Exploring ESL Students' Perceptions of Their Digital Reading Skills

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***Just as food nourishes us and we need it for life, so too—in the 21st century and the modern age—we need technology. You cannot survive without the communication tools; the productivity tools are essential*."**

(Richtel 2010, para. 20)

Abstract

This study investigates English language learners' interaction with paper text and web text reading. Four main research questions shape the study: 1) What evidence exists to suggest that ESL learners use different strategies when reading printed text as opposed to reading web text? 2) What metacognitive strategies do ESL students use and report when reading and learning from printed and web-based texts? 3) What issues do ESL learners identify in relation to their use of the Internet? and 4) What are the implications for ESL pedagogy? While research has increasingly been focused on second language reading, it has primarily been centered on how the learner interacts and decodes printed text. However, little research has been conducted on how the English language learner processes web text, navigates the Internet, or evaluates and comprehends what he/she is reading through the use of digital literacy skills and metacognitive strategies.

The intention of this study was to gain insight into the online reading strategies of English language learners in order to explore if there was a need for the Teaching of English to Students of Other Languages (TESOL) profession to teach digital literacy in the language classroom. A subjectivist approach was used to examine the metacognitive online reading strategies of intermediate and upper intermediate ESL students. The present writer acted in the role of both workshop facilitator and researcher during the eight-week study between September and November 2011. Data were drawn from the researcher's observation notes, interviews with the student participants, group discussions, and student participants' journals. As a result, data generation included both public views (expressed orally through interviews) and private and reflective views (expressed through journal writing). Thus, the data contained both

real time and ex post facto viewpoints. The central voices heard were the researcher and the student participants. The research methodology for the study was interpretive and qualitative. Data triangulation was achieved through a series of interviews and text analysis.

The findings of this thesis suggest that while students may appear digitally literate enough to randomly surf the Net, they lack sufficient skills to effectively research and evaluate information online. In addition, the study shows that language learners engage in characteristically different reading practices and strategies when reading print and web text. The research also indicates that there is a need for digital literacy skills to be taught in conjunction with the teaching of the target language in the TESOL settings studied.

Recommended pedagogical practices include suggestions to teach digital literacies in conjunction with print-based literacy practices; to provide both TESOL teachers-in-training and seasoned TESOL educators the means to develop digital literacy skills through formal instruction or through professional development workshops; to emphasize the need for lifelong learning of digital skills to keep current with the constant changes and development of digital technology; to reshape TESOL curricula to accommodate digital literacy and language teaching practices to meet the needs of the language classroom in the 21st century; to create literacy lesson sequences that will help the language learner develop, strengthen, and apply critical reading strategies; and to promote the wider adoption of more interactive teaching.

Dedication

To my wife, Vera, I thank you for your love, patience, and understanding. I know my dissertation journey has not been an easy one for you to accompany me on.

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CHAPTER 1: INTRODUCTION

1.1 Statement of Purpose

Within a span of a decade or two, the world has been redefined by a digital information era. However, the profession of Teaching English to Speakers of Other Languages (TESOL) within the language schools, community colleges, city programs, and academic institutions where I have either taught or observed within the Washington Metropolitan area (U.S.A.) seems to remain hesitant or reluctant to make the transition from a paper-based learning environment to a wholly digital learning environment. It has become clear to me that the more progressive "cutting edge" of TESOL higher education in the UK and elsewhere has shifted away from a non-digital environment and the tradition of reading on paper and has embraced both digital technology and digital text. However, my college and the largely private college TESOL environments with which I am familiar in the United States work within an orthodoxy of print-text mode where reading practices and skills are shaped by the textual production of an era gone by. Despite the fact that many TESOL educators, whom I know either as colleagues or friends, are aware that the digital age has caused literacy to evolve into a totally different concept from what it was fifty years ago, they continue to resist modifications to how they teach reading skills and to introducing the new medium of the Internet into their classrooms. While this is, of course, not the case in all TESOL settings, it is important to acknowledge this phenomenon in many local settings, divorced from the influence of university TESOL teacher-education institutions and research, perhaps particularly in private schools. Although reasons for this resistance are numerous, and include social, historical, and cultural factors in particular settings,

some are arguably based on issues such as “personal teaching philosophies, time-honored beliefs and additional burdens” (Arnold and Ducate, 2006, as cited by Blake, 2008, p.25).

It is not altogether surprising that digital technology has not had the same profound impact on language teaching as it has had in other subject areas. Because of the performative, rather than declarative, nature of language learning, TESOL tends to follow its own methods of teaching English and moves outside the circle of core subjects, such as math, history, or science. This discrete position, however, does not deflect the need for TESOL teachers and students to be digitally literate, especially considering the literacy "metamorphosis" that digital technology is creating and the change in reading cultures from printed text to web text. Further, technology has provided the language classroom with numerous tools to help teach language beginning with Comenius’ pictured “phonics” in 17th century books to the use of Edison’s photographic recordings in the 19th century to utilizing BBC produced DVDs in this new century.

Recent research conducted in the field of second language education has for some time suggested that technology can enhance the language learning process (Gee and Hayes, 2011; ACT, 2004; CEO Forum, 2001). Web pages, for example, have the potential to increase the volume of comprehensible input (Krashen, 1985). Research has also shown that language learners are motivated to spend more time reading online than when offline because they find web text more interesting and stimulating than the artificial or non-authentic information found on the printed page of language course books (Nginye, 2011). Carrier (1997, p.282) observes that prolonged exposure to the

authentic language, such as that found on web pages, appears to be quite beneficial to the learner.

Despite the fact that digital technology can be beneficial to second language acquisition, and disregarding the recommendation included in the American Council on the Teaching of Foreign Languages Position Statement, which “acknowledges and encourages using the potential of technology as a tool to support and enhance classroom-based language instruction” (ACTFL, 2011, para. 4), there still remains debate amongst TESOL professionals who teach ESL (English as a second language) in accredited academic institutions within the National Capital Region as to whether teaching digital literacy is a part of their job description. Maglic (2007, p.6) observes: "At first sight, one could agree: a language teacher has to teach language." However, one of the goals of the English as a second language teacher (ESL) is to develop the language learner's communication skills so that he/she can actively participate in modern society. Therefore, it is important that TESOL educators not focus on developing a second language learner’s reading skills without acknowledging the importance of digital literacy education.

As Regan and Osborn (2002, p.135) suggest, the foreign language teacher has traditionally recognized that his/her role is not only to teach students the “linguistic basics" of the target language but also to provide the language learner with a taste of the culture and literature of the target language as well. While this suggestion would indicate that it is not unreasonable for the TESOL educator to reconsider the digital needs of the learner, many TESOL professionals in settings in the USA with which I am familiar continue to see their role as primarily teaching the language through traditional methods. Such educators challenge the relevance of teaching digital literacy,

especially when it appears that the language learner seems content and satisfied with the traditional basic skill areas of reading, speaking, listening, and writing—all appropriate to the paper medium. Such a traditional view may be held because these TESOL teachers believe that they lack the digital knowledge and skills to utilize technology-enhanced language learning as a learning tool or because they believe "basic issues of participation, engagement in learning, and fundamental skills stand out as priorities ahead of learning about complex new communication and information technologies" (Bruce, 2003, p.70). Unfortunately, such a perspective only serves to highlight the lack of awareness of the new teaching responsibilities that are necessitated by an Internet-driven society.

To be considered fully literate in the 21st century, a person must be able to collect, evaluate, and use digital resources to problem solve and make informed decisions. Warschauer and Healey (1998, p.57) note that in a world of information, search strategies are essential and a student needs "the ability to respond and adapt to changes rather than training in a single way to approach a task." In addition, the increasing use of digital libraries is promoting digital reading and forcing students to move beyond the realm of paper-based texts (Armstong and Warlick, 2004; Brown, 2001; Parrot, 2003). Bruce (2003, p.2) expands on this point by contending that with the "proliferation of information needed for academic purposes, students are exposed not only to conventional text presentation but also to electronic texts." TESOL teachers, as a whole, need to expand literacy skills to encompass online reading in order to meet the current needs of their language learners.

The challenge for the second language learner is not only to develop and strengthen their ability to effectively use English but also to acquire the digital literacy

skills that will allow him/her entrance into the social, academic, and workforce environments of the 21st century (Kasper, 2000). The global job market in particular seeks applicants who not only possess strong critical thinking skills but who are also digitally literate and technologically savvy. This reality has not only become clear in developed nations, but in developing nations as well. As Muthui Kariku, the spokesperson for the current Kenyan government, which has initiated a program to give laptops to Kenyan school children, observes, "We are in a digital age, and from the young people we train we will get the next managers of the 'Silicon Valley' spurring growth and creating jobs. Technology is the only remaining frontier" (Kariku as cited by Odula, 2013, p.A-11).

The Internet can be seen as a key means for the ESL learner to participate in both the target language society and his/her native language culture. In addition, both web and digital reading skills can serve as a means of student empowerment. Solomon, Allen, and Resta (2006, p.444) support this view by asserting that "…technology prepares individuals in a democratic society to express their unique talents and fulfill their personal potentials. Much of technology's empowering capacity rests in the natural creative talents of people themselves." Consequently, if one of the key responsibilities of an ESL student is to succeed in the world beyond the classroom, then TESOL educators must be under an obligation to provide the student with literacy skills ensuring the ability to negotiate and critically engage with the numerous texts, modalities, and technologies that exist beyond the classroom (Ramanathan and Kaplan, 2000). In my view Mieskill, Mossop and Bates (2000) sum this up best when they suggest:

> Different qualities of mind are needed to efficiently integrate these new forms of symbolic representations into coherent, individually crafted wholes. These qualities include the convergent involvement of both analytical and patterned thinking, the ability to suspend judgment in favor of temporarily riding ambiguities, openness to new stimuli, new ideas, new attitudes, new forms, and increased intuitiveness, and a propensity for tinkering and taking risks. (Mieskill, Mossop and Bates, 2000, p.1)

As TESOL makes the necessary transition from its traditional print-focused literacy teaching methods toward a digital text environment, its teachers, as well as the profession itself, must connect with the digital age by examining how second language learners perceive different text types and what cognitive processes and strategies they employ to comprehend what they are reading.

As a step toward such awareness, this study investigates the reading behaviors of English second language learners. It focuses on how language learners transition from a printed text environment to a web text environment, drawing upon their own strategies. The study also not only broadens an understanding of the literacy practices of the ESL learner in online reading, it also underscores the need for reading strategy awareness training within the ESL classroom so that second language learners can meet the new literacy demands of the 21st century. In addition, possible factors that support or complicate a language learner's ability to comprehend, search, and evaluate online information are explored.

1.2 Research Aims and Questions

The focus of this study is to explore second language learner perceptions of reading in both a print and a non-print environment and to investigate the reading strategies that they construct and apply to succeed in achieving their learning outcomes. My primary objectives are to investigate the ESL learner's awareness of strategies in reading web text as well as the metacognitive reading strategies the language learner uses when reading printed text versus web text. Following this investigation, a further objective is to consider whether there is a need to rethink classroom reading practices to accommodate web text reading strategies.

The study aims to provide data to help expand an understanding of ESL learners' interaction with paper-text and web text reading and to contribute to the reshaping of reading practices not only within my institute, but also in similar TESOL teaching facilities that have yet to expand in second language (L2) literacy beyond the printed page.

The study is guided by the following four general research questions that support the objectives:

1) What evidence exists to suggest that ESL learners use different strategies when reading printed text as opposed to web text?
2) What metacognitive strategies do ESL students use and report when reading and learning from printed and web-based texts?
3) What issues do ESL learners identify in relation to their use of the Internet?
4) What are the implications for ESL pedagogy?

While it can be said that data generated from the participants' perceptions of their reading of printed text and web text and their descriptions of their strategy usage is self-

reported and may be subjective because the participant may not have reported truthfully, it can be argued that it represents a promising, albeit indirect means that a researcher has to identify the mental processing of a student. As Grenfell and Harris (1999, p.54) defend, "…it is not easy to get inside the 'black box of the human brain and find out what is going on there. We work with what we can get which, despite the limitations, provides food for thought…"

1.3 Basic Assumptions

Carrell (1989), along with other educational researchers, contends that reading competence not only guarantees success for the language learner in his/her mastery of the target language but is also essential in helping the learner meet academic and career goals. The growing popularity of the World Wide Web has many students making the move from reading for information in a print environment to screen-based text (Kress, 2003). Amer, Al Barwani, and Ibrahim (2010, p.103) further point out that "online reading has become a major source of input for EFL/ESL readers because it provides them with authentic language input."

Additionally, as Lai (2008, p.133) suggests, "a basis of improving in any language is through reading and the Internet could be a good reading tool"; however, data from recent studies show that new literacy skills and reading strategies may be necessary for the language learner to process and effectively decode less linear digital texts (Balcytiene, 1999). As a result, the notion of effective reading strategies is gaining popularity as a means of helping students increase their ability to read web text. Research indicates that a student's metacognitive awareness of his/her reading strategies can also contribute to the strengthening of digital literacy skills (Sheorey and

Mokhtari, 2001). Israel (2007) further argues that as learners become more knowledgeable of their cognition, they simultaneously become more focused on their own learning and assume responsibility for it. If language learners are consciously aware of their metacognitive and cognitive reading strategies, they are not only able to make sense of the large amount of information encountered through online reading, but they are also aware of why they are online in the first place.

While there have been many studies of the way ESL/EFL students read printed text (e.g. Anderson, 1991; Cohen, 1998; Sheorey and Mokhtari, 2001), there have been relatively few studies of ESL students' web text reading strategies (Anderson, 2003a; Coiro and Dobler, 2007; Huang, Chern, and Lin, 2009). More research is needed to better understand if and how students are adapting to new forms of text by incorporating reading strategies to understand and cope with the nonlinear, non-sequential, interactive text that is part and parcel of on-screen reading. Although my study focuses on L2 students, some of its findings might also be applied to the experiences of first language (L1) students. As Armstrong and Warlick (2004, p.1) argue, it is crucial for teachers and educators today to "teach the students literacy skills that reflect the information environment of the present…" In order to reshape and effectively instruct in the digital era classroom, language teachers, as well as teachers in other disciplines, need to be aware of the way students approach and perceive print-based reading as opposed to the way they engage with and process web text information.

1.4 Organization of Thesis

The first and key research question, which provides the foundation for the other research questions—What evidence exists to suggest that ESL learners use different strategies when reading printed text as opposed to web text?—will be explored through the evidence presented in the literature in the following chapter. Chapter 2 will begin focusing on second language reading theory, and then proceed on to an overview of relevant literature on digital literacy, and ways that digital literacy can be taught in the ESL classroom. Next, I present an examination of environments of printed text and web text and explain the meta-reading process as well as strategy instruction that can strengthen a learner's ability to locate and process the information that he/she encounters online. At the end of the Chapter 2, I present a summary of my findings for the first research question.

In Chapter 3, I present my research methodology, which includes my data collection techniques that consisted of qualitative observations, interviews, and student journals. I also present my research design and ways in which I achieved the trustworthiness of my study in this chapter. The proceeding chapter, Chapter 4, discusses my research methods for the data collection and analysis, as well as answer Research Questions 2, 3 and 4 through the evidence generated by my data.

Chapter 5, the final chapter, discusses the implications of the findings, propose possible suggestions for future studies, and reflect on what I view to be the potential limitations of my study.

CHAPTER 2: REVIEW OF THE LITERATURE

2.1 Introduction

This chapter focuses on a review of the literature that addresses the first research question: What evidence exists to suggest ESL Learners use different when strategies reading printed text as opposed to reading web text? The first section examines the literature around second language reading theory; the second delves into what has been written about the theoretical construct of digital literacy, and the evolution of digital literacy; the third provides a discussion on metacognitive reading strategies and how literacy skills needed to read the printed page differ from those needed to read a web page. Finally, this chapter concludes with a summary of the findings of the first research question.

2.2 Second Language Reading

In order to understand the perceptions that second language learners hold about their metacognitive reading strategies, it is essential to understand the theory behind second language reading. However, it is important to note before proceeding further that the relationship between L1 and L2 reading cannot be easily or neatly explained by one particular model or theory because the reading process is cloaked within the reader's mind, making it a silent and internalized activity that does not lend itself to the tangible and known. However, there are basic elements that researchers believe influence the second language learner's ability to read in the target language. Karim (2003, p.49) observes: "reading in both first and second language context includes the reader, the text, and the interaction between the reader and the text." This interplay between the

language systems requires the language learner to draw upon knowledge of context, form, and linguistic schema (Singhal, 1998) as well as to engage in multiple cognitive processes to construct meaning from the text (Horiba, 1996). Moreover, Fitzgerald (1995), drawing upon findings from research done in the United States on ESL students, concluded that there is a close link between L1 and L2 reading because the second language learner will enlist L1 reading knowledge to comprehend what he/she reads in the target language. Arguably though, there is a dividing point in which L2 reading fundamentally distinguishes itself in terms of processes that are uniquely tied to the second language learner's reading experience. These processes, which have been the focus of much research, include translation (Kern, 1994) and cultural differences (Parry, 1996). In addition, Koda (1996) considers that the key variable that sets L2 reading apart from L1 reading is the fact that it involves two languages, which makes it a cross-linguistic process. Still, the cross-linguistic process appears tied to L1 knowledge, which the language learner will use along with various reading strategies to facilitate reading in the target language (Karim, 2003). This application of L1 knowledge to L2 acquisition is commonly referred to as "language transfer" (Lado, 1957, p.57). Benson (2002, p.69) contends that transfer occurs "consciously, as a deliberate communication strategy, where there is a gap in the learner's knowledge or unconsciously either because the correct form is not known or because, although it has been learned, it has not been completely automatized."

The complex phenomenon of transfer is the core of two main positions on the relationship between L1 and L2 readings: the Linguistic Interdependence Hypothesis (LIH) and the Linguistic Threshold hypothesis (LTH). Both acknowledge the existence of transfers, but they have opposing views as to when transfer occurs during the L2

reading process (Bernhardt, 2005; Grabe, 2009). These two theories will be explored in more detail in the following sections.

2.2.1 The Linguistic Interdependence Hypothesis (LIH)

The key assumption behind the Linguistic Interdependence Hypothesis (LIH) is the language learner does not have to reacquire the ability to read in the target language once he/she has "developed an ability to deal with 'cognitive academic' or 'context-reduced' uses of language" (Cummins, 1979, pp.23-24) in their L1. In clearer terms, the Linguistic Interdependence Hypothesis can be defined in the way the language learner transfers L1 knowledge over to his/her L2 reading process. Cummins (1979) developed the LIH as a means to explain how L1 reading skills transfer over to the target language and asserts that fundamental similarities link the learner's first language skills to his/her second language skills and that these skills can be seen as interdependent. Yamashita (2002, p.12) observes that the LIH assumes that "there is a common underlying cognitive ability between L1 and L2, and it implies that we do not need to learn reading in L2 if we have a certain level of L1 reading ability." Transfer then, according to the LIH, happens automatically.

Possessing L1 linguistic knowledge and literacy skills are critical components of the LIH, without which transfer, based on the LTH, will not occur. Cummins' (1979) argument holds that it is essential for language learners to be literate in their L1 before exposure to L2. Within its application, re-teaching reading skills in the L1 would be seen as redundant because once language learners have adequate knowledge of a set of L1 language operations, such as reading and writing, they will be able to develop the same operations within L2 contexts (Yanping, 2002, p.2). The LIH can be seen as

relevant to this study because of the implication that language learners have the ability to apply the metacognitive reading strategies that they possess in their L1 to their L2 reading skills. Additionally, the reading strategies that language learners have knowledge of in their L1 can be used to develop and strengthen their proficiency in the meta-language of the Web—skimming and scanning techniques to find key words and to grasp the gist of web content via digital literacy instruction in the new language.

There is a large volume of research (e.g. Carson, Carrel, Silberstein, Kroll, and Kuehn, 1990; Bernardt and Kamil, 1995; Droop and Verhoeven, 2003; and Van Gelderen et al., 2007) that supports the LIH and upholds Cummins' view that underlying L1 linguistic proficiency assists in literacy development. Verhoeven (1991, p.72) noted that "literacy skills being developed in one language strongly predict corresponding skills in another language acquired later in time." However, many of the findings that support LIH come from studies done on child ESL learners whose literacy skills in their L1 and L2 are still in development (Bernhardt and Kamil, 1995). Current research has revealed that transfer does not occur in every case (August, 2006). An alternative to the LIH is the Linguistic Threshold Hypothesis, which will be discussed in the next section.

2.2.2 The Linguistic Threshold Hypothesis (LTH)

The Linguistic Threshold Hypothesis (LTH) is based on the idea that the second language learner's use of reading strategies in the target language is dominated by his/her L2 proficiency. Formulated by Clark (1980) during the late 70s, the LTH proposes that the second language learners will need to acquire a certain amount of linguistic proficiency in the target language before they can transfer their L1 reading

skills over to their L2 reading comprehension (Jiang, 2011). Unlike the LIH, the LTH posits the language learners cannot effectively read in the new language unless they have gained a "language ceiling" (Clark, 1980) or enough of a solid foundation in the target language to allow their L1 reading skills to cross over to their L2. According to the LTH, it is not important whether or not the language learners read well in their L1 because the successful application of any transfer of the learners' L1 reading skills to their L2 reading is dependent on if they have acquired the necessary "threshold level of linguistic competence" (Lee and Schallert, 1977, as cited by Jiang, 2011, p.178). If a language learner's second language skills are weak, and he/she attempts to apply L1 reading knowledge to the target language, according to the LTH, the learner's L1 reading strategies will "short circuit," (Clarke, 1980) causing the learner's good L1 reading abilities to revert back to poor reading strategies when attempting to read challenging passages in the target language (Bosser, 1991).

Top-down reading processing plays an important role in the LTH. Unlike the LIH, where reading is viewed as a bi-oriented process (neither oriented from the top nor the bottom but a combination of top-down and bottom-up knowledge), L1 reading in the LTH is seen as solely dependent on top-down processing that changes to bottom-up processing in the L2 because of the reader's inadequate level of proficiency in the target language (Yildiz-Genc, 2009).

The Linguistic Threshold Hypothesis received significant validation because of field research done by Alderson in the early 1980s, whose findings supported Clarke's theory as opposed to Cummins' theory (Yamashita, 2003). Alderson's research was inspired by one key question: "Reading a foreign language: a reading problem or a language problem?" (Alderson, 1984). At the end of a broad review of research,

Alderson concluded that L2 reading derived from both a language and a reading problem. The L2 could be seen as a reading problem when a language learner possessed a high level L2 proficiency and as a language problem when the learner possessed a low level L2 proficiency. This finding supported the LTH.

After Alderson's (1984) research, a number of studies were done (e.g. Bernhardt and Kamil, 1995; Lee and Schallert, 1997; Eskey, 2005) showing that learners whose L2 proficiency was under linguistic ceiling failed to transfer their L1 reading skills to L2 reading no matter how strong their L1 reading skills were.

Similar to the relevance the LIH holds to this study, knowledge of the LTH provides a background in what may be the best way towards digital literacy development in ESL learners. Based on the LTH, digital literacy skills can be taught in the language classroom in conjunction with traditional literacy skills in gradual steps as learners increase their language skills, eventually opening a window for learners to utilize their L1 reading strategies once they have established a good understanding of the target language. Thus, strategy skills can be enhanced by the crossover of L1 reading skills to the target language reading environment.

Although research has shown evidence of a linguistic threshold, the LTH has not been conclusively supported by empirical research (August, 2006). Moreover, existing research that supports the LTH has been criticized for methodological shortcomings and insufficient sampling sizes (Sohn, 2005). What appears to cast the most doubt on the findings from the LTH studies is a failure on the part of researchers to identify the linguistic threshold in absolute terms (Yanping, 2002).

In summary, the process behind second language is not black and white. However, two theories have emerged—the Linguistic Interdependent Hypothesis (LIH)

and the Linguistic Threshold Hypothesis (LTH)—in an attempt to provide a clearer picture of the way in which the second language learner gains reading competence in the target language. Researchers that support the LIH believe language learners transfer their reading competence in their first language over to reading their second language. On the other hand, researchers that back the LTH suggest that the ability to read a second language is dependent upon language learners first developing their second language reading skills in order to trigger their first language reading knowledge. While the intent of this study is not to establish the validity of either theory, knowledge of both the LTH and the LIH are important to this study because they share a common feature—both are linked to the cognitive and metacognitive strategies the second language learner employs (e.g. Morrison, 2004; Singhal, 2001; Brisbois, 1995). Additionally, studies that have examined L2 reading indicate that language learners draw upon metacognitive reading strategies when reading in either their L1 or in the target language (e.g. Fitzgerald, 1995; Pritchard, 1990).

2.2.3 The Metaphorical Reading Models

Beyond the hypothetical, researchers often use three metaphorical models of reading when discussing the processes involved in L2 reading comprehension—top-down, bottom-up, and interactive. These models, as Grabe and Stoller (2002, p.31) observe, "represent metaphorical generalizations that stem from comprehension research conducted over the past four decades. All involve cognitive processing."

Currently, the interactive model is supported by recent research (e.g. Bramford and Day, 2004; Kern, 2000). However, while the top-down and bottom-up models may not help to define more current research done in L1 and L2 reading, they do serve as a

foundation to reflect upon reading comprehension (Grabe and Stoller, 2002) and thus factor into L2 reading behaviors of the participants of this study. As Pookcharoen et al (2009) notes recent studies reveal that common L2 reading strategies are generally labeled as either top-down or bottom-up in nature. Both the top-down and bottom-up models and their applicability to this study will be discussed in greater detail in the sections that follow.

2.2.4 Top-down Model

In a very general and metaphorical way, the top-down model can be viewed as a mental map that the reader constructs to meet his/her reading goals and expectations. Theorists such as Goodman (1967) and Smith (1971) are responsible for the development and refinement of the top-down model. Within this model, readers are caught in a continuous cycle of hypothesizing the meaning of the text they are engaging.

The top-down model is seen as concept-driven and dependent upon what the reader brings to the text (Liu, 2010). For example, readers approach the text with the cultural and world knowledge they possess, along with very general cognitive processing strategies to make sense of large segments of information presented in the form of sentences, paragraphs, or stories (Birch, 2007). In applying a top-down approach to reading, learners use high-level processing strategies to make predictions about such things as "what the text is going to be like, inferences about the motivations of the characters, and decisions about how certain events are related in the reading" (Birch, 2007, pp.4-5). Goodman (1967, p. 127) describes this prediction process as a "psycholinguistic guessing game."

In regard to L2 reading, the top-down model has had a tremendous impact on ESL teaching and materials design (Villanueva de Debat, 2006, p.9). This impact can be attributed to the whole language method, which is considered a top-down approach (Reyhner, 2008) and is widely used in ESL curricula (Heugh, 2013). However, the emphasis on top-down reading practices for ESL literacy education should not be seen as superior to the other reading models because, as Hill (2011, p.71) cautions, the top-down approach is "not necessarily the most effective approach for each and every reading situation."

Because of the participant's engagement with top-down reading processing, the top-down model's relevance to this study can be seen in two key ways. First, the participant's top-down strategy usage, discussed in Chapter 4, is directly linked to his/her metacognitive reading process in the form of what Sheorey and Mokhtari (2001) label "global reading strategies," which help the reader set reading goals and self-monitor reading processes. Examples of global strategies include skimming and scanning techniques, the use of context clues, and the activation of prior knowledge. Second, the application of the top-down approach gears the reader toward setting expectations about text information and sampling enough information from the text to determine if it meets his/her expectations (Grabe and Stoller, 2002). This sampling process manifests in F-Pattern reading (Nielsen, 2006), observed in the participants and discussed later in this chapter, in which the reader does not read for details when reading online but instead makes a determination about the information by the keywords and links he/she notes within the text.

On the negative side, if learners rely too much on top-down reading skills, they will attempt to comprehend a text by using mostly background knowledge and

unsupported assumptions. Critics have suggested two major issues with the top-down model. The first states that it is impossible for readers to make predictions if they do not have sufficient knowledge of different text environments. The second asserts that even skilled readers who can generate predictions while reading take much longer to comprehend the text when they rely solely on a top-down approach (Stanovich, 1980).

2.2.5 Bottom-up Model

Putting together a reading puzzle by correctly piecing together segments of text is the way the bottom-up model can be metaphorically defined because within its design the reader pieces together individual units of language to help construct an overall interpretation of the text (Celce-Murcia, 2001). Its development is attributed to research done by Gough (1972) and LaBerge and Samuels (1974).

Bottom-up reading requires the reader to draw upon stimuli from the outside world in the form of letters and words. Thus, reading is seen as proceeding from part to whole and is text driven (Liu, 2010). Phonics, for example, is considered a "bottom up" approach through which students "decode" the meaning of a text (Reyhner, 2008).

Unlike top-down reading, as Carrell and Eisterhold (1983, p.557) note, “bottom-up processing ensures that the readers will be sensitive to information that is novel or that does not fit their own ongoing hypotheses about the content or structure of the text” whereas “top-down processing helps the readers resolve ambiguities or to select between alternative possible interpretations of the incoming data.”

The bottom-up model’s importance to L2 reading is tied to the mental mechanics second language learners use to construct a mental translation of the information within the text by piecing together with little interference from background

knowledge (Grabe and Stoller, 2002). The bottom-up strategies that second language learners use in this process can be defined as "focusing on individual words, pausing for grammatical difficulties and repeated readings" (Eunjeo, 2009, p.2).

The relevance of bottom-up reading strategies to this study can be linked to Sheorey and Mokhtari's (2001) metacognitive strategy classification of problem solving strategies and support strategies. Problem solving strategies allow learners to internally, through cognitive processes, overcome comprehension obstacles while support strategies are external reference tools that learners use to help improve their understanding of a text. Problem solving strategies include guessing the meaning of unknown words, visualizing what has been read, and focusing on the details within the text; support strategies rely on the use of physical items such as a highlighter to highlight text information or a dictionary to look up the meaning of new words. The findings (see Chapter 4) indicate that the study participants often drew upon bottom-up reading strategies to help them comprehend text in printed or electronically generated form.

Although the bottom-up model is very detailed, it fails to account for exactly how a reader's creativity and ability permits movement from lower level processing to higher level processing. As a result, the bottom-up model has been criticized for being too fixated on the inflexibility of the representation, which is mainly seen as serial and linear (Zainal, 2003). Also an over-dependence on bottom-up reading processing can result in the reader not moving on the word level and mostly relying on lexical knowledge. Further, Hill (2011, p.71) warns that cognitive overload can result from the bottom-up reading process because when a bottom-up approach is applied to reading,

"it does not automatically contribute to the improvement of contextual awareness in a given text."

2.2.6 Interactive Model

Contrasting the top-down and bottom-up models is the interactive model, created as result of a new generation of researchers (e.g. Rumelhart, 1977; Stanovich, 1980; LaBerge and Samuels, 1981; Rayner and Pollatsek, 1989) who felt that neither the top-down nor the bottom-up models accurately described the interactive nature of the reading process. Davis and Bistodeau (1993) further expanded upon this interactive process to specifically focus on second language reading. Through their research, Davis and Bistodeau (1993) proposed that L1 and L2 reading is a combined process, asserting that novice L2 readers automatically combine bottom-up strategies, constrained by limited L2 linguistic knowledge, and top-down strategies developed in L1. More current researchers, such as Baynham (1995) and Grabe and Stoller (2002), continue to expand upon research within an interactive paradigm in which "decoding contributes to comprehension and comprehension strategies, such as prediction and activating background knowledge" (Murray and McPherson, 2006, p.21).

It should be made clear that the word "interactive" is not a reference to the interplay between the reader and the text but refers to the interaction between the reader's top-down and bottom-up processing skills (Villanueva de Debat, 2008). The basic idea behind the interactive model is that the reader takes useful ideas from a bottom-up viewpoint and combines them with the main ideas from a top-down perspective (Grabe and Stoller, 2002). In this way, "word recognition needs to be fast and efficient; and background knowledge serves as a major contributor to text

understanding, as does inferencing and predicting what will come next in the text" (Grabe and Stoller, 2002, p.8). By combining the reading processes in both the top-down and bottom-up models, the learner goes through an ongoing reading process, "which involves the continuous process of sampling from the input text, predicting what will come next, testing and confirming predictions, and so on" (Singhal, 2002, p.6). Birch (2002) observes that the interactive model makes reading an interactive process in three ways:

1) The different processing strategies, both top and bottom, along with the knowledge base, interact with each other to accomplish the reading.
2) The reader's mind interacts with the written text so that the reader can understand the message.
3) The reader interacts indirectly with the writer of the text across time and space because it is the writer who is communicating information to the reader, but it is the reader who must grasp the information from the writer.

