

CHAPTER 6

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

In this concluding chapter, the summary, implications and recommendations are discussed relative to the findings of this study. The discussions must be viewed within the limitations of this research. The conclusions that have been drawn are tentative and could be reinforced with further research.

6.1 Introduction

Most of the research on reading process, strategies and text processing of L1 and L2 reading in English are from printed texts. Therefore, a great deal of what we know about reading and comprehension is through research conducted using printed texts. However, the Internet and the electronic text or hypertext has significantly changed how we read (McDonnell, 2003). Now, students do most of their academic reading and research on the Internet. These texts or academic materials that they read on screen can be referred to as electronic texts or hypertext.

Hypertext has features and capabilities that are fundamentally different from printed text. As Winkleman (1995) points out that while printed text is static, hypertext is dynamic. Hypertext is linked to a variety of information in different forms. The meaning of what is read is not limited to the words on that page, but rather linked elsewhere depending on the writer's cognitive map of space. In addition, reading hypertext has the possibility of drowning students in information overload because of the hyperlinks. Kamil and Lane 1998, argue that hypertext can be looked at from three situations:

- the literary version of hypertext, where the reader can create his or her own path;
- hypertext which allows one to add information by providing readers the opportunity to explore the text in greater depth;
- and the hypertext which allows students to study.

There is only a small but growing body of research on hypertext and very few empirical studies that discuss “the cognitive consequences of reading this type of non traditional text” (p.773). This study has tried to provide additional insight into the metacognitive and cognitive reading strategies of ESL learners when reading hypertext

One of the challenge of reading hypertext is the unpredictability of knowing where one will go when choosing the hyperlink. As Kamil and Lane (1998) state there is no way to predict whether or not that link will be useful. Therefore, without proper training and sufficient practice students will have difficulty to create a mental representation of a disjointed or multi-linear text. This in turn will affect the way the information in the text is comprehended by the students. In the end, the students might not be able to put this reading into any form of comprehensible output for their research or any other task.

Internet technology has had a significant impact upon reading strategies, resulting in the need to reassess our thinking about classroom reading instruction or practices. The question raised is whether there is a need to pay more attention to certain specific cognitive and metacognitive reading strategies that are useful to help students decode

meaning while reading hypertext. Therefore, given the prediction that in the future most of our reading would be hypertext or electronic text, we need to equip our students with skills and strategies in the reading instruction that will make them effective on-line readers.

Thus, this study using think-aloud protocol identified and compared the difference in metacognitive and cognitive strategies used by ESL learners while reading printed and hypertext. Ericsson and Simon (1980) strongly endorsed the think-aloud protocol as a method of collection of verbal data and analysis, within the framework of the human information-processing paradigm. The subjects in this study were required to verbalize their thoughts while reading a printed and hypertext. Immediately after the think-aloud task, the retrospective interview was conducted. This interview session allowed the researcher to ask questions and clarify statements that were considered vague or unclear. It was also to obtain confirmation on statements that were incomplete.

After the subjects had completed the think aloud reports and the retrospective reports the subjects were asked to write a summary of the text. The summary was used to assess the subjects' comprehension of the text. It was not a primary method for data collection but rather used to clarify or support the primary findings.

6.2 Conclusion

Before the main findings are discussed, it must be once again stressed that this study was investigative in nature, and that in view of its limited scope and research sample, this study can only make tentative postulations. Hence, the findings in this study

should be viewed as preliminary and suggestive, rather than conclusive.

The research design of this study involved two different types of text, one printed and the other hypertext. The research subjects read a printed text and then a hypertext. Think-aloud verbal protocol methodology (Pressley and Afflerbach, 1995; Ericsson and Simon, 1989) was used to identify reading strategies used by 10 Law students from MARA University of Technology, while reading text in print and hypertext. The students ranged in age from 20 to 23 years. Older students were chosen based on the premise that older individuals would be better at verbalizing their thoughts than younger children. This would add validity and credibility to the verbal reports collected.

During the think-aloud protocol, participants read and simultaneously verbalized their thoughts. Studies using think-aloud protocol reveal details of sequences of information processes reflecting the reader's short-term memory (STM). It is claimed that readers can be involved with think-aloud protocols without altering their cognitive processes (Ericsson and Simon, 1989).

