READING STRATEGIES OF ENGINEERING PROFESSIONALS

Christiantine Della

Kuala Lumpur Infrastructure University College, Malaysia

Abstract

This study aims to investigate the use of Offline and Online reading strategies employed by engineering professionals from two different sectors: a government agency and a private company. It then compares and contrasts the online and offline reading strategies used by these engineers at the workplace. The need to equip students with the necessary language skills to be able to perform effectively and efficiently at the workplace is critical. The findings of this study will help to align the teaching of reading strategies and reading skills in the classroom with the needs at the workplace; specifically the engineering workplace. A questionnaire survey method is used to gather data in this study. The questionnaire taps three different types of information: global reading strategies, problem solving strategies and support strategies.

KEYWORDS: STRATEGY USE, ONLINE, OFFLINE, ENGINEERS, WORKPLACE

Introduction

Reading is an essential skill for learners of English to ensure success in learning. With strengthened reading skills, learners of English tend to make greater progress in other areas of language learning. Reading should be an active, fluent process that involves the reader and the reading material in building meaning.

Reading strategies are conscious actions that readers take in the reading process to comprehend the reading texts. The use of reading strategies can be observable behavior such as taking notes while reading to help comprehend the reading texts, reading aloud when the text becomes difficult, underlining or circling information in the text, and using reference materials; for example a dictionary to help understand the content in the text.

The use of reading strategies can also be unobservable mental processes, such as thinking about what one knows to help understand the content, critically analysing and evaluating the information presented in the text, and trying to guess what the content of the text is about when reading.

According to (Paris and Lindauer, 1982) “readers should make decisions about taking proper actions for reading based on three variables: task dimension, limited cognitive abilities and motivation”. It is also imperative “to distinguish reading strategies from reading skills. Reading strategies are used deliberately while reading skills are automatic” (Carrell, Gajdusek, and Wise, 1998; p. 107).

Reading strategies are classified differently by different researchers according to the variables that they intended to explore. Reading strategies can be categorized into two groups- global reading strategies and local reading strategies. A distinction can also be made between cognitive and metacognitive strategies (Flavell, 1979).

To date much research has been conducted to investigate the reading strategies of students whose first language is English (L1), and that of second language learners (L2) of English. Some of these studies have investigated the effect of teaching the strategies used by L1 learners to L2 learners. Comparisons have been done to elicit the most appropriate methodology to be used in language classes. Such research has had pedagogical implications in reading classes for L2 learners.

Strategic awareness and monitoring of the comprehension process are important aspects of skilled reading (Sheorey and Mokhtari, 2001). Such awareness and monitoring is known as “metacognition” which “entails knowledge of strategies for processing texts, the ability to monitor comprehension, and the ability to adjust strategies as needed” (Auerbach and Paxton, 1997, p. 240-41). According to Sheorey and Mokhtari (2001), it is the combination of conscious awareness of the strategic reading processes and the actual use of reading strategies that distinguishes the skilled from the unskilled readers. Studies in L1 and L2 contexts show that successful reading strategy use is dependent on whether a strategy is used metacognitively (Jimenez, *et al.*, 1996). Studies have also shown that unsuccessful students lack this strategic awareness and monitoring of the comprehension process. These less successful students ought to be helped to acquire reading strategies that have been found to be successful (Mokhtari and Reichard, 2004).

Sheorey and Mokhtari (2001) and Mokhtari and Sheorey (2002) have conducted significant research on the identification of metacognitive reading strategies of L2 learners. They developed an instrument known as the Survey of Reading Strategies (SORS). The Survey of offline Reading Strategies (SORS) (Sheorey and Mokhtari, 2002) focuses on metacognitive strategy use within the context of academic reading. The SORS survey was developed by Mokhtari (2001) for post-secondary students who are native and non-native speakers of English. The SORS was based on a separate metacognitive reading strategy developed for native speakers of English; the Metacognitive Awareness of Reading Strategies Inventory (MARSI) (Mokhtari and Reichard, 2002). Participants were 302 college students (150 native English-speaking Students and 152 ESL students). They posed three research questions: (1) Are there differences between ESL and native English speaking students in their perceived strategy use while reading academic materials? (2) Are there any differences between male and female ESL and native English speaking students in their perceived strategy use while reading academic materials? and (3) Is there a relationship between reported strategy use and self-rated reading ability?