Out of all of the metaphorical reading models, the interactive models appear to be the best in defining L1 and L2 reading comprehension processes. The interactive model also seems a suitable compromise in the conflict over favoring either the top-down or the bottom-up models. However, the interactive model is not free of criticism. Some critics note that the interactive model is "self-contradictory" (Grabe and Stoller, 2002, p.33). Grabe and Stoller (2002, p.29) argue that "key processing aspects of bottom-up approaches, that is, efficiently coordinated automatic processing in working memory such as word recognition, are incompatible with strong top-down controls on reading comprehension."

Although the interactive model may have its flaws, it is the most favored in current reading research because of its balance and integrated nature (Birch, 2007). In order to address its shortcomings, Grabe and Stoller (2002, p.29) suggest the creation of a "modified" or "hybrid bottom-up/top-down model."

2.2.7 Conclusion

The relationship between L1 and L2 readings is a complex one that follows a winding path of interrelated concepts, opinions, and assumption, leading to no general consensus on exactly how they interact. While research has provided models and two schools of thought to explain the correlation between L1 reading processes and L2 reading processes, as well as the way second language learners transfer their prior reading and cognitive skills from their first language to facilitate the ability to read in their second language, it seems clear that second language reading cannot be pinned down to one particular theory, model, or approach. As Singhal (1998) observes, effective reading is accomplished in both the L1 and L2 by a combination of top-down and bottom-up strategies regardless of when transfer actually occurs. From the findings discussed in Chapter 4, the participants in this study used both top-down and bottom-up approaches when reading online—using high-level, top-down processing in their use of global strategies, as seen in their skimming and scanning techniques, while drawing upon data-driven, bottom-up processing, as exhibited in their problem-solving strategies such as their application of "the chunking technique." Therefore, any pedagogical approach to teach L2 reading must be open to draw upon a number of processes that enlist "a learner's prior knowledge and continually challenges the learner in a meaningful and relevant way" (Hill, 2011, p.70).

From this discussion on L2 reading, the review proceeds on to examining the concepts of digital literacy, which is explored in the following sections.

2.3 Digital literacy and digital literacies

In this section, I discuss the theoretical constructs of 'digital literacy' and 'digital literacies' as they appear in the literature and the relationship between them.

2.3.1 Digital Literacy

The phrase "digital literacy," first introduced during the 1990s and made popular by Paul Gilster's 1997 book of the same name, has become the commonly used generic expression to denote "the ability to understand and use information from a variety of digital sources" (Lankshear and Knobel, 2008, p.18). It can also be conceived in a broader context, in that people must draw upon their cognitive, motor, sociological, and emotional skills to successfully navigate within a digital environment (Eshet-Alkalai, 2004, p.93). Even though attempts have been made, and continue to be made, to create alternative variants for the expression of "digital literacy," such as "silicon literacy" (Snyder, 2002), "e-literacy" (Kaplan, 1995), "techno literacy" (Lankshear, Snyder and Green, 2000), "computer literacy" (Molnar, 1978), etc., the term "digital literacy" appears to be the most appropriate and most widely accepted phrase. However, as Bawden (2001, p.24) notes, "It is not of importance whether this [literacy] is called information literacy, digital literacy, or simply 'literacy' for an information age. What is important is that it be actively promoted, as a central core of principles and practice of the information sciences." To ensure consistency and clarity, and to explain my own conception of the term, I have used the phrase "digital literacy" throughout this

paper to define the skills needed to achieve digital competence. These skills, as set forth by the European Commission, encompass the ability to "retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet" (European Communities, 2007, p.7). I caution that one should not be misled in believing digital literacy gravitates toward one particular skill set because it does not. Instead it umbrellas multi-literacies consisting of Information and Communication Technology (ICT) Literacy (Stevenson, 1997), Technological Literacy (Molnar, 1997), Information Literacy (Zurkowski, 1974), Media Literacy (Desmond, 1997), Visual Literacy (Debes, 1969), and Communication Literacy (Winnipeg School Division, 1997).

Although digital literacy can be perceived as drawing upon a person's cognitive, emotional, and social abilities to effectively use digital texts, tools, and technologies, the words "digital" and "literacy" are not so tidily packaged when examined separately. While the word "digital" can easily be defined as a representation of information in binary form (Jones-Kavalier and Flannigan, 2006) and has come to be used in association with information and communication technology, the term "literacy" is not so simply explained because it is an extremely complex and controversial concept and is subject to a wide variety of interpretations. While there is little consensual agreement on the concept of literacy (Soares, 1992), it appears that most interpretations align themselves on a technological or educational perspective. For example, researchers such as Gee and Hayes (2011, p. 20) define literacy "as a technology, just like cars, tapes, tape recorders, televisions, and digital cameras. Like other technologies, it exists to help us do work that was done without the technology." Such a technological viewpoint goes beyond the concept of the ability to read and write and instigates a

complete paradigm shift from a culture of the handwritten word and printed page to a culture of the digital text and new digital media. This belief supports a form of teleological thinking that Roepke (2011, p.3) suggests "…conceptualizes history as a progression through (among other things) technological innovation, and that is driven by the (modernist) belief that technological progress will ultimately lead to an increase in economic, political and cultural welfare." On the other hand, educational theorists such as Dubin and Kuhlman (1992) view literacy as more human—more knowledge-induced opposed to technologically-evolved. They acknowledge that the word "literacy" has come to mean: "competence, knowledge and skills. Take, for example, common expressions such as 'computer literacy,' 'civic literacy,' 'health literacy,' and a score of other usages in which literacy stands for know-how and awareness of the first word in the expression" (Dubin and Kuhlman, 1992, p.vi). Unlike the technological stance, the educational viewpoint of literacy is less fatalist and historically driven; it encompasses a more sociological and inclusive interpretation that views literacy as a means of empowerment for diverse populations and as a force that democratizes across cultural, political, and socioeconomic boundaries (Roepke, 2011, p.3).

However, the point on which educational and technological perspectives join ranks is in conceiving literacy as undergoing a transition and being redefined in broader terms. The once conventional means of becoming literate by learning how to read (decoding a text) and write (encoding a text) appears to be only half the battle in the new digital age because in this fast-paced point-and-click society, the process of literacy goes beyond simply accessing networked computer resources and decoding what appears in an online text; it also includes collecting, analyzing, and engaging in

information to derive its meaning. However, it is worth noting that this contemporary view of "literacy" as a multifaceted concept is not a new one generated by the advent of digital technology. Print literacy arguably requires different literacies to read different types of texts, and language "has always been 'multimodal' (combining words, images, and sounds) as many messages conveyed via digital media" (Gee and Hayes, 2011, p.1). However, digital literacies and traditional literacy part ways here in that digital literacies require competence "in an even more diverse set of functional, academic, critical, and electronic skills" (Kasper, 2000, p.2), for example search engine use, hyperlink navigation, and electronic posting. Following this argument, I would claim that the ability to critically assess search engine results, hyperlink paths, and the trustworthiness of information posted online requires the development of active, strategic, and critical thinking processes that are outside the realm of critical reading practices used for conventional, linear text.

2.3.2 Digital Literacies

Because the conceptualization of digital literacy is becoming more fragmented, there are some researchers, such as Spalter and Tenneson (2006), who argue that such a construct cannot collectively be housed under the single roof of one "literacy", but needs to be pluralized to "literacies". Spalter and Tenneson (2006) also advocate the expansion of the expression "digital literacy" to "digital visual literacy," due to the highly visual nature of digital technology. Spitzer, Eisenberg and Lowe (2004) go further by suggesting that digital literacies need to be separated and categorized under two distinct classes: tool literacies and representational literacies. Tool literacies consist of the skills needed in the collection and integration of information from a variety of

sources whereas representation literacy comprises of competences associated with the ability to interact with images, sound/music and the intertextuality of web text. However, it can be argued that because of the interrelationship and often interdependency between tool and representational literacies they can be linked together in a single unified concept of digital literacy. As Lankshear and Knobel (2008, p.164) observe, "In some cases, the definitions of the different literacies are almost identical and only nuanced in different directions, as a result of their pathways from pre-digital foci and their sense of the concerns of the particular community they have developed to serve." Since all of the multi-literacies that digital literacy encompass share the same common aim of a student-centered pedagogy and the development of critical and reflective skills (Lankshear and Knobel, 2008), I do not treat them as distinctly separate literacies. Additionally, Li and Ranieri (2010, p.1031) note: "Nowadays, there is wide agreement among researchers that different types of literacy related to ICTs and generally to the media, all converge to the concept of digital literacy, together with other life skills (Buckingham, 2006: Martin, 2005; Midoro, 2007; Tornero, 2004)."

Whether the phrase digital literacy/literacies is adequate enough to identify and represent all the multi-literacies that digital technology is producing remains to be seen (Tornero, 2004). However, what is apparent is that the modern definition of literacy is no longer confined to understanding the reading experience as primarily a solitary act of engaging with a printed page, but is now conceptualized as a shared activity, which Gilster (1997, p.31) asserts is "partly about awareness of other people and our expanded ability to contact them to discuss issues and get help." Such a transformation extends digital literacy into a "three dimension state of personal, technological and

social processes…" (UNESCO, 2003, p.48). As Kasper (2000, p.2) asserts: "Indeed, the development of literacy is 'a dynamic and ongoing process of perpetual transformation' (Neilsen, 1989, p.5)…influenced by a person's interests, cultures and experiences."

Pedagogical avenues that might best support L2 reading within a digital text environment follow.

2.4 Pedagogy

Philosophies, theories, and pedagogies continue to clash over the best way to develop pedagogical approaches to teach digital literacies. The debate appears centered on: 1) how to define benchmarks to define digital competencies, and 2) what is the best way of teaching these skills in terms of structured lessons dictated by a curriculum or student-centered tasks integrated by a teacher as part of the overall lesson being taught. This section begins with a discussion about frameworks designed to set measures for digital competency and concludes with suggested approaches for teaching digital literacy within ESL learning environments.

2.4.1 A Competency Measure

Although digital literacy can be perceived as a co-evolutionary process in which its activities can never be frozen (Bruce, 2003), there is arguably a need to be able to judge levels of competency in areas of digital literacy in order to establish a set of standards to define them for teaching purposes. Literacy research over the past two decades has inspired different authors and researchers to construct frameworks and draw up itemized lists of components and competencies in an effort to establish a set of core standards to determine the level of a person's digital literacy. One of the first such lists,

which provided the foundation for others to follow, was created by Gilster (1997, pp.2-3) who felt people could be deemed digitally literate if they had the ability to:

- Think critically
- Read and understand the hypertext environment of the web page
- Obtain information from a variety of sources, with "the ability to collect and evaluate both fact and opinion, ideally without bias"
- Use Internet search engines
- Manage the "multimedia flow" through the use of information filters and agents
- Devise a "personal information strategy"
- Communicate with other online users and interact with them through discussion or seek out their advice
- Be able to back up traditional forms of content with networked tools
- Be cautious when judging the validity and completeness of materials referenced by hypertext links.

Over the course of the next decade, Tuckett (1989) and Ohles and Maritz (1998) tinkered with the framework of digital competencies that Gilster originally inspired by providing minor yet significant upgrades. The Tuckett (1989) model focused on the accuracy and understanding of digital literacy, meaning general knowledge of the capabilities of computers, sufficient ability to use them in an effective way, and high confidence in an ICT environment. In contrast, Ohles and Maritz (1998) shifted the focus from knowledge needed to use the technology to information-centered competencies that should be developed and expanded as a lifelong learning activity.

These competencies included the ability to use e-mail, acquire information through search engines, and navigate the World Wide Web (WWW).

Undoubtedly, the models Gilster, Tuckett, and Ohles and Maritz constructed can be credited for giving form, focus, and cohesiveness toward a workable means to identify and access digital competency. However, it was not until 2002, with the release of the report, "The Definition and Selection of Competencies (DeSeCo)," by the Organization for Economic Co-operation and Development, European Union (OECD, EU), that digital literacy was officially recognized and suggested benchmarks were offered to define it.

The DeSeCo report categorized digital literacy competencies into three main areas which the OECD felt were essential for a "successful life and a well-functioning society" (DeSeCo, 2002, p.3). The first category, "Interacting in heterogeneous groups," "relates to an ability of one to interact and collaborate with people from different backgrounds and cultures" (DeSeCo, 2002, p.9). "Acting autonomously," the next category, targeted the empowerment and the way in which people managed their lives in constructive and responsible ways. It also included critical competencies, which allowed people to make judgments and to effectively engage in the world around them. The final category, "Using tools interactively," takes into account both the competencies needed to master ICT skills and the socio-cultural tools in terms of language, information, and knowledge. One important element of this category is that it "does not simply mean having the technical skills to use a tool (e.g. read a text, use a computer mouse, etc.), but assumes a familiarity with the tool itself and an understanding of how the tools change the way one can interact with the world and how the tool is used to accomplish broader goals" (DeSeCo, 2002, p.9). Because they

presented a more holistic model that goes beyond the basics of reading, writing, and computing and that addresses individual and societal relationships, the DeSeCo competencies were unique. This desire to emphasize the individual in the process of becoming digitally competent was further expanded a year later in 2003, in a report for The Norwegian Ministry of Research and Education, when Soby (2003) introduced the concept of digital competencies as an extension of the whole person by establishing the German term "bildung," roughly translated as the process of formation through education, to define the process. However, there is debate amongst scholars over the pre-digital concept of "bildung," which is divided into two perspectives—one that sees it as a collective concept of an individual's identity based on membership in the "bloodline" of a culture he/she is born into and the other centered upon the culture of "self," meaning one's personal identity (Soby, 2003). Soby (2003, p.8) sides with the latter and interprets "digital bildung" as more of "an integrated, holistic approach that enables reflection on the effects that ICT has on different aspects of human development: communicative competence, critical thinking skills, and enculturation processes." Soby's "digital bildung," similar to the DeSeCo competencies, not only examines the way individuals, mainly children and youths, use their digital skills and knowledge, but also how such knowledge affects their thoughts and activities as well as their "understandings, interpretations, beliefs, attitudes, and emotions" (Lankshear and Knobel, 2008, p.167).

Following Soby's contribution to the holistic model of digital competencies, three new contributions toward an even more proficient digital competency model have emerged. Lankshear and Knobel crafted the first in 2008; Calvani, Fini, and Ranieri crafted the second in 2009; the Aspen Institute introduced

the third in 2010. All three models have shifted away from focusing on the acquisition of functionary skills, such as how to work a mouse and keyboard or open files, folders, and windows, toward defining the knowledge needed to build new literacy skills to engage with web text. The design for these models provides a more practical and less philosophical perspective of digital competency by concentrating on both the cognitive and metacognitive dimensions that define online reading practices. The Lankshear and Knobel (2008) model, for example, centers its framework around the integration of the literacies encompassed by digital literacy along with their skill sets. These are divided into five components:

1) Underpinnings: literacy per se and computer basics
2) Background knowledge: an understanding of what digital information is and its niche in society
3) Central competencies: the ability to read and understand digital and non-digital formats; ability in creating, communicating, and evaluating digital information; and knowledge of assembly, information literacy, and media literacy
4) Attitudes and perspectives: the ability to learn independently
5) Moral and social literacy: understanding net etiquette and the psychology of the cyber world.

While the Lankshear and Knobel model is thorough, progressive (the first to incorporate such components as net etiquette and psychology), and impressive, both the Calvani, Fini, and Ranieri model and the Aspen Institute model show a more evolved concept of digital competencies. This maturation is due to both models drawing upon the groundings of previous models as well as incorporating the knowledge gained from

recent research on digital literacy. For example, the Calvani, Fini, and Ranieri model provides a competency framework that integrates a reflective practice into a three-dimensional process. Li and Ranieri (2010) define these dimensions as:

- Technological: the ability to search, problem solve, and engage with a digital environment in a flexible way
- Cognitive: the ability to search, find, read, interpret, and evaluate information in a critical way
- Ethical: the ability to constructively engage in social discourse and use technology responsibly.

Additionally, both models shed the linear composition of their predecessors and approach competencies within a flexible and circular framework.

Unlike the Calvani, Fini, and Ranieri model, the Aspen model considers the merging of technology usage with the complexities tied to mastering digital literacy competency and offers a framework that encourages intellectual curiosity, critical thinking, and communication skills (Hobbs, 2010). The model includes the following five supportive and interrelated stages:

- Stage 1—Access: Finding and using media technology tools skillfully and sharing appropriate and relevant information with others.
- Stage 2—Analyze and Evaluate: Comprehending messages and using critical thinking to analyze message quality, veracity, credibility, and point of view, while considering potential effects or consequences of messages.
- Stage 3—Create: Composing or generating content using creativity and confidence in self-expression with awareness of purpose, audience, and composition techniques.

- Stage 4—Reflect: Applying social responsibility and ethical principles to a person's own identity and lived experience, communication behavior, and conduct.
- Stage 5—Act: Working individually and collaboratively to share knowledge and solve problems in the family, the workplace, and the community, and participating as a member of a community at local, regional, national, and international levels (Hobbs, 2010).

While the Aspen model, similar to the other competency models, focuses on the basics needed to achieve digital competency, there are some researchers, such as Prensky (2001), who suggest that a person's age provides a quick and accurate alternative to structured frameworks in attempting to define an individual's digital competency. However, participants in this study, such as Hilda and Faris who Prensky would deem less digitally competent because of their age, were actually more digitally literate than the participants who were born a generation or half a generation later.

2.4.2 Generation Gap

Digital competency determined by generation is a popular view proposed by Prensky who suggests that those born after 1980 possess innate digital competency and that the ability to go beyond the basic digital literacy skills can often be determined by rite of generation. The last century has been categorized into three generations—the Boom generation includes those born between the years 1946 and 1964, the Bust generation includes those born between 1965 and 1976, and the Baby Echo generation includes those born between 1977 and the present (Tapscott, 1998).

Prensky (2001, p.1) contends that the degree of the digital skills attributed to each generation has created a generation gap, which he has defined as a schism between the "digital native" and the "digital immigrant." Anyone born before 1980, Prensky classifies as "digital immigrants." He likens them to an immigrant learning a new language—although the "immigrants" may learn the technology, they will always have an "accent" because they will never fully comprehend the digital technologies in the same way that those born in the digital era do (Helsper and Eynon, 2009, p.504). Those born after 1980, Prensky (2001, p.1) labels "digital natives" and asserts that they are the generation who are the "native speakers of the digital language of computers, video games and the Internet."

However, Bennett, Maton, and Kervin (2008, p.777) argue that Prensky's and other researchers' attempts at "digital profiling" are

> put forward with limited empirical evidence (e.g. Tapscott, 1998), or supported by anecdotes and appeals to common-sense beliefs (eg. Prensky, 2001a). Furthermore, this literature has been referenced, often uncritically, in a host of later publications (Gaston, 2006; Gros, 2003; Long, 2005; McHale, 2005; Skiba, 2005).

This critical view of the digital native theory has recently been supported by Bennett and Maton (2010, p.328) who assert that Prensky's labels serves no purpose other than to create a "certainty-complacency spiral" that "enables the uncritical reproduction of the terms 'digital native' or 'Net Generations' in ways that give both of them a credence they do not deserve and amplifies their significance."

It can also be argued that while Prensky attempts to tidily segregate digital competency by rite of generation, he fails to define what the minimal competencies

would be to determine if one is or is not digitally literate. Moreover, research indicates that those whom Prensky labels as digital immigrants are quite capable of rapidly acquiring skills to the same level of expertise as the digital native (Helsper and Eynon, 2009).

When determining digital competency, it is important to remember that engagement with digital technology does not automatically imply digital literacy. This point is supported by evidence in the findings of this study in Chapter 4. Bennett and Maton (2010, p.324) also note that "interview data from studies revealed that many students were unsure what some Web 2.0 tools, such as blogs and wikis, were." Lankshear and Knobel (2008) further this point in that a student may possess net skills to search and locate digital information but lack the skills to be critical of the material they have located. As a result, educators should be cautious in assuming that young adult learners now entering the ESL or mainstream classroom are highly digitally literate. Due to the lack of evidence to support Prensky's claim that those born into the era of the Internet are innately digitally gifted, there is clearly a need to teach digitally literacy skills to all learners regardless of generation.

2.4.3 The Competency Conundrum

While frameworks have been developed to initiate standards for measuring digital literacy rates, defining digital competence may be difficult because the concept of competence, as discussed earlier, has different interpretations, and it is not often clear if it is being defined in terms of identifiable skills or patterns of behavior. Anttiroiko (Anttiroiko et al., 2001) concludes that defining benchmarks for both competency and skills is extremely difficult because both are invisible. For teachers to understand and

be skilled in digital literacy, perhaps they need to redirect the focus from how literacy and skills can be defined and categorized to what pedagogical approaches work best in harnessing the learning potential regarding digital tools—knowledge that is especially significant in the integration of new literacies in the TESOL classroom.

2.4.4 Defining a Pedagogy

This part of the section explores pedagogical avenues that might best support digital literacy learning. Developing a pedagogy that enables digital learning is a challenge because perceptions of pedagogy differ. The word itself is not easily defined because pedagogy, like literacy, is a nebulous concept (Chapuis, 2003). Traditionalists interpret pedagogy to mean "either the science/theory or art/practice of teaching that makes a difference in the intellectual and social development of students" (Chapuis, 2003, p.1) while modernists define pedagogy as "a highly complex blend of theoretical understanding and practical skill" (Lovat, 2003, p.11). McWilliam (1996, p.1) notes that the word "pedagogy" is "rarely used outside academe, although there is a tendency for some academics, including educators, to use it loosely as a synonym for educational or instructional practice." In light of these numerous interpretations of pedagogy and the fact that its meaning is constantly re-shaped according to social, historical and political developments, I have ascribed to a socio-cultural perspective in which pedagogy is simply defined as "interpretative and responsive teaching" (Edward, 2001, p.163).

2.4.5 Developing a Framework

Achieving an effective pedagogical model for incorporating digital literacy in TESOL instruction has proven to be a very elusive and difficult task for two reasons. First, there is debate whether teaching strategies to strengthen digital literacy skills should be integrated into language curriculum or taught separately. Some hold that it is easier and more practical to create a digital literacy course with a teacher who is digitally competent and knowledgeable on the subject than to train teachers how to teach digital competencies (Chamot, 2004). Others contend that "integrated instruction provides students with opportunities to practice learning strategies with authentic language learning tasks" (Chamot, 2004, p.19). While more research is needed as to whether digital literacy should be taught as a separate course or as part of ESL literacy teaching, there is strong support by language researchers for the integration of metacognitive learning strategies in the ESL classroom (Gee and Hayes, 2011; Anderson, 2002; Harris, 2004; Chamot, 2001).

Secondly, any pedagogy practice for teaching both English and digital literacies depends on multiple strategies of instruction. Therefore, any framework designed to teach digital literacy in the TESOL classroom cannot rely on a set pedagogy for teaching reading skills. It must combine both traditional and digital literacy to create a general overall strategy. These general strategies should seek to support cognitive and technical skills needed to engage in a web text environment while taking into consideration the following four core language learning conditions that have been deemed credible by TESOL as necessary to facilitate language learning. These conditions consist of: 1) student opportunities to interact and negotiate meaning from social interaction; 2) authentic language tasks, which promote exposure to and

production of the target language through problem solving; 3) learning windows that permit time for the language learner to reflect and formulate ideas, and to exercise mindfulness or intentional cognition; and 4) a low stress learning environment that promotes learner-centered activities (Egbert and Jessup, 1996).

Although the above language learning conditions do not dictate a specific method, theory, or pedagogy to be applied to teaching digital literacy, they do provide guidelines to structure digital literacy teaching practices within the language classroom. Such teaching practices work best when they not only focus on the text and the learner's experience but also take into account the software applications needed for the learner to perform a specific task.

One model that lends itself well to the above recommendations for teaching digital literacy to second language learners is the Aalborg PBL (Problem Based Learning) Model (Kolmos et al., 2004). Its unique design allows for teachers to introduce a problem-based task to their students and then the students take over in defining and continuously negotiating the problem. The learners select the type of textual environment they want to work in and the types of digital technology or resources they want to use. In relation to language learning, the Aalborg Model permits the language learner to engage in authentic tasks embedded with digital literacy learning outside of the classroom.

Such a paradigm of "hands-off-teaching" is anchored to a constructivist approach that takes the learning process one step beyond meaningful problem-solving tasks by introducing critical pedagogical practices that allow the learners to select and choose the problems that they feel need to be defined. Thus, the learners become active agents in their learning experience, reversing the traditional banking model of

education (Freire, 1970) where the learners passively accept the teacher to "deposit" information and skills into them. Within the "hands-off-teaching" dynamic, an interactive learning experience is maintained through a community of practice that sustains an open dialogue between the teacher and the student.

A second, more classroom-focused means to teach digital literacy is through a relatively new web-based learning application known as WebQuest (Dodge, 1995). It too utilizes holistic teaching practices to engage students in digital learning and is firmly rooted in constructivist learning theory, which asserts that learning is an active process and that knowledge is built from the learner's understanding of the world through experience and reflection. Moreover, WebQuest promotes a student-centered learning experience where the learner constructs his/her knowledge of what it means to be digitally literate. As facilitator, the teacher provides a framework in which the students not only collate and organize the information they have found on the Internet, they also aim their activities towards a set goal they have been assigned. As Benz (2005) notes, "Since students have to participate in the elaboration of their learning strategies, the level of autonomy and creative production they attain is increased." Working on WebQuest, learners seek to develop an answer to a central question, challenging the learners to approach it from a variety of perspectives. WebQuest activities used in the language classroom use the target language as a means for the learners to relate their life experiences to language learning. March (2003, pp.45-46) notes that "by engaging learners in a pursuit that requires them to use the required information and expertise in a new way, WebQuest helps students construct a deeper understanding and move through a crucial transition phase toward a more autonomous, learner-centered educational process."

Both the Aalborg Model and the WebQuest approach serve as a means by which learners can explore digital literacies in a way that champions neither the text nor the technology. Such a relationship permits learners to "work with not through new technologies" (Lea, 2004, p.16). Additionally, the Aalborg Model and WebQuest offer learners a mediational means. The benefits that the mediational means bring to a learning environment "include not only a range of technologies and applications, but also linguistic and rhetorical resources that students appropriate in order to get things done with texts as part of their study" (Lea and Jones, 2011, p.384).

Finally, asking students to 'think aloud' (Pressley and Afflerbach, 1995) as they complete tasks can serve as an effective follow-up to WebQuest and other problem-solving tasks that have engaged the learners. These think-aloud tasks allow the learners to actively show their use of digital literacy skills while engaged in a web text environment. Think-aloud tasks have the potential to reveal students' cognitive and metacognitive reading strategies to themselves, but they also offer the teacher the opportunity to encourage self-reflection and provide guidance in the orchestration and self-regulation of these skills. Carrell (1989, p.129) observes that too often in second language learning programs students "who receive instruction only in the skills or strategies fail to use them intelligently and on their own volition because they do not appreciate the reason why such strategies are useful nor do they understand where and when to use them." Think-aloud tasks can provide the learners with insight into their specific strategy use. The teacher can then reinforce a learner's use of an online strategy by offering the student specifics regarding the why, when, and how behind its use, explaining how to judge its effectiveness.

2.4.6 Teaching that Promotes a Blend

In concluding this discussion on pedagogy concerning the instruction of digital literacy, it should be noted that providing a pedagogy will be of most benefit if its implementation into the TESOL teaching practices is supported by a willingness and capacity amongst ESL program designers to promote teaching English in both a print-based and a web-based literacy environment. Arguably, the ESL teaching profession in private schools in the United States has done little to move towards a clear pedagogy for teaching digital competencies. An issue here may be the way technology and literacy are perceived by many ESL program directors, curriculum developers, and educators. As Carrier (1997, p.280) observes, the field of English language education "is a very ideological Profession." On the other hand, it should be said that TESOL is not the only discipline that has been slow to change literacy practices; mainstream education in general is also still somewhat confined within the domain of book technology (Lankshear and Knobel, 2008, p.123). This situation can be directly linked to the "fundamental notions of what literacy is" (Jones and Hafner, 2012, p.179), which is confined to an understanding of literacy as being aligned to reading and writing within printed text/page-based forms. The conception of how education views literacy needs to be widened so that it can be inclusive of all forms of text. The TESOL profession can achieve this aim by encouraging all pre-service and post-qualifying TESOL educators to see the relevance of increasing their knowledge of digital literacies and the competency to teach them, as they do in some contexts (Hague and Williamson, 2009). Whether this enhanced understanding is achieved through formal or informal instruction, they should, as Bush and Terry (1997, p.265) assert, center on three central issues in preparing teachers in the use of technology: 1) the establishment of a comfort

level with technology; 2) the integration of technology into the curriculum; and 3) the development of critical skills to evaluate it and its uses. It is equally important that TESOL educators realize that staying "literate" in this digital age is tied to a lifelong learning process because digital technologies are in a rapid and constant state of change. The classroom desktop computer in which the student interacted with through a keyboard and a mouse, for example, was considered state-of-the-art technology less than a decade ago. However, it has since been replaced by an interactive whiteboard, which one engages with via the touch of a screen.

As new ways are developed to teach digital literacies to both TESOL teachers and students, there is arguably little doubt that the choice of teaching approaches should be informed by educational research and effective pedagogical practices. Both can direct the successful development of a pedagogy that will support engagement with digital text and the use of web-based technology to enhance second language learning.

2.5 Modern Literacy

What follows is an examination of the environments of printed text and web text and an exploration of on-line reading behaviors and the challenges that a reader may face when reading web text. The section is concludes with a discussion on the meta-reading, as well as ways to teach metacognitive strategies.

2.5.1 Text: From the Printed Page to the Monitor Screen

Frechette (2002, p.3) notes that digital technology "…will alter our very conception of basic terms such as *reading, writing, and text.*" Therefore, it is important to examine the effect that the transition from printed text to web text is currently having on the way

a language learner reads and interprets text. Before continuing, it is essential to define what is meant by "text." Siitonen (1996, p.1) defines text as "an organized group of codes formed into words which generate meaning." A more modern interpretation might include that text is an expression or communication, which is neither fixed nor tangible. The interactive, multimodal text found on a digital page, for example, goes beyond expressing semantic and pragmatic content words to generate music, movies, photos, and graphic images. Thus, with the advent of the digital page comes a need to develop new ways of reading and thinking because, while both teachers and students are acquainted with the intricacies of printed or paper-based reading, they are, as a whole, may be quite unfamiliar with web-based reading (Pressley, 2001).

Birkerts (1994, p.128) compares book text and on-screen text to a painting versus a photograph—the painting is of the natural world and on-screen text is an artificial reproduction. Birkerts (1994, p.155) asserts that printed text is real and "verifiable" and that text on a screen "is a manifestation, an indeterminate entity both particle and wave, an ectoplasmic arrival and departure...[that] once dematerialized, digitalized back into storage, into memory, cannot be said to exist in quite the same way [as printed text]." The implication here is that the reader enters a reading landscape where text becomes more temporal and uncertain than it does with printed text.

One of the most apparent if not overtly obvious differences between printed text and web text is in the way its presentation is engineered—stapled or bounded sheets of paper versus the physically inflexible frame of a monitor screen. Upon closer scrutiny, a number of very clear distinctions can be seen between printed text, which is a medium drawn from a culture of simplicity in terms of the text's message being followed from page to page, and web text, which is rooted in a more complex culture of

illuminated text that requires the reader to possess some degree of digital knowledge to navigate through it. Further, printed text is mainly a solitary experience, whereas web text, by way of web publishing tools such as the blog, permits a person to open a dialogue with the writer and other readers by leaving comments. In the next two sections, printed text and web text will be explored in more detail.

2.5.2 Printed Text

The culture of printed text began several centuries ago. It first evolved within the confines of medieval monasteries when monks first transcribed text on to paper. A few centuries later it was typeset on to floppy pulp processed sheets by Guttenberg, then "cold typed" in the 1960s, and now it is currently reproduced on to a paper page via high-resolution digital imaging. Common forms of printed text are books, magazines, and newspapers. In the Western world, these forms draw upon a traditional reading culture in which the reader proceeds through the printed page from beginning to end, reading from left to right in the same word order as anyone else who reads the same text (Kist, 2005).

Printed text is hierarchical, mainly private, and offers the reader a very linear and static reading experience. Unlike web text, in which the navigation of the text can be fluid and reader driven, the text that the reader reads in printed text is "shaped by the author, and the readers have little choice but to follow the author's intended plot or expository structure" (Coiro, 2003, p.4). Readers do have control of their printed text reading experience in terms of rearranging the order of what they read by flipping through the pages, but printed text "is designed to be read in a linear fashion" and its "features are not malleable" (Coiro, 2003, p.4).