Retrospective Interviews were used to help clarify statements made as well as provide details that have been omitted. According to Ericsson and Simon (1989), during retrospective interviews, participants can retrieve the trace of preceding cognitive processes and reveal information preserved partially in STM and partially in long-term memory (LTM).

Therefore, in this study a combination of both think-aloud protocols and retrospective interviews were used to identify the different metacognitive reading

strategies used by ESL learners while reading printed texts and hypertext. This was to ensure that the think aloud protocol analysis was thus capable of providing useful insights into the cognitive processes that drive the working of this mechanism in reading events. Spires and Estes (2002) recommend the think-aloud protocol be used “to help uncover potential cognitive processes inherent in Web-based reading environments...” (p. 123).

The main findings, presented below, fall under five categories:

1. The metacognitive and cognitive reading strategies used by ESL learners when reading printed text.
2. The metacognitive and cognitive reading strategies used by ESL learners when reading hypertext.
3. The differences in the choice of reading strategies used by ESL learners while reading in print and hypertext.
4. Students’ perception on reading strategies used when reading hypertext
5. Reader Profiles

6.2.1 Metacognitive and cognitive reading strategies used by ESL learners when reading printed text.

Six of the reading strategies used by ESL learners when reading printed text had median values ranging from 3.50 to 14.0, and are considered as belonging to the high usage group of strategies.

These strategies of frequent usage are

- *monitoring comprehension (Metacognitive Strategy)*
- *pausing and thinking about reading (Cognitive strategy)*
- *reread (Cognitive Strategy)*
- *adjusting reading rate (Cognitive Strategy)*
- *paraphrasing(Support Strategy) and*
- *asking questions(Support Strategy).*

It can be concluded that these ESL learners tend to use the set of strategies designated as cognitive when reading printed text over support and metacognitive reading strategies, in that order.

6.2.2 Metacognitive and cognitive reading strategies used by ESL learners when reading hypertext.

Six of the reading strategies used by the ESL learners when reading hypertext also had high median values ranging from 3.5 to 17.0 and are considered as belonging to the high usage group of strategies.

These strategies of frequent usage are

- *monitoring comprehension(Metacognitive Strategy),*
- *pausing and thinking about reading (Cognitive strategy)*
- *reread (Cognitive strategy)*
- *adjusting reading rate (Cognitive Strategy)*
- *interpreting information(Cognitive Strategy) and*
- *asking questions(Support Strategy)*

Again, these ESL learners tend to prefer the cognitive reading strategies when reading hypertext over the metacognitive and support strategies, in that order.

However, when reading printed text ESL students seem to prefer support strategies to metacognitive strategies and when reading hypertext they prefer metacognitive to support strategies. In general, the students preferred to use the same cognitive and metacognitive reading strategies when reading printed and hypertext.

6.2.3 The differences in the choice of reading strategies used by ESL learners while reading in print and hypertext.

In the case of the individual strategies, there are two reading strategies belonging to the metacognitive category in which students differ in their usage when reading printed text and when reading hypertext. The results show that, on the average, the students used the strategies *determine what to read* and *use text features*, relatively more often when reading hypertext than when reading printed text. These two

strategies were used to decide what and how much to read when they were confronted with a hyperlink. They needed to use these strategies to help them make useful decisions, firstly whether to click on the hyperlink and if so how much of the text should be processed. The constant entry and exit of the hyperlinks can result in the read becoming disoriented and confused. What to read and the depth of processing of the many frames of pages in the hyperlink are important skills to acquire for on-line reading.

In addition, there are two reading strategies belonging to the cognitive category in which the students differ in their usage when reading printed text and when reading hypertext; on the average, the students used the strategies *try to stay focused on the reading* and *use prior knowledge* relatively more frequently when reading hypertext than when reading printed text. This is because the subjects did not want to get lost in all the information of the various texts in the hyperlinks. Also subjects who spent more time reading on the computer than the others used their prior knowledge to help them in deciding on what hyperlink to click on and how to read the text in the hyperlink. This confirms what Rouet and Levonen, 1996 stated that skilled hypertext readers plan and monitor choices about where to go in particular text and in what sequence to move. In light of this, subject 2, 7 and 9 who spent more hours reading on the Internet, managed their reading of hypertext well and was able to integrate the information read in the hyperlinks to write a fairly coherent summary of the hypertext.