The SORS was used to measure the type and the frequency of reading strategies that ESL/EFL students perceive they use while reading academic materials in English. The SORS is composed of 30 items with a 5-point Likert scale ranging from 1 (“I never or almost never do this”) to 5 (“I always or almost always do this”).

The SORS measures three broad categories of reading strategies, namely, Global Reading Strategies (GLOB), Problem Solving Strategies (PROB) and Support Reading Strategies (SUP). A brief description of these strategies is as follows:

- Global Reading Strategies (GLOB): those intentional, carefully planned techniques by which learners monitor or manage their reading, such as having a purpose in mind when reading, such as previewing the text as to its length and organisation (13 items)
- Problem Solving Strategies (PROB): actions and procedures readers use while working directly with the text. These are localised, focused techniques used when problems develop in understanding textual information, such as adjusting the speed of reading when the material becomes difficult or easy (8 items)

- Support Reading Strategies (SUP): basic support mechanisms intended to aid the reader in comprehending the text, such as circling information in the text, highlighting textual information or referring to a dictionary (9 items) (Mokhtari and Sheorey, 2002: 4).

The table below displays the three subcategories of the SORS and the specific items.

Table 1: Subcategories of SORS (Mokhtari, 2001, 2004) and specific items

Strategy Category	Item No.
Global Reading Strategies (13 items)	1, 3, 4, 6, 8, 12, 15, 17, 20, 21, 23, 24, 27
Problem Solving Reading Strategies (8 items)	7, 9, 11, 14, 16, 19, 25, 28
Support Reading Strategies (9 items)	2, 5, 10, 13, 18, 22, 26, 29, 30

Note: Total = 30 items

Results of the study revealed, that native English-speaking and ESL students display awareness of almost all of the strategies included in the survey. It was found that the ESL students reported using a greater number of support reading strategies. There was a significant difference in the use of the strategy of underlining information in the text for ESL learners. The female ESL students reported using the strategy more frequently than the male ESL students.

Secondly, both groups attribute the same order of importance to categories of reading strategies in the survey, regardless of their reading ability or gender: cognitive or problem-solving strategies (the deliberate actions readers take when comprehension problems develop), followed by metacognitive strategies (advanced planning and comprehension monitoring techniques), and support strategies (the tools readers seek out to aid comprehension). Thirdly, both native English-speaking and ESL students of higher reading ability show comparable degrees of higher reported usage for cognitive and metacognitive strategies in comparison to students with lower reading ability. Native English-speaking students of higher reading ability also seem to consider support reading strategies more valuable compared to non-native English-speaking students with lower reading ability.

Sheorey and Mokhtari (2001) report that “skilled readers are more able to reflect on and monitor their cognitive processes while reading. They are aware not only of which strategies to use, but they also tend to be better at regulating the use of such strategies while reading” (p. 445). This research contributes much to our understanding of the reading strategies of L2 readers. These authors conclude that it is important for all readers, native and non-native, to be aware of the significant strategies proficient reading requires. Teachers can play a key role in increasing students’ awareness of such strategies and in helping their students become active readers.

The Internet has begun to play an increasingly important role in the lives of L2 readers all over the world. Online reading serves as a significant source of input. Leu (2002) points out that “the Internet has entered our classrooms faster than books, television, computers, the telephone, or any other technology for information and communication” (p. 311). The increased use of the Internet increases the need to train language learners how to read online more efficiently. Thus, studies on online reading strategy use has become imperative. Anderson’s (2003) study of online reading strategies is therefore significant.

Anderson (2003) in his study of online reading strategies of L2 readers, adapted Sheorey's and Mohktari's (2001) Survey of Reading Strategies. The adapted Online SORS (OSORS) consists of thirty eight (38) items that measure metacognitive reading strategies. His study comprised two hundred and forty seven (247) L2 readers. One hundred thirty one (131) of the learners were studying English as a foreign language (EFL) in San Jose, Costa Rica, while the remaining one hundred and sixteen (116) were studying in an ESL environment at the English Language Centre at Brigham Young University, Utah. The top twelve and the bottom twelve online reading strategies were identified in the OSORS. Eight of the top twelve strategies are Problem Solving Strategies. There are a total of eleven Problem Solving Strategies out of the thirty eight strategies in the OSORS. Seven of the bottom twelve strategies are Support Reading Strategies. The OSORS included nine Support Reading Strategies. Thus, the majority of the top twelve strategies used by online readers are Problem Solving Strategies. These strategies are the ones that differentiate the EFL and the ESL readers. The EFL readers reported using the Problem Solving Strategies more frequently than did the ESL readers. The Problem Solving Strategies include strategies such as adjusting reading rate, rereading difficult text, and pausing to think about what one is reading.