When readers begin to read printed text, they begin at the top of the page and vertically descend down. Information within the text relate to each other by means of physical proximity with one train of thought logically linked to another. This seemingly natural order follows its course from paragraph to paragraph and from one page to another (Weyer, 1982). Because of the layered composition of printed text, the readers are able to re-read information and maintain focus. This is important because both focus and comprehension determines the pace and progress a reader makes when reading printed text (Birkerts, 1994, p.122). Purves (1998) notes that reading printed text is a two-dimensional experience, which may make navigating through printed text a much easier process than charting through web text (Carr, 2011). However, printed text is not always read in a linear way. For example, dictionaries and encyclopedia are designed to permit the reader to skip from page to page to locate specific information.

It might seem that the visual stimulation generated by web text would enhance the reading experience, but many authors contend that the opposite is true, with printed text offering a better reading climate than that of web text. According to Carr (2011, p.100), words that are "stamped on a page in black ink are easier to read than words formed of pixels on a black lit screen." Carr also observes that the reader does not experience the same degree of eye fatigue in reading printed pages as in reading online.

2.5.3 Web Text

Web text not only offers the reader a different reading environment and experience, it has also revolutionized the way in which literacy is now viewed by opening new ways of communicating information. This specific contribution merits a more lengthy

examination of its environment, application, and readability than what was seen in the above discussion on printed text.

In web text, the linear aspects of printed text have disappeared. Instead, text appears in a multimodal blend of audio, video, image, and hypertext, all of which invite the reader to explore in a nonlinear way.

Unlike printed text, digital text is relatively new—its availability for general use appeared only slightly over two decades ago. Web text appears within the content of a web page, text message, or online postings such as blogs or bulletin boards. It is electronically generated, multimodal, and although web text is considered more interactive than printed text, it is also seen as more ambiguous because it lacks hierarchical and static structure, both of which anchor printed text (Jones, 2007).

The anarchic form associated with web text permits readers to reject the way it is presented on a page and allows the option of changing it. Web text, for example, can have its shape, size, location, and color altered. The page on which the text appears can have its width expanded or reduced or can have the page's frame boundaries completely resized. Web text is not fixed to the page as printed text is but instead is variable, always in a constant state of flux and not locked to any rules which prevent one from changing, moving, or eliminating words or text from the electronically produced page they appear upon. The text is open to change as well and can be updated on a daily and even hourly basis. As a result, the self-containment that appears in printed text is absent in web text.

There are some critics who suggest that without solidity, text ceases to carry any strength. Birkerts (1994, p.155) believes that the impermanency of web text diminishes the power of the text itself. He notes that:

> the word cut unto stone carries the implicit weight of the carver's intention; it is decoded in sense under the aspect of its imperishability. It has weight, grandeur—it vies with time. The same word, when it appears on screen, must be received with a sense of weightlessness—the weightlessness of its presentation. The same sign, but not the same.

It might also be argued that despite the "flashy" and "live" look of web text, it is not extensively original or independent. Web pages, for example, adopt many of the conventions of alphabetic literacy, and the text appears heavily mandated by the printed word (Tyner, 1998). Tyner (1998, p.40) notes that "static Web pages look like billboards" and "the way that pictures and texts work together in multimedia interface is reminiscent of the visually stunning illustrations of Biblical texts seen in the illuminated manuscripts of medieval times."

Guo (2010, p.E-13) also sees web text as moored in the tradition of printed text, especially with regard to educational digital resources, which he contends are simply the binary equivalent of their printed predecessors. He notes that the new digital form is no more than "massive accumulations of e-text, hypertext, reproduction of paper print version…"

Findings from reading studies (e.g. Nielsen, 2006; Rayner, Ashby, Pollatsek, and Reichle, E 2004; Richardson and Spivey, 2004) reveal that when reading web text, readers will begin to quickly seek out useful bits and pieces of information by skimming the entire page. Instead of reading the web page from left to right or from top to bottom, readers engage in a "snatch and find" (Coiro, 2003) style of reading in which they scan for information of interest by skipping about a text and pausing from time to

time to focus on something they consider is pertinent to their interest. This reading behavior was observed in the study participants and will be further explored in the discussion of the findings in Chapter 4.

Research in web text reading also suggests that the reader does not read in a straight line as when reading printed text, rather his/her eyes skip from word to word and sentence to sentence because the web page does not encourage the left to right eye pattern usually used to sweep over a printed text (Tseng, 2008). Moreover, it was discovered that readers often spend 69% of their time looking at the left half of the web page and only 30% viewing the right half (Nielsen, 2010). Further, other studies done by Nielsen (e.g. Nielsen, 1997, 2006, 2010, 2011) show that the reader will focus on certain parts of the web text while completely ignoring other parts altogether. Crystal (2001, p.196) notes that "the lines of the text are not read in a fixed sequence; the eye moves about the page in a manner dictated only by the user's interest and designer's skill, with some pages being the focus of attention and other parts not being read at all." This method of reading has come to be known as the F-Shaped Reading Pattern. It derives its name by the fact that when people read online their eyes forego the way they have been trained to read printed text and rapidly scan across the words of a web page in a pattern that resembles the letter "F" (Bauerlein, 2009, p.144).

When engaged in F-Pattern reading, readers begin reading at the top of the page and read left to right all the way across as they would do with printed text. However, as their reading progresses, they begin to take "detours" as scanning of the text increases and the horizontal movement shortens. Their attention shifts toward catching explanatory links or links to subpages within the web text. By the time they have

reached the bottom of the page, the eye has limited itself to a small vertical scan, which forms the lower stem of the F pattern (Bauerlein, 2009, p.144).

Because the F-Pattern reading process does not require reading for details, but instead encourages scanning for keywords or links to further information, very little time is actually spent on reading. The average reading time spent on a web page averages less than 40 seconds (Bauerlien, 2009). The goal of web page reading is not centered on gaining knowledge but on linking information together (Poynter Institute, 2007).

2.5.4 Skimming and Scanning

Despite the rapid and abridged style of reading that web text induces, the reader's eye actually reads 25% slower on a web page than on a printed page (Nielsen and Loranger, 2006). Even with this slower rate of reading, web text mandates that the readers use skimming and scanning techniques to engage with it. Because online reading provides people with a large volume of nonlinear text, or in other words text that can be read in a multidimensional way, they resort to continuously skimming and scanning the text for information that they deem worth reading. The strategy behind both of these reading techniques provides readers with the means to help them succeed in reaching their reading goals. While skimming and scanning strategies are used by readers in both printed text and web text, they are commonly put into practice when readers are engaged in web text because of the need to quickly read in greater detail. The path usually followed when applying the skimming and scanning approach to a web page first involves skimming (rapidly reading) the page in an effort to piece together words, numbers, and phrases that may be relevant. Interestingly, when engaged in this

skimming process, readers will spend 80% of their time seeking out information on the part of the web page that was visible to them upon arrival. Although the readers will scroll to text, which was not first seen, they will allocate only 20% of their attention to this content (Nielsen, 2010).

Following a quick assessment of the information on the web page and deeming the text beneficial, readers will then reduce their reading speed down to a scan, which requires slower reading and scanning for the specifics that need to be read in depth.

An online search strategy called "power browsing" has evolved from skimming and scanning techniques (Williams and Rowland, 2007). Power browsing is defined as a skimming activity in which one quickly skims through the information at a website and then "bounces" out to another one. Birkerts (1994, p.32) expands on power browsing behavior by observing: "…the reader of [web text] tends to move across the surfaces, skimming from one site to another to the next without allowing the words to resonate inwardly." Moreover, Birkerts (1994, p.72) argues that printed text allows us to "slip out of our customary time orientation, marked by distractedness and superficiality, into the realm of duration. Only in the duration state is experience present as meaning."

Because of the skimming and scanning techniques used when reading web texts, other authors (Wolf, 2008; Carr 2008) also argue that web text reading neither allows for nor promotes reflection as printed text does. Gilster (1997, p.94) observes that in most situations online reading "means reading Web pages and tunneling through their hyperlinks to other sites, often without extensive examination or study." This would suggest that web text promotes a reading environment that is distracted, unfocused, and non-in-depth (Carr, 2011). The findings of the Miall and Dobson (2001) study also

appear to support this view. Their study revealed that web text readers were less engaged with the content of the text whereas printed text readers were not only more involved with what they read but were also more attentive to the details of the readings. On the other hand, Pressley and Afflerbach (1995, p.54) note that collecting information from many places—the feature of power browsing—can contribute to the learner's overall understanding of the text that is read as more connections are made between the text and other sources of knowledge.

2.5.5 Reading Challenges

As can be seen from the power browsing technique, engaging with web text is anything but a passive process because it requires physical action on the reader's part. Learners are forced to actively participate in the reading experience by operating a mouse and keyboard while focusing on and responding to onscreen demands at the same time. Eshet (2012, p.272) observes that in order for readers to successfully engage with web text, they must split their attention to places on the monitor, react to simultaneous stimuli, execute different tasks simultaneously (multi-tasking), rapidly change their angle of view and perspective of environment, process multiple representations of information, and quickly and effectively "synchronize the chaotic multimedia stimuli into one coherent action or body of knowledge." Gaining reading dexterity is not the only challenge that one faces when engaging in web text. Other challenges include digital overload, hypertext, and mash-ups, which are discussed below.

2.5.6 Digital Overload

Digital overload, also known as information overload, is a term coined by Waddington (1998) to describe the overtaxing of a person's cognitive capacity by the presentation of too much information or data. Web text may be encouraging digital overload because its high visuals and the colors and contrasts of its text may cause the human brain to gorge itself on "brain candy." Recent brain studies have indicated that the human brain has "a built-in intentional bias toward novelty and color" (Coates, 2007 p.108). While this brain attraction toward color and contrast may excite a reader's neurons and draw attention to what exists on a web page, it may also be inviting the working memory to become overtaxed to the point of overload. Those who are daily web users face the risk of being caught up in a repetitive cycle of overtaxing the memory. When this happens, the brain appears to be rewiring itself to be in a constant state of distraction so it can cope with the large influx of information that it is presented with. Carr (2011, p.194) observes:

> The influx of competing messages that we receive whenever we go online not only overloads our working memory; it makes it much harder for our frontal lobes to concentrate our attention on any one thing. The process of memory consolidation can't even get started. And, thanks once again to the plasticity of our neuronal pathways, the more we use the Web, the more we train our brain to be distracted—to process information quickly and efficiently but without sustained attention.

Ergo, society may be imposing upon itself a form of self-induced Alzheimer's as "our brains become adept at forgetting, inept at remembering" (Carr, 2011, p.194).

Campbell (1998), similar to Carr, worries about the way digital tools are affecting cerebral function. Campbell suggests that a digital reading environment causes readers to lose their in-depth reading ability and warns that the "flash" of web text overstimulates the brain's visual acuity while diminishing its verbal acuity. In addition, Truman (1992) worries that as printed text begins to lose its prominence in society, so too will people lose skills in linear argument as well as left brain conception.

The diminished ability to comprehend what is read online may be overtly evident in current young adults who may be developing a digitally induced form of attention deficit disorder. Coates (2007) suggests that young adults can only stay focused on a topic or task for 20 minutes at a time. This fact is supported by Jensen (2005) who contends that the brain needs catch-up time when processing the verbal/cognitive information that it is exposed to via web text. Jensen suggests that the maximum amount of new content that the brain can digest within an hour of uninterrupted concentration is about 10 to 15 minutes. Coates (2007) and Brown and Fritz (2001) note that the generations that have grown up in the digital age are visually motivated, preferring information presented in the form of images, diagrams, videos, and interactive software (Brown and Fritz, 2001). This trend may be attributed to the colorfulness of web text and web pages populated by photos, videos, and animations.

As of yet, there is nothing conclusive regarding the full impact that digital overload is having on our brains. Richtel (2010) observes that there are two camps developing amongst scientists. The "believers" argue that the onslaught of online information is taking a toll on our brains and creating a very attention deficit society, which cannot concentrate on anything for great length. According to Richtel, the "skeptics" believe the risks are minimal, and the positives outweigh the negatives in

having a continual flow of information at our fingertips. Moreover, there are some "skeptics" such as Shirky (2008) who argues that information overload is actually not an "overload" but a "filter failure." Shirky asserts that the human mind is not suffering an overload but a processing breakdown in which the mind has not yet determined an effective means to process and manage the dearth of information it confronts online.

However, what has yet to be considered is the fact that web reading is still in the midst of developing ways in which readers can meet the comprehension challenges of a swirl of information. Coiro (2003) predicts that this eventuality could take up to 20 years of research before new and effective strategies for a reader to use online are provided. This does not mean that it will take two decades for web text to be recognized as having reading advantages. Tseng (2008, p.3) thinks that the web text reading experience is already benefiting readers and suggests that the hypertext (internal links on a web page that direct readers to different sections of a website) woven into web text allows people to read "the way the mind thinks, in a nonlinear path." Tseng views this form of digital reading engagement as performative as it transforms the text into "dramas or musical scores." He explains:

> When readers 'perform' the text, they read for themselves…thus reading is more than a linguistic performance. Besides visual and auditory, it is even kinesthetic and tactile when the readers explore a text by making their own decisions. There are many choices of response and interpretative performance of one's own with hypertext. (Tseng, 2008, p.3)

2.5.7 The Hyperlink

The hyperlink poses one of the biggest challenges in web text reading because it subjects readers to a vast number of information sources, among which they may not be able to distinguish what is useful and what does not relate.

The invention of the hyperlink is attributed to Theodore Nelson, who created hypertext and coined the term when he was a research fellow of the Oxford Internet Institute in 1964. Nelson (1990, p.2) describes hypertext as: "non-sequential writing—text that branches and allows choices to the reader, best read at an interactive screen. As popularly conceived, this is a series of text chunks connected by links which offer the reader different pathways." As readers cannot turn web pages as they do printed pages, the hypertext provides the means to move through electronic text in a nonlinear way. Crystal (2001, p.202) contends that this feature of the hyperlink makes it "the most fundamental structural property of the Web, without which the medium could not exist."

Hyperlinks are displayed through underlining and a distinctive blue font color. By clicking on a hyperlinked text or image link, the reader can move to further information, which may come in the form of text, sound, animation, graphics, or multimedia (a mixture of text, video, sound, and graphics). Snyder (1998, pp.126-127) defines a hyperlinked text or hypertext as "essentially a network of links between words, ideas, sources, one that has neither a centre nor an end." Additionally, the hyperlink not only connects the user to sources of information but also to service-oriented interactive systems such as web-based e-mail, online merchants, and search engines. This ability to rapidly search through a large database of text, images, and sound via a split second click of a mouse is considered one of the greatest advantages

that hypertext has over a book (Beatty, 2003, p.48) and brings its own challenges to users.

Websites can direct readers through internal hyperlinks to information within the site's domain or through external links to additional resources that may be of interest. Most websites use a combination of both internal and external links.

Recent studies (e.g. Ruddle, 2009; Weinreich, Obendorf, Herder, and Mayer, 2006) reveal that the hyperlink is replacing the back button by allowing forward navigation through links to new "destinations" rather than backtracking to previously viewed pages. The decline in the use of the back button is not an indication that users do not return to pages or sites they have visited; rather it shows that the hyperlink permits the user to visit a home page or cornerstone pages of a site without the need for the back button (Weinreich, Obendorf, Herder, and Mayer, 2006).

The hyperlinks can work both for and against the language learner. In a positive light, the hyperlink can help learners translate and define words within web text or help to gain a better understanding of the topic being researched, as well as even providing an audio or visual learning experience through multimedia links. Hypertext, too, can be a source of empowerment and freedom for learners because they can take control and decide their reading agendas. Such control can be particularly beneficial to language learners because, unlike in an off-line reading environment in which learners may think they have very little say in their reading experience, the online reading environment may provide the learner with a sense of being more in charge. Moreover, immediate visual information in the form of photographs, maps, diagrams, video, animation, and sound have the potential to capture the language learner's attention and engages him/her in ways that printed text may not. As a result, the language learner can create a

comfort zone of low anxiety, which can serve as a means of motivation to engage in reading authentic materials in the target language.

Warschauer (1999, p.159) also supports the view that students can benefit from hypertext and notes that the "main strength of the Web is that it allows individuals to pursue their own interests." This sense of literacy liberty, in which the reader is creating a new text, in his/her mind, has created new words to describe the reader such as *wreader* and *secondary author*.

In permitting learners to direct their reading journey, hypertext also permits an incorrect assumption that learners inevitably know how to pick and choose the individual segments of texts that are present. Miall and Dobson (2001) found that while hypertext readers reported that the selection of links made them feel in control, they also complained that navigating hypertext was not an easy task. Charney (1994, p.268) cautions: "A wide range of factors influence appropriateness of a sequence for a reader…people left to pick and choose what they read may not discover a crucial detail." Hyperlinks can also lead language learners down a maze of click-on links, resulting in a state of frustration and confusion. A study done by DeStefano and LeFevre (2007) concluded that the hypertext experience did not provide the reader with a more enriching reading experience than printed text.

Another issue related to hyperlinks is tied to the fact that readers have no input in the creation of the hypertext. The reader's path is limited to the hyperlinks that the writer creates for the reader. One of the key questions Gilster (1997, p.130) observes that many web text readers fail to ask is: who created the hyperlink? Failure to ask and attempt to answer this question on the readers' part leaves them quite vulnerable to manipulation. Gilster (1997, p.130) notes, "It's far too easy for a page designer to

neglect a key objection to a particular point simply by hyper linking anything to it; the alternative viewpoint is therefore never seen." An author can control the reader's experience and covertly sway the reader toward a viewpoint that the author wants the reader to adopt. Gilster (1997, p.131) explains:

> Hyper textual reading puts the rhetorical arts into an odd tension; the reader, rather than the author, is the one who charts the course through the document. This being the case, the author of hypertext has to consider which routes the reader will be allowed to take. In doing so, he or she can lay out an argument through the omission or addition of particular items that support the point being made.

Because website text is broken down into "bite size" chunks of information that are threaded via hyperlinks, readers may be directed to other sites that tie into or back up what the source site posts. As a result, readers must collect bits and pieces of site-biased information to construct a narrative. Warnick (2002, p.105) observes that the danger here is that the "coherence and unity of rhetorical intent can splay out until the reader stops paying attention." This reading divergence provides web text authors with the advantage of a dominant role where they can overpower the readers with information, guiding the readers down whatever path supports the intended beliefs or ideology. Traditional literacy often offers little help to the learner to cope with the navigation of hyperlinks because, unlike in printed text where the learner has the advantage of darting back and forth between printed pages to construct and clarify possible meaning, hypertext forces the reader to make inferences almost from scratch or to try to remember previous pages (McDonell, 2003, p.8).

2.5.8 Mashups and Mix-ups

The mutability of web text can also present difficulties to those who interact with it. Because of its flexibility to alteration, web text is particularly vulnerable to plagiarism. Manovich (2007, p.1) notes that the "World Wide Web [has] redefined an electric document as a mix of other documents." This modifying of text on the Web is called a "mashup" (Jones and Hafner, 2012, p.45). The term, once used to describe the way songs were combined to create a new and unique variant of the original, is now also used to refer to the creation of an online text that has been constructed from other existing texts. The line between plagiarism and a mashing of text inevitably becomes blurred as the traditional concept of the individual authorship is redefined as a collaborative effort of the masses, especially in the advent of online platforms such as blogs and wikis, which offer the opportunity to not only read but also to write. Publishing online is often not the final submission of a text but a work in progress that is a contribution to the main piece. A good example of this is the online platform, FanFiction, where writing a story is a collaborative effort, drawing on other fiction.

As a result of the mashup culture that the Net has inspired, ethics have rapidly become a key concern in the way a student uses information obtained from the Web. Makinen, Mikola, and Holmlund (2010, p.55) note that ethics is rooted in morality, in other words an "individual's and society's culturally bound conceptions of what is good and bad and what is right and wrong." Although the Internet provides a vast amount of information and resources, it can also provide the means for a student to collect information and use it illicitly. Moreover, as Roberts and Waiseleski (2012) note, "Students are surprisingly unclear about what constitutes plagiarism or cheating" (Waiseleski as cited by Perez-Pena, 2012, p.A13). Therefore, there is a need for all

students—mainstreamers and language learners alike—to be taught the rules of respecting authorship, copyright, and intellectual property laws.

While there is a need to teach and encourage students to be responsible Net citizens and to be ethically mindful when online, preaching against the "evils" of the Net may not be the most effective teaching strategy because "a new moral is being created on the Internet constantly; new virtual communities are being born all the time" (Makinen, Mikola and Holmlund, 2010, p.57). It may be more beneficial for teachers to promote a critical consciousness, which does not steer them away to safer waters but instead encourages the learners to make their own informed judgments (Buckingham, 2003).

2.5.9 Toward a Critical Perspective

Part of promoting a critical consciousness is teaching good web citizenship, which encourages learners to be knowledgeable in how to evaluate online sources and to understand why they are online in the first place. Students should be encouraged to have a goal in mind when they go online. As Siegel (2008, pp.174-175) explains:

> You never enter the Internet as you would enter a park, or go onto the street, or browse through a bookstore. You don't go online to just go for a walk, not knowing what you'll find. You go online to look for something. Everyone you meet online is looking for something too. The Internet is the most deliberate purposeful environment ever created.

In knowing the "why" behind their Net use, students may be able to develop a free will and set their terms in how much engagement and control the digital world will

have over them. In this way, students can see that the tools of Web 2.0 do not dictate their actions; instead they, the students, control their web experience.

What does helping the learner develop a critical conscious entail? More specifically, what does it mean to be "critical?" Luke (2004, p.26) defines "critical" as the ability "to call up for scrutiny, whether through embodied action or discourse practice, the rules of exchange within a social field." Jones and Hafner (2012, p.98) define a critical stance as a "conscious stance" in which people put themselves "in the position to 'interrogate' the ideologies and agendas" presented in the information they are reading. Thus, being "critical" in a digital environment calls upon people to assume responsibility for their own learning and actions when engaging with information and interacting with digital tools, and it necessitates that people are active, not passive, receivers of information. This requires people to be skeptical of their own interpretation of the facts and to determine the credibility of the information they are reading by identifying if it is current, relevant, and accurate. Credibility is easier to establish with printed text because words in print are not as vulnerable to distortion as web text. Web text is more susceptible to bias and misinformation because web information can be inexpensively created and published without the constraints of fact-checking and proofreading that publisher's require for printed text.

Unfortunately, many of the ESL students with whom I have worked appear to lack the skills to assess the information they encounter online. Their litmus test to determine the accuracy of the information on a web page is often based upon Google search ranking. Bauerlien (2009, p.16) observes that most American young adults possess little of the knowledge that makes for an informed citizen, and too few of them master the skills needed to negotiate an information-heavy, communication-based

society and economy. In addition, Chajut (2010) says that when bombarded with large volumes of information, unskilled readers "are unable to ignore the many biased and falsified pieces of information they retrieve and they fail to exercise critical thinking skills" (Eshet-Alkali and Chajut, 2010, p.179). Therefore, it is critical for educators to not take for granted that either young adults or seemingly digitally proficient adult learners have the literacy skills to engage in effective digital reading. Sutherland-Smith (2002, p.664) notes this lack of criticality in students when she observes that students are able to "perceive Web text reading as different from print text reading," yet they also feel frustrated by their inability to instantly obtain the information they are seeking through quickly glancing over web text. As a consequence, Sutherland-Smith (2002, p.663) observes that students began to engage in a "snatch and grab philosophy" (not displayed in printed-text environments) in which they made "hasty, random choices with little thought and evaluation." Such observations suggest that while a student may consider him/herself digitally literate and indeed show proficiency in operating digital technology, he/she may fall short of possessing real research skills and the criticality needed to assess the credibility of a website.

In order to help learners better determine the credibility of web presented information, Buckingham (2003) provides a solid framework for information grading that is divided into three key areas: Representation, Language Production, and Audience. *Representation* encourages the students to examine the authority, reliability, and bias of web content by asking such questions as: Whose voice is represented—an organization or an individual? Are other viewpoints presented that would allow for a balanced and broad evaluation of the information the website displays? Does the site's content seem to be supported by reliable sources? How current is the site? Could more

relevant information be accessed elsewhere? *Language production* targets the visual and verbal "rhetoric" used in a website's design. Here the students note the "user-friendliness" of a website—the interactivity of the site and to where the hypertext links lead. *Language Production* prompts the learners to investigate the nature of a website's authorship and sponsorship. They can seek out the answers to questions such as: Does the author have a "by-line" or is he/she anonymous? From where does the author's view seem to originate? Where does the author stand politically? Does the author seem truthful? Who are the site's stakeholders? What influence do the site's advertisers have on its content? Lastly, *audience* allows the students to reflect on the purpose of why they interacted with a particular source of online information and what the Web received from them in terms of informed decisions.

Beyond knowing how to search, find, and evaluate information, students also need to understand the mechanics behind the advertising and marketing practices that dominate much of the Internet.

Lankshear and Knobel (2008, p.174) observe that the Net is a dangerous world "where the collection, collation, mining, exchange and sale of personal data enables the owners of powerful machines to believe that they know us better than we do ourselves, that our uncertainties can be corrected by their certainties." A good example of this is Google's 2012 change in its privacy policy (Google, 2012) in which it has begun creating more comprehensive profiles of its users by tracking the websites they visit. As a result of following its users' activities from the terms they type into the Google search engine to what they purchase on E-Bay, Google is able to target advertisements toward its customers' tastes. The only way Google allows the user to opt out of its data collection is for the user to either not sign into their Google accounts or to stop using

Google products altogether. Facebook, too, in 2012, came under fire from the German Government because of Facebook's ability to photo tag its users and their friends by the photos they post on the site through Facebook's facial recognition technology (Kleinman, 2012). In addition, language learners may not be aware that Google does not screen websites for the accuracy of the information posted on their web pages and that advertisers can pay Google for top ranking in the search results that Google provides to its users.

Vigilance, then, becomes not an optional practice but an essential one if students are to protect their privacy and avoid the pitfalls of being a victim of fraud or misinformation. As Kerka (2000, p.35) observes, "There is great promise in electronic access to information and the resulting democratization of publication and dissemination. At the same time, the potential threats make a framework of critical literacy essential."

2.5.10 Preferences

Most learners will favor either printed text or web text. The preference appears to be tied to not merely to the generation to which someone belongs but also to the type of text that they are frequently in contact with and feel comfortable in embracing. With more and more ESL and mainstream students using the Internet, the trend seems to be moving toward accessing and reading information online. As Solomon, Allen, and Resta (2003, p.59) observe, "digital technologies increasingly shift text literacy from page to screen, creating, for example, new reading requirements…" As a result of this shift, readers are engaging in new patterns of and new strategies for reading web text. Both of these patterns and strategies draw upon meta-reading practices (Houghton,

2009), which more precisely defined means reading about reading, but can be defined as the learner's awareness of the way in which he/she reads (Chen et al., 2009).

2.5.11 Meta-Reading

Anderson (2002), Sheorey and Mokhtari (2001), and Cohen (1998) concluded that metacognitive strategies help second language learners to regulate and monitor their reading behaviors and are vital for literacy development in the target language. The subject of metacognition has been widely researched both in printed text and in web text (Baker and Brown, 1984; Garner, 1987; Stimson, 1998; Hartley, 2001; Bendixen and Hartley, 2003). Metacognition literally means "big thinking" or "thinking about thinking" (Livingston, 1997, p.2). The term itself is commonly associated with John Flavell (1979) who viewed metacognition as the way people are consciously aware of their own thinking. Flavell felt that metacognition consisted of two processes—metacognitive knowledge and metacognitive experiences or regulation. The first component, metacognitive knowledge, refers to the way people construct knowledge and process information, as well as their personal awareness of their cognition of different venues or strategies they use in learning (Fogarty, 1994). Metacognitive experiences and regulation, the second component, includes the transference and application of metacognitive strategies to achieve a learning goal. These strategies are a way to help regulate and oversee learning as well as a means to ensure that the aims of a cognitive task have been met (Livingston, 1997, p.2). Thus, metacognitive strategies can be seen as a means that learners enlist to better understand the content they encounter. This becomes especially prominent with web text because learners must

make determinations about text components, such as hyperlinks, or about whether or not to engage with audio and visual features embedded in the page (Reinking, 1994).

O'Malley and Chamot (1990) contend that metacognitive strategies help to facilitate other strategies necessary for learners to cope with different reading demands. However, the metacognitive strategies that the learner employs are part of a process and are rarely used individually. Anderson (2002, p.10) observes that metacognition is not a linear process because more than one metacognitive process may be happening at one time.

However, there is a great debate over how to categorize what is a cognitive strategy versus what is a metacognitive strategy. Flavell (1979) even appears at a loss to definitively define the two terms. Nelson and Narens (1990) assert that cognition and metacognition are interconnected and interact with each other as a unified process. Roberts and Erdos (1993) attempt to distinguish a cognitive strategy from a metacognitive strategy by asserting that a metacognitive strategy is a fall back process, initiated when a learner's cognition fails. Thus, it can be suggested that "cognitive strategies are used to help an individual achieve a particular goal (e.g. understanding a text) while metacognitive strategies are used to ensure that the goal has been reached (e.g. quizzing oneself to evaluate one's understanding of that text)" (Livingston, 1997, p.2).

Whilst many educational psychologists continue to debate over the exact definitions of cognition and metacognition, a general consensus does exist in education that the term metacognition refers to "higher order thinking which involves active control over the cogitative processes engaged in learning" (Livingston, 1997, p.2).

2.5.12 Metacognitive Strategies

Metacognitive strategies are useful in helping the reader to achieve his/her desired reading task in either a printed or a web text environment although strategy usage is dependent upon the type of text. This is because the reading experience is different on the printed page than on the web page. For example, unlike the text on a printed page, the text on a web page lacks a predetermined beginning, middle, and end, and the reader is not locked into one author's vision and alternatively takes charge of the direction of his/her reading path.

Researchers, such as O'Malley and Chamot (1990), Anderson (2002) and Mokhtari and Sheorey (2002), have focused their studies on L2 metacognitive reading skills and have not only listed these skills but have also categorized strategies for them. O'Malley and Chamot (1990) were among the first researchers to pioneer a framework to identify the reading strategies used by second language learners. They divided these strategies into three types: meta-cognitive, cognitive, and social/affective strategies. The meta-cognitive strategies were sub-divided into three categories:

1) Planning Strategies (Combination of Global and Problem Solving Strategies): ways in which the learner preplans or plans his/her actions.
2) Monitoring Strategies (Combination of Problem Solving Strategies and Support Strategies): ways that enhance the learner's awareness of what he/she is doing.
3) Self-evaluation Strategies (Support Strategies): ways in which the learner reflects on his/her learning outcomes.

Anderson (2002) expanded upon these categories and devolved the above meta-cognitive strategies into five primary components:

1) preparing and planning for effective reading,
2) deciding when to use particular reading strategies,
3) knowing how to monitor reading strategy use,
4) learning how to orchestrate various reading strategies, and
5) evaluating reading strategy use.

In contrast, Mokhtari and Sheorey (2002), whose L2 metacognitive reading strategy classifications were used in the coding process of this study (See Chapter 3), categorized their strategies into three distinct areas:

1) Global reading strategies: readers carefully plan their reading by using techniques such as having a purpose in mind and previewing text.
2) Problem solving strategies: readers work directly with text to solve problems while reading, such as adjusting speed of reading, guessing the meaning of unknown words, and rereading text.
3) Support strategies: readers use basic support mechanisms to aid reading such as using a dictionary, highlighting and taking notes.

All three means of classification of metacognitive reading strategies can not only provide the means for a teacher to better teach reading to his/her class but can also help to guide his/her students in their comprehension of what they are reading while monitoring their reading rate and assisting with critical evaluation at the same time.

2.5.13 Models for Strategy Instruction

In addition to the classifications of metacognitive learning strategies, models have been developed to teach them in both first and second language contexts. Such models to help learners develop their own metacognition are important because they not only help

their awareness of the strategies they are using, but they also help them to select the most appropriate strategy to achieve their reading goals. There are three current models—the SSB1 Model (Cohen, 1998), the CALLA Model (Chamot, 2005; Chamot et al., 1999), and the Grenfell and Harris Model (1999). As can be seen from Table 2, shown below, the trio shares a number of similar features. For example, the SSB1 Model, the CALLA Model, and the Grenfell and Harris Model all use activities as a means to identify what strategies the learner uses to learn. Additionally, all three models encourage the language teacher to model the strategies that he/she wants the students to learn. Finally, the models all share a common goal to develop a learner's metacognitive strategies and to encourage him/her to reflect on and evaluate his/her use of them.