On the whole, the results imply that the students do not differentiate whether the reading strategies they use are specific to the printed text or pertinent to the

hypertext, except for the four individual strategies discussed earlier. By category (i.e. metacognitive, cognitive and support), they also do not differentiate whether the category of reading strategies they use are specific to the printed text or the hypertext. Also when a student uses a set of reading strategies in reading printed text, he/she tends to use the same set of strategies when reading hypertext for the greater portion. However, many reading researchers like Coiro, 2003; Sunderland, 2002; Anderson, 2001; Leu, 2002; Rouet & Levonen and Salmon et al, 2005, agree that reading hypertext involves additional cognitive processes. This is because the text structure of printed and hypertext differ.

Many reading theorists argue that after reading a number of texts with the same genre, a person formulates patterns or frameworks called schemas. The reader then invokes his/her schema to anticipate what will occur next, make inferences to fill in missing gaps and to decide which aspect of the text is important for comprehension. However, when the text, like hypertext sets incoherent expectations they create comprehension problems for the readers. Reading programs should have instructions and exercises that provide learners with ample exercises to practice these strategies

Therefore, if we want students to become skilled on-line readers, practice and training in reading hypertext will help them plan and monitor their comprehension of hypertext.

6.2.4 Students' Perception on Reading Strategies Used When Reading Hypertext

Each student on the average perceives that they use 21 of the 38 reading strategies in the questionnaire (Refer to Table 5.5). The 8 reading strategies that they perceive they most frequently use in descending order are:

- When on-line text becomes difficult, I re-read it to increase understanding (*Reread*)
- Try to get back on track when I lose concentration (*Try to stay focused*)
- When reading on-line, I decide what to read closely and what to ignore (*Determine what to read*)
- I review the on-line text first by noting its characteristics like length and organization (*Noting texts characteristics*)
- I scan the on-line text to get a basic idea of whether it will serve my purpose before choosing to read it (*Previewing text*)
- I try to guess what the content of the on-line text is about when reading (*Making Predictions*)
- When on-line text becomes difficult, I pay closer attention to what I am reading (*Adjusting reading rate*)
- I read slowly and carefully to understand what I am reading on-line (*read slowly when reading on-line*)

A comparison of the five reading strategies that the students' perceive they most frequently use and the strategies that they reportedly use in the think-aloud protocol are given below in Table 6.2.4

Table 6.2.4: Most Frequent Strategies used as Perceived and Reported by Subjects when Reading Hypertext

	Subjects perceive they use	Subjects reportedly used
1.	<i>Reread</i>	<i>Pausing and thinking about reading</i>
2.	<i>Try to stay focused</i>	<i>Monitoring comprehension</i>
3.	<i>Determine what to read</i>	<i>Reread</i>
4.	<i>Noting texts characteristics</i>	<i>Adjusting reading rate</i>
5.	<i>Previewing text</i>	<i>Interpreting information</i>

Only the reading strategy *reread* appears in both the columns. The students seem aware that the following reading strategies, *try to stay focused*, *determine what to read*, *noting text characteristics* and *previewing text* are important reading strategies to use when reading hypertext but they were not frequently used except for a few subjects when reading hypertext. Practice and training will help guide students on how to use these strategies to enhance hypertext reading.

The findings in the open-ended questions indicated that majority of the students have difficulty reading on-line text. The reasons given by the students showed that they lacked confidence in:

- Reading hypertext
- Using electronic dictionary
- Using the tool bar to aid comprehension.

In addition, the students reported that reading hypertext was too time consuming as some of them took a long time to complete the reading task. This because of the time spent reading the various texts embedded in the hyperlinks. There was also a lot of rereading because every time the students returned to the main text some were disoriented. Skilled hypertext readers, like three of the subjects in this study, plan and monitor choices about where to go, what sequences to move and how much to read.

6.2.5 Reader Profiles

Based on the findings, observation and reader's profiles, in general there are three types of readers for hypertext in this study.

