

Conceptualising Online Literacies
An investigation into Thai EFL students'
Web-based research practices

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ABSTRACT

The use of Web as a source of information has commonly been integrated into Thai English classrooms to enhance students' learning and expose them to "real world" language. Unfortunately, this important issue has never been systematically addressed through detailed and sustained research. This means that teachers of English as a Foreign Language do not have an effective research base from which the tools essential to support the development of the necessary literacies in the digital age can be developed.

The purpose of this study is to gain an in-depth understanding of the literacy practices that need to be developed in order to make effective use of the Web as a source of information. Drawing on a Multiliteracies framework, this study examines the kind of practices that were employed by Thai EFL students in the completion of language tasks that required them to use Web-based resources. The rich data gathered on the common practices and challenges that students faced in using Web-based resources provides insights into the skills and knowledge essential to the development of online literacies.

The research that forms the basis of this thesis is set in a Thai university and the participants are undergraduate students majoring in TESOL in their first year of study. The data was collected using two types of verbal protocols. A Think-aloud protocol was used to collect the practices that the students engaged in while completing Web-based research tasks, while stimulated recall was used to collect retrospective recalls of the reasoning behind the practices. These tools allowed the researcher to gather rich data on the spot without having to rely on participants' memories.

Five phases of online literacy practices were identified. Consistent with online literacy studies in different contexts, three main skills were found necessary for the task of online research include the ability to search and locate information,

the ability to evaluate online information and the ability to effectively use retrieved information for the intended purposes. Significant findings from the study relate to the direct relationship between the practices employed in different phases. These results showed that the lack of skills hindering the completion of one phase was found to have an impact on the outcomes of other phases and the timing and quality of the overall task completion. Thus, attending to the development of discrete skills is insufficient to the development of online literacies. Other important findings highlight that the students relied heavily on various compensatory strategies in order to make up for skills and knowledge gaps that were hindering their progress. The limited English proficiency, the sheer amount of information on the WWW and the lack of ease experienced by many when reading from a computer screen are some of the reasons given for the use of compensatory strategies. Nevertheless, all of strategies deployed by students in this way were transferred from the printed environment. It is not surprising that many of these strategies were found insufficient to the job of assisting the students in sifting through a huge amounts of information that awaits them in the online spaces they enter when the commence their searches.

Such results are interpreted as highlighting the need for the conscious and explicit development of online literacy practices specific for EFL contexts. The data collected from students working on online tasks provided the foundation for the conceptualisation of effective practices that is taken up in the latter part of the thesis. It is necessary for EFL teachers to acquire a comprehensive understanding of effective literacy practices within online environment in order to support the students' development of those required literacies. This study has the potential to inform pedagogies specific to the context of ELT in Thailand and EFL teaching in similar contexts. These implications will help EFL teachers to develop a clear understanding of the online practices that occur outside classrooms in order to support students' learning needs in the online environment.

CERTIFICATE OF ORIGINAL AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Chapter 1.

INTRODUCTION

1.1 Background to the study

There is little doubt that the proliferation of computer-based technologies has brought about profound changes to social and educational contexts over the past two decades. People now rely on computer tools and services to carry out many of the most mundane tasks of everyday life. In turn, we are shaped by them in ways that would not have been envisaged ten years ago (Godwin-Jones, 2010). As the availability of the Internet has become much more widespread, the lives of people are now being directly influenced by reading and writing practices through the Internet. In classroom contexts, students today rely heavily on the Internet as a source of information, often turning to the Internet rather than books when gathering information (Leu, Kinzer, Coiro, & Cammack, 2004). The detailed study by Godwin-Jones (2010) revealed that Internet users read more online now than they did ten years ago due to the popularity of the reading material available in electronic format. Students today read online for pleasure and use online material to complete school assignments.

Thai classrooms demonstrate no exception to this trend. The Internet and computer programs are now commonly used in the delivery of lesson content and tasks, especially in higher education (Wiriyaichitra, 2002). This is mainly a consequence of the increased availability of computers and the speed of the Internet. The number of Internet users in Thailand has tripled within the past 10 years, reaching 23.8 million in 2013 (NECTEC, 2013). One third of the Thai population is reported to have access to computers and the Internet, with the majority of Thai Internet users spending more than 20 hours a week online. The Thai government also realises the importance of the new technologies and the

impact they are having on Thai people's lives and their ways of living. This is evidenced in the focus on Information Communication and Technology (ICT) in the most recent educational reforms (Office of the Education Council, 2004). ICT is generally perceived as a tool that allows improvements in teaching and learning, and one that provides life-long education. In addition, it is seen as strengthening the educational system (Noytim, 2006). It is, therefore, not surprising that ICT tools, especially the computer and the Internet, are commonly integrated into classrooms to improve the learning and teaching of English in Thailand.

The World Wide Web (WWW) has been increasingly integrated into English language classrooms in both ESL (English as a Second Language) and EFL (English as a Foreign Language) contexts for the purpose of enhancing learning and teaching (Murray, 2005). The Internet is viewed as an important tool because it facilitates the level of independent learning and the opportunities for students to be exposed to real world language. Thai students are believed to have lower proficiency in English than students in neighbouring countries because of the lack of exposure to authentic language (Baker, 2012; Noytim, 2006). Unlike many neighbouring countries in Southeast Asia, Thailand has never been colonised by a Western country; thus, Thailand did not inherit the legacy of a colonial European language. Even though English has long been recognised as an International language and Thai people have enjoyed its instrumental values (see Chapter 2 for detailed discussion of context), English is still used mainly in the education and business sectors rather than for the purpose of communication. In English language classrooms where both teachers and students share the same native language, the learning environment appears to be 'artificial'; combined as it is with commercial textbooks, which often fail to provide materials using real-world language, it does not come as a surprise that Thai students have low levels of English proficiency (Noytim, 2006).

To enhance the meaningful learning environment of English in Thailand, the Internet has been integrated into classrooms. In the EFL context, the Internet is often used as a source of information to enhance language learning tasks such as academic writing (Stapleton, 2005). Regrettably, as is the case in many other contexts, the new technologies have been integrated into EFL classrooms without the appropriate pedagogy (Noytim, 2006). Teachers often feel that they have not been properly prepared to teach with technology (Suwannasom, 2010). Many have taught themselves how to use computer-based technologies and how to teach with these technologies. The lack of appropriate support in using online resources for work-related research, education and general information has caused many to face problems such as information overload and online media distraction (Bulger, 2006). As the application of computer-based technologies has continued to grow, so has the need for Thai EFL students to develop the literacies necessary to take full advantage of the rich opportunities provided by online resources (Bulger, 2006; Goodwin-Jones, 2000; Murray, 2005). Though some literatures distinguish between the World Wide Web and the Internet, this thesis employs these two terms in order to refer to the online environment in general. Therefore, for the purpose of this thesis, these terms are used interchangeably.