Table 1

Models for Learning Strategy Instruction (Chamot, 2010, p.22)

Models	SSBI* Model (Cohen, 1998)	CALLA** Model (Chamot, 2005; Chamot et al., 1999)	Grenfell & Harris Model (1999)
Foundation Building	**Teacher as diagnostician:** Helps students identify current strategies and learning styles.	**Preparation:** Teacher identifies students' current learning strategies for familiar tasks.	**Awareness raising:** Students complete a task and then identify the strategies they used.
Modeling	**Teacher as language learner:** Shares own learning experiences and thinking processes.	**Presentation:** Teacher models, names, explains new strategy; asks students if and how they have used it.	**Modeling:** Teacher models, discusses value of new strategy, makes checklist of strategies for later use.
Strategy Awareness	**Teacher as learner trainer:** Trains students how to use learning strategies.	**Practice:** Students practice new strategy; in subsequent strategy practice, teacher fades reminders to encourage independent strategy use.	**General practice:** Students practice new strategies with different tasks.
Goal Setting	**Teacher as coordinator:** Supervises students` study plans and monitors difficulties.	**Self-evaluation:** Students evaluate their own strategy use immediately after practice.	**Action planning:** Students set goals and choose strategies to attain those goals.
Self-Management	**Teacher as coach:** Provides ongoing guidance on students` progress.	**Expansion:** Students transfer strategies to new tasks, combine strategies into clusters, develop repertoire of preferred strategies.	**Focused practice:** Students carry out action plan using selected strategies; teacher fades prompts so that students use strategies automatically.

Evaluation		**Assessment:** Teacher assesses students` use of strategies and impact on performance.	**Evaluation:** Teacher and students evaluate success of action plan; set new goals; cycle begins again.

Similar to the teaching models for digital literacy discussed in section 2.5, there is no set approach to teaching learning strategies. However, teachers should maintain a flexible learning environment and offer a variety of meta-reading strategies that students can select and experiment with to find out what fits their learning styles and needs. As Oxford (2003) notes, "a given strategy is neither good nor bad; it is essentially neutral until the context of its use is thoroughly considered."

Out of all three models, the design of the CALLA (Model) seems appropriate as its non-linear framework permits an instructor an easy route back to previous teaching segments that can be used to help students better understand a strategy and help him/her transfer it to a new reading task, and CALLA places greater emphasis on the learner's metacognitive awareness and self-evaluation of his/her learning strategy use. It is because of CALLA's focus on reflective learning practices, as well as its features of pinpointing weaknesses, strengthening performance, and assessing outcomes, that I adapted the CALLA model for use in the study workshops and subsequently used in my own classroom. However, I should point out while the CALLA model proved an effective instructional tool for me, it may not be suited to the needs of other teachers. Selecting the most effective model to teach learning strategies is dependent upon what the teacher considers will be the most beneficial in helping his/her students to improve their strategy awareness and application.

2.5.14 Same but Different

To sum up, the literature on printed text and web text indicates that due to the changing nature of what constitutes "text" in the 21st century, it would seem premature to make any predictions as to whether web text will supersede printed text in the literacy practices of either the mainstream or the language classroom. Wood (2000) and Aviram (2006) insist that printed text and web text will remain in a continuous clash with each other. Wood (2000, p.122) sees this clash as between the "techno-enthusiast" versus the "literacy community" while Aviram (2006, p.1) views it as a conflict between "the old modern, rationalistic, linear, conceptual, book-based culture of Western societies in the last few centuries (since Gutenberg)" and "the new emerging postmodern, branching, multimedia-based, reproduction-oriented culture of electronic text." However, I disagree with both summations. While I acknowledge that the cultures of printed text and web text are different, each deeply bound to its own tradition, I would suggest that the cultures appear to complement rather than clash with each other, especially if we view different literacies to be from the same "gene" pool. Although both forms of text have their advantages and disadvantages, it cannot be said conclusively that one is better than the other. I would propose that educators integrate the two domains of printed text and web text in their classrooms so they can meet the current and future needs of their students. By bridging the environments of both textual landscapes, the educator and the profession as a whole will recognize that printed text and web text are read in a different manner and that web text requires alternative strategies support comprehension, pedagogical strategies that are still in the process of development. Only in this way can the fundamental notions of what constitutes literacy and how to teach it

change. I will next refer to the first research question, which was guided and developed by the literature review.

2.6 Do ESL learners use different strategies when reading printed text as opposed to reading web text?

This literature review addressed Research Question 1: What evidence exists to suggest that ESL learners use different strategies when reading printed text as opposed to reading web text? The existing evidence that ESL learners target different reading strategies toward specific reading environments can be divided into three, reflecting the three types of key metacognitive processes that are considered essential for successful reading (Anderson, 2002; Sheorey and Mokhtari, 2001; O'Malley and Chamot, 1990). The three processes, discussed in Section 2.5.12, are: Planning Strategies (Combination of Global and Problem Solving Strategies); Advanced Organization, Monitoring Strategies (Combination of Problem Solving Strategies and Support Strategies); and Self-evaluation Strategies (Support Strategies).

Within the Planning Strategies process, during which learners decide how they were going to engage with the text they will be reading, previous studies discussed in the review (e.g. Nielsen, 2006; Grabe and Stoller, 2002) confirm that ESL learners assign select roles, such as reading for purpose and reading for pleasure, to what they read in either a print or online environment. For example, for research purposes, as documented by recent studies (e.g Bodomo, Lam, and Lee, 2003; Coiro, 2003; Kasper, 2000) show that English language learners feel online text serves them better than printed text. In these, studies the learners gave two reasons for this preference—it was quicker and easier to find the information they were seeking online than in a book or

library, and they felt that the Web provided them with instant and more plentiful resources than a print environment did. These findings are also consistent with research conducted by Poole and Mokhtari (2008), which revealed that students preferred the expediency and ease that researching online provided. However, for pleasure reading, studies such as Tseng (2007) show that second language learners prefer to read from print on paper, particularly books. This preference was because of the familiarity that the learners felt with books as well as a reduction in eyestrain that they attributed to the readability of the printed page.

With respect to setting a purpose for reading, the findings from studies conducted by Mesgar, Bakar, and Amir, 2012; Tercanlioglu, 2004 show that proficient second language readers engage in purposeful reading in both online and print environments.

More significant evidence of different planning strategies for online reading versus print-based reading can be seen in additional studies (e.g. Grabe and Stoller, 2002; Sheorey and Mokhtari, 2001) mentioned earlier in sections 2.2.4 and 2.2.5 Here, the findings from these studies suggest that second language learners did not read web text word by word as they were inclined to do with printed text but instead used skimming and scanning techniques for web text. A possible explanation for this tendency may be attributed to habit in that second language learners find skimming and scanning the best reading practice for engaging with text in a web-based environment. Moreover, this habit may be linked to the eye discomfort the learners often report feeling when reading intently online (Mercieca, 2004). Previous studies have shown that readers do not read lengthy onscreen text (Johnson, 2013; Tseng, 2003; Mercieca, 2004). These studies identified eyestrain from staring at a monitor screen as an

incentive for students to scan what they are reading online in an attempt to minimize the number of words their eyes have to read.

Another strategy ESL learners engage in when reading online, noted by Krashen (Krashen as cited by Rodriguez and Ramos, 2009) and Sutherland-Smith (2002), is the "surf" technique (Callister and Burbules, 1996). This strategy permits the learner to skim the text to identify key words, phrases, or links without diligently reading line by line. The choice of the "surf" technique to read web text may be attributed to the learners' desire to search through a large volume of information in a short period of time to avoid being overwhelmed by it.

Beyond the Planning Strategies, past studies (e.g. Tseng, 2008, Coiro and Dobler, 2007; Dalton and Strangman, 2006; Sheorey and Mokhtari, 2001) have revealed that second language learners use metacognitive Monitoring Strategies when reading online and the printed page. These strategies center upon various comprehension monitoring techniques that learners use to evaluate their understanding of the text they are reading and in the way they implement these strategies to comprehend parts of the text they do not understand. Findings from studies (e.g. Liu, 2005; Mercieca, 2004; Lynch, 2001) indicate differences between the comprehension monitoring strategies that language learners use when reading print on paper and text online—specifically in the way in which learners pay significantly closer attention to the content presented in printed text opposed to web text. The implication here is that reading printed text, such as a book, is linear and therefore static and as a result one often pauses to think about what he/she has read (Liu, 2005). In addition, previous studies (e.g. Greenfield, 2009; Miall and Dobson, 2001) suggest that human concentration cannot remain centered when engaged in online reading because

hypertext contributes to a distraction factor while printed text provides focus for cognitive processes and reflective thinking.

Finally, when examining the final metacognitive process of self-assessment, studies (e.g. Al-Amrani, 2007; Coiro, 2003; Hauptman, 2000) indicate that language learners self-assess their ability to navigate through print and web text formats. For example, the language learner's degree of satisfaction on succeeding in his/her online reading goals is based upon how well he/she adapts to nonlinear, nonhierarchical, and nonsequential construction of web-based text (Al-Amrani, 2007); however in printed text, the learner appears to measure his/her reading successes by how well he/she can navigate through the more linear, hierarchical, and sequential composition of printed text (Hauptman, 2000).

In sum, previous studies, as highlighted in this chapter, demonstrate that second language learners use metacognitive reading strategies to effectively engage in reading both printed text and web text. Moreover, internet usage by both ESL and mainstream students has shown a steady increase over the past decade (Liu, 2005) and as a result studies are showing that students are not only transferring their print reading strategies over to online reading practices, but are also developing new strategies to comprehend web text (Armstrong and Warlick, 2004; Anderson, 2003b; Parrot, 2003). Consequently I can conclude that the evidence reviewed shows that whilst of course the fundamental reading processes are the same, learners do use strategies differently in the two reading environments and, indeed, use different strategies faced with the demands and affordances of the web-based reading environment.

2.7 Overall Summary

In this chapter, I have presented an overview of relevant literature on digital literacy. I have also discussed second language reading theory and ways that digital literacy can be taught in the ESL classroom. Additionally, I have examined the environments of printed text and web text and have explained the meta-reading process as well as strategy instruction that can strengthen a learner's ability to locate and process the information that he/she encounters online. This review on the existing literature not only enabled me to increase my knowledge and understanding of digital literacy, but helped to provide greater insight into meta-reading strategies and online reading behavior. At the end of this chapter, I discussed the first research question arising from the literature and the evidence that exists to show that ESL learners use different strategies when reading printed text opposed to web text.

CHAPTER 3: METHODOLOGY

3.1 Introduction

"Qualitative research is research that involves analyzing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon" (Auerbach and Silverstein, 2003, p.3). Because my research attempted to explore a social science phenomenon, I used a qualitative research approach as an investigative framework. I found this approach suitable because the qualitative methodologies are viewed as appropriate for researching the underlying mechanisms that drive actions and events (Healy and Perry, 2000). This study developed from an initial set of research questions focusing on the metacognitive strategies the participants drew upon to help them bridge the gap from traditional literacy practices to modern literacy practices rooted in digital media. The questions explored the potential need to develop digital literacy skills in the TESOL classroom in order to ensure that the language learner is well equipped to successfully engage in modern literacy practices associated with digital technology.

3.2 Methodological Framework

3.2.1 A Constructivist Paradigm

My methodology came from the constructivist paradigm, which Crotty (1998, p.42) defines as "the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context." My research drew upon the constructivist belief that individuals

construct their own understanding of the world, which they use to acquire new knowledge in order to address a new learning situation (Benaim, 1995). The constructivist paradigm implies the need for the dynamics of qualitative research, which is about understanding the meanings individuals construct in order to participate in their social lives (Bogdan and Biklen, 1992; Erickson, 1986; Lincoln and Guba, 1985; Schwartz and Jacobs, 1979). Denzin and Lincoln (2005, p.3) note that qualitative research:

> consists of a set of interpretive, material practices that make the world visible. These practices transform the world into a series of representations, including observation notes, interviews, conversations, photographs, recordings and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meaning people bring to them.

The natural setting is used as a key source of data in qualitative research. In the case of educational research, the natural setting might consist of a school district, school, or classroom (Cohen, Manion, and Morrison, 2000).

3.2.2 Epistemological Orientation

Epistemologically, the study assumed a subjectivist approach to examine the phenomena under investigation. I interacted with the participants through interviews and workshop observations in order to have access to multiple views of the

participants' realities and to be a part of the creation of the findings. As Pratt (1998, p.23) asserts:

> Knowledge and truth are created, not discovered; the world is only known through people's interpretations of it…truth is arrived at not by seeking correspondence, but by seeking consensus; not by looking for a perfect match, but by finding a reasonable fit; not by assuming detachment, but by assuming commitment. Truth, therefore, is relative rather than absolute; it depends upon time and place, purpose and interests.

My epistemological view also rested on a relativist ontological position in which I saw 'reality' as being a construct of an individual's mind. I aligned my perception of relativism to a less radical interpretation, allowing relativism to be seen as a link between a person's mental construction and visible and tangible things (Lincoln and Guba, 1985).

3.3 Trustworthiness

"Trustworthiness" is a term often used in qualitative research that can be defined as the means to assess and ensure quality in valid inquiry (Lincoln and Guba, 1985). Although *reliability* and *validity* remain appropriate concepts for attaining rigor in quantitative research, the terms are considered inappropriate for qualitative research because of markedly different epistemological and ontological assumptions (Hammersley, 1992). Thus, in an attempt to create appropriate criteria for judging the trustworthiness of qualitative research, Lincoln and Guba (1985) created a means to identify appropriate criteria for critically evaluating 'naturalistic research' by replacing *internal validity* with

the concept of *credibility*; *external validity* with the concept of *transferability*; *reliability* with the concept of *dependability*; and *objectivity* with the concept of *confirmability*. However, these new concepts fail to accept the inevitability that at some point the subjectivity of the qualitative researcher will play a role in analyzing and interpreting of data (Auerbach and Silverstein, 2006). As a result, Auerbach and Silverstein (2006) suggest more appropriate alternatives to the positivist's ideas of *reliability* and *validity* as well as Lincoln and Guba's (1985) proposed qualitative concepts of *dependability* and *transferability.* Auerbach and Silverstein's (2006) alternatives provide three new qualitative criteria to judge qualitative research as a suitable way of distinguishing between justifiable and unjustifiable use of subjectivity to interpret data. Alternative terms for this new criterion are *Transparency*, *Communicability*, and *Coherence*. To build trustworthiness and maintain a transparent analysis, I kept records in the form of observation notes, written entries in the participants' journals, and transcribed text of the participants' interviews. In order to make my data analysis communicable, I have described the themes and theoretical constructs of my study in this chapter, and I have provided an account of my findings in the following chapter. To show coherence in the data analysis, the following chapter will also illustrate how the constructs of my study fit the pieces of data together, thereby justifying my findings.

3.4 Triangulation

Credibility for the study was established through methodological triangulation. This design of data analysis conforms to Miles and Huberman's (1994, pp.428-429) view that qualitative data should be divided into three subordinate processes and that these

three processes should occur both before and after data generation. The three subordinate processes consist of: 1) data reduction, 2) data display, and 3) conclusion drawing and verification. As a result, triangulation was achieved by the multiple generation of data from journal entries, observation notes, interviews, and student projects. This combination of data sources not only complemented each other but also served as a way by which the weaknesses or biases in one data generation method were compensated by another (Miles and Huberman, 1994).

Further, because self-reporting is subject to the limitations of the one providing the account of his/her thoughts and actions (Chamot, 2004), I used more than one self-report approach in the form of interviews, student tasks, and student journals as a means to establish creditability.

Finally, in addition to my own initiatives to ensure creditability, my supervisors served as external auditors. Both reviewed my coding methods and organization of data and provided me with guidance in the processes of analyzing and recording the data.

3.5 Research Design

The study was designed to answer the research questions through three sources of data: observation, interviews, and student journal entries. Observation was conducted during a series of reading workshops created for the study participants, which helped me to explore the reading processes of ESL students in both paper text and digital text. The workshops were held in a seminar classroom, which contained seats for the eight participants placed around a large circular table. Information was shared with the students via handouts, PowerPoint presentations, and notes written on a whiteboard located in the front of the classroom. The workshops were held after the students'

morning classes. I was the workshop facilitator, allowing me to observe the students during the workshops.

3.6 The Research Site

The site under study was at a private language school within an urban area of the State of Virginia located in the United States. At the time of the study the school had on roll 230 full-time morning students and 145 full-time evening students, all of whom attended classes five days a week. I selected this particular school because it was my workplace and because it provided a sufficient population of ESL students for a sampling.

The school's student population is ethnically, culturally, and linguistically diverse. The students are all adult learners of English as a second language between the ages of 18 and 59. All are enrolled in English language classes at a beginner, intermediate, or upper-intermediate level. The majority of students are either from Middle Eastern countries or from countries in Central or South America. There are a minority of students from Russia, the Ukraine, Spain, Ethiopia, Japan, China, and Korea. The instructors and staff at the school are from various cultural backgrounds.

3.7 Details of the Study's Participants

The students in the study agreed to participate over a period of two months. The participants included eight English as a second language learners. There were seven females and one male. The participants' ages ranged from 18 to 38. All eight participants had Internet access on and off campus so each could seek out online reading resources and material. Pseudonyms identify each participant in the study.

The participants were selected by means of a convenience sampling process (Bryman, 2008), providing a better alternative to a random sampling which lends itself to large-scale research initiatives (Auerbach and Silverstein, 2003). Ethical permission to conduct the study was received from the University of Nottingham (see Appendix A) and from the Director of Education of the school that was the site of the research. The students involved in the study signed a letter of consent (see Appendix B). All participants were assured that they would remain anonymous and that their participation or possible withdrawal from the study would have no adverse effect on their grades or standing at the school (see Appendix C).

From what I observed when facilitating the workshops, the participants were relatively similar in their degrees of familiarity of the Internet and reading online. Hilda had the best understanding of web text and web page design because she is a graphics artist by profession. Faris and Maria focused their online activities on research activities than on socializing or surfing the Net for pleasure. The most casual online readers were Evita and Sabina who used the Internet on a daily basis, mainly to read e-mail or to practice a grammar structure. Lee, Rosa, and Jasmine had the highest comfort level with online text because they spent much of their free time engaged in on-screen reading, studying, and social networking activities.

Table 2
Demographic Information of Student Participants

Name	Age	Gender	Country of Origin	Level of English proficiency	Highest Level of Education
Hilda	38	Female	Austria	High Intermediate	BA
Maria	29	Female	Guatemala	High Intermediate	BS
Rosa	25	Female	Colombia	High Intermediate	BS
Evita	19	Female	Colombia	Intermediate	High School
Faris	30	Male	Saudi Arabia	High Intermediate	MA
Lee	22	Female	Korea	Intermediate	BA
Sabina	27	Female	Kosovo	Intermediate	BA
Jasmine	26	Female	Egypt	Intermediate	High School

As can be seen in Table 2, the participants' demographic background shows a diverse group in terms of age, ethnicity, and education, although unfortunately it is not representative in terms of gender. The participants represented seven different countries and spoke different languages. Most of the participants possessed a solid grasp of English with their language ability level ranging between intermediate and high intermediate.

It should be noted that there was a ninth participant who dropped out due to personal reasons and had to be excluded from the analysis.

Because the data were generated primarily through interviews, workshop discussions, and student journals, the participants had the opportunity to express their opinions, perceptions, and reflections openly and candidly with the researcher. All participants were physically and mentally able to participate and were at a language proficiency level to participate effectively in the study, which allowed for their literacy skills and development to be assessed.

All written documentation generated from the participants is genuine and unaltered. All study material provided by the researcher or other non-participants, including the translation of all interviews, is in its original form.

3.8 Data Generation Methods

Using a qualitative methodology, I first generated broad informative data from the interviews and then moved toward more in-depth, "thicker" data descriptions (Geertz, 1973) drawn from observation notes and learning journals. This method better secured wider multiple-view data, providing a clearer picture of the way students construct their literacy skills while transitioning from paper reading to online reading.

The activities for data generation, such as interviews, reading workshops, and participant diaries, were undertaken outside of normal class time. While this did take up some of the students' personal time, it also supported the students' classroom studies by raising self-awareness of their reading skills for different media and encouraged them to develop these skills beyond the course of the investigation.

The data generation focused on three sets of outcomes: 1) student perceptions of reading skills needed for web text compared to paper text; 2) the way students' viewed their experiences in reading, searching, and collecting information on the Internet; and 3) cognitive and metacognitive strategies that the students reported using when reading online. These outcomes were generated by the research questions. As a result this data helped to not only uncover what existing online reading practices and strategies the participants were engaging in but also what habits and processes they may not have been aware of using as well.

Between data generation and analysis, I continued to shift through the data to search for emerging events, concepts, and themes while simultaneously reading current literature to help identify more obscure threads that I might have missed. Merriam (1998, p.162) points out that "the right way to analyze data in a qualitative study is to do it *simultaneously* with data collection." Stake (1995, p.242) notes that the researcher "is committed to pondering the impressions, deliberating recollections and records…data [is] sometimes pre-coded but continuously interpreted." Through the process, emergent common themes were analyzed and then placed into a repetitive process of generating and comparing until a saturation of data could confirm the trends seen in previously generated data sources.

Table 3, presented below, provides an overview of the data generation instruments used in this study with explanations to follow according to when the data were generated.

Table 3
Overview of the data generation instruments

Source of Data	Research Stage	Type of data analyzed
Individual interviews (semi-scheduled)	Pre/During/Post Interviews	Audio recordings and transcripts
Student Journals	During/Post	Journal entries
Workshop activities		
a) Participant observation	a) During/Post	a) Observation notes
b) Group Discussion	b) During/Post	b) Observation notes, audio recordings, transcripts
c) Student Projects	c) During	c) Observation notes, reflective journal entries
d) Self-reports	d) During	d) Observation notes, audio recordings, transcripts
e) Final Student Presentation	e) Post	e) Observation notes, audio recordings, transcripts

3.9 The Students' Projects

All who participated in the workshops were asked to do two research projects and one final presentation. The first two projects were "scavenger hunts" in which the participants had to find answers to questions from online sources. Scavenger Hunt 1 was undertaken after the first workshop and Scavenger Hunt 2 was initiated mid-way through the study during a workshop held in Week 4. The final presentation, which was

given by the participants at conclusion of the workshop in Week 8, required the participants to create a workshop presentation on a topic from one of the headline events listed in the lyrics of “We Didn't Start the Fire” by Billy Joel.

The workshop projects and final presentations were designed to offer an opportunity for the participants to research and evaluate information in paper-text and web-text mode and provided the means to compare the critical skills the participants used in both print and digital reading formats. Using a task-oriented research approach for both the projects and final presentations, participants were required to research information in the “real” world environment outside of the classroom, which made this study unique because previous studies have explored how students engaged the Internet within the realm of the classroom. On the assigned due date, the participants met as a group and shared their answers, as well as their resources and search and evaluation experiences through self-reports. Prompts (see Appendix J) were used in conjunction with the scavenger hunt questions to initiate workshop discussion in the way in which the participant’s searched, accessed and evaluated the information to answer the scavenger hunt questions.

The scavenger hunts required answers to trivia questions using online search engines (see Appendix J). Scavenger Hunt #1, for example, had the participants searching for an answer to a question such as, What does the word “apiary” mean? These tasks focused on the strategies used to search, skim, and evaluate in order to gain the requested information, helping the participants build their search and evaluation skills. Such a growing base of literacy knowledge provided the participants with a foundation for the final workshop presentation.

As preparation for their final presentation, the participants could seek out information through paper-based text, electronic text, or both. The final presentations were presented orally in front of the other participants, and each participant supported his/her final presentation visually through PowerPoint or poster board presented images. The participants' final presentations concluded the workshops.

3.10 Observation of workshops

Participant observation is recognized as a standard ethnographic technique often used for generating data (Adler and Adler, 1994; Glesne and Peshkin, 1992; Spindler and Hammond, 2006). Observation is not only useful in providing a description of the phenomenon under study but can also serve as a way to understand the experiences of the participants in relevant contexts (Auerbach and Silverstein, 2003). In this study**,** observation of the participants was carried out through a series of structured reading workshops, which were conducted for one hour every day during the second week of the study; one hour for two days the third week; one-and-a-half hours for three days the fifth week; and then one hour a week for the remaining three weeks, equaling 11.5 total hours of observation.

Through my observations, I intended to get a general impression of the participants' attitudes and perception of their reading experiences, especially with regard to their online reading habits. As a result, the workshops focused on specific reading themes that were seen as important to the participants and to me. The main goal of the workshops were to help develop ESL students' digital literacy skills and to raise the learners' strategy awareness.

Although three of the participants were students in my American Culture Class, the reading workshops were independent of the course in which I acted as instructor. While I did maintain an insider's perspective on workshop activities, I was not an insider in the sense of being a classroom teacher. My role in the reading workshops was limited to facilitator where I mainly presented and explained reading concepts and strategies as well as moderated group discussions (see Appendix I for a summary of the different strategies introduced at the reading workshops).

Participation in the workshop was entirely voluntary. The participants were not asked to evaluate the school, their teachers, or the school's curriculum, and no grade or credits were assigned to the workshop or its activities.

The reading workshops were especially valuable because they provided an additional research tool in the form of self-reports on tasks, both concurrently and retrospectively. During each workshop, the participants were asked to complete a reading task from a printed page, a web page, or from both reading environments. These self-report tasks required the participants to report their thoughts while engaged in a reading task. (These tasks thus resemble the 'think aloud' teaching strategy described in section 2.4.5, with which students would be familiar.) After completion of the task, group discussions were held, and the participants were asked to reflect upon their online and off-line reading. Often these discussions were generated by a formal guided question, such as "How is reading a web page similar to reading a page in a book?" or "How can skimming and scanning help you save time when doing research on the web?"

Thus, each participant who participated in the tasks can be viewed as an individual case, and his/her statements, attitudes, and responses generated by their

verbal reporting provided insight into his/her reading comprehension processes and strategy usage.

The individual self-reports and the workshop group discussions were audio recorded with the participants' permission. While it was not possible to conduct the workshop and take notes at the same time, post-observation notes, highlighting the participants' reading strategy knowledge and application development, were written immediately following the workshops. The content of the observation notes included but was not limited to the following: description of physical setting, confidential descriptions of the participants, reflections of workshop discussions, questions for future group discussions, and outcomes of workshop tasks (see Appendix D). The observational data that these notes provided, discussed in the following chapter, complemented the data drawn from the other data sources such as the interviews and journals.

3.11 The Student Interviews

The interview data for this study were generated over a span of eight weeks from mid-September 2011 through early November 2011. The interviews were conducted both formally and informally. The informal interviews entailed spontaneous questions, which I asked the students during workshop group discussions. The formal interviews were scheduled one-on-one interviews divided into three meetings—initial, mid-term, and final.

The student interviews were used as a method of inquiry to better understand and gain insight into the reading behaviors of the participants and served as a principal means of data generation and contributed to the triangulation of data from other

sources. Seidman (2006, p.10) observes that “interviewing provides access to the context of people's behavior and thereby provides a way for researchers to understand the meaning of that behavior.”

All of the formal interviews were conducted in English in a quiet conference room located in the school. I selected this location for the interviews because it was convenient for the participants and provided a relaxed environment. The length of the interviews varied from 30 to 45 minutes. This variation was due to the participant's level of speaking skills as well as to individual personality.

The interview design was moderately scheduled (Gilmore and Campbell, 2005; Trochim, 2001) with questions that prompted the participants to describe their reading processes and strategies when engaged in both print-on-paper reading and online reading (see Appendix E). Six general open-ended questions were asked during each interview as a means to establish purpose and focus and to allow me to follow up on the interviewee’s responses. The follow-up questions provided an opportunity to maintain the participant's meaning and to avoid imposing my interpretation of what the participant said.

The interviews were done in a series of three meetings based on the design of Schuman (1982). The initial interview established the context of the participants' experience; the mid-term interview permitted the participants to reconstruct the details of their experience within the context in which it occurred; and the final interview allowed the participants to reflect on the meaning their experiences held for them. The spacing of the interviews was arranged a week apart. This allowed the participants to reflect on what had been discussed in the preceding interview and on what they had learned (and perhaps applied to tasks afterwards) during the workshops. Moreover,

allowing intervals between the interviews helped to reduce the possibility of "idiosyncratic interviews," which Seidman (2006) suggests is a danger when interviews are not extended over a period of time.

One of the greatest challenges in interviewing ESL students, as Gass and Mackey (2000) note, is for the interviewer to convey that he/she has understood what the second language speaker has said without seeming to reinforce the participant's response. The way that I attempted to safeguard against this was through "neutral back channeling" (Levis and Grant, 2003, p.17) in which I limited my remarks or interjections of agreement or disagreement, such as "hmm or uh-huh," as suggested by Levis and Grant.

A digital-PC compatible voice-activated recorder was used to capture field data and to prepare transcripts of the interviews and group discussions for textual and thematic analysis. The audio recordings of the interviews were used to create verbatim transcripts of each participant. Participants' names were replaced with pseudonyms during the transcription process. There were nine hours of recording, generating 47,000 words. Validation of the accuracy of the transcripts was achieved by listening to each recorded interview and comparing it to the written transcript. Basic transcription conventions based upon the Jefferson System (1984) were used so that data generation could be efficiently and effectively achieved without making the transcriptions unnecessarily complex (see Appendix F).

All participants granted permission for their interviews to be audio recorded and all were told that once the transcript of their interviews had been made, the MP3 recording of their interviews would be erased and all personal identifying information would be removed from the transcript.

3.12 The Students' Journals

At the beginning of the study, each participant was provided with a spiral notebook to use as a learning journal that would be collected at the final presentations. The participants were instructed to use the journals to record and reflect on their experiences while reading print on paper and web text online; they were also to notate how they searched for and evaluated information in both text environments. Because writing a learning journal was a new experience for all of the participants, I provided them with journal prompts (see Appendix G). The participants understood that they were not limited to answering the prompt questions and were encouraged to expand on their thoughts about their reading habits and practices. While it would have been interesting to ask them to keep online journals, it was decided that their familiarity with paper-based activities would make this option more appropriate.

The participants' journals in my study served as a steadily growing archive in which the participants could record their awareness, development, and use of strategies in printed text and web text, as well as the search and evaluation methods they used to complete workshop tasks. Additionally, the journals allowed the participants to make sense of what they might have learned through the reading workshops and to reflect on what was meaningful to them and what was not (Gee, 2005). Finally, while there was the possibility that when writing in their journals the participants might forget to include all the details about their reading strategies and behaviors, the journals provided an invaluable means to gain insight into the participants' mental processing and served as a means to investigate the participants' strategy awareness.

3.13 Data Analysis

The analysis of the data for this study followed the principles presented in the work of Tesch (1990), establishing ten core principles and practices in qualitative analysis. A strategies framework was used in the coding process to assist with identifying patterns in the data and to help establish categories by which the remaining data could be coded.

The patterns found within the data generated the themes for this study. Auerbach and Silverstein (2003, p.38) define a "theme" as "an implicit topic that organizes a group of repeating ideas." The framework of coding for this study was theoretically grounded in an inductive approach, permitting the identified themes to be strongly linked to the data themselves (Patton, 1990). While the method of analyzing the data was one of constant comparison and contrast, I also looked for irregularities, which constitute an important aspect of educational research (Delamont, 1992).

The qualitative data were coded according to themes, based upon the strategy usage. As a result, the patterns in the participants' reading behaviors became the focus of my analysis. The codes I used for the interview data were subsequently used for the observation notes and journals and are explained in greater detail in the following chapter.

During the initial coding process, descriptive coding (Saldana, 2009) was used in which a word or short phrase summarized the text and transcript. For the second and third coding processes, I utilized a pattern coding (Saldana, 2009) method that helped to highlight emerging themes and to reduce the descriptive codes into manageable themes and constructs (see Appendix L). These themes were simplified into metacognitive strategies based on Sheorey and Mokhtari's (2001) three categories of 1) global strategies (the learners' monitoring activities); 2) problem-solving strategies (actions of

the learners when they are engaged directly with the text); and 3) support strategies (tools the learners use to aid comprehension, such as note-taking, highlighting key words or text segments, or using a dictionary). In addition to the codes identifying reading strategies, one category outside the realm of metacognitive application was added—Digital Literacy Education. This category became a central theme because it analyzed the participants' perceptions of digital literacy and whether it should be taught in conjunction with their English language learning.

Sub-themes (or themes in a theme), such as "attitude," "use," and "difficulty" were also introduced as part of the coding refinement process. The sub-themes helped provide structure to the three main themes and also proved useful in establishing a system of ordered groupings within the data (see Appendix M).