- The Novice reader is one who clicks on all or most of the hyperlinks in the hypertext he/ she is reading. The reader does not skim through the text in the hyperlink but rather reads almost every line in the text in the hyperlink. At the end, the reader is seen to loose focus on the reading purpose or leaves the hyperlink even more confused and disoriented. It seemed to the researcher that these readers felt they had to read the whole text since they clicked on the hyperlink. This is because in reading instructions and practices using printed text, students are required to read the whole text, from beginning to end as there is only one set of text to read. However, when reading hypertext the students have the choice to read not only the main text but also various texts provided by the hyperlinks embedded in the hypertext. More exposure and prior knowledge on hypertext will guide them to be skilled hypertext readers who will be able to manage and comprehend frames of pages that can lead to information overload. When the reader is not able to get the clarification he/she wants, he/she leaves the hyperlink. The readers assume that hyperlinks are placed for the purpose to

help comprehension of the text. However this is not true in some cases. The purpose of some hyperlinks is just to provide additional information either in the form of visuals or more texts.

The summary scores these ESL students obtained for the hypertext were below average. In general the summary contained more supporting details and it was not very coherent.

- The Cautious reader is one who ignores all the hyperlinks or just clicks on the hyperlink only when he/ she has finished reading the paragraph, page or the whole text. Even then, he / she glanced over the text and did not engage in actively reading its contents. This reader does this so as not to be confused or distracted by the information in the hyperlinks. This is her/his way of avoiding information overload. The researcher felt that these readers approached the hypertext very much like a printed text. The summary scores these ESL learners obtained for the hypertext were in general average and above average. The summaries on the whole were fairly coherent, although there were two ESL learners whose summaries lacked coherence.
- The Skilled reader is one who monitors his/her comprehension of the text before he/she decides whether or not to click on the hyperlink. If he / she finds that he/she has understood the paragraph or page he/ she would not click on the hyperlink. This appeared to be an effective strategy so that they would not waste time or get distracted. However, if he/ she entered a hyperlink he /she would only scan and skim through the text to only see if the information is relevant or

not. They read selectively and did not feel that they had to finish what they started. Also, it was noted that these readers spent more hours per week on the computer than the rest of the subjects. It would seem that the exposure and prior knowledge helped them in their reading decisions and knowledge of website structure.

The summaries scores for these three ESL learners for hypertext were high. Two of these ESL Learners also obtained high scores for their summaries of the printed text. These two students were also more proficient in English as compared to all the other subjects. They had obtained a Band 5 for the MUET Exam. Although the other student's summary score for the hypertext was high, her summary score for the printed text was low.

6.3 Limitations of the study

This study is limited by the relatively small sample size of just 10 subjects. Additionally, only one faculty, namely the faculty of Law, UiTM was involved in this study. A wider cross-section of subjects may have provided a different set of findings. Hence, the findings of this study may not be applicable to ESL students from other faculties in UiTM or other institutions of higher learning. In addition, it would be difficult to draw strong generalizations due to the limited number of students.

In addition, although the think-aloud protocol is a widely used method to investigate the reading processes of learners, sometimes subjects do not report all the strategies they employ while reading the texts.

Another limitation of this study is related to the reading text used in this study. The possibility of text-related variables such as background knowledge and linguistic complexity of the texts influencing the individual reader's performance was not thoroughly examined. The topics for the texts were selected on the basis of what the subject lecturers considered as appropriate for their students.

Since this study is investigative in nature and that in view of its limited scope and research, this study can only make some tentative postulations that may be significant.

6.4 Implications of the Study

Today, the way we view literacy and reading instruction is evolving in new directions as a result of the Internet. In light of this, Leu (2000) argues that the internet has become a central position in the classroom and that the literacy community must continue to explore these contexts for literacy and learning if we wish to prepare children to be literate in the near future. Therefore, improving reading comprehension of hypertext is pertinent (RRGS, 2002).

As Sutherland-Smith (2002) reports that when observing students interacting with text resulting from an Internet search, these students perceive WEB text reading as different from print text reading. The subjects in this study also perceived it as different and difficult as compared to printed text. However, most of them read the hypertext like a printed text. At the end most of them were not able to effectively summarize the information coherently.

Although the research sample for this study was relatively small, only 10 subjects and it involved subjects from one faculty, the findings of this study to a certain extent have significant implications on teachers, reading instruction, curriculum design, research and material production.