1.2 Research rationale

It has been reported that students in university settings are increasingly required to conduct research online to complete course-related tasks, but they often receive little preparation and instruction on how to efficiently use online resources (Bulger, 2009). Murray and McPherson (2006) explained that computer literacy is often taken as a given in language education; thus, it has been neglected as an area of study. Many researchers have focused only on how online activities facilitate language learning without examining the skills required to engage in those activities. The new technologies have been integrated into the classroom without a full understanding of their strengths and weaknesses. If this trend continues, students and teachers will be left without

the necessary support for the kinds of literacies which have been brought about by the new technologies.

This issue has been neglected not only in language education but also in a range of educational contexts. The lack of research in this area is a consequence of two assumptions. The first assumption emerges from the L1 (native language) context. It has been widely assumed that students today are 'digital natives' (Prensky, 2001) and that they are able to adapt themselves to manage new technologies without the need to be taught. The new generation is simply better than the older generation at understanding and utilising technology (Passanisi & Peters, 2013) and their ability to deal with printed material can be transferred to the online environment (Leu et al., 2004).

Many literacy scholars have started to recognise that this is problematic and have turned their attention to the important question of redefining the concept of literacy in this media rich, digital age. However, most related studies are only located within L1 contexts. This is because it has been widely assumed that students can transfer their skills in L1 and employ them in L2 (second/foreign language) learning contexts. This assumption explains why studies of online literacies within L2 contexts are very scarce. Murray and McPherson's (2006) study of ESL migrants in Australia proved this assumption to be wrong. It was found that ESL learners often face challenges when they searched for information on the Internet as they are often led to websites containing English beyond their level of proficiency, or that have low readability or are unreliable. Moreover, studies have also shown that students still prefer to conduct searches and construct search terms in their own language (Stapleton, 2003). The explanation for this preference stems from their limited proficiency in the L2 language being learned. These studies suggesting that there are additional demands of operating in the second and foreign language context have led to the specific focus in this thesis on addressing these issues.

Apart from the assumptions being made about students today, the lack of support in developing essential literacies is also a result of the lack of understanding about these new literacies. In the Thai EFL context, Banpho (2001) reported that teachers have not gained expertise in teaching with technology. Many teachers do not have the 'teachable tools' to support learning in this new environment because they have not themselves learned in their formal teacher training how to teach with new technologies (Suwannasom, 2010). Without a clear understanding of the necessary skills for the new learning environment, teachers have no suitable tools with which to equip their students with 21st century skills.

To date, very few studies on EFL students' practices on the Web have been undertaken. Of those available, the majority have not been conducted in natural contexts (Anderson, 2003; Pookcharoen, 2010). Traditional methods such as survey or interview, which rely mainly on students' memories and their ability to recall events, were found to be insufficient for capturing the actual practices and challenges that students face. They neglect the reasoning that underlies students' navigational decisions during the practice of Web research. Because there is widespread integration of these technologies in the Thai EFL classroom, this study aims to problematise this issue to explicitly determine the skills that are essential for Thai students to independently use the Web as a research tool.

1.3 Purpose of the study

This study aims to describe the constitutive elements of literacies in the digital age specifically in relation to Thai EFL students. The fulfilment of this aim requires identifying the skills and knowledge that students need to develop to enable them to become literate in the new learning environment. By observing the practices that students employed in a natural context, the author was better able to examine those practices that assisted the students to achieve their task goals as well as those that cause frustration but are nevertheless repeated. The

observations of what students can and cannot do, along with the rationale behind the practices, provide clear pathways to the explication of the skills required. These are immensely important in the context of EFL where students not only face difficulty in working in an open-ended environment with vast amounts of information but also are working in a language in which that they have not gained expertise. To make use of technology in a meaningful way, it is critical for Thai EFL students to develop these essential literacies.

Located within the EFL context in a Thai metropolitan university, this study focuses specifically on the use of the Web as a resource for English language tasks as a constituent of essential literacies in the digital age. The research questions are as follows:

What are the essential skills and knowledge that Thai EFL students need to develop in order to effectively engage in the task of researching on the Internet and complete their language tasks?

To answer this research question, two sub-questions were closely investigated:

- 1. What practices do Thai EFL students employ in conducting research on the WWW for information to complete their class-based language tasks?*
- 2. What kinds of challenges do they face in researching the required information?*

1.4 Significance of the study

This study not only aims to prove that the assumptions regarding the fluency of digital native students are not correct but also to highlight the need to explicitly develop the necessary Internet research skills. If teachers fail to recognise this problem, students will be left unsupported in developing the literacies they need in the new learning environment. Awareness of these literacy issues will enable

teachers to enhance students' experiences in using online resources for school-related purposes and facilitate the explicit development of the necessary skills. It is intended that the findings from this study will make clear those literacies that are required to effectively use the Web as a learning tool in today's teaching and learning contexts. In doing so, the work of this thesis will also address the need to systematically and explicitly develop the skills and knowledge that are necessary for students to function effectively in the online learning environment. The results will be used to enhance the practices of EFL teachers in universities in Thailand.

As Web-based technologies are becoming increasingly significant in the learning and teaching of English in Thailand, it is clear that teachers need to have at their disposal teachable practices and strategies that equip their students with the necessary literacies. The findings from this study may be used to support the development of these essential learning skills. Drawing on empirical data gathered from this specific context, these skills are based on authentic practices collected in a natural online learning context. The suggestions concerning these important skills can be based on the empirical evidence rather than the usual teachers' intuition. There is a genre of research that only focuses on the pedagogical implications without a basis in research evidence. Through the processes of identifying practices and analysing the challenges faced by students, it is hoped that this thesis will fill the gap in the literature. Moreover, this study aims to identify the skills that are necessary for EFL students whose English is still developing. This can provide better understanding of the skills required in this specific context. To date, there has been hardly any research on the necessary literacies for those who use English as a second or foreign language. Most of the research on online literacies has been conducted with native speakers of English, leaving a gap in the understanding of online literacies for EFL students. This is detrimental to the teaching and learning of English in the digital age. Although there is an increase in the number of Web pages in other languages, including Thai, the majority of Web pages are still in English. The outcomes of this study could also be

beneficial in other EFL contexts and could empower EFL teachers in the development of appropriate skills in the digital age.

The present study also hopes to yield methodological benefits to the research field. The lack of research in a natural context due to the choice of research methodology has prevented researchers from gaining a better understanding of this issue. The use of verbal protocols as a data collection tool is essential in identifying and making explicit online practices in natural contexts. This richness and depth of data cannot be captured using traditional research instruments such as observation, survey or interview, because these research methods rely principally on participants' memory. To gain a comprehensive understanding of these practices, the use of verbal protocols is found to be essential. Since verbal protocols have not been widely used in language education, or have only been used without careful consideration of the strengths and weaknesses of the methodology, especially in the EFL field, this study assists in moving this methodology forward by offering a detailed evaluation of the application of verbal protocols. Through identifying the problems that arose as a consequence of the research design, this study was able to provide suggestions for minimising these problems.

1.5 Structure of this thesis

Following this introduction, the thesis is organised into five further chapters.