Coding was done manually on paper and with the help of the concept-mapping software, SmartDraw (2012). I did attempt to use qualitative research software such as Nvivo (2012) and Atlas.ti (2009) to assist with the coding process, but with this relatively small data set, I found it more time-consuming than plotting and referencing everything out on paper.

3.14 Overall Summary

Stake (2005, p.454) asserts that "the qualitative researcher is interested in the diversity of perception…" I used multiple methods of data generation, such as interviews, observations, and journals, which I acknowledge had limitations but offered a variety of perspectives as well as offering a window into the unobservable mental processes of the participants. The study was guided by a constructivist paradigm and assumed a subjectivist epistemology, a relativist ontology, and a naturalist methodology (Denzin

and Lincoln, 1998). This approach allowed a more flexible relationship as a researcher because it permitted me to share in the "constructed realities with the stakeholders" (Erlandson, Harris, Skipper, and Allen, 1993, p.68). Throughout the study, I aligned my vision with that of Stake (1995, p.43) who sees the function of research "as not necessarily to map and conquer the world but to sophisticate the beholding of it."

CHAPTER 4: DISCUSSION OF THE FINDINGS

4.1 Introduction

To review, this study investigates ESL adult learner perceptions of reading in both a print and a non-print environment and the metacognitive reading strategies that the learners constructed and applied in order to achieve their reading goals. While the particular focus of the study was on the ESL learner's metacognitive awareness of personal reading strategies, it also explored how reading practices in the ESL classroom need to be more receptive to modern literacies in order for learners to decode new digital text formats and to evaluate online information. The study was not concerned with first language reading (except where it is useful to map the origins of theories and ideas), the teaching and learning of languages other than English, or English taught to non-adult second language learners. A qualitative analysis of the data generated for this study is presented in this chapter. A general background of the study's participants is presented in the first part. Next, the findings from the data are reported and discussed in answer to Research Questions 2, 3, and 4. The chapter concludes with an overall summary of the key points that the findings from the data generated produced.

4.2 Data Generated from Interviews, Journals, and Observation

As previously indicated in the last chapter, three data generation instruments in the form of interviews, journals, and workshop observations were used to provide complementary perspectives into the way the participants perceived and engaged in printed text and web text environments. Table 4, below, presents a brief overview of the data and analysis methodology.

Table 4
Overview of the Data and Analysis Methodology

Approach	Sampling Method	Time	Data Source	Data Analysis
Qualitative	Convenience	September to November 2011	Interviews (audio tapes and transcripts)	Descriptive; Theme-based; Pattern
		October to November 2011	Workshop observations (observation notes, audio tapes, transcripts)	Descriptive; Pattern
		November 2011	Participants' journal (journal entries)	Theme-based; Pattern

Interviews

All eight of the participants participated in the interviews. The data were recorded according to themes adapted to metacognitive strategies based on Sheorey and Mokhtari's (2001) three categories: global strategies, problem-solving strategies, and support strategies. From this strand of data, themes were again developed and refined to generate information on the participant's knowledge of his/her metacognitive awareness. This knowledge was grouped into an additional three specific categories: Declarative Knowledge (knowledge that the learner has about him/herself and about the factors that influence his/her performance); Procedural Knowledge (the knowledge or beliefs and opinions a leaner has about a given task); and Conditional Knowledge (knowledge that the learner draws upon in deciding "when" and "why" to use a particular strategy to overcome a problem). The identified reoccurring themes from the interviews were first investigated separately from the other data generation instruments

and later examined in conjunction with them. This helped to support and solidify the findings.

Student Journals

The participants' journals served as a means to generate data regarding their strategies by having the participants write personal reflections about their online reading experiences and the strategies they attempted to use to meet their reading goals. The journals may also have helped the participants become more metacognitively aware of their reading processes and strategy usage.

The participants' journals were coded and analyzed by examining the participants' attitudes and use of metacognitive strategies, as well as strategy recognition and purpose (see Appendix M). Through this means of analysis, a more nuanced picture emerged from what the participants indicated they did or didn't do when reading in printed text or web text.

Observation notes

For this study, observational notes were written up after each workshop and were used to record the participants' contributions to the workshop discussions as well as their reflections on how they accomplished the workshop projects. The observation notes were meant to validate what the participants said they did when reading by observing what they stated during the self-report tasks. Since my research focus centered on ESL student perceptions of his/her digital reading skills, I paid close attention to the way the learner approached the Internet for information and the strategies he/she reported using engaged in on-line reading. Such use of observation notes, as Watson-Gegeo (1988, p.576) observes, provided "a descriptive and interpretive account of what people do in a setting (such as a classroom, neighborhood, or community), the outcome of their

interactions, and the way they understand what they are doing (the meaning interactions have for them)."

Analysis

In an effort to address my research questions posed in chapter one, the analysis of the data for the following discussion is drawn from workshop observations, the participants' interview responses, and the participants' journal entries. It can be seen that the quotations from the participants' journals, which appear later in this chapter contain numerous spelling and grammatical errors. Corrections were not made to the text because I felt that any alteration of the participants' written dialogue would impose my voice on that of the participants and thus diminish and alter the accuracy of the data.

4.3 Research Questions 2, 3, and 4

Three research questions helped me to explore three key areas in need of further investigation. Research Question #2 centers on identifying the reading preferences and strategies that language learners use when engaged in reading either printed or web-based texts. Reading issues that confront a learner when on the Internet is the focus of Research Question #3. Research Question #4 targets digital literacy and its roles in ESL teaching practices being the last area of focus.

4.4 Research Question #2

The question posed by Research Question # 2 that guided the study is: What metacognitive strategies do ESL students use and report when reading and learning from printed and web-based texts? While other studies have focused on online reading

(e.g. Nielsen, 2013; McNamara and Shapiro, 2005; Kymes, 2005), they have concentrated on hypertext navigation or on the readability of web text in terms of modality, font color and sizes, and layout; few studies have centered on the way ESL students actually read online and the strategies that they use to read web-based text. This research question is designed to contribute to the knowledge of how second language learners comprehend web text and how this differs in the way they read printed text, especially in the use of metacognitive strategies.

4.4.1 Printed Text Reading Attitudes

4.4.1.1 Text Preference and Purpose

The data from the participants' interviews and journals indicated that the participants' preferences toward printed text were derived from their reading purposes and an overall desire to read print on paper. Their preferences varied. Rosa affirmed, *"I really prefer books."* During their interviews, Evita, Hilda, Maria, and Sabina indicated that they too preferred reading printed text to web text. Faris' preference had a slightly different variant in that he enjoyed engaging in light reading online; however he noted, *"for deep reading, which is going to take longer, I'd rather to read a book."* Interestingly, Jasmine preferred reading English in web text but Arabic in printed text. She explained in a journal entry:

> *I prefer to read a web page* [in English] *more than a page of print. For many reasons: I will use Google Translate if I don't understand any words. It's easy for me to go another page if I don't find what I want; I feel when I read from a web is faster for me than any book; When I read online, I could save any idea or information in a second.* (Jasmine)

Lee indicated that she was split on her reading preferences stating that her choice between reading printed text or web text was "*50/50*." It is important to note here that Lee's equal preference towards reading environments may be tied to her desired to achieve her learning goals. From what I observed in the workshops and in my interviews with Lee, she primarily used the Internet for social networking and what she considered "fun" activities although she did use Internet applications for study purposes. However, because Lee took her learning seriously, she readily drew upon information presented in printed text or web text to gain a better understanding of what she needed to know.

One of the key purposes that participants assigned to print reading was for pleasure. Maria explained:

> *When I was working, I use to spend like 8 hours in front of the computer. So then, having like a book in front of the computer, so you don't have the feeling that you are doing something different because you still in front to the computer. So just grab the book and going to the couch or going to your bed and just read that printed text, so that makes a difference; you are doing something different. Because every time I think about being in front of the computer, it's like you at work. So, it's like that distinguished that different feeling.* (Maria)

Sabina simply stated, *"…when I read just for pleasure, I prefer printed text."* Evita's preference for pleasure reading was expressed even simpler: *"I prefer in book."* Hilda noted, *"Pleasure reading has to be printed."* Rosa concluded that when reading for pleasure she feels *"more comfortable reading something that is printed."*

In contrast, the main purpose that the participants assigned to online reading was for research. Hilda acknowledged, *"I have to say I guess I would rather do research on the Internet in these days because it saves me time."* Jasmine was also influenced by the ease in which one could seek information online: *"I read more from the Internet than book…it's easy for me. If I need anything, I just write* [type] *it, and I can find it in one second."* Lee stated:

> *I think nowadays web page is better than on page because it is very easy to search the information than go to library or read newspaper and books. Because when I go to library, it takes long time to search what I want. But, Internet is very easy… I write* [type] *one word; it is lots of information in there. Of course Internet is more easy, easier than page.* (Lee)

Sabina expressed an awareness of the abundance of information that the Internet provides and the speed in which it could be obtained:

> *I read more online because I need to find more information about things that I'm doing now…in bookstore, for the answer you have to read some books. Not just one or two books, but more than two books because you want to find exactly what you need to find, and it takes more time. And Internet is faster*. (Sabina)

Similarly, Evita observed, *"I think it is better to find something* [online] *because it's quickly. So, it's easy to find something or if you have search information I think it's easy. Is more practical."* Faris concluded that *"to reach the information easier, it is the best to go Internet…"*

Rosa and Maria, however, did not designate their online reading as a central means of research. Rosa stated, *"If I am going to do a serious project, I will definitely go to the library…because I need accurate information…life and teachers have taught me that."* For Maria, trusting the information that books provide and a familiarity of researching in print influenced her use of print reading as a research tool:

> *I prefer going to the library because I feel like can have more control about what I'm searching, and know the books. I feel more comfortable doing the library. You can learn in advance which books you can consult, you can check in the library. And when you do that online, there's always these web pages that you start wondering about the information; if you can rely on it or not. And so, you waste too much time. So I think, with the library, you don't have that too much.* (Maria)

However, not all types of print were desirable. Jasmine, Rosa, Evita, and Lee did not like reading newsprint. Rosa complained that newsprint was *"too much…It looks like too much letters in the little space."* Evita also commented about the size of newsprint: *"I really don't like because the print is so small and always like…so reduced. So, I really don't like to read the newspaper…"* Lee explained her aversion to newsprint this way:

> *I don't like newspaper because they use very small letter. It is short* [columns]. *So, I don't like this way. It is very short, and I have to read up and down. I don't like…it's long, and it disturb my concentration. So, my eyes, it's left to right, and I don't like.* (Lee)

Jasmine, similar to the others, was overwhelmed by the length of newspaper articles in print. Pointing to a newspaper during one of the reading workshop sessions, Jasmine observed:

> *…a lot of words you can see at the same time. It makes your eyes to feel like it's huge article you read. And also, like when you read this one and you take the first look, you feel like, 'How long will it take me to finish all of this?'* (Jasmine)

Cost and language were other factors contributing to some of the participants favoring reading the news online. Two participants, Lee and Rosa, indicated that the high price of a newspaper or magazine in printed form influenced their reading. Lee commented that one of the incentives for her to read online was *"because newspaper is pay. It's free to read the website."* While Evita, unlike Lee and Rosa, chose to read the news online because she speaks Spanish and wants to *"read the news in Spanish."*

The participants' desire to read on paper seemed grounded in comfort and portability. During one of the workshop group discussions, Hilda shared with everyone her view that a printed book provides her with both a sense of comfort and relaxation. Hilda explained to me and the other participants that she enjoyed lying on her bed reading her book in one hand and eating an apple from another. *"Something you cannot do with a laptop,"* she added. Hilda also noted in one of her journal entries:

> *I prefer printed paper. It might be the people my age are more used to that. It is easier for me/my eyes to read text on printed paper (it makes me tired to read much text on computer screen—that's why I also still read books written on paper rather than using a Kindle or such like…). I need to hold the paper in my hands, take it wherever I want. (I would not carry a computer or Kindle with me*

> *and read on a park bench, in the Metro, in a spa….probably it is something else if I am on a long distance flight or so; however, I would rather work on it or perhaps read short infos, look something up…) Last, but definitely not least—I need to have at least the feeling that I can make notes, mark something within the text and sometimes store it to look it up sometime—summarizing—I don't see the computer as a tool which replaces books, magazines, newspaper…* (Hilda)

Sabina also felt this sense of comfort with print on paper: *"…when I read in the printed text, it's more comfortable."* Rosa also expressed the same: *"I feel more comfortable reading something that is printed."* Maria, who also favored printed text over web text, offered a more in-depth reflection:

> *I like the fact you can touch the book. I like the feeling that you have when you are reading, and this book like 600 pages and you feel like you need to finish that. I don't know. I like that. I like the smell of books. And I feel more comfortable with that.* (Maria)

The participants' responses also indicated that, despite the heavy marketing of E-books, the mobility of the printed page still had an advantage over electronic text. Evita explained, *"…I can have a book in a bus or in my car when I go to my university or something like that."* Sabina noted the same ease of mobility: *"I prefer more printed book because…you can read everywhere you are—in bus, in train…"*

Two out of six of the participants in this study reported that they preferred to read printed text, especially when they needed to engage in-depth reading. However,

they also said that their reading purpose affected their desire to read printed text over web text. For example, when engaged in leisure reading or reading news articles, some participants preferred reading online. Factors, too, such as language preference, reading comfort, and portability, also influenced whether a participant favored printed text or not. In general, the participants preferred printed text more for leisure reading than for information gathering. Interestingly, while the participants used the Internet for information gathering, they trusted the information they read in printed text more, an important point that will be further discussed in the following section.

4.4.2 Printed Text Reading

4.4.2.1 Reading Strategy

Data obtained through the interviews revealed that the high intermediate participants used skimming (reading fast for highlights presented in the text) and scanning (seeking out key words in the text) techniques when reading printed text. Hilda said, *"Skimming through the book. That's what I'll do often. To me that's a kind of surfing…I mean for my generation, this is surfing the book."* Similarly, Maria observed, *"Scanning and skimming are a really good techniques that I have been using since I was in school in order to optimize my time and choose what is important and what is not."* Sabina too noted that when she sought information from books she usually skimmed the text.

In contrast, the participants who had been drawn from intermediate level classes observed that they paid greater attention to details within the printed page rather than the ideas expressed in it. Lee stated, *"Read book is detail. Yeah, only detail."* Jasmine explained that her reason for focusing on details was because she was *"afraid to miss something important."* Evita stated that she too feared that she would miss out on

something important if she did not read for details: *"I always think that maybe I am going to lose something important. So, I think I read all of them. Or sometimes, I have more information that I need, but maybe I need more, so I read more. I don't know, but I just read…always I read everything."* Sabina had a more flexible approach to how she reads printed text even though she was an intermediate English language learner. She explained: *"I like to…read everything. I don't want to lose nothing from what I'm reading."*

All of the participants felt that it was easier to read printed text than web text, and all said they often printed web text for easier reading. Hilda revealed: *"Information I want to really read and it's more than one page, then I can't read it in the Internet, then I have to print it because it's hurting my eyes, and I can't take notes."* Rosa also engaged in a similar practice to Hilda: *"I go online* [and] *search the information, and I select what I want to read, copy and then I print it. I like it more printed."* Faris had a more refined rule of thumb as to when he printed web information onto paper: *"If it's long article, and I should read all of it, and I know it is all information that's very important for me, definitely I am going to print it out."* Evita explained that she committed web text to paper by either printing it out by hand or via a printer. She noted: *"When I have to do a presentation usually I print that information that I need. I try to write other pages because I think I can memorize if I write. But when it's a lot of things, so I print it."*

Most of the participants were aware of the reliability factor of the printed page, in which the trustworthiness of information presented in either a book or journal had undergone some form of verification process by the publishing house, something that information published on websites often lacks. Hilda observed: *"To me the book is the*

best source of all—it is trustful…" Maria also noted: *"The books that I know that I can check, so I know that I can rely on that information."* Rosa expanded on this faith in the truth attributed to the published printed page by stating:

> *I prefer the books over the information I can find on the web pages. I am not saying that the information in the books is more important. Maybe some web pages can have really important information; really trustable information. But, you know, it's more difficult to trust all the information the web pages have.* (Rosa)

All but one of the participants preferred to read print when they felt a need for in-depth or careful reading.

4.4.3 Web Text Reading Behaviors

4.4.3.1 Reading Strategy

When reading web text, the participants used skimming and scanning, similar to the methods used when reading printed text. Maria observed: *"For reading web text, I believe that using scanning and skimming is a good tool. Since Internet is overwhelming and there is a lot of data and information…"* Lee noted: *"First…when I enter the page, first I skimming the topic because I want to know the topic. And after that, what I want to know, I scanning the page…scanning allows me to catch information what I want."* Jasmine said that she first skimmed web text *"to understand it."* Sabina preferred to first scan web text: *"In the beginner, when I find something, maybe I do the scan of the thing to know if it is what I am looking for."* Hilda's description of the way she engaged with web text was the most descriptive:

> *These days there is so much around. I can't handle reading every article in every detail. If I look something up I do it mostly on purpose—to inform myself about something in particular. Then, it is easy to look for keywords because they are already stored in my imagination and when I overlook a text within an article my eyes will stop automatically. I can then decide very quick whether it is worth to read the whole article/text or I stay with skimming. Furthermore—use skim to get an overall view. I skim text, newspapers and magazines, to see if something I already heard—something in any form familiar from a text, article, or discussion I already liked and want to know more about, or something I just work on, talked about, or is of general interest currently. Sometimes it is enough just to skim text in that case to update myself about day life events—key words are the important thing because the total is mostly not written in a new way after you read similar articles hundreds of times…* (Hilda)

The use by Hilda and other participants of skimming and scanning strategies to read information on web text is not surprising because readers will often skim web text so they can quickly map out the content of a web page in order to control the amount of information that needs to be processed (Nielsen and Loranger, 2006; Rowlands et al., 2008).

The participants were split in the way they read web text in terms of focusing on details and ideas. Faris acknowledged that when reading web text, he was *"going to read for details."* Jasmine, too, paid more attention to details when reading web text: *"Maybe because everything I read it from the book. I read because I study this one. So, I have to know every details…"* In contrast to the other participants' responses, Rosa

and Sabina focused more on ideas than detail when reading web text. Rosa reflected: *"You know, your question makes me think because I am not really aware of that when I do it, you know? So, I have like to go back and think if I have done it or no. I think in most the cases—I think about general ideas."* Sabina noted that in *"Web text maybe I want to know more about the main idea."*

4.5 Access, Search, and Evaluation Strategies

4.5.1 Search Engine Preferences

The data drawn from the outcomes of workshop task activities reported by the participants in their journals, and from workshop observations and group discussions provided an overall view of the way the participants access, search, and evaluate information when reading online. For all of the workshop tasks, the participants confined their searches to individual preferences based primarily on what they perceived to be safe and familiar. The two primary websites that the participants used to find and access information were "Google" and "Wikipedia." Jasmine noted in her journal:

> *… for the last question 'Who was the first African American to win the Nobel Prize of Literature'—I check the question Google and the name was Toni Morrison. In order to confirm, I check in Wikipedia 'List of African American firsts.' In the list, Toni Morrison is the first person to win the prize in 1993.* (Jasmine)

Maria wrote a similar entry in her journal: *"Today, we talked during class about the Vietnam War. So, I decided to check online a little bit more. As always the first place*

that came in Google was Wikipedia." Rosa also noted in her journal about her use of Google—*"I Goggled 'Television in North Korea'"*—and Wikipedia—*"Wikipedia—I trust it—It has always given me good information."* Faris—*"...I am using Google as a search engine,"* Evita—*"I, Goggle,"* and Sabina—*"If I am looking for one subject or something, I just go to the Google and everything what I write is about that subject."* All shared that they used Google for their online searches. Hilda also affirmed in her journal entry:

> *I just Googled 'U.S. President Got Stuck in his Bathtub', and there were a list of links. I have to say, I didn't clicking on every link because in this case I saw the name. It appeared in every link, so I was pretty sure that the 27th president, William Howard Taft was the one.* (Hilda)

Lee was the only participant that enlisted the use of an additional search engine: NAVER. NAVER is the dominant search engine in South Korea (Herman, 2007). Lee discussed her knowledge of NAVER in her journal: *"NAVER is the most famous website in Korea. We can search everything on this website. I think it will help me in my future research because 'NAVER' definitely provides general searches from searches to images, dictionaries, personal advisors, and so on."* This would suggest that Lee, although she reported using "Google," preferred the search engine that was familiar and popular amongst her culture and generation.

The sources used by the participants to create their final workshop presentations were predominantly obtained through the Internet although Hilda wrote in her journal that she used a variety of resources: *"My research sources in the matter of a presentation about Steve Jobs were the Internet, magazine, TV and a book."*

4.5.2 Purpose and Evaluation

The findings from the workshop group discussions indicated that the participants had a purpose in mind when they used the Internet. All eight said that they always had a reason for reading something online as opposed to reading a book, which they said they often read simply for pleasure or out of curiosity.

In addition, group discussions and journal entries revealed that the participants also focused their attention on select parts of the web page and ignored other parts that were considered unimportant. Lee observed: *"First I go…when I enter the page, first I skimming the topic what I want and click the topic. And after, then, what I want to get information."*

Some participants considered the design of the web page as a factor regarding what they paid attention to when reading online. Hilda noted in her journal: *"Design—also/or especially of a Website is not just decoration: it is part of the communication!!"* However, the web page's design in terms of its presentation of color, font size, movement, flashing, advertisement, and multimedia devices served as a source of irritation and resulted in criticism for some of the participants. Maria noted: *"There is some web pages that they always pop up like advertisements. There's some really cheap or cheesy advertisement. So, if that comes to the web page, I don't read it because I'm like, What kind of junk come with it?"* Hilda commented in her journal:

> *I understand that ad money are big part of the net, but hope there will be another form of it in the future than this 'loud' overvalued, disturbing and distracting from the essential pop-ups and obtrusive hints to 'what I don't want to know' in every corner of the window.* (Hilda)

Some students, like Lee and Evita, found the colorfulness of the web pages attractive. Evita observed that the font color *"is so important because if you interest the first view maybe you can be interested to read all the article."* Lee enjoyed the colorful images that the Net offered: *"Picture is visible and very colorful. I like color because I am interested in picture. So, I understand more than paper because of picture. The newspaper is not colorful. It is white and black. So, I don't like it. Boring."*

4.5.3 Multitasking

From the participants' journal entries and from what I observed in the workshop sessions, the participants engaged in a significant amount of multitasking activities. The way in which Web 2.0 apps are applied is often through mix and match application in which people engage in several activities on their computers at one time, requiring a static shift of attention between them (Jones and Hafner, 2012). This is known as multitasking, and it has become an embedded practice of Net culture, particularly amongst young adults (Gee and Hayes, 2011).

Gee and Hayes (2011) suggest that multitasking is not a new practice initiated by the digital age but rather a throwback to the ancient times of our ancestors who, during cave dwelling times, had to multitask in order to survive. Of course, the practice of multitasking today is not about hunting wooly mammoths, except perhaps in a search engine, but it still has a profound effect on a learner's digital literacy.

The practice of multitasking consists of two different processes—task switching and dual tasking (Jones and Hafner, 2012). An example of task switching is when someone writes an e-mail and then switches to instant message on Facebook. It is the action of switching from one activity in one browser window to another. Dual tasking

is being involved in two activities simultaneously—for example, listening to music while composing an e-mail. The participants in this study reported engaging in both task switching and dual tasking.

Sabina acknowledged, *"I always have my Facebook open. But, I open a lot of other windows for the research, not just the e-mail."* Lee said she multitasks online with five windows open in which she plays online games, communicates through Facebook, and searches the Internet for information. However, Hilda admitted that she could only multitask with three windows open. Anything beyond that she *"gets confused."* Although Maria noted that when she is online she is focused on doing research and does not check e-mail or Facebook at the same time because she loses her *"concentration,"* she stated that she does open other windows connected to the topic she is researching on: *"I'm doing the research of one topic, but this topic has subtopics. So, that could be multitask because I'm researching about different* [*things*]*."*

The loss of focus that both Hilda and Maria said that they felt when they engaged in either task switching or dual tasking may be a side effect of multitasking. The practice of multitasking has come to be seen by critics as a double-edged sword offering both favorable and unfavorable consequences. On the one hand, it is a way to strengthen visual-spatial intelligence (Carr, 2011), and it serves as a tool in which a person can effectively engage in the fast-paced environment of the Web. On the other hand, multitasking can be seen as encouraging an online habit of doing two or three things at once, which some researchers argue results in people falling into a state of continuous partial attention (CPA) resulting in a decline in critical thinking skills (Stone, 2006; Greenfield, 2009; Arum and Roksa, 2010).

While more studies need to be done before drawing any final conclusions on the impact that digital multitasking has on students and society as a whole, it can be deduced that a student's engagement in multitasking practices does not equate to digital competency. My personal observations of the participants during the workshops has led me to support Bauerlien's (2008, p.86) view that while a learner may be "able to juggle a conversation on Instant Messenger, a Web-surfing session, and an iTunes playlist while reading *Twelfth Night* for homework," this does not indicate that they are in fact digitally literate.

4.5.4 Summary

The self-report activities indicate that the participants are active strategy users, using different strategies when reading on the web compared to reading a printed page. This conclusion is also supported in the finding showing that the participants assigned different reading roles to printed text and web text; different levels of engagement when reading print on paper and text on screen; varied strategy use to allow greater comprehension of web text; and the implementation of self-evaluation strategies to measure their success within specific textual environments. Moreover, the study's findings indicate that the participants drew upon more strategies to engage with web text than printed text. Thus, it seems that the learner must utilize additional strategies necessitated by the challenges posed in reading online text that are not essential for reading printed text.

Additionally, the previous sections reported the participants' reading attitudes and behaviors regarding both printed text and web text. Overall, the majority of the participants preferred to read ink print when they felt a need for in-depth or careful

reading. The participants' preference toward either printed text or web text was affected by their reading purpose. For pleasure reading, all of the participants except one preferred to read the text in print. However, when engaging in research the participants turned toward searching online as opposed to searching in a library or a book. There seemed to be two reasons for this—ease of access and time saving considerations.

Effects created by text displayed onscreen also affected the participants' attitudes toward reading online both positively and negatively. For example, text color and images attracted the participants and enticed them to read information posted on a web page. Headings in bold or colored font appeared to facilitate readability and to engage the reader. However, the "busyness" of web text displays, in terms of pop-up ads and flashing text, disturbed and annoyed the participants.

In addition, when reading either printed text or web text, all of the participants engaged in skimming and scanning techniques often, glancing over the main content of the text and then pinpointing select areas of the text that were of interest to them. When reading printed text, it was observed that the participants scanned the text first, noting its characteristics such as length and organization. This reading behavior might be attributed to the fact that printed text is less inclined to overwhelm a learner with information. The information within printed text was considered to be more trustworthy by nearly all the participants because of the fact-checking guidelines that paper-based publishers follow. Whether the participants read printed text more for ideas than details seemed to depend on their language level—the upper intermediate level participants tended to focus on the ideas when reading printed text, and the intermediate level participants showed a preference reading for details, taking a line by line reading approach because they were afraid that they might miss an important detail. This

tendency did not hold true for the participants when they read web text. The determination by the participants as to who read for ideas or details in web text did not seem influenced by their language level but by their reading style.

Finally, it was also observed that multitasking was a common on-screen behavior that all participants engaged in. However, the participants' ability to effectively dual task or task switch should not be seen as a sign that they are digitally literate.

4.6 Research Question #3

The third research question that guided the study is: What issues do ESL learners identify in relation to their use of the Internet? This question seeks to contribute to the knowledge of the types of difficulties that language learners identify when they are engaged in online reading. A number of studies have focused on the way ESL learners comprehend web-based text (e.g., Leu et al., 2007; Corio, Knobel, Lankshear, and Leu, 2008; Coiro and Dobler, 2007), but literacy researchers have done very little investigation into the difficulties that ESL learners report experiencing when reading online.

4.6.1 Challenges Posed by Online Reading

4.6.1.1 Loss of Concentration

As mentioned in the previous section, web-related tasks could cause the participants to lose their concentration. Thus, staying focused when reading online was one of the central challenges that the participants noted. Hilda observed:

> *I really have to say this is for me the most difficult part of the Internet—to be focused…because I get too much lost in the Internet too often. You know what I mean? This kind of focus I had during my school isn't here anymore. That's why I think a lot children have lots of problems with attention deficit disorder.* (Hilda)

Maria also identified with this same lack of focus when online. She explained, *"I don't know if it's my personality, but if I start reading on the Internet, I lose focus."* In contrast, Maria said that she did not have this problem when engaged with printed text: *"…with printed text my attention is 100%, and I don't waste my time."* Evita confessed that she finds websites to be distracting, *"like there are a lot of things that they are not important in the reading."*

4.6.1.2 Web Text Induced Problems

Other key problems for the participants when reading online were web text issues and eyestrain. Rosa noted:

> *Sometimes you have a lot of work, and you don't have much time to look for information, so you want it quickly. There are a lot of pages. And then you open one, and some them are long with little letters, so you don't want to go through the whole thing.* (Rosa)

Lee noticed that when she read an online article and attempted to scan the information for a specific point, *"it was hard to find the part because the article does not fit the*

whole screen on one page. Therefore, it is even harder from me to scroll over to find the part."

Eyestrain caused by online reading was a major issue for the participants when reading web text. Sabina noted that when she reads on the Internet she feels more tired: *"…my eyes are very tired from the Internet."* Maria noted that her eyes *"get tired to reading more than an hour."* Hilda also acknowledged that web text *"bothers my eyes."* Evita felt it was better for her to read print on paper because of the eye problems she experienced when reading web text. She pointed out: *"I have to use glasses, so in the computer it's difficult because eyes tired."* Eyestrain was the main reason why the participants chose not to read texts on a computer monitor but instead printed out a hard copy, especially if the text was lengthy or if they needed to read it in great detail.

4.6.1.3 Language and the Net

Language comprehension appeared to be easier to cope with when both searching for and reading online information. Jasmine observed that she grasps 70 percent of what she reads in English online and only 50 percent of what she reads in English in printed text. The participants often used their native language when online as a means to comprehend what they did not understand in English when reading web text. Maria observed:

> *I read something in the newspaper that I found interesting, and I would like to learn more, or if I see something on the TV, I start looking that up on the Internet in English. And sometimes I switch to Spanish depending I have realized that I switch when I don't understand too much what it is they're talking about, so I switch to Spanish to understand that. And I go back to*

> *English…because that way, I can check if I understood that. So, I read that. If I have doubts, I go to Spanish to check that and then I go back and continue.* (Maria)

Jasmine used Google as a translation tool: *"I use all the time Google Translate."* Lee noted that searches online in Korean *"translate Korean to English. Some I translate the Korean to English, some of the idioms—Korean to English."* Evita shared that she types the words in English into Google, but the results are given in Spanish.

4.6.1.4 Hyperlinks and Overload

One of the biggest obstacles for the participants when reading online was to avoid being distracted. Hyperlinks were a major source of both distraction and frustration for the participants. Many of the participants reported becoming confused or lost as each click of a link took them further away from their place of interest. The hyperlinks contributed to the participants' sense of feeling overwhelmed by information when reading a web page. Rosa commented:

> *Most of the time they* [hyperlinks] *are really distracting because maybe if you read them, maybe that will happen you like some of that topic and you go there and take time to read it…And I really don't like these kinds of things when I am reading on web pages…it's a lot of work for myself to figure out the whole connections, why is something and what do I have to pay attention for if I read this or that and who is related to whom or what, and which company is involved, or whatever.* (Rosa)

Faris, similar to Rosa, observed that hyperlinks were distracting: *"…I know once you get into the Internet and looking for something there is a lot of hyperlinks…and when you open…the certain article there is something related to this article. So, maybe you find another 10 articles. So, it is hard to manage your time."* For Jasmine, hyperlinks were not a time management issue but were instead a source of confusion. Jasmine stated, *"…I feel this link, it will make lost all the information what I know and what I need to know."* Hilda concluded that hyperlinks were not *"real reading…Real reading to me means having a paper in my hand and not sink into the screen of the computer. Also, not having the temptation to follow links to other links."*

Beyond hyperlinks, an additional troublesome element that the participants said hindered their ability to read online was information overload. Sabina complained that some web pages *"describe more things than it need to be or they use more difficult words* [in English]*…sometimes they have a lot of information, more information than we need to know or that we need to read…that makes me feel confused."* Hilda also felt overwhelmed by the information on the Internet: *"The Internet gives me so many opportunities, or so much opportunities, I have to say that it's sometimes just too much."* Information overload was one of the primary reasons why many of the participants found reading from a book easier than reading online. On the other hand, the participants did choose to check in with online news sources in their native languages and were able to use online translation tools to translate information in English to their mother tongues in order to enhance their comprehension of what they were reading.