Firstly, the most prominent outcome of this study has been in verifying the metacognitive and cognitive reading strategies that ESL learners used to aid comprehension of a hypertext. This study has identified 2 metacognitive, and 2 cognitive reading strategies that students used more frequently when reading hypertext than when reading printed text. Due to the structure of hypertext and the hyperlinks, the metacognitive reading strategies of *determining what to read* and *the use of text features* were frequently used in the reading process. This was also true for the cognitive reading strategies of *trying to stay focused* and *using prior knowledge* that the subjects used to aid comprehension. It would seem that the subjects depended on the above reading strategies more to help them read and manage information found on the hypertext than printed text.

Although, the subjects in the study were proficient in English and had above average grades for their reading, most of the subjects reported that they have difficulty in reading hypertext. Firstly, difficulty here refers to reading hypertext on screen. Most students are more comfortable printing online materials and reading them. Secondly, would be deciding on which hyperlink to enter and which to ignore which in turn affects the reading order. Thirdly, would be the depth of

processing the various frames of pages embedded in the hyperlinks. Finally, would be integrating the information read from the hyperlinks with the main text. An organizer that can help them to map out the different information read would be helpful. Therefore, it is not surprising that most of the subjects' scores for the summary were below average as compared to their summary scores for the printed text.

This shows that text structure plays a significant role in reading comprehension. This further strengthens the notion that ESL learners need to be trained to be skilled readers of hypertext. Today, particularly in the educational context for many students, reading is undoubtedly one of the most important skills and with the Internet playing a prominent role in education, ESL readers need to be skilled readers of hypertext.

The findings of the study further concur with other hypertext reading researchers that reading hypertext is not a simple process. In this study the subjects were engaged in various cognitive processes as the hypertext just does not involve one text but rather a number of texts because of the presence of hyperlinks. This points to the fact that Educators and Curriculum designers should not treat reading hypertext as a simple act or a mere transfer of skills from print to hypertext. There is a dire need to implement reading comprehension instruction that would help ESL learners to manage the unique characteristics of hypertext such as the openendedness and multi-linearity of it.

In light of this, reading strategy instruction for the mentioned metacognitive and cognitive reading strategies as well as other relevant reading strategies like

comprehension monitoring should be viewed seriously. These metacognitive and cognitive strategies will help the ESL learner process the information from hypertext into some form of comprehensible output for the students. Comprehension monitoring is also crucial because readers need to possess the ability to be aware of what kind of reading problems they are encountering and what kind of strategies could be used to solve them.

Moreover, the ability of comprehension monitoring enables readers to integrate different types of new information. The sole aim is to equip ESL learners with skills to help them function efficiently and independently in their studies as well as their career. Therefore, teachers now have to reassess the reading instructional goals and practices in the classroom to incorporate the multi-linear and open-ended characteristics of hypertext that require readers to build their prior knowledge and also utilize a different set of strategies.

Another significant educational implication addresses the selection and the use of hypertext readings for classroom purposes. Hypertext represents a new genre because it extends beyond traditional text. It not only allows students to interact with the text but also take part in creating a text of their own. As the form is still fairly new, it can prove to be a challenge for ESL students who are not familiar with the structure. It can cause confusion and students should be introduced to the various formats of hypertext readings. Therefore, there is a need to utilize hypertext readings for classroom purposes.

According to Smith (1986) knowledge of the organization and presentation of a text can help readers interact and comprehend text. The different ways in which various texts present their information is called “genre schemes” by Smith. These genre schemes differentiate one type of text from another. Genre schemes have become conventional in that they signal readers regarding the characteristics they might expect to encounter while reading a particular text. These expectations allow readers to predict what a text will look like. Since readers have become accustomed to the genre schemes they regularly encounter, a text that does not comply with the characteristics of its genre scheme may cause problems for readers.

Smith (1986) goes on to say that, if we do not know the relevant structures then we will not understand the text, or our reading of it will be distorted. The findings of this study are consistent with the above notion. Therefore, since structure and organization play an important role in the skills readers employ in order to comprehend text, teachers and those involved in producing reading materials must seriously take heed of this. There should be a tangible shift from teaching reading comprehension using printed text to teaching reading comprehension using hypertext

ESL Learners need to have instructions to guide them to manage the features of hypertext in their reading decisions as well as knowledge of website structures. This will help minimize disorientation or getting lost in the hypertext and in turn build their confidence to become skilled on-line readers. The aim of educators and curriculum designers should be to seriously rethink the reading instructional goals and aim to make students become skilled hypertext readers.