Chapter 2 consists of a review of the literature pertinent to the study. This chapter aims to show that what constitute 'literacies' in today's contexts are not supported by the traditional literacy curriculum. The chapter is divided into four sections. The first section addresses the context of English Language Teaching in Thailand, which impacts on the skills being identified. The second section draws on New Literacies Perspective as the guiding framework of the study. It shows that changes that have occurred in contemporary society have resulted in the need to redefine what it means to be literate. The third section focuses

specifically on the affordances and hindrances of the Web pages because of the major role they play as sources of information in the EFL classroom. The last section draws on a range of literature to outline some of the skills and knowledge essential to become a literate Web researcher in today's contexts.

Chapter 3 describes the methodological approach, data collection and data analysis procedures. This chapter discusses the strengths and weaknesses of the selected methods, verbal protocols, as well as the ways in which these methods benefit the rich data gathered for the study. The step-by-step description of the data collection procedures and rigorous data analysis processes are also detailed. The in-depth analysis was made possible because of the data generated by these methods. Because verbal protocols have not been used as widely as other traditional qualitative data collection methods, it is necessary to provide a clear understanding of the ways in which they were employed to obtain thick descriptions of students' practices from multiple perspectives, especially in real-time.

In Chapter 4, results from the data analysis are reported. The practices that the students employed to complete the tasks as well as the challenges they faced during the task completion are reported in detail. These practices and challenges can be grouped into five interrelated recursive phases which resemble a set of practices employed to achieve the same goal. The Online Literacy Practices Cycle is comprised of the following: Phase 1: Setting search goal, Phase 2: Generating search term, Phase 3: Locating relevant information, Phase 4: Evaluating the reliability and accuracy of retrieved information, and Phase 5: Using online information to respond to task.

Chapter 5 draws upon the significant patterns of online practices reported in the Findings chapter to discuss the skills and knowledge that were found to be essential for Thai EFL students to effectively complete each phase of the Online Literacy Practices Cycle, as well as the overall task. The three skills which were found to be prominent in the task of using the Web as a resource are the skills

required to search for specific information, the skills needed to evaluate information which has been retrieved online, and the skills required to use information retrieved from different sources to present an original and cohesive response. These new understandings of the skills and knowledge that Thai EFL students require to effectively use the Web as a research source have important implications for EFL pedagogy.

The final chapter, Chapter 6, summarises the major outcomes and concludes the study by exploring the implications for research and for practice. It proposes key features for the professional development of teachers in the Thai EFL context. This chapter also outlines the limitations of the study and identifies possible areas for future research.

The work of this thesis is intended to serve the interests of teachers and students in EFL classrooms in Thailand. The extensive literature base examined for this study, the application of innovative and multi-perspectival methods to the gathering of data and the detail of the resultant findings provide a strong basis for the recommendations that are made in the final sections and hopefully ensure acknowledgement of their value at both system and classroom levels.

Chapter 2.

REVIEW OF THE LITERATURE

2.1 Introduction

The previous chapter discussed the background of the study, and the significance of and rationale for making explicit the skills involved in using Web-based resources in the EFL classroom. In this chapter, the literature that assisted the author in forming salient research questions addressing this particular issue will be discussed. The advance of new technologies has shifted the parameters of the didactics of reading, especially in the Thai EFL context. The Internet has been integrated into lessons to increase students' exposure to real world language as well as to encourage independent learning. However, the use of technology in the EFL class is not without problems. Despite being a common tool in the classroom, students have not been systematically supported to develop the kinds of skills and knowledge essential to independently use the Web as a source of information. Consideration of this problem has led this study to examine the kinds of skills and knowledge that are essential for Thai EFL students to be considered as literate in this new learning environment. The aim of making these skills explicit in this study is to potentially inform ELT pedagogies in Thailand and to encourage teachers to embrace the integration of new technologies. Even though many studies have started to examine this issue within the L1 context, not much is known regarding essential Web skills in EFL contexts because few studies are located in the context of students who are non-native speakers of English.

This study focuses on the use of the Web as a source of information in an English language classroom context in Thailand. It aims to address the questions that relate to determining the new skills and knowledge may be required for Thai EFL students to complete language research tasks using the

Internet. The goal is to gain a better understanding of what is required to be literate or bi-literate in the 21st century. As thoroughly discussed in Chapter 1, a lack of understanding of the literacy required in the changing social and technological contexts of the communication of learning has resulted in students being unprepared for the changing times. The existing literacy pedagogy based on the traditional definition of literacy no longer supports students to fully participate in a society that has experienced profound changes, and explicit teaching is required to address this situation.

To address the issues under investigation, this chapter is divided into four sections. The first section examines the English Language Teaching context in Thailand as well as the integration of new technologies in EFL classrooms. Limited exposure to real world language as a result of a number of historical factors has seen the benefits of the integration of the Web, which has expanded the opportunity for language learning. Nonetheless, the underdeveloped skills and knowledge specific to the use of the Web as a source of information for the EFL classroom has hindered learning practices. The second section examines the notion of literacy in the digital age which is a product of the changes in a technology-driven society. These changes have an impact on the different forms of literacy today. Through new literacies perspectives (Leu et al., 2004), this section aims to problematise the inadequate nature of traditional approaches to literacy, which do not prepare students for the literacy required today.

Based on the notion of Multiliteracies, originally proposed by the New London Group (1996) almost two decades ago, this guiding principle of literacy in the digital age provides a clear linkage between classroom teaching and the demands of the workplace. This framework has provided the study with an understanding of the educational responses that have come about as a result of the changes in society. This discussion has lead to a close examination of the kinds of skills and knowledge essential to this new learning context. The third section addresses the additional demands on learners when they use the Web

as a source of information. It specifically focuses on the affordances and hindrances of the Web, for which the new skills are required to operate adequately in the online environment. The final section of this chapter draws on the findings from recent empirical studies from various disciplines to identify the specific skills and knowledge that are essential for students to effectively use the Web as an information source. This last section is given particular attention to explicate the assumptions being made about students today. As explained in the research rationale section of the Introduction, the lack of support in developing the necessary skills has eventuated because of assumptions that students today are digital natives, and there is therefore no need to teach them technological skills. Another assumption, which has had a great impact on this lack of pedagogical focus on developing necessary skills in the EFL classroom, is that students can transfer these skills from their native language to work within the foreign language environment. The discussion in the last section of the literature review proves these assumptions to be questionable and highlights the need for students to be explicitly supported in developing the essential skills. The research questions were then formed around the skills and knowledge necessary for Thai students to effectively employ Web-based technology as a part of their language classes. In this section, the significance of making explicit the new literacies skills will also be discussed in relation to the need for explicit instruction.

This chapter aims to show that to be considered as a literate member of the global community, students today need new skills for which the traditional curriculum is not adequate. Because these skills are linguistically demanding, these results may or may not be applicable to the study context in which students use English as a foreign language. The review of the literature in this chapter provides the basis and framework for this research to explore the essential literacy skills in this specific context.