4.7 Research Question #4

The fourth and final key research question that guided this study is: What are the implications for ESL pedagogy? As discussed in Chapter 1, the aim of this study was to provide insight into the new literacy reading practices of the second language learner. Data generated from this final question is intended to identify areas of development in current second language reading instruction and to provide insight into ways that these areas can be enriched through the introduction of reading strategies that help the language learner to effectively search for and critically read information from the Internet.

4.7.1 Digital Competency

This section on Research Question #4, relates to the topic of digital competence. It first discusses the participants' views of their digital literacy abilities and then moves on to identify what formal digital literacy instruction the participants had received. Next, the section identifies what digital skills the participants desired to be taught. The section concludes with how the participants felt about the teaching of digital skills in the ESL classroom.

4.7.1.1 Participants' Perceptions of Digital Skills

Evita, Sabina, Lee, and Jasmine perceived digital literacy skills, particularly those that centered on the ability to search and evaluate online information, to be universal in the sense that they are not limited for use in the target language. Sabina noted, *"I think is the same strategy that I can use in my native language too."* Lee stated that online search and evaluation strategies could be used in both English and Korean. Jasmine

also thought that such research strategies could be used in Arabic and English. Evita concluded, *"I think to do a lot of search because when I study I have to do it. So, I think it's very useful when I go back to my country…I can do in my own language."*

4.7.2 Digital Literacy Development

Only two of the participants, Rosa and Evita, had some formal education in digital literacy, which was limited to warnings about Wikipedia. Evita explained, *"In my university, the teachers teach us…for example we can't go to Wikipedia because it is not sure.* [We check] *Author, date title."* Rosa reflects, *"…I knew for a fact that I couldn't give them* [Rosa's teachers] *…I mean to say that I found certain information in Wikipedia. I could never do that. If the teacher see that, he will give it to me back. So, I cannot do that."* The remaining students indicated that their digital reading knowledge was self-taught. Hilda stated, *"Definitely, I didn't get any input about that* [web text reading strategies]*."* When asked during his final interview if any of his current or past teachers had taught him specific ways to read either printed text or web text, Faris responded, *"No, I just learned on my own because nobody teach me that."* Jasmine replied to the same final interview question in a similar fashion with a simple, *"No."*

4.7.3 Desired Skills to be Taught

The majority of the participants indicated that they would like to be taught digital literacy skills, especially in search and evaluation techniques. Jasmine expressed a wish to be taught the most effective way to search the Internet. Faris, too, felt that he would benefit from being taught how to best search the web and to know what strategies to use in determining if a website is credible or not. Sabina indicated that she would like a

teacher to explain to her *"if I have to take that thing that I find, even if I'm not sure if it's true or not, or I should look more to be more sure about that if it's true or not."* Interestingly, Rosa not only wanted to be taught criticality but also wanted to learn this skill using both online resources and books: *"…teachers can give them* [students] *certain books, not only information about web pages. But they* [teachers] *can guide them* [students] *to certain books that really can help."* Maria focused her digital learning desires to the target language. She explained that she wanted to know:

> *…really good websites that we can rely on. Because it's like I know websites…I don't know how to say that, but I know websites that you can rely on in Spanish or something like that in my own country because you are used to that. In Guatemala, I know which places I should go. I know which places I shouldn't go. But if I go to another country, another language, I don't know which places I shouldn't go. So, I don't want to make mistakes going to places that are not good. So, I would like that kind of…like if I come here, there's going to be people to tell me like, 'hey, don't go to D.C. in the southwest and this place because it's not good.' Like the same, like people tell you that kind of stuff, 'You should go to this place in Georgetown because it's really good and you find this…' So, like the same kind of directions for books and websites here because I have that knowledge for my country, but I don't have it here.* (Maria)

Evita desired more instruction in both how to search the Net for information and how to determine when she had enough information on the topic that she was researching:

> *…I don't know where I have to stop because it's good. I have the information, just I keep reading. And I read a lot because I think more. But I spend a lot of*

> *time reading or searching for something. So, normally the people search and it is done. No, I spend a lot of time. So I like to be more specific or go to the point. It's hard because I think I need to know when the reading is enough.* (Evita)

Unlike the other participants, Hilda and Lee felt that their digital literacy skills were sufficient and indicated a lack of desire to learn more. Lee stated, *"…No, no. I can do that myself."*

4.7.4 Views on the Teaching of Digital Skills in Class

The participants expressed mixed views as to whether digital literacy skills should be taught in conjunction with their language learning. Hilda expressed very strong views against digital literacy being included in language studies:

> *A language teacher teaches language right? So, if this person* [a student] *wants to learn how to use the Internet or the World Wide Web, this person has to make another course maybe in addition…The language teacher should teach the language…an English teacher is a focus; you know that's English language. And anything else is something else…Let's put it this way. The first thing should be about language. You know, language. That's all I want to say. The first focus should be the language.* (Hilda)

Jasmine also felt that the teaching of digital literacy skills was not the responsibility of the language teachers. She worried that a student might become bored *"because the teacher is talking with him about how to search. Maybe this person is not interesting with computers."* Sabina worried about burdening the language teacher with an

additional subject to teach. She noted, *"…it's a lot of responsibility for the teacher to do all the things. If she teaches us how to learn a language, she can't teach also how to do research. It's a lot for her."* Lee, too, felt that the language classroom was not an appropriate place for instruction on how to access, search, and read online. She stressed that she could learn these skills on her own: *"Teacher need not."*

The remaining participants voiced an opposite view. Rosa fervently believed it was a language teacher's responsibility to teach digital literacy skills:

> *Definitely, it's the responsibility of the teacher. I think if it's not the teacher, who is going to teach him* [the student]? *…a human being has a culture…has an environment, which should be taken into account when you are teaching. That environment right now, nowadays, includes technology. And it's almost a priority for every human being. As it is a priority and students are using it all the time, the teacher should be on the student's side and guide that process so the use of technology is more, let's say, helps, really helps the student.* (Rosa)

Evita had a similar train of thought. She observed:

> *…if a language teacher teach us about read a book, they have to teach about read a website because sometimes, now, it's very important both. Maybe a lot of time ago that was not necessary, but now, now how to have to use the computer it's very important because the computer is…we need to know.* (Evita)

Further, Maria noted:

> *If the teacher teach some strategies, it's like killing two birds at the same time. Because, for example, for the chunking strategy, you are learning to*

> *comprehension in English because you are taking from the one paragraph the important points, so you are doing two things in one. Do you know what I mean? So, it's not just focused to teach one technique. It's like helping you to comprehension. So, for me, it's like more benefit.* (Maria)

Faris concluded that digital literacy should be taught in language class. He stated, *"It's really important thing to teach…so, if there is any strategy to learn…I am really going to be happy."*

As can be seen, the majority of the participants had little or no formal digital literacy education. While several of the participants indicated that they would like to be taught to read more effectively in both printed text and web text environments and would like instruction on how to search, access, and evaluate information online, the participants were divided in their views as to whether it was the TESOL educator's responsibility to teach them digital literacy skills. Moreover, Hilda, Jasmine and Lee were adamantly against digital literacy skills being taught in conjunction with English. The implication here is that ESL learners may fail to see the importance of being digitally literate and while they may feel competent in their digital abilities, they may possess an unsophisticated mental map of the Internet and have very simple and basic knowledge in searching the net or evaluating the information they access (Large, 2006). In addition, it should be noted that while Hilda, Jasmine, and Lee could successfully locate information on the web through the use of Google or Naver, these search engines did nothing to teach these learners criticality or even to distinguish accurate information from inaccurate.

4.8 The Research Questions Revisited

So far in this chapter, the findings from the data have been reported and discussed. Below is a final review of the study's findings by revisiting Research questions 2, 3 and 4.

Question 2: What metacognitive strategies do ESL students use and report when reading and learning from printed and web-based texts?

Through my own observations and through what the participants indicated in their interviews and journal entries, language learners use different strategies to sort through information they read and to draw conclusions. As McDonell (2003, p.3) observes, it is more difficult for ESL learners to search and retrieve online information in English than it is for native English speakers because the language learner must collect "information through a second language, adding additional variables that may influence their experience." This study shows clear strategies in how the participants were able to manage and digest the large volumes of information they were presented with online. One key strategy that the participants used was the "chunking technique" (Sutherland-Smith, 2002). Maria, for example, researched the adverse effects that Thalidomide had on pregnant mothers during the early 60s. When Maria first began researching the topic, she found an overabundance of historical information on Thalidomide-induced birth defects so she began to "chunk out" or reduce the information to bits of information that she could manage, making use of the cognitive feature of 'chunking' identified by Miller (1956). One feature of the "chunking technique" that may appeal to language learners is it allows them to take subjects that they have some general knowledge of and reduce it to specific components. Evita selected to do a presentation on Halloween. She then proceeded to carve the topic down to a specific "chunk" or

theme—the holiday's custom of children begging for candy. By reducing a topic into smaller parcels of information, Evita was able to increase her knowledge on one aspect of Halloween.

While some educators (Kavaliauskienė, 2002) contend that skimming strategies may cause inexperienced readers to become confused and misinterpret what they are reading, this detrimental result was not reported by the participants in this study. Instead, the beneficial results of skimming strategies were similar to those found in the Pressley and Afflerbach's (1995) study where overall meaning was constructed by the learners through collecting bits and pieces of information from a text.

From the interview data, the participants discussed their use of a multitasking approach to collect and compare the information they located online. This practice, which has been described as "interlaced browsing," (Nielsen, 2000) permits the user to focus on information presented in several different windows at one time. Both workshop and interview data revealed that while the participants were not focused on one single site when engaged in "interlaced browsing" for research purposes, they did have specific windows open, such as online dictionaries or online translators, which they would refer to when needed. The average number of browser windows that the participants had open at any given time was five because they found it harder to focus as the number of opened windows increased. Only three of the participants engaged in multitasking activities that involved interaction and communication, such as Facebook or Internet games, while conducting online research. The other participants found this use of technology too distracting.

The participants felt that accessing information on the Internet was a more flexible process than attempting to obtain information from a printed text environment,

such as a library, which they felt required prior knowledge of the research subject. They observed that it was easier to scan different web pages to see if the information provided was useful or not. In contrast, the participants argued that finding information in a library is a more complex and extensive process. Rosa explained, *"…if I am going to a library, and I searching about certain topic, I will read the content in order to look if the book has the information I am looking for. At first I read the titles, and then kind of I just scan through it, and then if I see that it is worth to read it, I read it."* Rosa's self-evaluation demonstrates how learners obtain information differently in printed text than they do in web text.

While the majority of the participants indicated that they utilized the Google web page search engine more often than a library's digital cataloging system, several of the participants preferred accessing information in a library setting as opposed to an online environment because they felt less distracted and did not have to maintain a high level of discipline to stay focused. This preference hinged on the fact that participants viewed the media presented on web pages and Web 2.0 applications, such as Facebook, as distractions that often disrupted their primary purpose for being online.

Interestingly, this study also revealed that while obtaining information online, the participants' second language proficiency did not influence their use of their L1 when researching a topic. Participants with high upper intermediate level English reading skills, such as Hilda, Maria, and Rosa, as well as those who possessed low to mid-level English abilities, such as Evita, Sabina, and Jasmine, used their L1 to research and read information on the Internet.

Two themes emerged from the findings regarding the participants' ability to draw conclusions from the texts they were reading. First, if the text was related to

language rules or quizzes, or involved short paragraphs or summaries on a subject, the participants preferred online engagement as seen in Sabina's journal entry—*"I need to know more information about conditionals, and I go online. I am going online because the information that I have in the book* [class textbook] *is not enough. I still don't understand and cannot distinguish between different classes of conditionals. I went to website. This website didn't have good explanations, but it had some very good practice test"*—and in Hilda's interview response that on a computer she prefers to *"work on it or perhaps read short info…"* However, in order to fully grasp details and to derive meaning from what they read, the participants preferred to print the online information and then read it on paper. Perhaps the application of traditional reading strategies to web-based text can be problematic and troublesome, especially with regard to reading for information, which appears reflected in Faris' interview comment, *"If I want to read about something, and I want to concentrate on it, and I want to find some information to serve my article or my research for example, I think I'd rather to print out the article to see it is much better."*

Question 3: What issues do ESL learners identify in relation to their use of the Internet?

The one-click-away availability of an online dictionary, especially one that could provide multiple language translations and complete sentences, was an online learning tool that the participants found helpful and beneficial. Interestingly, the findings suggest that while the participants knew how to look up words in a printed dictionary, they were less inclined to do so when engaged in printed text. One possible reason for this tendency may be that it is faster and easier for the language learner to engage in online split second definitions than thumbing through page upon page of listed words

and their meanings in a paper-bound dictionary. The participants considered the speed and ease of locating information online as one of the greatest benefits of online reading. However, this online boon was countered by the problems the participants had in determining what words to key into a search engine to find the information they were seeking.

Effectively using a search engine was one of the biggest challenges for the participants for two reasons—the first being the participants' lack of knowledge in how to successfully engage the search engine to scour the Net for information, and the second being the language barrier presented by the design of search engines for English speakers. The findings of this study show that the participants engaged in what Callister and Burbules (1996) refer to as "channel surfing" in which learners search the web randomly. Although the participants primarily used the Google search engine, the data shows that many of the participants drew upon a hit-or-miss strategy, selecting from the results with no overall sense of coherence.

The inability to effectively locate information online had some participants seeking solace in a print-based environment, allowing them to fall back on the traditional literacy skills they grew up with and knew well. On the other hand, the majority of the participants, despite their familiarity with finding information in a book, still preferred the Internet as a means of searching for information. They attributed this preference to a matter of time, which Hilda summed up best in her journal reflection: *"The Internet gives you quick access and information about certain things. It is like a city—if you know what you want and what you will find out it's a blessing to have it and you go straight into it."*

The participants not only struggled with locating information online but also with the ability to read and navigate through web-based text. When reading text on a screen, they found it difficult to keep track of where they were when scrolling down. They also reported that they lost reading continuity due to the length of sentences when scrolling across. The multimedia features, such as music and video, as well as hyperlinks, were additional elements that contributed to feelings of distraction and being overwhelmed. Finally, the participants reported that they often found the sheer amount of information confronting them online intimidating. A plausible explanation for the problems the participants encountered when reading web text as well as the information anxiety they felt is no doubt directly related to an incomplete set of literacy skills that prevents them from taking control in how web text is presented to them and from managing the information they confront.

A closer examination of the results revealed that the participants identified hypertext as a key contributor toward overloading them with information and causing them confusion. More specifically, the unpredictability of hyperlinks was considered by the participants to be the most cumbersome aspect of reading web-based text. This finding is in accord with research indicating that hypertext creates problems for the language learner because they are used to reading on paper and do not know how to read hypertext effectively (Tseng, 2008). For example, when confronted with a screen full of text peppered with hyperlinks to additional pages of information, the participants could determine if the link would be useful to them only by clicking the link. At the workshops and in their interviews, the participants stated that the more links they clicked, the greater was the potential to get entrapped in a web of information. Evita demonstrated this predicament on her laptop during one of the workshops. With each

click of a hyperlink, Evita was provided with a web page of additional data. In a short time, she had created a long history of web pages, making it more difficult for her to return to her original point of interest. This finding seems aligned with research cautioning that although a hypermedia environment may provide learners with greater freedom in exploring different domains of knowledge, it may also create problems for them because they may not be able to construct knowledge from a large volume of information presented in a nonlinear and unstructured fashion (Eshet-Alkalai, 2004).

In addition, the participants reported that when reading hypertext, they were often taken further and further away from their reading goal. This problem would seem a logical outcome, considering the fact that ESL learners may not have the ability to handle the cognitive load of guessing words and complex grammar structures that a native speaker has and as a result may quickly click away through the hypertext links in the hope of making sense of what they are reading (McDonell, 2003).

Lastly, two hindrances that caused the participants to favor reading hard copy text over screen-based text were the negative viewing effects of web-based text and the inconvenience of the portability of display technology for online reading. The interview data showed that the participants had a tendency to print out lengthy articles that required extensive reading. This reading practice appears to be directly linked to the eyestrain that the participants felt when reading web text. These findings appear in accord with previous research, indicating a reader's preference to read information in detail from print rather than from web text (Abdullah and Gibb, 2006; Liu, 2005; Mercieca, 2004; Altun, 2000).

Question 4: What are the implications for ESL pedagogy?

From what was observed at the workshops and from what the participants indicated in their interviews and journal entries, it appears that the participants' digital literacy skills in terms of surfing the web does equate to digital literacy in general. This is evidenced in Evita's account of how she assesses the accuracy of information posted on the web—*"When I need to find something fast I use the Web and believe that the old information that appear there is correct except for the chats or blogs participants"*—and in Rosa's struggle to bookmark a website—*"I have tried to bookmark, but I don't know how. Sometimes it doesn't work, so maybe I don't know how to do it."* While the study showed that the participants had a basic knowledge of Web 2.0 tools and were quite familiar with social networking tools, the data also revealed that all of the participants lacked knowledge on how to access and evaluate online information. The participants' inability to effectively navigate the Web and assess the trustworthiness of what they read online was one of the biggest gaps in their digital literacy. For example, when the participants initiated an online search they would immediately go to Google, type what they felt were keywords, and then review the hits that came up. None of the participants attempted to initiate a search plan that would draw upon a variety of search engines other than Google. While this set practice of searching for information online can be attributed to drawing upon what is needed to get by, it can also be interpreted that the learner does not possess the skills to effectively search the Internet. Gilster (1997) notes that the final core competency of digital literacy is the development of search skills, which many students who are seen as digitally literate simply do not possess (Li and Ranieri, 2010).

The interview data and workshop observations revealed a further indication of the participants' naiveté about Google—none of the participants knew how Google ranked its search listings and were oblivious of the fact that Google search results can be successfully manipulated or that advertisers can pay for the privilege of being in the first ten hits of a search listing. Of course, another central issue with the Googlization of everything is that it can cause a student to depend on Google too much (Vaidhyanathan, 2011). The danger of course here is that language learner lets "Google" do the thinking for him/her.

One key factor that may have contributed to the participants' blind trust in Google is that the participants possess very limited critical thinking skills. This lack of criticality is highlighted in an interview statement made by Rosa in which she remarked, *"Online,* [it] *seems everything is already done. Everything is processed. Everything is already in line. So, you don't have to analyze it. Somebody have done it for you already."* This revelation reflects similar findings made by other researchers, such as Kamil and Chou (2005), Jonassen (2000), Stimson (1998), Sutherland-Smith (2002), and Burke (2002), who also found that the ability to access information online did not equate to assessing it, and the ability to surf the Internet did not equate to strategically navigating it. Aside from Hilda, Maria, and Jasmine, whose journal entries indicated that they attempted to evaluate information by confirming its validity from two or more additional sources, the findings reveal that the rest of the participants demonstrated a superficial understanding toward searching the Web and seemed ill-equipped to evaluate the credibility of the information they encountered online. While this low use of online text evaluation by the participants was disturbing, it was not surprising. None of the participants indicated that they had ever been given the

opportunity to develop their critical skills, therefore few of the participants showed any indication of questioning what they read online.

The participants' superficial online research skills may also be attributed to their own belief that their literacy skills were better than they actually are. Similar to what the EDUCAUSE (2006) researchers discovered in their study centered on students and information technology, several of my digitally savvy participants overestimated their actual skills, allowing their own overconfidence to make them blind to their shortcomings when engaging with online content. During one of the study workshops, Lee became defensive when I asked the group if they felt they had the skills to effectively search and evaluate information on the Internet. She reproached, *"Yes. We adults not children."* Participants who displayed the most digital "hubris" also felt that it was not the role of the language teacher to teach digital literacy skills. This overconfidence in their abilities complies with past research in that "learners whose skills or knowledge bases are weak in a particular area tend to overestimate their ability in that area" (Kruger and Dunning, 1999, cited in Anderson, 2002). What this implies is that the students "don't know enough to recognize that they lack sufficient knowledge for accurate self-assessment" (Anderson, 2002, p.5).

Such a lack of criticality suggests 1) a student's Internet use does not equate to effective strategy use; and 2) students, especially those whom Prensky (2001) labels digital natives, are not necessarily as digitally competent as they lead themselves and others to believe. Both of the above findings clearly distinguish a gap in the language learner's ability to search and evaluate information online and help to confirm that there is indeed a place for learning digital literacy in the ESL classroom.

The data analysis exposed other gaps in the participants' digital literacy, including:

1) A lack of knowledge of how to bookmark a web page;
2) A lack of planning strategies for making a web page easier to skim and scan by hiding unessential border areas or adjusting width or font sizes;
3) A difficulty in determining the legitimacy, accuracy, and reliability of information presented on a web page, although the participants' language level may have limited their ability to make such determinations;
4) A lack of knowledge in assessing the accuracy of information, for example, checking to see when a website or web page was last updated;
5) A difficulty in differentiating between facts and opinions.

4.9 Overall Summary

The findings reveal that ESL learners do take both conscious and unconscious mental steps to accommodate the transition needed when switching from traditional literacy to digital literacy. Moreover, the study was able to identify types of metacognitive and cognitive strategies that second language learners employ in their process of reading both printed text and web text.

The interview and journal data shown in this chapter contribute an overall view of the language learner's reading practices in traditional print on paper and digital on-screen environments, as well as provides greater insight into the learner's on- and off-screen reading preferences and their awareness of strategy use. As a result of the data generated by the participants' interviews and journal entries, there was a clear indication when reading on-line that language learners are often aware of the reading

strategies that they are employing; however, these strategies are often quite basic and are in need of development, especially with regard to the digital skills needed to access, read, and evaluate online information.

Finally, there is a gap in the digital knowledge that language learners possess. They may appear to know how to use various Web 2.0 tools, but they lack key reading and navigational skills needed for effective online reading. While a mixed picture has emerged from the data expressed in the participants' opinions on the teaching of digital literacy in the language classroom, the risk remains that without fine-tuning the language learners' digital skills, they may be exposed to wrong or misleading information that may not only hamper their ability to read online but also may place them at risk to be taken advantage of by the criminal elements that exist on the Internet. Therefore, providing students online reading strategy instruction should be one of the main aims of any educator who is teaching literacy skills (Anderson and Vandergrift, 1996; Nunan, 1996, 1997; Chamot, Barnhardt, El-Dinary, and Robbins, 1999; Janzen, 2001). Nunan (1996, p.41) brings this within the realm of traditional fixated ESL environments that I have observed when he points out, "Language classrooms should have a dual focus, not only teaching language content but also on developing learning processes as well."

CHAPTER 5: CONCLUSIONS, IMPLICATIONS, AND FUTURE RESEARCH

5.1 Introduction

This study attempts to further our understanding of the metacognitive reading strategies adult ESL learners incorporate in their daily reading practices in both ink print and web text environments, as well as their perceptions of their digital skills and how they utilize those skills. It also argues for the importance of teaching metacognitive strategies, particularly with regard to online reading. In the following sections, I present the implications of this research, propose possible suggestions for future studies, and reflect on what I view to be the potential limitations of the findings.

5.2 Implications of the Study

The research from this study has contributed to knowledge in the field of ESL education in three specific ways. First, the existence of e-reading has only recently come into being and so it has not been extensively researched in the ESL context. This study provides new insight into how the second language learner's e-reading comprehension processing and strategy use differs from traditional reading methods. Secondly, this study extends previous online reading studies by examining the way language learners pursue learning tasks outside the realm of the classroom. Thirdly, this study provides a stepping stone toward a new line of research that focuses on the ESL learner's onscreen reading behaviors.

On a local professional level, this study also offered me the opportunity to better understand my students, sharpened my awareness of their use of metacognitive reading

strategies, and helped me to build upon my teaching practices to effectively teach modern literacy skills in my classrooms. Upon deeper reflection, I have concluded that the study's findings indicate the following important pedagogical implications:

1) Based on the findings, the ESL environment observed in this study indicated that there is a gap that needs to be filled between the teaching of traditional literacy reading practices and digital literacy reading skills in the language classroom. Undoubtedly, this is one of the greatest challenges that my language college and other ESL programs similar to mine now face because teaching reading strategies and meta-reading in both printed text and web text environments are an essential component of literacy instruction in the modern ESL classroom. Metacognitive strategies can help students better regulate other strategies (O'Malley and Chamot, 1990).

The teaching of these reading strategies to strengthen the learners' ability to read printed text and to develop their skills to effectively read web-based text can be done through self-regulated learning tasks such as think- or self reports, problem-oriented tasks, and project-based activities. Such an approach to teaching develops strategy awareness in the learners and offers them the choice to try or not to try a strategy according to its relevance. Moreover, teaching strategies in this way makes the instruction of digital literacy less dragooned and more acceptable to learners, such as Hilda and Lee, who are steadfastly opposed to the implementation of new literacy instruction being taught in the language classroom.

Based on the insight gained from this study's workshops and from the issues Hilda and Lee said they had with the teaching of digital literacy in the language classroom, I would suggest that language educators subtly integrate online reading strategy instruction into class activities as a means to raise the learners' metacognitive

strategy awareness and to build upon the strategies they already possess. A good example of how this can be done is through online homework tasks (see Appendix O), in which the students not only "teach" the class what they have learned about a particular subject, but they also discuss their online reading experience and difficulties they might have encountered when using the Internet. In this way, a teacher can encourage his/her students to become more independent and autonomous learners while not dictating digital literacy instruction to them. It also provides a useful framework for student learning, through which the teacher can provide feedback and guidance and can help the students assess their own success in choice of strategies.

2) The study findings showed the participants' inability to use a wide range of web resources beyond Google and Wikipedia, their confusion in how to read and evaluate web text, their limited knowledge of effective online reading strategies, and their frustration in navigating through hyperlinks. These findings can provide useful information to improve pedagogical teaching practices. By understanding the shortcomings of the language learner's awareness and usage of strategies when reading online, teacher training modules can be developed to help guide TESOL educators in how to best teach, model, and practice metacognitive reading strategies that improve the learner's ability to search, access, and evaluate information online, as well as to adjust to the different types of text they are reading. The models for strategy instruction, discussed in literature review, can provide such a framework.

From my current experience in introducing online search strategies to my students, I have found it helpful to provide the learners with online resource sites to help them find trustworthy information relevant to their research, for example, The Intute Virtual Training Suite's (2008) 'Internet Detective'. I would also suggest that

language educators use WebQuests and follow-up self-report tasks in their classrooms as a way to provide the learner with appropriate search strategies.

Through guidance, the language learners' ability to read online text can be strengthened by equipping them with the digital skills that will enable them to improve their comprehension of web text, as well as to better access and analyze the information they encounter online.

3) From the other side, the study results did show that the participants do apply appropriate strategies for reading paper-based and electronically generated text, such as reading for details and skimming and scanning. However, these skills are just enough for the learner to get by when reading online and thus need to be built upon and expanded. The implication here is pedagogical—TESOL educators will need to continue to go beyond the strategies the learners already know and dig deeper to devise lessons that motivate and encourage students to develop, strengthen, and apply new critical reading strategies.

Looking back on the way I taught English before I began my study and on the views I held on digital literacy and its relevance to second language acquisition, I now realize that my steadfast and stubborn opposition to any changes to my non-digital teaching methods or my non-tech classroom was due in part to my personal lack of awareness of my students' use of digital technologies and the direct impact this was having on my ability to meet their modern literacy needs.

Even during the study, I must admit that I was somewhat in the dark when my students held private discussions amongst each other about digital technologies such as Google document or iCloud, for instance. Additionally, I am ashamed to admit to an embarrassing technological misunderstanding that I had with a student a few months

back. The incident occurred when I noticed a student glued to her iPhone screen rather than focusing on the homework review from the class textbook. When I politely asked the student to put her iPhone away and to check her homework, she reproached, "What do you think I am doing?!" To my surprise, the student had taken a photo of her answers from the textbook with her iPhone. She found it easier to have photos of the homework completed in her textbook than to carry the textbook to and from class. This is a clear indication of one of the many ways that a student can use digital tools for learning purposes.

Despite my ignorance to the extent to which an iPhone can be utilized as a teaching tool, digital technology and resources since have now become an accepted part of my English teaching. For example, I recently integrated an Internet classroom assistant (ICA) to facilitate my course instruction (see Appendix N). As a result of my use of the ICA, my classroom has gone virtually paperless. Students access the ICA online to find their homework assignments, study materials, classroom handouts, English grammar reference materials, and Internet-based resources for their target language development.

4) As noted in Section 2.4.6 in Chapter 2, unlike the acquisition of traditional literacy skills, which made few demands on readers to upgrade their ability to read printed text, digital literacy is a process of lifelong learning (Pacific Policy Research Center, 2010). Technology continues along a fast track of changes, and what suffices as digital skills today will be considered insufficient and outdated tomorrow. Educators in all fields can no longer depend upon what they currently know to carry them through the life of their career—they must engage in a process of lifelong learning.

Sabina's journal reflection is evidence of this: *"I would ask the teacher if I have to take that thing that I find, even if I'm not sure if it's true or not, or I should look more and to be more sure about that if it's true."* Jasmine's interview response also proves this point: *"I like teacher to tell us the way how we can make surf. He can help how we have a lot of ways how we can search."* The pedagogical implication here is two-fold—there is a need for all teachers to develop digital literacy skills so they can meet the needs of their students.

However, the barrier that may arise here, especially from the ESL teaching environments that I have observed, may not simply be in providing the means for ESL educators to develop digital literacy skills. Instead it may prove difficult to motivate them to incorporate online reading instruction in their classroom teaching practices. From discussions I had with my colleagues, when engaged in this study, I learned that the majority of them felt that it was not the responsibility of the language teacher to teach or develop digital literacy in the language classroom. "After all," many of my colleagues were quick to point out, "it is not in our job description." Unfortunately, I have observed this mindset in teachers in other colleges, institutes, and schools where I have taught in which their sole focus is on teaching the language and nothing beyond. This attitude, as the study reveals, appears to have been adopted by a few of the study participants as well, who also perceive the teaching of digital literacy as an adulteration to what they feel should be taught in the language classroom. What I have come to realize during the course of my study is that such a fixed viewpoint of traditional language teaching and learning goes beyond basic assumptions of what a language teacher should or should not teach and is fueled and sustained by hubris. Such hubris allows my colleagues to maintain a traditional literacy environment in their classroom

because they either fear that moving beyond old millennium practices of teaching L2 literacy skills will make them appear to be surrendering to the demands of a new era of teaching or that they will lose respect because their students are more digitally literate than they are. It is also pride that blinds language learners, such as Hilda and Lee, into believing that there is nothing they do not know about digital literacy because of their experience with leisure online activities—part of their daily routines. Drawing upon what I have learned from my personal journey researching and writing this dissertation, the only way that this hubris can be foiled is through increased knowledge and understanding of digital literacy.

Pedagogical changes cannot happen if the structures around them remain stationary. Therefore, the reshaping of TESOL curricula is essential to accommodate digital literacy development and training opportunities for ESL educators to upgrade their digital skills and teaching practices.

In an effort to raise my colleagues' comfort level with technology and to nudge both them and my school forward out of old ways of reading strategies and into new ways necessitated by a world that has gone digital, I have begun sharing online resources with my director and colleagues where they can download lesson plans, teaching materials, and grammar handouts. I have also made the school staff aware of reliable websites where students can go to practice set language skill areas that they want to develop. In addition, I have presented PowerPoint presentations at staff meetings on how print-based and digital texts are different and require a different set of reading strategies, as well as how the integration of Internet Classroom Assistant (ICA) and online homework tasks can bring language teaching practices current and serve as

an effective means to help both teachers and students to become successful literacy users.

5) With regard to the gap between traditional literacy and digital literacy, the findings suggest that it is imperative that the development of digital literacy skills within the ESL classroom are not ignored.

As a direct result of the research done in this study combined with knowledge gained from professional development workshops on digital literacy education, I have woven digital reading strategies into my classroom that may provide a framework for other educators to utilize and build upon. My approach to teaching digital competencies is introduced in three stages during the course of the session that I am teaching. In the first stage, the pre-planning stage, I devote class time to teaching my students how to approach online information. The pre-planning instruction entails encouraging my students to read for a purpose by having them focus on key words or questions before searching the Internet. In addition, I encourage my students to use alternatives to Google by demonstrating on my laptop how to effectively use other search engines that are more trustworthy and non-commercial such as Sweetsearch, Cuil, and Wolfram Alpha. Further, I model search techniques based on Boolean Logic and provide the students with a handout, giving them a step-by-step approach to broadening or narrowing their searches and determining the trustworthiness of a domain by its dot suffix (.edu, .org, or .gov, for example). In the second stage, the actively reading stage, I help my students become more aware of how to monitor what they are reading and how to best seek out information. Through modeling, I show the students how they can narrow their searches to specifics in terms of identifying main ideas of a text, guessing the gist, and looking for key words or ideas. I also focus on establishing boundaries on

the usage of hypertext by shifting their focus of the big ideas of a text down to the specific details. Finally, in the third stage, the critical thinking stage, I encourage my students to challenge the information they read online and to question the credibility of web-presented information by providing them with a printed web page evaluation checklist and by asking such questions as: What are the author's credentials?; Why should I trust him/her?; and Who are the website stakeholders?