Working professionals, too, read frequently for various purposes. They have to frequently refer to manuals, journals, reports and other reading materials. There is therefore an acute need to equip students with the necessary reading strategies and reading skills to function effectively at the workplace. How then can the reading strategies employed by professionals be available to L2 learners? Studies of reading strategies of professionals such as managers, business people, engineers, scientists etc. have rarely been carried out. There is a need to align what is taught in the reading classes with the needs of professionals at the workplace.

This study therefore attempts to investigate the reading strategies of engineering professionals when they read materials online as well as offline. The need to investigate the reading strategies of online reading is due to the dearth of engineering information available on the Net and the need for engineers to assess such materials for specific purposes. This study hopes to bridge the gap between what is taught in classrooms and the needs of engineers at the workplace.

Purpose of the study

The purpose of this study therefore, is to investigate the online and offline reading strategies used by engineering professionals. It seeks to fulfil the following objectives:

1. To investigate the use of offline global reading strategies, offline problem-solving strategies, and offline support reading strategies employed by engineers.
2. To investigate the use of online global reading strategies, online problem-solving strategies, and online support reading strategies used by engineers.
3. To compare and contrast the use of online and offline strategies by engineers.
4. To compare and contrast the use of online and offline reading strategies by engineers in two different organisations.

Research questions

The study was guided by the following research questions:

1. What are the Offline reading strategies most often used by engineers in the engineering field?
2. What are the Online reading strategies most often used by engineers?
3. Are there any similarities in the Online reading strategies and Offline reading strategies used by engineers?
4. Are there acute differences in the Online reading strategies and Offline reading strategies used by engineering professionals?
5. What are the differences in strategy use among engineers at Company A and Company B?

Methodology

The main purpose of the study is to investigate the online and offline reading strategies used by engineering professionals at the workplace. A survey design was used. Mokhtari and Sheorey's (2001) Survey of Reading Strategies (SORS) and Anderson's (2003) Online Survey of Reading Strategies (OSORS) are adapted in the present study to investigate the strategies used by engineering professionals when they read online and offline engineering materials (see appendix A and B). The survey intended to probe the reader's perceived use of reading strategies and the frequency of the use of the reading strategies while reading.

The questionnaires were distributed to the engineering professionals at their place of work. Two sets of questionnaire were administered to the participants; one for online reading strategies and the other for offline reading strategies (see appendix A and B). Each item in the respective questionnaire was modified to include the word "online" or "offline". The questionnaire to identify offline reading strategies is identified as Set A, while the questionnaire to identify online reading strategies is identified as Set B. Both sets of questionnaire comprise similar items. There are a total of twenty-nine (29) items in each questionnaire for the present study. The participants were given fifteen minutes to fill in the first questionnaire (Set A - offline reading) and another fifteen minutes to fill in the second questionnaire (Set B - online reading). Once the first questionnaire (Set A) was completed, it was collected by the researcher and the second set (Set B) was then distributed.

The questionnaire comprises 12 global reading strategies; 8 problem solving strategies and 9 support reading strategies. The questionnaire is a five-point Likert scale where '1' means that 'I never or almost never do this' when I read online or offline; '2' means that 'I do this only occasionally'; '3' means that 'I sometimes do this'; '4' means that 'I usually do this' and '5' means that 'I always or almost always do this' when I read online or offline.

Participants

For the purpose of this study, two locations were selected as venues where the questionnaires were administered to engineers. Company A is a private company and Company B is a government agency. The choice was due to the fact that both these places employ large numbers of engineers. It also serves the purpose of comparison between reading strategies employed by engineers in different engineering companies in the use of online and offline reading strategies.

A total of sixty eight participants took part in the questionnaire survey. The participants are civil engineers. Engineers at Company A are engaged in a more varied scope of engineering work in contrast to Company B. This is due to the fact that Company A is involved with road building and maintenance, site investigation, traffic engineering, geotechnical engineering, forensic engineering, pavement engineering, and landscape mitigation among other more specialised fields of engineering. The government engages Company A for its projects and the company has had a long-term concessionaire with the government. Company B, on the other hand, is a government agency primarily engaged in construction and road building and the engineers at Company B are engaged in various scope of work such as design, procurement, project management, and consultancy.