2.2 English Language Teaching in Thailand

The first section of the literature review describes the context of English language learning in Thailand and highlights the students' language proficiency as a result of this context. The students' level of English proficiency essentially has an impact on their practices in using online resources in English. As explained in the previous chapter, scholars have started to investigate the use of new technologies in classroom. Nonetheless, these studies are located within an L1 context, where the students use Web-based resources in their native language (Bulger, 2009; Coiro & Dobler, 2007; Kuiper & Volman, 2008). Although the results of these studies have provided some understanding of this issue, it is not clear whether these results can be applied to contexts in which students are using online resources in their second or foreign language. Thus, this study specifically aims to focus on local responses in making explicit the Web inquiry skills that are essential for Thai students to use English Web-based resources for their English language tasks. To address these issues within the ELT context in Thailand, this section begins by reviewing the nature of English language teaching, which is greatly influential on the level of language proficiency and, in turn, determine the skills that students require to be online-competent. The second part of this section discusses the integration of the Internet in Thai education, especially in the English Language classroom.

2.2.1 The role of English in Thailand

The historical background of the role of English in the development of Thailand has of course had a great impact on the learning and teaching of English. Unlike many neighbouring countries in the South East Asian region such as Malaysia, Singapore, Vietnam or the Philippines, Thailand was not colonised by Great Britain or any other Western country. Therefore, Thailand has had a relatively short involvement with the English language compared to its neighbours (Baker, 2012). The first use of English in Thailand was officially evident during the reign of King Rama III (1824 - 1851), when British colonial power was increasing. The use of English in the country was seen as a sign of modernisation, thus

preventing Thailand from being colonised (Foley, 2005; Rappa & Wee, 2006). This instrumental value of English continued to the reign of King Mongkut (1851-1865) as a means of maintaining Thai sovereignty, whereby it was necessary to open the country to foreign interests and communicate with the West on an equal footing (Aksornkool, 1980 cited in Rappa & Wee, 2006). From then on, English has been used as a means of intercultural communication. According to Kachru's (1985) concentric circles of English based on geopolitical classification, this has placed Thailand as a country within the 'Expanding Circle'. Even though such classifications have been criticised by many researchers (Graddol, 1997), this longstanding classification serves as a useful means to distinguish Thailand from countries in the 'Inner Circle' which use English as a first language and the 'Outer Circle', such as Singapore, Malaysia and the Indian subcontinent which use English as an official second language. The historical background of the status of English in Thailand clearly has an impact on the teaching and learning of English in Thailand today.

In today's context, English has become more than the language of diplomacy. As a result of the demands of globalised workplaces, English has become the language of business and education. Economic growth was seen to be one of the major forces that prompted Thais to learn English, and it became important to have a good working knowledge of English in order to achieve higher education and socio-economic success. As Baker (2012) pointed out, English is commonly used in many areas in Thailand including:

[as] a compulsory subject in school and in higher education, as a medium of instruction in international education programs, as the language of international organizations and conferences (including ASEAN and ASEAN +3), for international business transactions, tourism, the internet, global advertising, scientific and technology transfer, media (including imported film and music), international safety and international law (p.19).

There is no doubt that English has played an increasingly significant role in Thailand. The English language has a higher status than any other foreign language in Thailand because of its instrumental value as a global language. This widespread use of English in various domains has driven the need for Thais to acquire the necessary language skills. English has been adopted as a means to obtain well-paid jobs, as a tool for study and as a mode of communication via Information and Communication Technology (ICT) (Baker, 2012; Noytim, 2006). English can be viewed as the “key to professional advancement” (Wongsothorn, 2000, p. 332).

A good working knowledge of English is a requirement for new applicants in most workplaces and is measured by the TOEIC Test (Test of English for International Communication). Moreover, English is used as a source of study and career advancement. It is a compulsory subject from year 1 of primary school (Wongsothorn, Sukamonsol, Chinthammit, Ratanothayanonth & Noparumpa, 1996), and is highly significant in higher education. It is not only a required aspect of the university entrance examination but is also a compulsory subject in the tertiary context (Office of the Education Council, 2004). To continue a higher degree overseas, students need to meet the requirements for a certain level of English proficiency validated through English tests such as TOEFL and IELTS. Lastly, as the new medium of ICT, English is being used more and more as a means of gaining access to the knowledge and information on the English-dominated WWW (Foley, 2005; Noytim, 2006).

Even before the proliferation of the Internet, Srisa-an (1998) had pointed to the need for Thai students to develop English proficiency to gain access to original sources of information which are available worldwide. It is evident that competence in English is recognised as being a necessity to fulfil this major objective in Thailand (Wongsothorn, Hiranburana & Chinnawongs, 2003).

Current status: English as a foreign language

It is interesting to observe that even though English is highly regarded for its instrumental value in Thailand, it is not used for day-to-day activities and communication among Thais. Thailand has one official language, Thai, and it is used across four regional areas with slight differences in each dialect. Even though other languages such as Chinese, Malay, Lao, and Khmer are also spoken by minority groups (Foley, 2005), they are given relatively minor status (Baker, 2012). It is not an understatement to consider Thailand as being a country in which most of the population is monolingual. English is mainly used for education and business, but it is far from being the common language for communication. As the language of business and education, English is a compulsory subject in primary school, secondary school and at the tertiary level. English is taught as a subject in school, but Thai is used as the medium of instruction (Forman, 2005). Forman used this criterion in his thesis to make the distinction between the contexts of English as a Second Language (ESL) in which English is the dominant language of the country and English as a Foreign Language (EFL) in Thailand in which Thai is the dominant language.

Given the focus on Thai as the medium of instruction in EFL classes and the lack of contact with native speakers experienced by most students in Thailand, it is not surprising that graduates who have learned English at school and university have relatively low competence in English when they enter the workforce (Noytim, 2006, p. 19). Even though there are many factors that could be seen as contributing to this situation, including teachers' proficiency (Noytim, 2006) and large class sizes (Wongsothorn et al., 2003), the most prominent factors are the lack of practice in the target language outside the classroom and test-focused curriculum/teaching practices (Wongsothorn et al., 2003). In addition, the learning environment of English education in Thailand is found to be an important contributor to the low level of English. Because English is taught as a foreign language (EFL), opportunities to use the target language in authentic English-language environments are rare. As Forman (2005) pointed out, in the EFL context, English is being taught and studied as a school subject

or as an object. The majority of English teachers in Thailand are non-native speakers of English, and Thai is typically used as the medium of instruction at primary and secondary levels in particular. As noted above, students often lack the opportunity to use English in their day-to-day activities (Forman, 2005; Noytim, 2006), and this situation limits their exposure to the target language, especially in rural areas where teachers are “the only source” of the target language (Forman, 2005, p. 340).