5.3 Suggestions for Future Research

Anderson (2003b, p.3) observes that "researchers have done little to explore the reading strategies that learners use while engaged in online reading tasks." Hopefully this study will initiate further research in the metacognitive strategies that English second language learners engage in when reading online as well as in the impact that digital technology is having on language learning. Reflecting upon what was observed in my current study, several suggestions for future research are provided as follows:

1) This study was dependent on data gained from adult ESL learners; however, a deeper examination of possible differences between reading strategies by adult EFL learners versus adult ESL learners should be done.

2) The participants in this study engaged in skimming online text to collect information; however, this technique is not always suitable for extracting information from printed text because ink print often demands a more in-depth level of reading. Future research might help to identify ways to teach language learners to better recognize the differences associated with screen-based or paper-based readings.

3) While this study did observe the way in which the language learner engaged in hyperlinks, it is not the central focus of the research. Thus, more research must be

conducted to investigate how ESL learners interact with hyperlinks, especially in the context of their leisure reading as opposed to class assigned reading. Currently, there have been only a few studies in English as a second language in the sphere of web text reading strategies (e.g. Anderson, 2003a; Coiro and Dobler, 2007; Huang, Chern, and Lin, 2009). Therefore, additional reading research is needed to better understand if and how students are crossing the digital bridge by incorporating reading strategies to understand and cope with the nonlinear, non-sequential, interactive text that is part and parcel of on-screen reading. These future studies should use a combination of qualitative and quantitative research approaches to allow for closer examination of how student self-reports varied from his/her actual strategy usage.

4) Neither cultural nor gender variables were considered in my study. Both variables could affect the ESL learner's choice of reading strategy and perception of digital literacy and technology. It is important that future research examines the effect that culture and gender have on the language learner's printed text and web text reading behaviors in order to facilitate knowledge of how best to teach digital literacy to second language learners.

5) In an attempt to expand the study focus on the participants' use of strategies for reading online for learning purposes, future studies might seek to explore what strategies the learners enlists when they read online for leisure. This might increase our knowledge of the similarities and differences between the learners' strategies when reading for learning and non-learning purposes. Moreover, empirical data generation might provide a deeper understanding of specific metacognitive reading strategies—in terms of choice and use—the language learner engages when reading in printed text and web text.

6) As the findings suggest, it is important for TESOL educators to recognize the need to teach reading strategies for both printed-based text and web text environments because a learner's reading purpose influences the strategies used in a particular reading environment. As has been noted in the literature review, TESOL educators who are experienced in teaching reading strategies in printed-based environments may lack the knowledge in teaching the application of strategies for online reading. Thus, more research is needed to help establish the key skills that a TESOL educator needs to master in order to be competent enough to teach students how to meet the challenges of online reading and to what degree this digital reading knowledge should be taught to the language learner. In addition, future qualitative studies might focus on the relationship between students' perceptions and teachers' perceptions on reading.

7) While empirical research has shown that students benefit from explicit teaching of reading strategies (e.g. Dheib-Henia, 2003; Jenks, 2002), this study did not explore the effectiveness of the explicit digital literacy instruction in the ESL classroom. Future studies should be initiated to determine if digital literacy instruction is best taught as an integrated component of the language curriculum or separately through workshops or as a specialized course.

5.4 Limitations of the Study

This study had some limitations. First, the research within one language program or school may not be representative of all ESL/EFL classrooms in the United States or internationally as there may be cultural and intervening variables in the way students perceive their reading strategies within the contexts of printed text and web text. Arguably, qualitative studies may not lend themselves well to generalizability (Stake,

1980); however, as Myers (2000) notes, “small qualitative studies can gain a more personal understanding of the phenomenon and the results can potentially contribute valuable knowledge to the community.” While I do not claim generalizability, I do believe the results from my study provide emerging patterns in the ESL learner’s on-screen reading strategies and denote behaviors that should be explored in future studies.

Secondly, the study may have failed to take into account age and gender as well as learning and cultural variables that may have affected the data and thereby the findings. The language level of the participants may also have limited the accuracy of the data due to the participants' inability to verbalize information about their reading practices. It should be noted that the study participants possessed English proficiency levels that ranged from good to fair, and all were able to respond appropriately to the questions posed to them in the interviews, although there might have been times when the participants were not able to give voice to their thoughts due to limitations based on variables such as language and culture.

Thirdly, it is recognized that while the participants were told to honestly reflect, record, and discuss their reading behaviors, the validity of the views and perceptions of what they shared cannot be completely established. Baker and Brown (1984) note that sometimes readers claim to know an effective reading strategy but do not apply it or sometimes readers do not describe a strategy but are in fact using it. On the other hand, while the data should be cautiously interpreted, as Winser (1988) suggests, verbal self-reports may provide a more credible measure of cognitive processing as opposed to “outmoded psychometric tests” (Winser, 1998, p.260). The study results do provide insight into the way language learners reportedly engage with the digital text they access for both learning and personal needs. Thus, while it is recognized that limitation

is an inevitable element of self-reports, it should be noted that the self-reported reading strategies of the participants generally tended to match what was observed in the workshops as well as during self-report tasks.

5.5 Overall Summary

The educational landscape has changed considerable since the start of this new millennium. As Rowlands et al (2008, p. 308) remind us, "we are all the Google generation, the young and old, the professor and the student and the teacher and the child." At the end of the last century, electronically generated text, if it was present at all in the language classroom, might have been used in the form of drill and kill software or word processing a paragraph or essay in the target language. These activities seem somewhat "prehistoric" now. Today, the Internet is digitally transporting language learners into a web text reading environment where they can explore and learn the target language as well as other academic subjects. Web text is changing the way literacy is defined and is necessitating the need for educational institutions that teach ESL to alter and adjust the way reading is taught in their classrooms. In making these modifications, ESL programs need not completely succumb to the Internet but should weave digital literacy into its teaching practices. Such a step does not have to be a drastic one. Teaching metacognitive strategies for reading printed text is anything but new in the language classroom so moving forward to include online reading strategies seems an expected part of the evolutionary process of language education. Such steps toward digital literacy in the classroom can be done at a slow and steady pace and will involve both setbacks and successes as teachers

discover what teaching models are the most helpful in teaching both meta-reading and digital competencies.

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Appendices

Appendix A
Ethics Approval Form

2011/28/AK

School of Education – Research Ethics Approval Form

The University of Nottingham

Name	John Gilbert
Main Supervisor	Mary Bailey, Julio Gimenez
Course of Study	PhD
Title of Research Project:	ESL Student Perceptions of Digital Reading Skills
Is this a resubmission?	Yes

Date statement of research ethics received by PGR Office: 08/09/11

Research Ethics Coordinator Comments:

I have read through the resubmission carefully and am confident that all the issues raised re the initial submission have been addressed as follows:

i) An Information Sheet for participants has been provided giving relevant information;
ii) The information sheet includes details regarding activities that will be carried out both in and outside of the class time;
iii) The access document now explains the protocol regarding the need for further sampling;
iv) The email contact for the ethics team has been added to the consent form, information sheet and letters.

Please could you remove my name as the contact and simply keep the generic ethics email contact?

Good luck with the study!

I consider this research to be above minimum risk ☐

Outcome:
Approved [√] Revise and Resubmit ☐

Signed: Name: Dr Alison Kington (Research Ethics Coordinator) Date: September 8th 2011

Appendix B
Student Consent Form

September, 12, 2011

PARTICIPANT CONSENT FORM

Project title **ESL Student Perceptions of Digital Reading Skills**

Researcher's name **John Gilbert**

Supervisor's name **Dr Mary Bailey, Dr Julio Gimenez**

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.
- I understand that I will be audio taped at certain points in the study. I will always be informed when this is about to occur.
- I understand that data will be stored in a locked safe in the researcher's home that only he will have access to.
- I understand that I may contact the researcher or supervisor if I require further information about the research, and that I may contact the Research Ethics Coordinator of the School of Education, University of Nottingham, if I wish to make a complaint relating to my involvement in the research.

Signed …… (research participant)

Print name …… **Date** ……

Contact details

Researcher:
John Gilbert
reached@comcast.net

Supervisors:
Dr Mary Bailey, Dr Julio Gimenez
School of Education
University of Nottingham
mary.bailey@nottingham.ac.uk; julio.gimenez@nottingham.ac.uk

Dr Alison Kington
Ethics Board
The School of Education
The University of Nottingham
Email: educationresearchethics@nottingham.ac.uk

Appendix C
Student Information Sheet

The purpose of my study is to explore how English language learners interact with paper-text and web-text reading, and it is hoped that the study results may contribute to the reshaping of reading practices in English language classrooms. It will be conducted by examining an English language learner's perception of reading in both a print and non-print environment and the reading strategies that he/she constructs and applies to succeed in achieving his/her learning outcomes.

There are no risks to those who decide to participate in my study nor is there any compensation. Participation is entirely voluntary. The study is part of my dissertation project. It is self-financed and is not funded by other parties, organizations, or academic institutions.

For those Level 11 students wishing to be part of the study, an hour long reading workshop will follow after the American Culture class. This will ensure no student in the American Culture class feels pressured to be part of the study and it also keeps class time independent from study time. Although the reading workshop will draw upon in-class readings, the workshop itself will provide participants with reading strategies for both print and online text, which is not included in the American Culture course.

Participant confidentiality and anonymity is of the highest priority. All data collected from study participants will be recorded, analyzed, and maintained. The collected data will be stored in a locked wall safe in my home and access will be limited to me.

Participant results will be combined with those of other study participants in order to obtain a general understanding of the collected data. The combined information then will be summarized to generate findings for use in my dissertation, which will be read by my supervisors and my dissertation committee.

As already stated above, a participant's anonymity and the confidentiality of information he/she provides will be strictly maintained. Once the transcript of an interview has been made, the MP3 recording of the interview will be erased and all personal identifying information will be removed from the transcript. In addition, only composite information summarized from all participants will be used in my dissertation findings. In addition, participant journals will be anonymised, and surveys will be completed in anonymity.

If at any time you have questions or concerns regarding your participation in the study, please e-mail:

Dr. Alison Kington
Ethics Board
The School of Education
The University of Nottingham
Email: educationresearchethics@nottingham.ac.uk

Appendix D
Sample Excerpts of Observation Notes

September 19, 2011, Workshop 2, 11:30-12:30, Room #4

On a less contentious note, the workshop today had more of a flow. I taped part of the session so that I can recall things that I might have missed and also to see interviewing techniques that may need strengthening. The participants appeared happy to have an activity to engage in and this proved to be a unifying force. I was pleased all six participants were in attendance. One participant appears firmly rooted in a printed text environment, which will provide a good contrast.

Attitude toward specific text environment.

Interestingly, the participants seem to have different methods of high lightening information. Some participants prefer to lightly mark their books with a pencil while others prefer to fully shade in areas of text with a high lighter: yellow being the preferred color.

Indication of strategy use.

In addition, the group agreed that reflection is difficult when reading a web page. They felt there was more time to think and ponder what they had read when they read printed text.

Need for Reflection when reading – metacognitive knowledge of oneself.

October 11, 2011, Workshop 2, 11:30-12:30, Room #4

Hilda shared with the group her view that a printed book provides her with both a sense of comfort and relaxation. Hilda told the group that she enjoys lying on her bed reading her book in one hand and eating an apple from another. "Something you cannot do with a lap top," Hilda observes.

Mobility/ Preference

The group as a whole felt that one had to have a reason to read when online whereas with a book, they contended, a person can pick it up and simply read it for pleasure or of out of curiosity.

Reading preferences. Supports the idea that the reader has a purpose when he/she goes online.

One excellent point offered by two students was that one often selects a book by reading a couple of lines from its opening chapter in order to see if it seems interesting enough to merit reading.

Similar to power browsing.

Appendix E
Interview Schedule

Interview Schedule 1 Guided Questions

1. What country are you from?
2. What is your first language?
3. Do you speak any other additional languages other than English?
4. Have you studied in an English speaking country before this country?
5. How often do you read?
6. Do you read for pleasure or for a purpose?
7. Do you mainly read printed text or web text?
8. Do you notice differences in the way you read printed text and web text?

Interview Schedule 2 Guided Questions

1. How did you feel when you used the Internet to obtain information for your workshop assignment?
2. What are the difficulties/challenges you had to deal with when you did so?
3. What did you do to deal with this problem?
4. How do you think the resources on the Internet are different or similar to off-line resources?
5. How is online reading different/similar to class reading?
6. How do you manage your time when you do online reading for your research?

Interview Schedule 3 Guided Questions

1. What makes you click on a hyperlink?
2. What information do you download when online?
3. What did you learn from the workshops?
4. What strategies do you now apply to your reading or Internet searches?
5. Have you bookmarked any websites for future reference?
6. Have you tried any new web search engines since the start of the workshop?
7. Is there anything you wish you knew more about in terms of reading strategies or finding information on the web?
8. How can your teacher help you in better web search and information evaluation strategies?
9. How can your teacher help you in developing stronger reading strategies?

Appendix F
Transcription Conventions developed by Gail Jefferson (1984)

? ?	Arrows in the margin point to the lines of transcript relevant to the point being made in the text.
( )	Empty parentheses indicate talk too obscure to transcribe. Words or letters inside such parentheses indicate the transcriber's best estimate of what is being said or who is saying it.
hhh .hhh	The letters
[	Left-side brackets indicate where overlapping talk begins.
]	Right-side brackets indicate where overlapping talk ends. Brackets should always appear with one or more other brackets of the same sort (left or right) on the line(s) directly above or below to indicate which turns are implicated in the overlap.
((coughs))	Words in double parentheses indicate transcriber's comments, not transcriptions.
(0.8)(.)	Numbers in parentheses indicate intervals without speech in tenths of a second; a dot in parentheses marks an interval of less than (0.2).
becau-	A hyphen indicates an abrupt cut-off or self-interruption of the sound in progress indicated by the preceding letter(s) (the example here represents a self-interrupted "because").
:::	Colons indicate a lengthening of the sound just preceding them, proportional to the number of colons.
Underlining	Underlining indicates stress or emphasis, proportional to the number of letters underlined.
?	An upward-pointing arrow indicates especially high pitch relative to preceding talk; a downward-pointing arrow indicates especially low pitch relative to preceding talk.
>talk<	Right and left carats (or "more than" and "less than" symbols) indicate that the talk between them was speeded up or "compressed" relative to surrounding talk.

=	Equal signs (ordinarily at the end of one line and the start of an ensuing line attributed to a different speaker) indicate a "latched" relationship—no silence at all between them. If the two lines are attributed to the same speaker and are separated by talk by another, the = marks a single, through-produced utterance by the speaker separated as a transcription convenience to display overlapping talk by another. A single equal sign in the middle of a line indicates no break in an ongoing spate of talk, where one might otherwise expect it, e.g., after a completed sentence.
°word°	Talk appearing within degree signs is lower in volume relative to surrounding talk.
WOrd	Upper case marks especially loud sounds relative to the WORD surrounding talk.

Appendix F.1: Excerpt of Interview with Participant H

PTH: Participant H
INT: Me

1 INT: >A:lright testing< testing 1 2 <3::> okay: so the recorder: is now: o:n
2
3 PTH: °Oh right:°
4
5 ((microphone disturbance))
6
7 INT: °Alright° this is go:ing to be Student I's guided questions for 8 his first interview for What country are you ↓from?
9
10 PT1: I'm from Saudi >A:rabia ↓
11
12 INT: Wh:at is your f:irst ↓la:nguage
13
14 PTH: My: first language is A:rabic:
15
16 INT: Do you ↑speak any other (.) a:dditional languages than 17 ↓English

18 PTH: ((lip smack)) <Urm> (.) just my native urr: language urr which 19 A:rabic (.) °it's Arabic°
20
21 INT: Have you studied in< a:ny other E:nglish speaking ↑country 22 other than ↓in <the United States>
23 PTH: ↑Urr no:
24
25 INT: °How:°: o:ften do you re:ad

26
27 PT1: ((lip smack)) U:rrm .hh (.4) >a:lmost every↑day:
28
29 INT: Is it for ↑ple:asure or for::: or:: a:cademic ↓purposes:
30
31 PTH: ↓Urm (.) ↑sometime it de↓pends if I hav:e re:search based on 32 my: urr: field so: urr I read about something which is in this field and urr:: 33 academic reading .hh and m:o:st of the time (.2) urm: (.) >reading for< 34 pleasur:e and to:: keep up: with urr new: urr >what's the word< h:appen in 35 urr: in the ↑world?
36
37 INT: I:s that in printed text >printed text< for example would be 38 newspaper (.) .hh m:agazi:ne (.) book: or:: is it on webtext (.) reading a 39 journal or a::: (.) publication ↓online
40
41 PTH: Urr: well ↑basically it's in:dependent on wh:at urr:: I'm 42 look↓ing for so if it is urr: a:cademic: .hh (.) maybe >at the beginning< 43 maybe I will urr:::: Google urr G-Google it or search urr: the Internet (.) but 44 later I have to go back to:: the ↑real sources which is urr: .hh urm::: ((lip 45 smack)) >going to help< ↓me: in this research .hh but ↑generally urr I used 46 to read ↓urr: n:ewspaper magazine urr:: paper m: newspaper but ↑now: .hh 47 because the Internet and you h- you can find all newspaper: (.) urr: the 48 Internet .hh so most- urr most li:kely now I'm using urr: Inter↓net: urr: for 49 reading
50
51 INT: >Is it a< ma:tter: of ↑expense that ↓online reading is- free: 52 opposed to buy:i:ng if you had to buy: is that another (.) incentive to be 53 ↓reading=online
54
55 PTH: (.4) ↑I don't ↓think that urr the mere reason: but I ↑guess they: 56 are because .hh (.2) urr to- to reach the urr:: the information e:asier: the- 57 urr:: it is the b:est way: to go to:: urr Internet and this is:: it's: .hh (.) I mean 58 you can- you can open this: newspaper or:: read: in the newspaper in 59 everywhere: anyti:me .hh urr:: without any: urr ↓problem
60
61 INT: Do:: you mai:nly: read when you- (.) re:ad is it mainly in ↑A:rabic or is in Engl↓ish
62
63 PTH: (.2) .hh Urr: (.2) ((lip smack)) u-u:rr at this moment 'cause I'm- 64 I'm concentrate on learning ↑E:nglish: (.) urr: I try to avoid urr: reading urr: 65 any u:rm: ↓newspaper >Arabic:< new:spaper .hh try to concentra:te on urr 66 Engl↑ish .hh but sometimes because urm (.) ((lip smack)) I want to keep up 67 with: my urr: c-urr ↓country urr news and something so urr: .hh I might as 68 well (.) read urr (.2) ((lip smack)) A:rabic newspaper:
69
70 INT: >When- when< you read online do <you: p:rint up: what you're reading or do you actually read from the ↓scree:n itself>
71

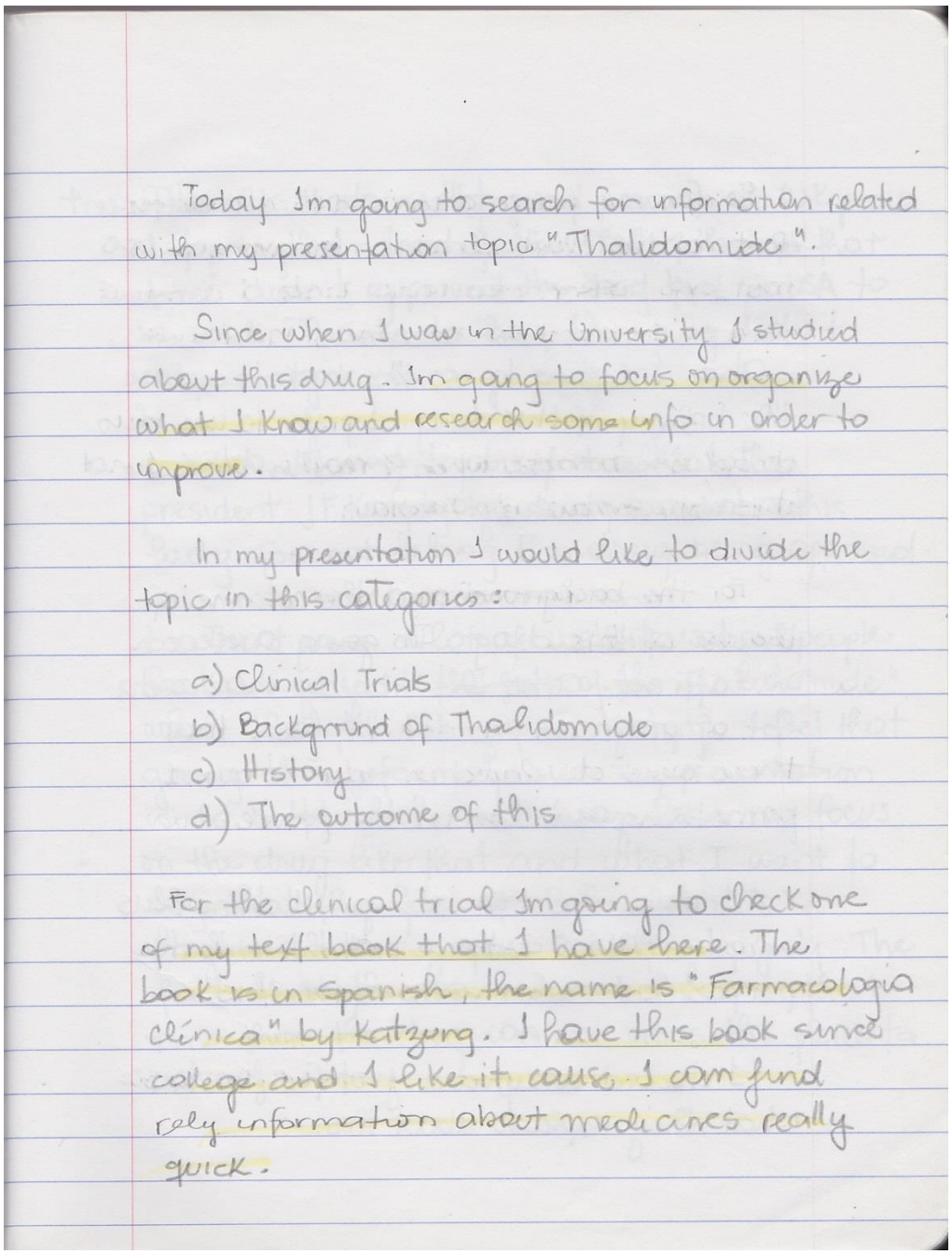
72 PTH: .hh (.) Urr no: I read it from screen ↑itself and but sometimes if 73 the article is very: urr it's a- it's >very interesting for< me and I need to use 74 it as ur:m build up my vocabul↑ary >I print it: t-< print it out to: urr (.) to 75 read it again and ↓again
76
77 INT: Do you study (.) academics larticle that you got from a ↑journal 78 would that be something that you would print up: or would you bookmark 79 it and come back to read (.2) ↓°online°
80
81 PTH: Urm (.) ((lip smack)) .hh some↑times when I'm: planning to: 82 urr: ↓urr (.) write an: essay: or ar:ticle about something .hh so I ↑need to 83 print: out so:me ↓urr papers so later I can urr: take- because urr I ↑think it's 84 too h:ard to just to- to know this: information and you will (.) planning to 85 come- urr to go back: urr again for it .hh because <urm (.) .hh sometimes 86 you will not: urr: (.) be successful in that::>
87
88 (.4)
89 INT: <°What- would you the say the percentage of re:ading for 90 p:leasu:re and re:ading for a: p:ur↓pos:e in your ↑l:ife ↓right now:
92
93 PTH: Since you just said: (.) r:ight now: (.) urr:: I::- maybe I'm 94 reading pleasure more than urr: 60 ↓percent but ↑a:lso: when I'm reading 95 about th- (.) urm: urr something p:leasure it's a:lso because (.2) I like to 96 read about urr:: in my ↓field:=so it] is: the same time I can say it's a 97 pleas↑ure and (.) it is: urr and it is urr: know↓ledge as well .hh
98 INT1: °°↓Do°° (.) you ↑m:ai:nly: read (.) p:rinted text or web ↓text (.) when you r:ead
99
100 PTH: (.) Uhmm would you re:phrase it [inaudible 0:05:55]=
101
102 INT: [Y::es]= when you read
103 currently< .do you mainly read from paper tex:t or: ↓online text
104
105 PTH: ((Lip smack)) ↑O:h text online .hh ↑A:ctually if: urm (.) if I 106 w:ant to r:ead about something and I want to cont- concentrate on it: and I 107 want t:o urr: (.) .hh to find urm: ((lip smack)) urr something- information 108 to serve my urr: my a:rt:icle or my: my research for °example° ↑I-sh- I 109 think I'd rather to: urr to print out th- the- the article to see ↓it: it's much 110 better >↑but for: p:leasure .hh because you:- you are not going to 111concentrate a lo:t and just to want to know: the urm: (.) .hh I mean the light 112 urr: news: so m- n:o urr I urr just read it: [it's on the Internet]
113
114 INT: [°°When°°] 115 you: <loo:k at this> article I printed up he:re=
116
117 PTH: °°Hmm°°
118

119 INT: =and if we compa:re this to:: .hh loo:king at ↓- an actual picture 120 of a web↓page .here d:o you no:tice the difference when you read ↑this: (.) 121 and you read ↓this: do you read them the same way or do you: (.) or do 122 you notice a difference in the way you read this .hh a: printed ((taps table 123 twice)) (.) <or you would read this webpage>
124
125 PTH: ((lip smack)) <Hurm:> (.) .hh >once< again if <I'll print it: out: 126 urr> maybe I- g- I'm going to highlight s:omething=
127
128 INT: Hmm↑mm:
129
130 PTH: =so I- I-I- urr >o:nce again< if I re:ad: (.) or if I want to read 131 .hh (.) I: will start f- urr >at the beginning< I will start with read it and urr: 132 (.) in Internet=
133
134 INT: Hmm: mm:
135 PT1: =.hh then if: this article is very important for my: research: (.) 136 for sure I will print it out to hi:ghli:ght:= and to concentrat:e more (.) much more than urr that
137
138 INT: So:↑ your focus: (.) would be: mo:re on the text printed out 139 o:pposed to what you would read ↓on °the web
140
141
142 PTH: Yes:

Appendix G
Journal Prompts

- **What am I trying to accomplish in my reading?**
- **What strategies am I using when I read text on paper or text online?**
- **How well am I using this strategy?**
- **Is it effective in achieving my reading goal?**
- **What else can I do (if your reading strategy is not working or helping you to understand what you are reading)?**

Appendix H
Excerpt from Maria's Journal



Today Im going to search for information related with my presentation topic "Thalidomide".

Since when I was in the University I studied about this drug. Im going to focus on organize what I know and research some info in order to improve.

In my presentation I would like to divide the topic in this categories:

a) Clinical Trials
b) Background of Thalidomide
c) History
d) The outcome of this

For the clinical trial Im going to check one of my text book that I have here. The book is in Spanish, the name is "Farmacologia clínica" by Katzung. I have this book since college and I like it cause I can find rely information about medicines really quick.

Reading webpages is more difficult for me that reading text books. With webpages I get lost and distracted really easy. Since it is to easy to surf and go from one page to another.

One of my problems it is that I need more discipline, because when I read online, I go to check my email, my facebook, skype, so I don't focus that easy. In the other hand, with printed text my attention is 100% and I don't waste my time.

Scaning and Skimming are a really good techniques that I have been using since I was in school in order to optimize my time and choose what is important and what is not.

For reading web-text I belive that using Scaning and Skimming is a good tool. Since internet is overwhelming and there is a lot of data and information, we need to be more cautious.

Appendix I
Summary of Workshop Reading Strategies and Perceptions

Reading Activity/ Strategy.	**Plus**	**Minus**
Debunking Reading Myths	Provides the student of with a understanding of processes and strategies involved in becoming a strong reader.	In general helpful, but linked more to traditional literacy.
Identifying the reading purpose.	Promotes a critical consciousness by encouraging students to have a goal in mind when they go online.	Students need to be given carefully created pre-reading activities to establish his/her purpose for going online for this to be useful.
Skimming and Scanning Techniques	Very helpful in the development of a student's overall understanding of a text by finding the gist.	Necessary for online reading, but students may feel less engaged with the content. Does not promote reflection, which is needed for criticality.
Snatch and Grab Technique	Useful as an online reading strategy, teaches the student to seek out information in a short period of time.	Again necessary for online reading compression, but does not promote real reading because it encourages students to hastily piece together information.
The Chunking Technique	Very helpful as an online reading strategy in comprehending what is being read by breaking web text into small units or chucks of information.	Requires practice and the teacher to model how the student can break a broad topic down into manageable "chunks" or segments.
Online Reading vs. Printed-text reading	Raises an awareness that printed text and web text are read in a different manner and that web-text requires alternative strategy comprehension.	Of benefit, but students may fail to note the challenges of online reading because of over estimating their online reading skills.

Tips for Using Browsers	Useful in helping the students become more aware of browser features such the ability to adjust text readability; alternatives to Internet Explorer such as Mozilla Firefox.	Students who are familiar with browser software and tools may feel they already know this information and may not be receptive to be suited for adult language learners with limited web experience.
Exploring search engines	Provides an opportunity to introduce students to higher-quality search resources. Helpful to those who are willing to go beyond Google.	The hold Google has on students is hard to break. To attract students the better search engines will need to replicate Google's ease of use.
Applying Boolean Logic	Strengthens the student's ability to effectively search the Web for the information he/she is seeking.	Boolean searches are not perfect.
Critical Reading	Encourage students to be active and not passive receivers of information by seeking to evaluate the trustworthiness of the information and opinions they encounter.	Requires time and practice to develop. Students need practice and guidance in developing critical reading skills.
Evaluating Websites	Encourages students to make informed judgments about the websites they access.	Students need to be provided with clear rubric for evaluating websites, supplemented with critical reading instruction otherwise the rubrics serve as hollow points.
Navigating Hyperlinks	Helpful for developing critical thinking skills in the determining which links maybe helpful and which may not.	Keeping the student focused key words and questions by limiting the number of links he/she can follows requires active monitoring.

Appendix J
Scavenger Hunt Questions

Scavenger Hunt #1

1. What does the word “apiary” mean?
2. What does the idiom “throwing the baby out with the bathwater” mean?
3. How many geographical continents are there?
4. Who is Benedict Arnold?
5. When and where was Coca-Cola invented?

Scavenger Hunt #2

1. Which President got stuck in his bathtub on Inauguration Day?
2. Who was the inventor of sticky note?
3. Who discovered King Tut’s tomb?
4. What is the name of North Carolina’s women’s soccer team?
5. Who was the first African American to win the Nobel Prize Literature?

Scavenger Hunt Prompts

1. Where did you find the answer?
2. What do you think is the general topic of the page?
3. Would this page be helpful to you in future research? Why do you think so?

Appendix K
Excerpts of Hilda's Journal Entries for Scavenger Hunt 1 Question #3

3. How many geographical continents are there?
By convention there are seven continents: Asia, Africa, North America, South America, Europe, Australia, and Antarctica. Some geographers list only six continents, combining Europe and Asia into Eurasia. In parts of the world, students learn that there are just five continents: Eurasia, Australia, Africa, Antarctica, and the Americas.

3.1. What is the title of this page? How do you know?
a. http://www.nationalgeographic.com/faq/geography.html#continents
Used it before.
Per key input "How many geographical continents are there" into google it is the first page which appears.