Results and discussion

The findings of the study are discussed below.

Profile of respondents

Table 2 shows the profile of the respondents. For the OSORS, thirty-six (52.9%) engineers responded while for the SORS a total of thirty-two (47.1%) responded. 47.1% of the respondents are from Company A and the remaining 52.9% are from Company B. There were 67.6% and 32.4% male and female respondents respectively. 79.4% were below the age of thirty-five; 8.8% were in the thirty-five to forty-five age bracket and the remaining 11.8% were in the forty-six to fifty-five age bracket. The majority of the respondents, therefore, are young engineers. 83.8% of the respondents are engineers; 1.5% are involved in site investigation testing; 2.9% are from the technical division; 4.4% are geologists; 5.9% are transport planners and 1.5% are structure assistants.

Table 2: Profile of respondents

		Frequency	Percent
Mode	Online	36	52.9
	Offline	32	47.1
Company	A	32	47.1
	B	36	52.9
Gender	male	46	67.6
	female	22	32.4
Age	below 35	54	79.4
	35-45	6	8.8
	46-55	8	11.8
Occupation	Engineer	57	83.8
	Site investigation testing	1	1.5
	Technician	2	2.9
	Geologist	3	4.4
	Transport planner	4	5.9
	Structure assistant	1	1.5

Before running the Parametric test, the data was screened for normality and homogeneity. Kolmogorov-Smirnov's Test was run to examine the normality assumption. The results indicated that $z = 0.52$, $p = 0.95$, thus the hypothesis of normality cannot be rejected, $p > 0.05$. Levene's test was run to indicate the normality assumption. For the test of homogeneity of variance, the result was $p > 0.05$. The result indicates that the population variances for the two groups of respondents are equal ($F = 1.29$, $p = 0.259$). To test the reliability of the study, the Cronbach's Alpha was used, where Cronbach's Alpha was $(\alpha) = 0.87$. The Alpha for this study was > 0.7 , which indicates that the items in the questionnaire have good internal consistent reliability.

Independent-sample T-tests were run in the analysis. In response to the research question, if there are any significant differences in online and offline reading strategies, the results indicate that there are no significant differences between online and offline reading strategies, $t(66) = -1.41$, $p = 0.16$ (Table 3). The mean for the online reading strategies was 3.65, while that of offline reading strategies was 3.79.

Table 3: Independent sample t-test for online and offline reading strategies

	Mode	Mean	SD	SE	t	df	p
Reading Strategy	On line	3.65	0.36	0.06	-1.41	66	.162
	Off line	3.79	0.46	0.08			

Differences in online and offline reading strategies

In response to the research question, whether there are acute differences in the online reading strategies and offline reading strategies used by engineering professionals according to the three categories, Global, Problem-solving and Support Strategies, the results indicated that there were no significant differences in the use of Global and Support Reading Strategies. For the use of Global Reading strategies in online reading, the mean was 3.72 while that of offline reading was 3.84; for Support Strategies the mean was 3.49 for online reading and 3.53 for offline reading.

However, there was a significant difference in the use of Problem-solving Strategies where the mean for online reading was 3.72 and the mean for offline reading was 3.99 (Table 4).

Table 4: Mean for reading strategies

	Mode	N	Mean	Std. Deviation	Std. Error Mean
GLOB	Online	36	3.72	0.44	0.07
	Offline	32	3.84	0.51	0.09
PROB	Online	36	3.72	0.47	0.08
	Offline	32	3.99	0.52	0.09
SUP	Online	36	3.49	0.47	0.08
	Offline	32	3.53	0.62	0.11

Frequency of strategy use

To answer the question: Which strategies are most often used, whether Global, Problem-solving or Support, the mean statistics indicate that Problem Solving strategies were most often used in online and offline reading, followed closely by Global Reading Strategies for which the mean was 3.78. The strategies which were used the least were Support Strategies. The mean for the use of Support Strategies was 3.51 (Table 5). These findings are consistent with the findings of Anderson (2003) in his study of ESL and EFL learners. Problem Solving strategies were more often used by the ESL learners.