In the past, L2 researchers have agreed that there is a need to consider an interaction between the ESL reader's language ability and the particular reading task for the reading process. Due to this, the ESL learner had to attain a certain threshold of language ability. This study further contributes to the findings of other research that there is an interaction between the ESL reader's awareness of text structure and hypertext. It also showed that if you are a good reader for printed text, it does not automatically mean you are a skilled hypertext reader. Therefore, for reading hypertext ESL learners should attain a certain threshold of schemata and strategies to be a skilled hypertext reader. Comprehending hypertext is not only limited to the words on the page but the ability to process the information read in the many frames of pages in the hyperlinks.

Yet another implication of this study is that it supports the notion that reading instruction which takes into consideration developing the reader's schemata, reading strategies, purpose for reading, reading rate and navigational skills, will be successful readers on the Internet. A reader who is not trained nor has any prior knowledge on hypertext can drift aimlessly from text to text, forgetting their initial purpose. The subjects in this study who spent more hours reading on the Internet were identified as skilled hypertext readers.

Curriculum designers and teachers at schools as well as Institutions of higher learning must seriously consider the demands of hypertext and in turn, incorporate appropriate reading strategy instruction for hypertext in the curriculum. This would enhance the ESL learners reading of hypertext, knowledge of text organizational patterns and familiarity through practice of reading hypertext.

Therefore, in today's rapidly changing economic environment, students need highly refined skills to be successful. Teachers, especially reading teachers, must be very clear about the skills their students require and be able to meet their students' learning needs (Lefever-Davis, 2002). The technologies of literacy are rapidly changing and we must quickly expand our vision if we hope to prepare children for the future.

As a result, children today need to be prepared for much more than book literacies. Teaching students how to locate, effectively use hyperlinks, read and interpret search materials on the Internet should be important focus on reading comprehension instruction today (Henry, L.A. (2005). This study has further highlighted the fact that text literacy is necessary and valuable, but students need to be taught to be successful readers on the Internet.

6.5 Recommendations

It is crucial for teachers, educators and curriculum designers especially in schools and Institutions of Higher Learning to understand and examine closely the current needs of ESL readers, as the Internet has a significant impact on reading. In addition, Coiro (2003) believes that the comprehension process is different on the Internet, and some tasks on the Internet require readers to extend their use of traditional comprehension skills to new contexts for learning while others demand fundamentally different sets of new literacies not currently covered in most language curriculums. She goes on to say that reading on the Internet is different and the definition as well as the teaching of

reading comprehension needs to reflect those differences. Therefore, educators now should envision new constructs of reading comprehension that introduce and reinforce students to strategies for interacting with on-line texts.

A model of reading pedagogy on recognizing the complexity of the reading process of hypertext based on the text characteristics should be considered. It has been found that the metacognitive reading strategies of “determine what to read” and “text features” and the cognitive reading strategies of “trying to stay focused” and “prior knowledge” played a significant role in the reading process for hypertext for the ESL subjects in this study. However, this study was limited to a small research sample and the subjects came from only one faculty – Faculty of Law. Replication of this study with a larger number of subjects and from varied disciplines might provide different insights.

Furthermore, in the reader’s pursuit of information when reading on the internet, the readers are presented with a number of alternatives. These alternatives are the vast amount of information the readers encounter. Therefore, the readers must discern and eliminate these alternatives in order to reduce the amount of uncertainty. According to Smith comprehension is a state opposite to confusion. Smith asserts that, we comprehend when we have no unanswered questions because we have no doubts about alternative interpretations or decisions in our mind. Information enables us to make sense of a situation, and comprehension aids that making sense. As a result uncertainty is eliminated or reduced. Therefore, for comprehension to take place, uncertainty must be eliminated or reduced. However, comprehension does not result necessarily from reading all of the information in a text but also from using the skill of knowledge to

acquire information necessary to reduce uncertainty. This multiple entry and exit of the links can create reader disorientation and cognitive overload (Conklin, 1986). When students read printed text the page retains the information about the topic that the students are reading so that the students may look back and forth in a text.