English language teaching in Thailand places strong emphasis on memorisation, and on building the knowledge of grammar and vocabulary because the curriculum mainly focuses on examinable skills such as reading, vocabulary and grammar (Bunnag, 2006; Noytim, 2006). High stake tests, such as university entrance exams, rarely test productive skills (Wongsothorn et al., 2003, p. 446), thus teachers often feel that it is their responsibility to enhance linguistic competence to help their students to pass the exams, which occur at all educational levels in Thailand. Despite educational reforms to focus more on Communicative Language Teaching (CLT), English teachers are still practising conventional methods in which teachers dominate the classroom. This conventional teaching pedagogy rarely provides opportunities for students to practise the target language in the classroom (Todd, 2001). The curriculum tends to put a strong emphasis on teaching non-communicative written exercises such as multiple choice, cloze test and transforming sentences, because competence in these skills is important to excel in test-taking (Wongsothorn et al., 2003). As a result, students have poor outcomes when they try to achieve communicative goals. The combination of factors outlined above influences the context of English Language Teaching in Thailand.

2.2.2 Integration of Internet in Thai Education

Thai educators, researchers and language teachers have attempted to explore the potential of ICT as a means of enhancing the teaching and learning of English as a foreign language in Thailand, and most Thai universities are technologically ready to support ICT integration (Laohajaratsang, 2008).

Technological advances are evident in both social and educational contexts, and the number of Internet users in Thailand has tripled within the past 10 years (National Electronics and Computer Technology Center, 2013), rising from 7 million in 2003 to 23 million in 2013. In the educational context, the tertiary education sector recognised the potential of the Internet and other ICTs, which resulted in 1997 in the establishment of UniNet (Inter-University Network) by the Office of Information Technology Administration for Educational Development, Ministry of University Affairs (Suwannasom, 2010, p. 6). The goal of UniNet is to provide an educational network and to promote research and development across Thai universities. Since then, computer and Internet access has been provided to university students at no charge.

This growing access to computers and the Internet is the major factor that contributes to the integration of technology in Thai education contexts in general. Studies by Vitartas and Sangkamanee (2000), Bruckner and Tetiwat (2008) and Siritongthaworn, Krairit, Dimmitt and Paul (2006) have all revealed similar results. The majority of Thai students appear to have access to the computer and the Internet, both at home and university. The Internet is often used for finding information related to their study and for general knowledge, for personal communication and entertainment. These authors agree that these technological behaviours are the driving force behind the integration of ICT in the tertiary education context, and their studies show how ICT has been integrated into the day-to-day and academic lives of Thai students.

Research on the use of the Internet specifically in English education in Thailand is very limited, yet, there is evidence of both possibilities and constraints in this field, as well as evidence of increasing interest in the potential of the Internet and other Web-based tools. In Banpho's (2001) study of 150 English teachers in six public universities in Bangkok, it was found that more than half of the participants surveyed had no experience of using computers. Despite their lack of experience at that time, most agreed that information and technology should be integrated into the ELT classroom. Prapphal's (2004) later work also

suggested that Thai English teachers should use technology to supplement their teaching. For example, the use of e-mail could be integrated into writing tasks, as could the use of Web-based projects, online self-testing and electronic portfolios. Charupan, Soranastaporn and Suwattananand (2001) urged English teachers to consider using the Internet to facilitate their teaching since it was a growing global source that could be accessed freely.

Thai research into the potential of the Internet as a space for research and publishing in ELT classrooms is still limited. A study by Vattanapath, Charupan and Soranastaporn (2002) surveyed 180 Thai English teachers working at universities in order to investigate the students' use of Websites in practising their English skills, and to assess the teachers' activity choices. This study found that students used Websites for doing language exercises, writing reports and playing vocabulary and grammar games, whereas teachers' favourite activities were assigning students to use English learning Websites for language exercises and finding information for writing reports. A more recent work by Noytim (2006) investigated the potential of the Internet to support the students' language development in a provincial university. Noytim revealed that even though the participants had low overall levels of computer and Internet skills, they showed high levels of interest and enthusiasm. The findings of this study also confirmed that the Internet could be a powerful resource in an EFL context. Nonetheless, the integration of the Internet with the traditional EFL program could be problematic. To take full advantage of the Internet as a learning source, a major redesign of the program is necessary, rather than simply making the Internet an 'add-on' to the existing curriculum. Observations of the research based in Thailand reveals the great potential for employing the Internet and technology to enhance EFL teaching in Thai tertiary contexts. Nevertheless, there are still constraints on the use of ICT in the EFL classroom.

One of the biggest challenges relating to the integration of technology into the ELT classroom has been found to be the level of students' language proficiency. In Noytim's (2006) investigation of the challenges in ICT adoption, it

was found that the English language barrier is one of the most significant challenges, in addition to problems with ICT access, lack of appropriate software and level of expertise of administrators and teachers. Because English is still the dominant language of the Internet and software applications, its use has become limited for people who do not yet have English proficiency (Todd, 2005). Moreover, lower level students may find authentic native speaker texts in English too difficult to comprehend. Furthermore, Anchaleewittayakul (2004) found that many Thai students were used to teacher-directed instruction in ELT and expected to receive a similar kind of instructional support for online learning. Hence, these studies imply the importance of gaining a better understanding of some of the challenges of the Thai EFL context in order to effectively integrate technology and the Internet into the classroom.

Even though a number of studies conducted in the Thai EFL context have shown that EFL teachers acknowledge the potential of the integration of technology into their classroom to increase students' exposure to authentic language, some questions remain unanswered. For example, many studies have mentioned teachers' limited knowledge, which has prevented them from fully using the technology. However, none of the studies addresses the specific abilities or knowledge relating to technology or the use of Web from the students' point of view. None of the studies has reported how students cope with the use of technology in a foreign language, or whether they need additional skills or knowledge when completing the assigned tasks in English. Previous studies have reported that Thai students have low English proficiency, which raises the question of how Thai students cope with authentic native speaker texts in English, and how teachers find a balance between providing exposure to real English environments and protecting their students from feeling overwhelmed. To effectively integrate technology into English language classrooms, further research needs to be conducted to make explicit the skills and knowledge essential for Thai students. The use of the Internet as an 'add-on' as suggested by Noytim (2006) was found to prevent teachers from exploiting the technology to its full potential. A better understanding of this issue

will allow EFL teachers to embrace and integrate technology in their classrooms in a more meaningful way.

2.3 Literacy in the digital age

The second section of the literature review aims to identify the literacy required in the digital age. It draws on the principle of New Literacies as the guiding framework to address this issue. Because of the changes in society driven by new technologies, the existing literacy pedagogy is inadequate for preparing students for the kinds of literacy practices they will encounter in today's world. The ability to use the Web as an informational source for both work and personal life has become an essential literacy. With what skills and knowledge must students become equipped to participate in the global community as a literate member? The first part of this section will examine the changes in society, using the New Literacies perspective as the guiding framework, and will proceed to describe the literacy learning that is taking place in 21st century classrooms. This section (2.3) aims to problematise the insufficiency of the existing literacy pedagogy, which is based on the traditional definition of literacy that focuses only on the ability to read and write in a print-based environment. As a result of the technological advances of the past two decades, the social and technological context has significantly changed the nature of literacy; thus the traditional literacy pedagogy can no longer support the literacy practices that students engage in today. It is important to closely examine the changes in society that have had an extensive impact on the nature of literacy in the digital age.