Table 5: Mean of reading strategies more often used

	N	Minimum	Maximum	Mean	Std. Deviation
GLOB	68	2.50	4.83	3.78	0.48
PROB	68	2.25	5.00	3.85	0.51
SUP	68	2.11	4.67	3.51	0.54

The independent sample t-test indicated that there are significant differences in the use of Problem Solving Strategies between online and offline reading of engineering materials; $t(66) = -2.21$, $p < 0.05$ (Table 6). On the other hand, the test indicated that there are no significant differences in the use of Global and Support reading strategies between online and offline reading of engineering professionals, $t(66) = -0.04$, $p = 0.30$ and $t(66) = 0.78$, $p = 0.77$.

Table 6: Independent sample t-test between online and offline reading strategies

Reading Strategy	Mode	Mean	SD	SE	t	df	p
GLOB	Online	3.72	0.44	0.07	-1.045	66	0.30
	Offline	3.84	0.51	0.09			
PROB	Online	3.72	0.47	0.08	-2.212	66	0.03
	Offline	3.99	0.52	0.09			
SUP	Online	3.49	0.47	0.08	-.284	66	0.78
	Offline	3.53	0.62	0.11			

Differences in strategy use at company A and company B

The Independent sample T-test used to compare and contrast the use of online and offline reading strategies by the engineering professionals at Company A and Company B showed significant differences; $t(66) = -3.62$, $p = 0.0001$ (Table 7).

For Company A, the mean for Problem Solving strategies was 3.71, while that of Company B was 3.97; the mean for Global reading strategies for Company A was 3.57 while that of Company B was 3.96; the mean for Support Strategies used by engineering professionals at Company A was 3.32 and

for Company B, the mean was 3.68. For both Company A and Company B, Problem Solving strategies were most often used by the engineering professionals followed by Global Reading strategies. The least often used strategies were the Support Strategies.

The differences in the use of Problem Solving strategies and Global reading strategies for Company B were very small. For Problem solving reading strategies the mean was 3.97 and for Global reading strategies, the mean was 3.96.

Table 7: *Independent sample T-test between engineering professionals at company A and company B*

Reading Strategy	Company	Mean	SD	SE	t	df	p
GLOB	A	3.57	0.44	0.08	-3.71	66	.000
	B	3.96	0.44	0.07			
PROB	A	3.71	0.39	0.07	-2.07	66	.042
	B	3.97	0.57	0.10			
SUP	A	3.32	0.53	0.09	-2.92	66	.005
	B	3.68	0.49	0.08			

Conclusion

The Engineering professionals read online and offline engineering materials for various purposes. The materials that they refer to often are manuals and reports. From this study, the use of reading strategies most often used by engineering professionals is made clear. Besides that, the differences in the use of reading strategies used by engineers in a private company and that of a government agency sheds light on the reading behaviour of engineers in different organisations. The significant difference in the use of reading strategies by Company A; the private company and Company B; the government agency could be the differences in the nature of work. One is a private company, which is also engaged in conducting research, while the other is a Government agency involved with Government sponsored projects. For the private company, the prime motivation is business and therefore engineers need to race against time to meet with deadlines. Due to the constraints of time, it is likely that the engineers at Company A use more Problem-solving reading strategies in contrast to Global and Support reading strategies.

For both Online and Offline reading, Problem-solving strategies were most often used by the engineering professionals at Company A and B, followed by Global reading strategies and then only by Support reading strategies. Problem-solving strategies include: "I read slowly and carefully to make sure I understand what I am reading", "I try to get back on track when I loose concentration", "When the text becomes difficult, I pay close attention to what I am reading", "I try to picture or visualise information to help remember what I read", "When I read, I guess the meaning of unknown words or phrases". Support reading strategies are such as: "I paraphrase (restate ideas in my own words) to better understand what I read", "I underline or circle information in the text to help me remember it", and "I go back and forth in the text to find relationships among ideas in it".

Support strategies such as these are the least often used by engineers in the field, most probably because of constraints of time or due to the need to meet with deadlines. However, more engineers in Company B (government agency) used this strategy in contrast to engineers at Company A. This

could be because the engineering professionals at Company B have more time to spend on reading and comprehending what they read or that they are less proficient in the English Language and thus take longer to read.

There is however, a significant difference in the use of Problem Solving strategies between online and offline reading. More Problem Solving strategies were used for offline reading than for online reading. This could be due to the fact that when the engineers read manuals or reports, they spend more time trying to understand the content in the material compared to what they read on their computers.