As a result, there is a need to implement new classroom reading practices. Firstly, there should be a gradual but significant shift from using printed reading texts to hypertext. ESL learners need to be aware of the text structure and characteristics of hypertext for reading comprehension exercises. Secondly, as Shetzer and Warschauer (2000) suggest teachers need to rethink our instructional goals, techniques, and objectives in order to prepare students for literacy in both paper and electronic mediums. As educators, we are not being fair to our students if we expect them to read, comprehend, and extract information from the Web without first providing explicit instruction in the unique skills needed for these tasks. Moreover, these are the skills that modern academia and the global workplace will demand of our students in the future.

Although, the 10 subjects in this study were fairly homogeneous in their reading ability, language proficiency and were considered good readers, their summary scores for the hypertext on the whole were below average except for three subjects. This only shows that language proficiency is not the only issue but rather the need for explicit reading strategy instruction and practice in reading hypertext. Rapidly finding, evaluating, using, and communicating information should become central instructional issues in a reading program. Highly literate individuals should be able to skim webpages, link to other webpages, and generally sift through large amounts of

information in a short time. Individuals who read slowly and haltingly will still be evaluating the first screen of information by the time a more rapid reader has already completed the informational task.

Future research should continue to focus on two important aspects. Firstly, other studies should be conducted on a broader range of online reading tasks. This study was limited to a hypertext that was selected by the researcher. Future studies should investigate how readers generate their own search tasks, use search engines and process the frames of pages in the hyperlinks. In addition, research should continue to explore how low achieving readers from a diverse population read hypertext.

6.5.1 A Basic Framework for Hypertext Literacy

ESL learners today are reading more from the internet than from printed text. Samuel, (2008), in an article entitled, *Reconfiguring English in the classroom* said that for a student in the 20th century, his journey was from page to the screen, but for a student of the 21st century, his journey is from screen to page.

One of the major challenges a student encounters today is trying to deal with the vast amount of information available on the internet. Therefore, managing this vast amount of information, creating knowledge as well as organizing the information into some form of comprehensible output will depend very much on the learners' ability to locate, sort, select, evaluate and use the information.

In view of this, an important question that needs to be addressed is, what should reading instruction and programs today include to prepare students to face tomorrow's world?

According to Samuel (2008), classroom teaching especially reading needs to go beyond the use of textbook only. Grabe (2002), advised that there is a need to identify aspects of reading instruction that students need the most help and thereby provide the necessary guidance. In answer to this the researcher would like to propose a framework for hypertext literacy which advocates that reading instruction develops readers' schemata, navigational skills and reading strategies.

The Framework for Hypertext literacy is based on the literature review of hypertext as well as the findings and suggestions given by ESL learners in this study. In addition, the list of cognitive challenges reported and observed while reading hypertext, formed the basis for the Framework. The cognitive challenges discussed in chapter five are:

- Reading path
- Reading order
- Managing information overload
- English proficiency
- Unpredictability - Taking risks
- Prior knowledge
- Managing Hyperlinks
- Metacognitive strategies

Today's reading instructions will need to address these cognitive challenges. The framework is aimed to increase the readers' efficient engagement when reading hypertext and enhance comprehension of the texts. It also might help remedy the comprehension difficulties faced by ESL readers when reading hypertext.

The framework is designed to help teachers, educators and curriculum designers to include or highlight these key elements in their existing instructional reading course or program. Using the framework as a guideline, teachers and curriculum designers can hopefully develop a reading program that will produce skilled and confident on-line readers.

The framework consists of key components that need to be included in reading instruction in order for students to be able to select, evaluate and use the information. This in turn will help to increase students' efficient engagement while reading hypertext and enhance comprehension of the text. The components or key elements in the framework define and discuss skills, strategies and knowledge students need to become proficient readers in an environment that is significantly shifting towards e-literacy. The researcher feels that this basic framework will help focus attention on what needs to be taught as well as ensuring that ESL students receive sufficient amounts of teaching in each area.

The Framework includes six basic components of skills, strategies and knowledge. There should be equal emphasis on these six aspects in the reading instruction. Each of these elements are listed in table 6 and explained below.