It has long been established that the advancement of new technologies has had a major impact on the perceptions and definition of literacy practices (Lankshear & Knobel, 2006). The many emerging definitions of literacy affirm that the nature of literacy has shifted. Despite being commonly understood as the ability to read and write prose and other printed texts, the definition of literacy is difficult to compose. The nature of literacy as “a social construct, a complex

idea that means different things to different cultural groups at different times” (DSE/CEOV 1994, p. 329 cited in Lo Bianco & Freebody, 1997) really encapsulates to this problematic term. Nonetheless, this study found the definition of literacy proposed by Lo Bianco and Freebody (1997) best captured the essence of this term. They defined literacy as “the many capabilities required to become a participating member of a literate society” (p. 329). This definition of literacy has led this study to explore two important concepts – ‘literate society’ and ‘many capabilities’. Literacy scholars have attempted to redefine a ‘literate society’. From New Literacies perspective, Leu et al. (2004) considered literacy to be a deictic concept because of the changes in society over time. Literacy practices change as society changes; therefore, the definition of literacy needs to be updated constantly. These changes have a direct impact on the ‘many capabilities’ required to become a literate member. This issue will be address in detail in the second half of this chapter (see Sections 2.4 and 2.5).

2.3.1 New literacies as the theoretical framework

The term ‘new literacies’ has been used to describe the response to the changing communication environment made possible by new technologies (Leu et al., 2004). New literacies has been used in terms of gaming technology (Gee, 2008), multimodality (Unsworth, 2006), critical literacy (Fabos, 2008) and multimedia literacy (Lemke, 1998; Mayer, 2001). These different usages of the term ‘new literacies’ represent an attempt to broaden the traditional notions of literacy which have up to now mainly been based on traditional conceptions of printed texts. The new technologies that establish communities on the Internet, such as search engines and Webpages, require new literacies to effectively exploit their potential (Coiro, 2003). These new technologies open new possibilities for communication and information as more and more people use technology to communicate (Leu et al., 2004). These new communication channels and new ways to gain knowledge may be challenging for learners who started their school career with the literacies of paper and pencil but who will encounter the literacies demanded by a much wider variety of information and

communication technologies (ICTs). Because of the demands of globalisation, there is an obvious need for Thai learners to be competitive within an educated workforce. The body of work that is loosely identified as the New Literacies movement provides an appropriate framework with which to closely investigate this issue and form judgements about the skills and capacities required to be considered a 'literate' person in the second decade of the 21st century.

The 'New Literacies' perspective is encapsulated in the definition put forward by Leu, Kinzer, Coiro and Cammack (2004) as:

The new literacies of the Internet and other ICTs include the skills, strategies, and disposition necessary to successfully use and adapt to the rapidly changing information and communication technologies and contexts that continuously emerge in our world and influence all areas of our personal and professional lives. These new literacies allow us to use the Internet and other ICTs to identify important questions, locate information, critically evaluate the usefulness of that information, synthesize information to answer those questions, and then communicate the answers to others (p. 1572).

This definition is used as the basis of the discussion in a later section on the 'many capabilities' that students are required to acquire to participate as literate members of the global community. In the next section, the concept of a 'literate society' will be examined through the lens of New Literacies perspectives.

The New Literacies concept is not only a response to new technologies but also to the changing communication environment as a consequence of the changing social context. These changes have occurred around the world and are also evident in Thailand. Drawing from the Multiliteracies perspective to understand how the changing social context impacts literacy instruction, these changes have been identified as occurring at three levels: in work lives, civic lives and personal lives. These changes were first outlined by the New London Group

(1996) who coined the term 'Multiliteracies' to capture the two types of literacy – multilingual and multimodal – that are required for users to be able to do more than read and write in the traditional way with only one language, in one mode. It is this 'change' in the social context throughout history that has shaped both the function and form of literate behaviour.

According to Cope and Kalantzis, the greatest impact on literacy practices has originated from the demand for different kinds of work within the new economy (Cope & Kalantzis, 2009). The language used in the workplace has changed from being primarily a top-down discourse of discipline and authoritative texts. This situation has been reflected in the nature of western schooling. Historically, teachers have held the authoritative positions, and the answers to questions were only right or wrong. It has become obvious in the second decade of the 21st century that such traditional approaches to literacy learning do not adequately equip today's students with the skills appropriate for the root and branch changes that have occurred (Eagleton & Dobler, 2007).

In today's world, the globalised context and the new capitalism has changed the view on 'human capital' and what it means for people to be literate (Cope & Kalantzis, 2009). To find a place within so-called 'advanced' economies, workers need to be skilled, well-rounded and flexible (Cope & Kalantzis, 2009). This has come about in part because of the replacement of hierarchical command structures with the horizontal relations of teamwork. In traditional hierarchical organisations, decisions were made by the highest levels of authority and communicated to the lower levels. These practices wasted much of the intellectual capital. To achieve higher levels of productivity, team members at the lower levels of an organisation need to be empowered to make decisions, as well as to identify problems, locate useful information, synthesise the information and communicate solutions to others (Leu et al., 2004). A literate worker also needs to know how and when to make decisions about which technologies in which forms and functions of literacy will support his purposes (Coiro, Knobel, Lankshear, & Leu, 2008). These kinds of change

required different discourses and practices in the workplace. To prepare students for these new dynamics of today's capitalism, literacy pedagogy needs to extend beyond teaching the traditional basics of reading and writing the national language. It is apparent that it is necessary to create learning conditions which promote a culture of flexibility, creativity, and innovation. These intense global economic competitions make learning to read and using information sources more important to success than ever before (Friedman, 2005).

The changes that have resulted from new technologies have had a direct impact on the workplace in today's social context and have prompted many of the changes to literacy practices. The decentralisation of the workplace places 'human capital' at the pinnacle of importance. As discussed in the previous section, members who have traditionally been seen as occupying lower-level positions now have the power to make decisions and communicate solutions to other team members in the organisation. To achieve higher productivity, these members need to be empowered in the workplace to make informed decisions on a daily basis. Leu et al. (2004) have identified a number of important skills, such as identifying problems that must be solved before useful information related to these problems can be located. This includes knowing how and where to find and retrieve information on both the Internet and Intranet. Members of high-performance workplace teams must also know how to critically evaluate information and distinguish accurate or unbiased information from inaccurate or biased information. Finally, members need to know how to synthesise the information that they have gathered to devise solutions, before rapidly communicating their solutions to other team members. Fundamentally, these changes have had an impact on the nature of literacy practices within organisations. The effective use of information to solve important problems and the ability to communicate a solution are central to this transformation within a globally competitive economy. It can be argued, therefore, that as the world of work has undergone transformation, the effective use of the Internet has equally become a more significant component of the literacy curriculum (Leu et al.,

2004).

The notion of New Literacies provides a useful framework for this study in identifying what it means to be literate in a social context that has changed profoundly. It is apparent that the traditional notion of literacy, focusing on the ability to read and write, is no longer sufficient for the demands of literacy practices today. The New Literacies framework enables this study to examine the skills that are essential for students to make informed decisions and to solve problems, empowering them to be competitive in the global economic environment.