Generally, more Problem-solving, Global and Support reading strategies were used by the engineers at Company B, the government organisation, in contrast to engineers at Company A; the private company. The engineers at the government organisation spend more time using various reading strategies.

As seen in the literature review, many studies have been done to investigate the metacognitive reading strategies of ESL and EFL learners but none to date has been conducted on professionals at the workplace. This study thus bridges the gap between what is done in classrooms and what is practised at the workplace. Examining the metacognitive reading strategies of engineering professionals sheds light on what reading strategies are significant to accomplish the tasks of engineers. It therefore is a significant study. More of such research should be carried out in other professional fields such as in business, information technology, medicine, architecture as well as in other fields.

The results of this study have pedagogical implications for English for Specific Purposes (ESP) classes. In most institutions of higher learning, Technical English classes for engineering students are conducted. On the basis of the current findings and the literature, a fair balance between strategic and linguistic training should be achieved in skills development programmes such as for Technical English classes. When exposing students to authentic engineering materials, both offline and online, teachers should (1) assess students' awareness of strategy use (for example by using instruments such as the SORS and OSORS); (2) raise awareness of the importance of strategic reading; (3) raise awareness of the array of strategies available to aid comprehension (for example Global, Problem-solving and Support Reading Strategies); and then (4) provide strategy training. Problem-solving strategies such as the ones employed by the engineering professionals in the study can be emphasised to enable students to become efficient and effective readers. This will have implications when the students enter the workplace.

References

- Anderson, N.J. (2003). *Scrolling, Clicking, and Reading English: Online Reading Strategies in a Second/Foreign Language*. The Reading Matrix, Vol. 3, No. 3, November 2003, pp. 1-33.
- Auerbach, A. And D. Paxton. (1997). "It's not the English thing: bringing reading research into the ESL classroom". *TESOL Quarterly*, 31, 237-261.
- Carrell, P.L., Gajdusek, L., & Wise, T. (1998). Metacognition and EFL/ESL reading. *Instructional Science*, 26, 97-112.

- Flavell, J.H. (1992). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. In T.O. Nelson (Eds.), *Metacognition: Core reading* (pp. 3-8). Boston: Allyn & Bacon.
- Jiménez, R.T., García, G.E., & Pearson, P.D. (1996). The reading strategies of bilingual Latina/o students who are successful English readers: Opportunities and obstacles. *Reading Research Quarterly*, 31(1), 90–112.
- Leu, D. J. Jr. (2002). The new literacies: Research on reading instruction with the Internet. In A. E. Farstrup & S. J. Samuals (Eds.), *What research has to say about reading instruction* (3rd Ed.) (pp. 310-336). Newark: DE: International Reading Association.
- Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education*, vol. 25, no. 3, pp. 2-10.
- Mokhtari, K. and C. Reichard (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94, 249-259.
- Paris, S. G., & Lindauer, B. K. (1982). The development of cognitive skills during childhood. In B. Wolman (Eds.), *Handbook of Developmental Psychology*. Englewood Cliffs, N.J.: Prentice-Hall.
- Sheorey, R. & Mokhtari, K. (2001). Differences in the metacognitive awareness of reading strategies among native and non-native readers. *System*, 29, 431-449.

Appendix A

SET A QUESTIONNAIRE

This study seeks to investigate the reading strategies you use as an engineering professional when you read engineering materials (books, manuals, reports, journal articles, research, tender proposal etc.) offline (hard copies or printed material). The questionnaire requires an honest evaluation of what you do as you read engineering materials. You may be assured that your responses will remain completely confidential.

Your cooperation is greatly appreciated. Thank you.

A. Background Questionnaire

1. Gender : _____
2. Age : _____
3. Occupation : _____
4. Scope of work : _____

SURVEY OF OFFLINE READING STRATEGIES

Each statement is followed by five numbers 1,2,3,4 and 5, and each number means the following:

“1” means that “I **never or almost never** do this” when I read offline

“2” means that “I do this **only occasionally**” when I read offline

“3” means that “I **sometimes** do this” when I read offline

“4” means that “I **usually** do this” when I read offline

“5” means that “I **always or almost always** do this” when I read offline

After reading each statement, **circle the number (1,2,3,4 or 5)** which applies to you. Note that there are **no right or wrong responses** to any of the items in this survey.