Figure 6: A Basic Framework for Hypertext Literacy

	Elements/components	Explanation
1.	Metacognitive Reading Strategies	These are strategies that require thinking about the topic, backtracking and constant self monitoring. Active awareness of one's comprehension while reading and the ability to use fix-up strategies when faced with comprehension difficulties are essential to become better hypertext readers.
2.	Building prior knowledge	Sufficient exposure to reading hypertext will help the students gain confidence. Prior knowledge of website structures and topics will definitely improve decision making skills and enhance comprehension.
3.	Managing Hyperlinks	Extensive reading practice using hypertext will benefit the students' by increasing their knowledge and confidence in dealing with hyperlinks
4.	Managing Information Overload	Sorting, selecting, evaluating and then organizing the information into some form of comprehensible output are important skills.
5.	Critical Evaluation	Developing skills of critical thinking is essential for hypertext reading. Teaching students to evaluate information, establish facts, make inferences and assumptions and think logically and analytically enhances comprehension of hypertext.
6.	Mind mapping	Mind mapping can aid students' map out or organize the wealth of information encountered clicking on hyperlinks. It is a tool that trains individuals to select key points and store these points, acting as a blueprint of your concrete presentation of key ideas and concepts found in the hyperlinks.

1. Metacognitive Reading strategies

Metacognitive reading strategies can be divided into three categories, planning, monitoring and evaluation. The category of planning refers to the learner identifying the purpose for reading and making decisions to reach one's reading goals for the text. Comprehension monitoring and redirecting one's efforts during reading will help to fulfill the reading purpose. The last category is evaluating one's cognitive abilities to fulfill the task.

A metacognitive awareness strategy instruction program should incorporate detail explanations of why these strategies are useful and when to use them. Most important is the extensive modeling of the strategies while using hypertext. The students should have adequate opportunities to practice these strategies so that they will be confident reading hypertext. A high level of metacognitive awareness is associated to high levels of comprehension ability (Kasper, 1997; and Carrel, 1989).

2. Building Prior Knowledge

Sufficient exposure and extensive practice reading hypertext will help build students prior knowledge of hypertext. The students need to be exposed to how hypertext is organized or structured and learn to make appropriate decisions when dealing with hypertext. This is important because hypertext structure does differ from printed text. Therefore students need experience and instructions in dealing with it. Reading a text with the understanding of its text framework helps readers organize information and better comprehend the text.

3. Managing Hyperlinks

Building students' prior knowledge will help them better manage hyperlinks. It helps them be aware that not all hyperlinks are useful or need to be read from beginning to end. The reading purpose has to be kept in focus because it dictates how you manage and comprehend the texts in the links. The learner will know when to scan, select only the main ideas or just ignore the text in the hyperlink. The very nature of hyperlinks shape the way information is managed and interpreted.

4. Managing Information Overload

The wealth of information available on the Internet can be overwhelming for most ESL learners. Sorting, selecting, evaluating and then organizing the information into some form of comprehensible output are skills the students need to be taught and given ample practice using hypertext.

5. Critical Evaluation

The information available on the various websites need to be evaluated for accuracy. It is crucial to evaluate the extent to which the information contains factual and updated details that can be verified. That would be verification of information for reliability and level of trustworthiness. In addition the information needs to be evaluated in relation also to its relevance to the topic, question or problem. The teaching of critical thinking skills can prove to be very beneficial for the students.

6. Mind Maps

A mind map allows you to focus on the subject and at the same time helps demonstrate connections between isolated pieces of information. Since it gives you a clear picture of both the details and the big picture, you can group and regroup

concepts, encouraging comparisons between them. Viewing the whole picture helps an individual think logically and therefore, assesses the information appropriately. Mind Maps help you to learn, organize, and store as much information as you want, and to classify it in natural ways that give you easy and instant access to whatever you want.

Therefore mind maps can act as a blueprint of your concrete presentation of key ideas and concepts found in the hyperlinks. This in turn, helps to recognize relationships of the various subjects and how they relate to other information, other related issues and experiences. When an individual is able to visualize the whole picture, it becomes easy to analyze, synthesis, evaluate and also encourages problem solving by allowing the individual to see new creative pathways.

The framework was designed on the premise that an effective reading instruction which caters to the needs of the students can help most students to become better online readers. This framework tries to offer some direction and guidance in areas of concern in hypertext reading. However a more thorough review of literature and a study using wider cross-section of subjects will definitely provide a far more comprehensive framework. Furthermore, future research could explore the effectiveness of the hypertext literacy framework. The findings might expand our understanding of hypertext reading as well as uncover other elements needed for online reading.