2.3.2 Literacy learning in the 21st century classroom

The decentralisation of the workplace has prompted great changes in literacy practices, as has been argued in the previous section. Since literacy is the foundation of learning, literacy pedagogy has always been expected to play an important role in the facilitation of learning at all levels. By developing a concept of literacy that is relevant to specific contexts, educators can better prepare their learners with the kinds of literacy they need for their work, civic and personal lives (New London Group, 1996). In today's context, the Internet has had a defining influence on conceptions of literacy. Leu et al. (2007, p.39) explained that "[in] the history of literacy, no other technology for reading, writing and communication has been adopted by so many people in so many places, in so short a time" and this is a contention supported by a number of other authors. The speed with which the Internet has risen and its proliferation into all aspects of life has meant that teachers have been trying to keep pace with the developments and rethinking fundamental aspects of their pedagogical practice.

In this context, the World Wide Web plays an important role in knowledge development as well as knowledge management. Despite being recognised as a central source of information and placing new demands on learners' literacy skills, students have not really been prepared by their teachers to acquire information using the Internet (RAND Reading Study Group, 2002). Bransford,

Brown and Cocking (2000) argued that learning in the 21st century is highly dependent on the ability to comprehend information at high levels. This is partly because of the new reading purposes, and new text formats which have resulted in new reading practices. Thus, to be prepared for these new literacies, students need to become more independent in acquiring, synthesising and communicating knowledge. Because digital technologies provide access to a large amount of information, the ability to effectively use information is regarded as being highly valuable (Glister, 1997). Learners who possess problem-solving skills and the ability to cooperate with other team members are considered to have high performance; 21st century skills also include the ability to operate an array of ICT tools that enable learners to gain access to information in order to make informed decisions, solve problems and communicate solutions. Some of the new technologies include “Web logs (blogs), word processors, video editors, World Wide Web browsers, e-mail, spreadsheets, presentation software, instant messaging, plug-ins for Web resources, listservs, bulletin boards, avatars and many others” (Leu et al., 2004, p. 1571). These changes have important implications for the literacy instruction necessary to prepare learners to be ready for the globalised world.

These changes to literacy practices because of new technology have already been reflected in the language classroom and have been used to develop student literacies, particularly for communication purposes. Initially, ICTs, especially computer-based technologies, were only used as drills for language practices. The technology first emerged as tools or tutor providing the platform for activities and exercises. The most popular type of this language learning technology is Computer Assisted Language Learning (see Warschauer, 2004 for seminal reviews). Nowadays, because of the increase in the capacity of the Web, the use of ICTs in the language classroom has expanded tremendously (Murray, 2008). The pedagogy of language teaching at this time is dominated by the communicative language teaching (CLT) approach, which focuses on the use of authentic language and learner-centred teaching. These two factors lend themselves to the increasing use of the Web as a source of information in the

language classroom.

Given the changes in today's workplace, it seems irrefutable that the Internet has also become a centralised and centralising source of information (Leu et al., 2007). These transformations point to the need for teaching and learning to extend beyond a focus on the ability to read and comprehend print-based materials. It is necessary to prepare students by providing the literacy skills that will allow them to independently acquire information via the Internet.

To sum up, this study employs New Literacies as the guiding theoretical framework to identify the kinds of literacy that are essential in the digital age. Because the Internet has been regarded as the defining technology for literacy learning in the 21st century, this thesis employs the term 'online literacies' to specifically conceptualise the kinds of skills and knowledge essential for students to use online resources in gathering and synthesising information to make informed decisions, solve problems and communicate solutions via the Internet (Leu et al., 2004). The next section will specifically discuss the WWW as an online source of information in the 21st century.

2.4 Web as a source of information in ELT classrooms

For more than a decade, teachers and researchers have tried to understand the role of the Web as an educational tool in classrooms (Windschitl, 1998). One promising area of study has been the use of the Web for student inquiry. Windschitl (1998) outlined the remarkable features of the Web that have brought opportunities into the educational setting. These features include the sheer volume of information available on the Web, up-to-the minute information and its accessibility. Because of these features, the Web has been advocated as an information repository that can be used to promote independent student learning (Greenhow, Robelia & Hughes, 2009).

In spite of the integration of various technologies into language classrooms such as the popular Computer Assisted Language Learning (CALL) and Computer Mediated Communication (CMC) (Warschauer, 2004), the use of Web Wide Web remains an important source of information for the development of online literacies in the 21st century in the teaching and learning of languages. This area of study has been the subject of research in various bodies of literature. For example, Stapleton (2003, 2005a) studied the use of the Web as a research source in the context of L2 academic writing in Japan. Similarly, Slaouti (2002) examined the use of the Web as an authentic source of information in an English for Academic Purposes teaching and learning context in the UK. These studies confirm that the Web has the potential to enhance both teaching and learning in the 21st century, which is especially important for language learners in countries such as Thailand where the exposure to the target language is very limited.

One of the presumed reasons why research in educational technology has shifted to focus on the use of the Web as an information repository is that the conceptualisation of 'classrooms' has been broadened by Web technology (Greenhow et al., 2009). The learning space is no longer confined to the classroom, thanks to the proliferation of technology. The Web has enabled the development of hybrid learning spaces that combine the physical, traditional classroom and the online virtual learning environment (Greenhow et al., 2009). Students today have more choices regarding how and where to learn. DeGennaro (2008) asserted that students today are more creative, interactive and media oriented than they were ten years ago. These changes are apparently influenced by the changes to the Web over the past decade which will be described below.

The World Wide Web that we are familiar with today has, in fact, undergone major changes since its creation. The first-generation Web or Web 1.0 had many aspects that seemed similar to conventional classroom resources (Cormode & Krishnamurthy, 2008). For example, the Web was used as a

source of information in the same way that books were used in the traditional classroom (Greenhow et al., 2009). Users could browse, read and obtain information on Websites. The predominant characteristic of Web 1.0 was the read-only mode whereby content was created by “experts with substantial credentials in academic fields and disciplines” (Dede, 2008, p. 80). Users act as the consumers of the content and remain as audience only. In contrast, the second-generation Web or Web 2.0, which we are familiar with today, allows anyone to become the creators of the content of the Web (Cormode & Krishnamurthy, 2008). This significant shift allows the exchange of information and increases the content on the Web considerably. There is no defined line between the content creators and the consumers; these roles have become interchangeable. The users now also play an important role on this platform. Web 2.0 facilitates content sharing among users which has been evident in social networks such as Facebook and Twitter, among others. Web 2.0 embodies ‘knowledge’ as a collective agreement that has been subjected to peer review (Dede, 2008).