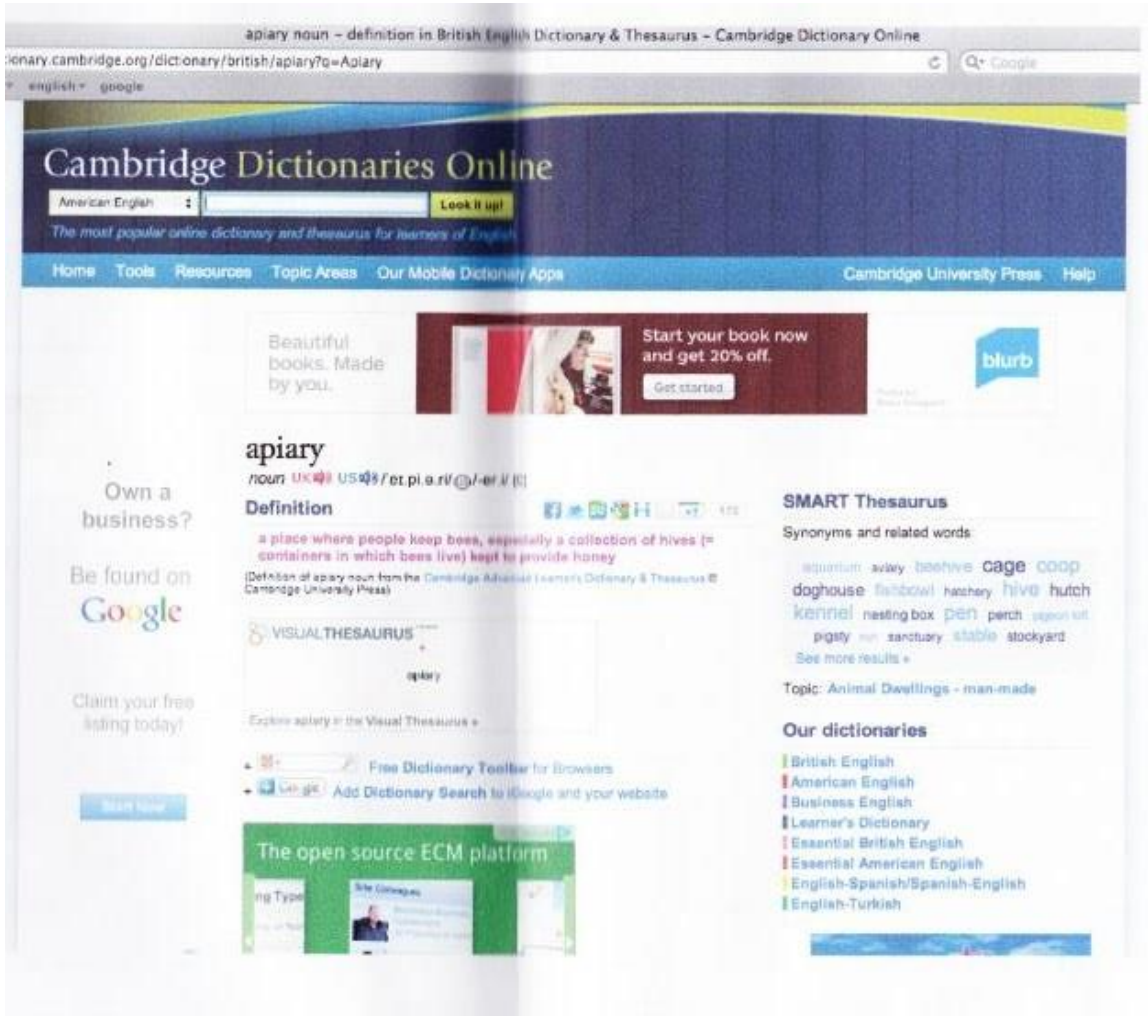
b. http://geography.about.com/od/learnabouttheearth/qt/qzcontinents.htm
Per key input "How many geographical continents are there" into google it is the secound page which appears.

3.2. Skim the text and graphics on the page.
What do you think is the general topic of this page?
a. The general topic of this website is about geography, archaeology and natural science.
The answer to the question was found under FAQ's.

b. It is a site within the site about.com und used to be about geography within this explored topic.

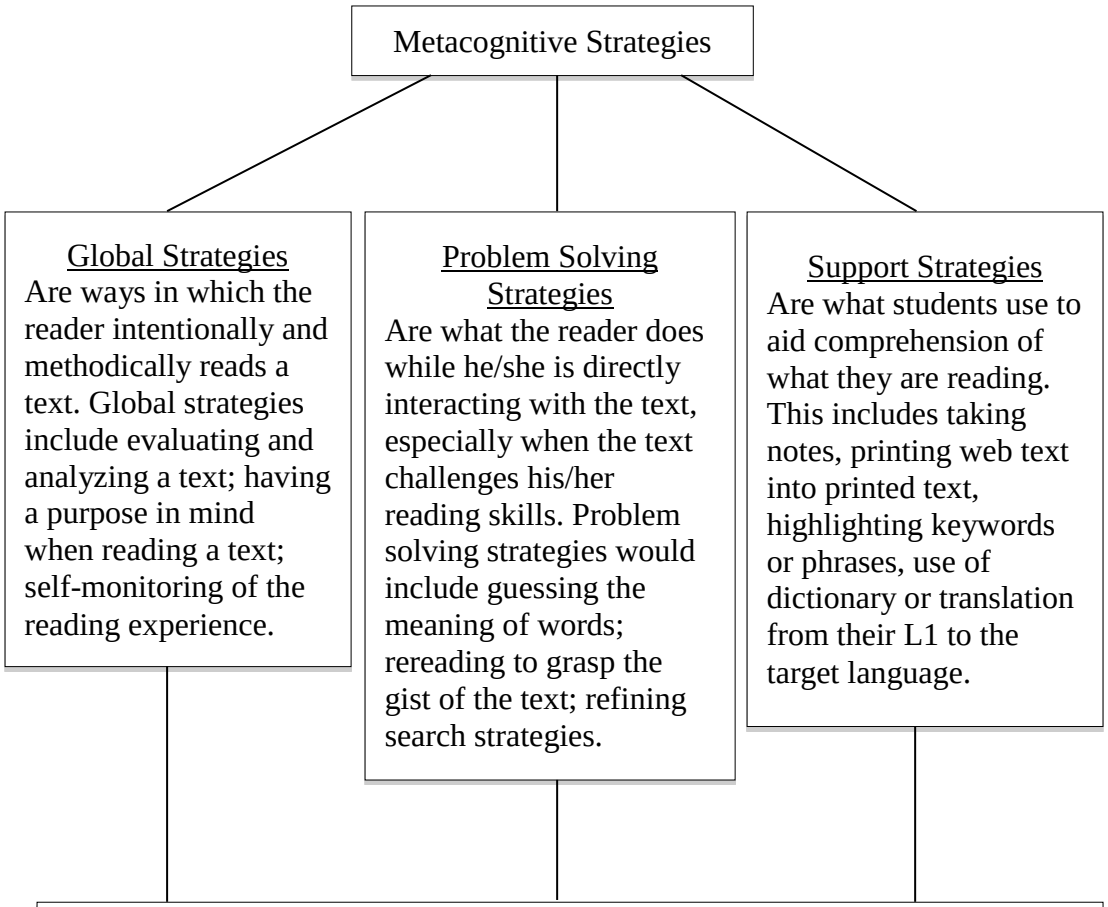
3.3. Would this page be helpful to you in future research?
Why do you think so?
a. Yes.
If I would like to know something in particular about the above mentioned issues, I think this is a proper site do research.

b. No.
I guess there might be a lot of effort behind listing all this topic's, but for a final use (find what I am looking for it is way too confusing and absolutely too much sponsored links. It is an unnecessary effort to grapple with this site.


apiary noun – definition in British English Dictionary & Thesaurus – Cambridge Dictionary Online
Cambridge Dictionaries Online
Look it up!
Home Tools Resources Topic Areas Our Mobile Dictionary Apps Cambridge University Press Help
Beautiful books. Made by you.
Start your book now and get 20% off.
Get started
blurb
apiary
noun
Definition
a place where people keep bees, especially a collection of hives (= containers in which bees live) kept to provide honey
SMART Thesaurus
Synonyms and related words
aviary beehive cage coop doghouse fishbowl hatchery hive hutch kennel nesting box pen perch pigsty sanctuary stable stockyard
See more results »
Topic: Animal Dwellings - man-made
Our dictionaries
British English
American English
Business English
Learner's Dictionary
Essential British English
Essential American English
English-Spanish/Spanish-English
English-Turkish
Own a business?
Be found on Google
Claim your free listing today!
VISUAL THESAURUS
Free Dictionary Toolbar for Browsers
Add Dictionary Search to iGoogle and your website
The open source ECM platform

Appendix L

Excerpt of Coding Chart: Descriptive Codes simplified into three manageable themes. These codes helped to identify reading strategies.



A chart of sub-categories was created with nodes and codes to provide a general overview of emerging themes.

Media	Node 1: Supporting strategies
P-text	Code 1: language strategy = word translation to L1
E-text	Code 1: language strategy = word explanation

To compare strategies and behaviour across media, I organized the quotes into two categories: p-text (printed text) and e-text (electronic text).

Media	Node 1: Support Strategies	Node 2: Problem Solving	Node 3: Global Strategies
P-text	Code 1: Reading Habit Code 2: Thinking Process Code 3: Strategic Knowledge		
E-text	Code 1: Reading Habit Code 2: Thinking Process Code 3: Strategic Knowledge		

Appendix M
Themes divided into subcategories: Coding Excerpt from Student Journal

Wikipedia

I know in advance that Wikipedia would be the first place to give me information about it **[use]**; however, I don't trust on Wikipedia **[attitude]** so I just will use that information as a general idea. (Maria)

I know that I don't like Wikipedia **[attitude]**, but I am just going to use that website in order to know what is the name of "Manifest Destiny" in Spanish**[use]**. (Maria).

After being surprised about how Wikipedia had accurate information about this topic **[attitude]**. I check my book to see if I found some information about this lady**[use]**, but I didn't find it. (Maria).

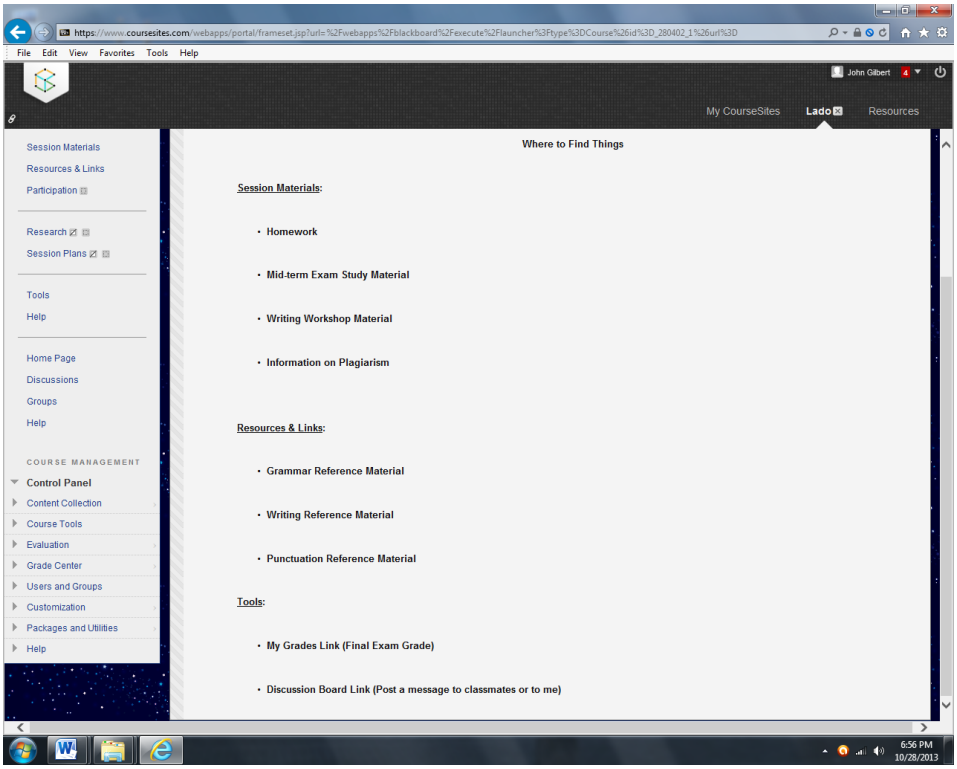
Wikipedia – I trust it**[attitude]**- It has always given me good information **[use]**. (Student "D").

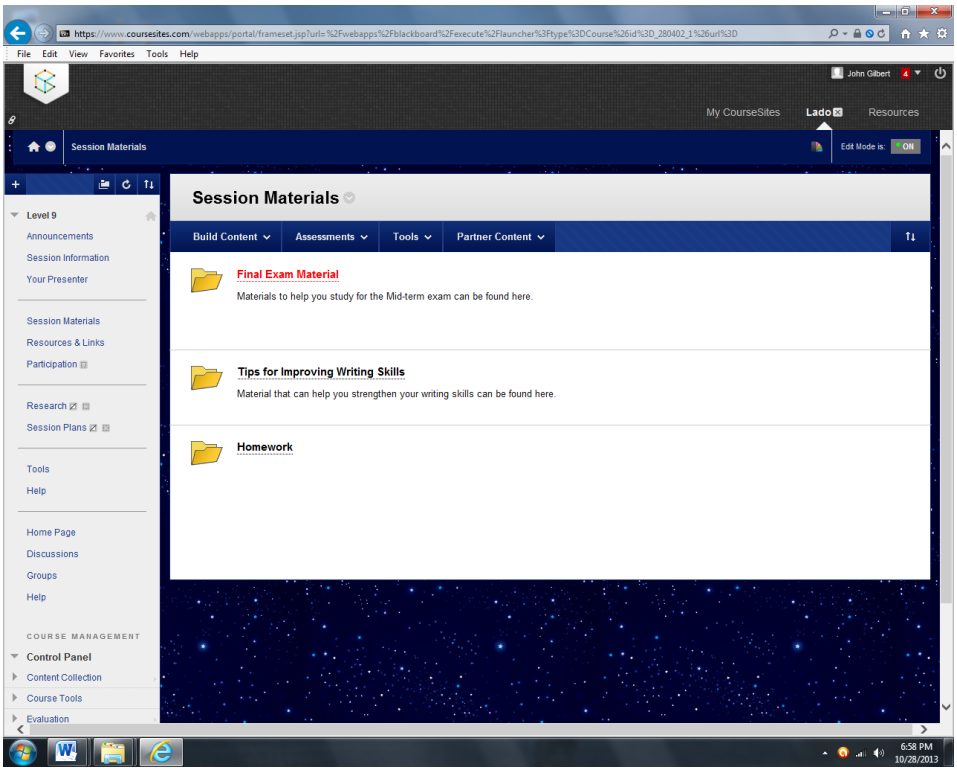
Google

So, I wrote in Google **[use]** "Number of Continents" a lot of websites appeared with information. The problem **[difficulty]** in my opinion for me is that most of the websites are unknown and are not from universities or familiar for me. (Maria)

I Googled **[use]** "Television in North Korea" (Lee).

Appendix N
Screen Shot of My use of Blackboard as an Internet Classroom Assistant





Appendix O
Homework Task: An Example of the Inclusion of the Internet into my Daily Classroom Practices.

Homework

Go to http://grammar.ccc.commnet.edu/grammar/gerunds.htm

Read up on Gerunds and Infinitives. Be able to provide the class with one point about the Gerund and one point about the infinitive. In addition, be able to discuss how they are different from each other.

Non-Homework

Check out this site for writing and punctuation tips:

http://www.english-the-easy-way.com/Writing_English_ESL/Writing_English_ESL.htm

Appendix P
Pen Portraits

Savenye and Robinson (2004, p.1046) contend that qualitative research involves "highly detailed, rich descriptions of human behaviors and opinions." In the following, I have presented pen portraits on all eight participants in an effort to build up a picture of their literacy practices by means of illustrating how the participants experienced the factors that influenced their reading behaviors and strategy use. My observations as well as comments made by the participants during their interview sessions contributed to the pen portraits.

Participant 1: Hilda

Hilda was a 38-year-old female from Austria. She left a career as a graphic artist to come to the United States to improve her English skills so that she could secure a job with an international company in Europe. She was a morning student at the language school and a part-time evening student at a prestigious art college.

Hilda was a very good verbalizer who could express her thoughts well. Although she was an avid fan of Apple Computer and quite comfortable with its software applications, Hilda had an ambivalent attitude toward technology in general. In her interviews and group discussions, Hilda emphasized her preference for printed text over web text. Hilda explained:

> *…if I take for example, the Washington Post, pick up the Washington Post every morning, when I have the printed version, I read the newspaper—I mean, usually, you read the newspaper from the first page to the last page. I do it mostly the other way around—but that's another thing. And if I read the*

Washington Post online, there is so much and there are so many hyperlinks. And if I'm there, I'm confused and I'm always a step further, you know? Because there is this link…when I read the newspaper in paper [form] there is this page, and I am with this page.

On the other hand, Hilda never hesitated to be an advocate for "Google," "Wikipedia," or the World Wide Web. She reflected, *"I can't imagine living without Goggle."*

Hilda was very self-conscious of the fact that she was born "between" the non-Net and the Net generations. Her feelings of being in the digital "Twilight zone" may mirror those of others who did not grow up with technology but have adapted to it. Hilda observed: *"It's maybe a question of age, but I grew up with books…I'm working with the Web…maybe that's to try to get familiar with it, but until yet, I love more printed stuff."*

Hilda's bias toward a print-based environment cannot be simply attributed to the fact that she was not born into the digital generation because Hilda's preference for ink print on paper was not linked to a generational preference but was instead due to issues she had with the readability of online text. Hilda explained: *"I get lost with colored font. It is ok for my eye if there is used one color for individual words…however, I cannot deal with a color jungle within text… There is something disturbing me."*

Interestingly, while Hilda acknowledged the need for students to be digitally literate in the 21st century, she adamantly argued against new literacies being taught in the ESL classroom. She expressed a concern about the modern world pushing

technology too much on students and that she did not want a computer teaching her English or any language:

> *It's hard enough to learn the language…It's not that…I appreciate if there's some helpful websites. But I don't think…and maybe it's something in my mind where students all sitting in the classroom with a computer before them and the teacher is there, but somehow the computer is more teaching you the language. I don't want to end up in this way.*

Participant 2: Lee

Lee was a 22-year-old female from Korea. She came to the United States to improve her English so that she could pursue a graduate degree at an American college or university. Unlike Hilda, Lee grew up surrounded by digital technology and felt more comfortable in a web-based environment than in a print-based one. During the workshops, Lee would not take notes from what I had written on the whiteboard. Instead, she would simply hold up her I-Pad and take a photo of the whiteboard. She was very proud of how digitally developed her country was and boasted: *"Do you know the Korea is the faster Internet than America. We are the most developed Internet than America. In Korea it is more faster than America on the Internet. People use always Internet in Korea. I think the more information in the Korean website."*

Lee was shy, but readily replied to any questions asked to her. She was a visual learner who could easily become bored or disengaged if information was not displayed vibrantly. Lee noted: *"…when the news is colorful, I more easily approach the article."*

While Lee stated that she did not use a cursor when reading online text to keep track of her place within a paragraph or sentence, she did use a pen to help her read printed text: *"On paper, I read with my pen. I use my pen and highlight very important thing. I check and highlight the topic."*

Lee perceived her digital literacy skills to be better than they actually were. Although she stated that searching on the "*Internet is very easy,"* she appeared to lack adequate skills to evaluate the information she collected. For example, when I asked Lee how she determined the trustworthiness and accuracy of the information she accessed online, she replied: *"I don't recognize exactly…I can't know that the true or false…I don't know."*

Arguably, Lee could be seen as a good representation of the way that those who have grown up in the digital age overestimate their digital abilities. This often leads to a "hubris" in which the student not only believes that he/she is impeccably digitally skilled but is also somewhat of an authority when it comes to digital technology. Lee revealed her hubris in her response when asked if she felt TESOL students needed be taught digital literacy: *"Teacher help need not. Because I know those things. Because of my experience. Everyone know to search the Internet. The teacher is need not."*

Participant 3: Rosa

Rosa was a 25-year-old female from Colombia. She came to the United States to work as a nanny for one year. Rosa was permitted by her employer to attend morning English classes to improve her second language skills. She was extremely reflective and was able to express her views on digital literacy clearly.

Although Rosa's age could define her as being a part of the digital generation, she did not grow up in a digital environment so she did not identify herself with those who had grown up with technology. Rosa explained: *"...I started in a different generation than now. I grew up…there was not that much use of computers, and there was no facility of the access of computers and online and the Internet the whole time like it is now."*

Rosa was very comfortable working with web-based resources but was skeptical of online information. Her leeriness was apparent in her assessment of a Colombian online resource called 'Embargo': *"In Colombia, we have a page, which is like the summary of the summary of the summary. So, I wouldn't go there…you cannot really trust that information because 'Embargo'...I don't know how to translate 'Embargo'...but that's not a good place to go."*

Although Rosa had not received any formal digital literacy instruction, her critical thinking skills were somewhat developed. For example, she said she often judged web pages by the colors they displayed: *"some pages use yellow and orange. I don't know why, it doesn't give me that they are trustable. Because I think yellow and orange are colors that people use for commercial and when they want to sell something."*

An additional web practice that set Rosa apart from the other participants was her adeptness at power browsing. This was surprising to me because I would have expected a more digitally active student such as Lee to engage in this practice more than a 'newcomer' to the Net such as Rosa. Rosa commented on her use of power browsing:

I won't read the whole…[online text]…It's boring to read it…As you know, there are a lot of web pages that can give you more specific information. So, if the page I am reading now doesn't give me that information…that select information I want, I can perfectly go to the other without wasting my time with the whole thing.

Rosa engaged in some of the same strategies as the other participants to read web text. These strategies included the "snatch and grab" and "chunking" techniques (mentioned earlier in Chapter 4). However, Rosa concluded that strategy usage was a very individualized process:

I think every student has at the end the day his own strategy. Even if he has never thought about it—since you are a child you are creating a strategy. And that's a way you work because you are unique. You are different to everybody. And then that's a way to create.

Participant 4: Faris

Faris was a 30-year-old male from Saudi Arabia. He was a Ph.D. candidate from a Middle Eastern University who had come to the United States to strengthen his English speaking and writing skills. He was extremely serious about his studies and centered his time online around achieving his study goals rather than social networking or pleasure surfing. Faris was comfortable around computers and familiar with the Internet. He indicated that sixty percent of his reading was done online where he read for both academic and leisure purposes. Faris especially enjoyed the availability of periodicals that he could access through the Internet. Faris reflected:

I used to read newspapers and magazines [in printed form] *but, now because of the Internet, I am using Internet for reading...I guess because to reach information easier, it is the best way to go Internet. And it is, I mean, you can open this newspaper or read any newspaper everywhere, anytime without any problems.*

Further, Faris found the Internet of important value when reading for his studies. When he searched for information to help him with his research pursuits, Faris said that he preferred using the Internet and that he engaged in browsing or skimming strategies to locate the information he needed online. Faris conveyed: *"If I'm talking about searching for information, I'd rather Internet…I am looking for key words."*

However, once Faris found articles of interest he would neither read them online nor bookmark them for later reference but would print the articles out in hard copy form. Faris explained:

Sometimes when I am planning to write an essay or article about something, so I need to printout some papers so later I can take it because I think it is too hard to know just the information and you are planning to come to go back for it because sometimes you will not be successful in that.

Additionally, Faris printed out articles not only as a means to easier relocate information but also as a way in which he could apply reading strategies that helped him comprehend the text. Faris commented:

If I want to read about something, and I want to concentrate on it, and I want to find some information to serve my article or my research for example, I think I'd rather to print out the article to see it is much better.

Faris' online and offline reading preferences were of interest in two ways—he found accessing and retrieving information online easier and more productive than trying to locate information in printed text; however, he only maintained this practice to search for information or to gain an overview of a text. To enable better comprehension of the texts he obtained online, Faris engaged in a support strategy for better comprehension by printing the text in hard copy form.

Participant 5: Sabina

Sabina was a 27-year-old female from Kosovo. She was a participant in the Council on International Educational Exchange (CIEE) work and travel program and used her free time to study English. Her goal was to advance her English skills from an intermediate to a high-intermediate level. Aside from English, Sabina spoke three other languages—Albanian (her mother language), Serbian, and Croatian.

Sabina had experience with Internet use. Although Sabina used the computer as a means to communicate with her friends and family via e-mail and Facebook, her primary focus in using the Internet was as a learning tool. As a language learner, Sabina sought out ESL websites that could help her better understand what she learned in class and could provide a means of practice to strengthen her grammar skills. Sabina commented:

> *I need to know more information about conditionals, and I go online. I am going online because the information that I have in the book* [class textbook] *is not enough. I still don't understand and cannot distinguish between different classes of conditionals. My purpose is to find additional about different forms of conditionals*.

However, similar to Faris, Sabina printed out online information that was of interest to her in hard copy form. Her reason for this practice differed from that of Faris in that her need for text in printed form was due to availability and not as a means to necessitate a better understanding of what was being read. Sabina explains: *"…when I find good practice test…I print them because I want to have some copies and practice when a computer is not available."*

While Sabina had a very positive perception of online ESL resources, she often felt overwhelmed by the searches she engaged in while seeking out answers to her language questions. Sabina commented:

> *My biggest challenge* [online] *to find what I look for. It is difficult to decide and you have to check a lot of websites and a lot of information off the Web to decide which one is better for you. It is difficult.*

Sabina shared Hilda and Lee's opinion that it was not the role of a language teacher to help her develop digital literacy skills that would enable her to search the Internet more effectively and efficiently: *"…it's a lot of responsibility for the teacher to do all the things. If she teach us how to learn a language, she can't teach also how to do research. It's a lot for her."*

Participant 6: Evita

Evita was a 19-year-old female from Colombia. Similar to Rosa, Evita's reason for being in the United States was to work as a nanny for an affluent suburban family. Because the two children she cared for were away at school during the day, Evita was permitted by her employer to attend morning English classes. Evita's desire to improve her English skills was motivated by her career goal of becoming an English teacher in her country.

Evita had a very open and friendly personality. She enjoyed interacting with others around her. Evita was not intimidated by technology and was comfortable with surfing the Internet. Like Sabina, Evita used the Internet each day to communicate with others and to complete homework tasks and reinforce what she had learned in class. Evita confided: *"Most of the time when I read on Internet I do that because I need to do homework or researching."*

Evita took great pride in her English studies and looked upon learning a language as a fun experience. While she indicated that she preferred to read in printed text, Evita appeared intrinsically motivated to read online to increase her knowledge of English grammar. When engaged in reading printed text or web text, Evita was aware of her application of self-monitoring and inferencing strategies, which she drew upon for better comprehension of what she was reading. Evita observed:

> *When I read in other language, in this case English,* [it] *is so difficult for me* [to] *understand the first time. I have to re-read and make the story or analyze it in my mind. It's like if I am talking with my mind.*

Evita was also excited and motivated to develop her digital literacy skills and learn new strategies to better search for, access, and evaluate online information. She felt becoming digitally literate would make her a better teacher. Evita shared:

> *I want to learn how to read* [the] *right way on* [the] *internet…because I want to be a English teacher. I need to learn how* [to] *help my students with good strategies, for example they have to learn how* [to] *select the good material online; motivate them with the good reading habit, but I need* [to] *do that before then.*

Evita felt that in order to become knowledgeable in the online reading strategies that she hoped to teach her future students in Colombia, she would first need to be taught them by her ESL teacher. Evita believed that teaching digital literacy skills should be included in her language course instruction. Evita stated passionately:

> *…if a language teacher teach us about how* [to] *read a book, they have to teach about how* [to] *read website. Because sometimes, now it's important to both. So, it's important to read a book, but it's important to read on the computer. Maybe a long time ago the teacher needed to teach how* [to] *read book. But now we use the computer. it's very important* [to] *read on computer.*

Participant 7: Jasmine

Jasmine was a 26-year old female from Egypt. She had immigrated to the United States with her husband and young son. Jasmine attended morning classes to strengthen her English writing skills. She had confidence in her computer skills, and part of her daily

routine was spent on the Internet where she read articles for pleasure, studied English grammar, and engaged in social networking activities.

Jasmine was very enthusiastic about reading online. She preferred reading a web page over a printed page. She felt that online reading helped her achieve her two most important reading goals—to grasp terminology used within a text and to understand what she was reading. Jasmine explained:

> *I prefer to read a web page more than a page of print for many reasons. This* [is] *because I will use Google Translate if I don't understand a word, and it's easy for me to go another page if I don't find what I want. Also, I feel when I read from a Web is faster for me than any book and when I read online I could save any idea or information in a second.*

Unlike the other participants in the study, Jasmine read only in English when reading online and noted that when she read English in web text, she comprehended 70% of what she read opposed to 50% when she read printed text.

Interestingly, the opposite was true when Jasmine read in Arabic—she preferred reading her native language in printed text. Jasmine explains:

> *In Arabic, I prefer printed text more than the web text. I don't know why. Maybe, when I grew up, I read print text only in Arabic…when I was in my university, I don't use the computer a lot. But, when I come here* [to the United States] *I use the computer for seven years now and use only English. I feel it is easy for me, the English…I don't know how to type quick in Arabic. Like if I type one word in Arabic and that same times I can type five words in English. I am faster in the English type more than the Arabic type. I don't know if you*

believe me or not…like one alphabet in Arabic, I try to look where is it in the keyboard. Like "A" in Arabic, I try to look where is "A"? But, in English I know without looking. So, maybe my mind start to think in English all the time.

Despite the fact that Jasmine spent time on the Internet, her search and evaluation skills were extremely weak. She consistently used Google and seemed unaware of alternative search engines. However, she was able to evaluate the accuracy of Google translate. Jasmine observed: *"I use all the time Google translate to translate English to Arabic…if I need to know like how it means another name in English. But if you do it from Arabic to English, it will not give you meaning…like it just translate word by word."*

Jasmine also made an effort to evaluate the credibility of the resources she used to develop and strengthen her knowledge of English grammar. However, her determination of the trustworthiness of grammar information presented in printed text and web text varied and also indicated that her ability to assess the accuracy of what she read in print or web text was limited. For example, she was very skeptical of grammar structures that were explained on websites. She argued:

I feel like if I go to a website it will be like a person opinion, and I didn't want to know in the grammar about the person opinion because the grammar, it's a rule that you have to understand that it's like this. So, we didn't need opinion for other people. You have to know this is the grammar for this rule and you have to know it and understand it like this.

Despite the fact that Murphy's grammar is also available online, Jasmine felt grammar rules presented in a textbook had been verified and could be trusted, especially since they were used in the classroom and her teachers provided specific grammar rules as photocopies from books. Jasmine noted: *"A book…it is trust in grammar…like Murphy Grammar book…or the sheet which the teacher give us from book."*

Participant 8: Maria

Maria was a 29-year old female from Guatemala. She had come to the United States on a fiancée visa and was eagerly awaiting her upcoming marriage. She enrolled in the morning session with the goal of increasing her vocabulary and reading skills so that she could achieve a high TOEFL score. Maria's English skills were the strongest of all the study participants, and she possessed an upper-intermediate level of English in her reading, speaking, listening, and writing skills. In her home country, Maria had been a pharmaceutical representative, and she had extensively used technology in the course of her daily work routine for both research and communication purposes. Her primary use of the Internet was as a tool for work and learning.

Maria had a social, outgoing personality. She enjoyed participating in group discussions and was very talkative. Maria was extremely confident in her ability to locate information on the Internet. She reflected: *"…I think I can find information. I feel comfortable. I feel like I'm going to find the information that I'm looking for. That it will take me time, but I will find it."* Maria's ability to search and evaluate information was impressive. Although both Hilda's and Rosa's critical thinking skills were developed, Maria was more knowledgeable in critically analyzing information in

both print and web text environments, setting her apart from the rest of the participants. Maria commented on the way in which she verified the information she encountered in print and online:

> *You can learn in advance which books you can consult, you can check, in the library. And when you do that online, there's always these web pages that you start wondering about the information. Ok, I check the websites. If I find that, for example, the website address ends with .org, .edu, so I know that comes from universities, comes from organizations, or .gov that is government. So, I know I can rely on them.*

Although Maria was one of the few participants who did attempt to use other search engines, such as Amazon's "Askville," her preferred search engine was Google. Maria noted that after accessing an article from the search results, she skimmed the article in a left to right reading pattern looking for keywords that would suggest that the information merited a closer read. Maria explained: *"I read from the point on the left upper side to the right downside and just pick some words. And if they grabbed my attention, these words, then I read the article."*

While Maria found hyperlinks within web text a challenge because they often took her away from a key point, she developed a strategy of ignoring hyperlinks when closely reading an online article. Maria noted this strategy application when she was reading an article of the Vietnam War: *"As I started reading, I found hyperlinks that take me to another web pages. Since my goal is* [to] *learn about the war. I didn't click it. I just focused in finish what I was reading."*

Unlike Lee, Maria did not overestimate her digital literacy skills. While Maria was confident in her ability to read in both printed and web text and possessed strong computer skills, she felt that there was room to strengthen her online reading skills. Maria concluded: "*I feel more comfortable with textbooks or printed information, because with online reading, I still get sometimes a little bit lost."*