this was consistent with the findings of other studies which showed that high-proficient readers use more global strategies than low-proficient readers do. Moreover, first-year students reported using more support strategies than fourth-year students did. This was also consistent with the findings of other studies which indicated that low-proficient readers use more support strategies. In addition, there were no statistically significant differences with reference to gender in either group. However, there were significant differences between male and females in both groups with reference to individual strategy use.

These results have important pedagogic implications. Online reading constitutes a new challenging form of representation which requires ''high levels of multi-modal competence'' (Kress 1998, p. 56). Readers must understand the complex ways these modes operate and the limitations and potentials of these modes (Kress 2003). They also need to understand how links function, that is, where a particular link will take them, and what to do when they get there (Bolter 1998). Hence, being prospective EFL teachers, they need to be aware and raise their students' awareness that print-based strategies may fall short in meaning making in online reading environment while some of them could be effectively used to process information (Coiro and Dobler 2007). Besides, the features of this new form of representation may present some challenges for novice learners. For instance, Dalton and Strangman (2006) indicated that lower proficiency L2 learners may have problems with using text supports appropriately. Moreover, fast reading is especially crucial in online reading because readers need to skim multiple pages and process large amounts of information in a short time (Leu et al. 2004). Thus, success in online reading depends on being 'highly strategic and metacognitive' (Dalton and Strangman 2006). This requires explicit regular instruction. Learners generally tend to use a fixed set of reading strategies that they have long been accustomed to regardless of the text type. Learners should be consciously aware of the different types of metacognitive and cognitive reading strategies. More importantly, they should be consciously aware of the reading strategies characteristic of skilled readers.

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