Statement	Never			Always	
	1	2	3	4	5
1. I have a purpose in mind when I read					
2. I take notes while reading offline to help me understand what I read.					
3. I think about what I know to help me understand what I read.					
4. I take the overall view of the text to see what it is about before reading it.					

5. When offline text becomes difficult, I read aloud to help me understand what I read.
6. I think about whether the content of the offline text fits my reading purpose.
7. I read slowly and carefully to make sure I understand what I am reading.
8. I review the offline text first by noting its characteristics like length and organization.
9. I try to get back on track when I loose concentration
10. I underline or circle information in the text to help me remember it.
11. I read slower according to the engineering material I read.
12. When reading, I decide what to read closely and what to ignore.
13. I use references materials (e.g. a dictionary) to help me understand what I read).
14. When the text becomes difficult, I pay close attention to what I am reading.
15. I use tables, figures and engineering drawings in the text to increase my understanding.
16. I stop from time to time and think about what I am reading.
17. I use context clues to help me better understand what I am reading.
18. I paraphrase (restate ideas in my own words) to better understand what I read.
19. I try to picture or visualize information to help remember what I read.
20. I use typographical features like bold face and Italics to identify key information.
21. I critically analyze and evaluate the information presented in the text.

22. I go back and forth in the text to find relationships among ideas in it.
23. I check my understanding when I come across new information.
24. When text becomes difficult, I re-read it to increase my understanding.
25. I ask myself questions I like to have answered in the offline text.
26. When I read, I guess the meaning of unknown words or phrases.
27. I check to see if my understanding about the text is right or wrong.
28. When reading, I translate from English into my native language.
29. When reading, I think about information in both English and my mother tongue

Appendix B

SET B QUESTIONNAIRE

This study seeks to investigate the reading strategies you use as an engineering professional when you read engineering materials (books, manuals, reports, journal articles, research, tender proposal etc.) online (materials on the Internet). The questionnaire requires an honest evaluation of what you do as you read engineering materials. You may be assured that your responses will remain completely confidential.

Your cooperation is greatly appreciated. Thank you.

B. Background Questionnaire

1. Gender : _____
2. Age : _____
3. Occupation : _____
4. Scope of work : _____

SURVEY OF ONLINE READING STRATEGIES

Each statement is followed by five numbers 1,2,3,4 and 5, and each number means the following:

“1” means that “I **never or almost never** do this” when I read online

“2” means that “I do this **only occasionally**” when I read online

“3” means that “I **sometimes** do this” when I read online

“4” means that “I **usually** do this” when I read online

“5” means that “I **always or almost always** do this” when I read online

After reading each statement, **circle the number (1,2,3,4 or 5)** which applies to you. Note that there are **no right or wrong responses** to any of the items in this survey.

Statement	Never			Always	
	1	2	3	4	5
1. I have a purpose in mind when I read					
2. I take notes while reading online to help me understand what I read.					
3. I think about what I know to help me understand what I read.					

4. I take the overall view of the text to see what it is about before reading it.
5. When online text becomes difficult, I read aloud to help me understand what I read.
6. I think about whether the content of the online text fits my reading purpose.
7. I read slowly and carefully to make sure I understand what I am reading.
8. I review the online text first by noting its characteristics like length and organization.
9. I try to get back on track when I loose concentration
10. I underline or circle information in the text to help me remember it.
11. I read slower according to the engineering material I read.
12. When reading, I decide what to read closely and what to ignore.
13. I use references materials (e.g. a dictionary) to help me understand what I read).
14. When the text becomes difficult, I pay close attention to what I am reading.
15. I use tables, figures and engineering drawings in the text to increase my understanding.
16. I stop from time to time and think about what I am reading.
17. I use context clues to help me better understand what I am reading.
18. I paraphrase (restate ideas in my own words) to better understand what I read.
19. I try to picture or visualize information to help remember what I read.
20. I use typographical features like bold face and

italics to identify key information.

21. I critically analyze and evaluate the information presented in the text.
22. I go back and forth in the text to find relationships among ideas in it.
23. I check my understanding when I come across new information.
24. When text becomes difficult, I re-read it to increase my understanding.
25. I ask myself questions I like to have answered in the online text.
26. When I read, I guess the meaning of unknown words or phrases.
27. I check to see if my understanding about the text is right or wrong.
28. When reading, I translate from English into my native language.
29. When reading, I think about information in both English and my mother tongue