These significant modifications to the functionalities of the World Wide Web have had major implications for teaching and learning, and for classroom research. The Web is viewed as a powerful tool, especially in language learning, because it brings the authentic context into an academic environment (Slaouti, 2002). Thanks to its distinctive features, such as the vast amount of information, easy accessibility, and ease of participation, the Web has huge potential for language teaching and learning. Kuiper and Volman (2008) argued that learners could gain access to both specialised and general information, and there is no topic too wide to imagine. Because anyone can publish anything on the Web, the Web can be considered as the World’s biggest information repository, as discussed previously. It is the fastest-growing form of publishing and it continues to grow at a rate that bypasses traditional print-based publication (Slaouti, 2002). These factors contribute to the use of Web in both formal classes and out-of-school activities. However, because there are no boundaries to publishing on the Web, it can be both advantageous to the

educational setting, and at the same time can introduce major challenges to those who are not able to adapt to this new learning space.

Despite being useful as an educational tool, the use of the Web as a source of information places additional demands on students. Kuiper and Volman (2008, p. 242) argued that “The Web as an information source is a tool that can only play an adequate role in students’ learning processes under certain conditions” which they are not accustomed to in traditional forms of education. These demands are largely a consequence of the distinct characteristics of the Web. Studies show that despite many affordances to assist Web users, there are still many hindrances that may prevent them from using the Web successfully.

2.4.1 Affordances and hindrances

In this section, three distinct characteristics of the Web will be discussed in detail. First, the structure and organisation of the Web will be discussed in relation to the additional demands that it brings to Web reading. Then, the open-to-all nature of the Web will be discussed in connection with the quality and standards of the Web as a source of information. Lastly the different forms of texts that are available on the WWW will be discussed in association with the users’ ability to make meanings from new forms of texts.

2.4.1.1 Structure and organisation of the World Wide Web

Given the rapid growth of the amount of information available on the WWW and the increasing number of Webpages, the organisation of this information becomes highly important. As of September 2013, there were approximately 3.82 billion Websites (<http://www.worldwidewebsize.com>) and 55.4% of these sites are written in English (W3Tech, 2013, “Usage of content languages”, para. 2). The system of hypertext is used to organise this large amount of information. Hypertext is a system that organises texts within texts within texts and connects them through the highlighted ‘hyperlink’ (Slaouti, 2002). The system allows information to be connected in such a way that only a certain part

of the information can be seen at any one time. It was deliberately designed so that readers could follow links that interest them without being overwhelmed by the large amounts of information unrelated to their interests. Nevertheless, because most of the information is hidden behind the hypertext and hyperlink, students who had not previously experienced these features were found to feel overwhelmed when using the Web (Murray, 2005). Kuiper and Volman (2008) pointed out that because the WWW required learners to construct their own path, students needed to develop the ability to be continuously making decisions on their own needs to acquire information. This was found to be a challenge for students who had only experienced traditional forms of education. Reading researchers have observed that many students tend to approach reading and researching on the Web in a non-linear way, jumping from one website to another, rather than flipping the pages as in the traditional print environment. This is primarily due to the ways in which texts are connected through hyperlink. Even though nonlinear reading also occurs in the print environment – for example, when reading a magazine or newspaper – the nonlinearity that occurs on the Web is far greater and more significant than it is in print-based environments.

Another factor that maybe a cause of confusion to online users is the fact that the hyperlinks are created by the Web designer based on what they perceive as logical. This design; however, may not be logical to readers and can cause confusions when trying to follow the links. Being able to select their own reading path on the Web means that there is nothing to stop learners from reading hypertext in a non-linear way. In fact, it is unlikely that any reader would read information on a Webpage from beginning to end or follow the pre-designated path which the author created (Sutherland-Smith, 2002). Online users often partially read the information on a Webpage and jump to a different page via the hyperlink (Slaouti, 2002). This is one of the aspects of the Web that has motivated educational and reading researchers to try to understand how students deal with Web texts and whether their approach differs when they are dealing with printed texts. Tindale (2005) explained that because hypertext

provides readers with a higher degree of control, especially in constructing their own reading path, this change in text organisation has resulted in a higher cognitive load. The learners who are not familiar with this environment or have not been supported in developing the skills to deal with these new text types found themselves in difficult situations in the online environment. The fact that hypertext is a network of links between words, ideas and sources, without a beginning, middle or end, presents another layer of challenge for students when performing in the Web environment.

These distinct affordances that assist the non-linear approach to reading Webpages encourage readers to become the 'co-author' of the text (Sutherland-Smith, 2002) as they select the information through the links, headings or subheadings. Readers not only determine the information being read but also the order in which it is read. It is this order in which information is read that has great implications for students' comprehension. It can assist readers' comprehension or it can hinder it. Regarding comprehension, Slaouti (2002) explained that when readers partially read the information on one Webpage then move to another Webpage before finishing the first one, they might not understand or, even worse, misunderstand the information that the author intended to provide. In Altun's (2003) studies concerning the experiences of ESL students reading on the Web in the university context in the United States of America (US), it was found that the students valued the hypertext as a bank of information, with more information to be had by selecting the hyperlink. Nonetheless, the participants experienced disorientation and revealed that they perceived hypertext as a maze when they engaged in a non-linear approach to select their own reading path. This high level of control is a consequence of the structure and organisation of the Web. To effectively engage with Web texts, learners need to be prepared for both linear and non-linear approaches to reading. There is no doubt that the distinct characteristics of texts available on the World Wide Web present additional challenges to readers, especially those who are still developing their language proficiency, as is the case for EFL students.

2.4.1.2 The World Wide Web as an open source of information

As noted in the introduction to this section (2.4), the fact that anyone can publish anything on the Web can be both advantageous and detrimental. In educational contexts this duality is particularly important. The open nature of the World Wide Web has made it a resource of mixed quality and standards. Therefore, a specific skill-set and critical mindset are needed when using the Web, particularly for educational purposes. Compared with traditional information sources, information presented on the Web is considered to be less reliable, given the obvious absence of editorial control in the Web environment (Flanagin & Metzger, 2007). The type of information available on the WWW varies from publications which are regulated in much the same way as traditional print genres, such as online newspapers and refereed journals, to texts that have not been screened or edited, composed by any individual who wants to write about the topic (Slaouti, 2002). It is the latter practice that receives much criticism for its lack of a professional editor or gatekeeper to monitor the content. As an unregulated source of information, the burden of evaluating the credibility of information is placed on consumers of the information.

The fact that the Web is open to everyone has both positive and negative aspects in relation to students. The positive side is that Web 2.0 facilitates participatory and collaborative practices, offering the author and Web builder a wider reading audience. Undoubtedly, this nature of the Web makes it the biggest library with the most up-to-date information on the widest possible range of topics (Kuiper & Volman, 2008). Given the breadth and scope of information available on the Web, it surely has potential as an educational tool. However, the negative side of this accessibility is that students may access incorrect or incomplete information, harmful information, or information which is badly presented or not useful to learners (Burbules & Callister, 2000). The enormous diversity of topics and quality of information on the Web has the potential to enhance students' learning in educational contexts, but at the same time, it can hamper students' learning if they have not been adequately prepared.

To critically evaluate information in the Web environment, learners have to operate on a higher state of alertness compared to operating in the conventional environment (Stapleton, 2003). This is because the librarian, reviewers and publishers assume the duty of vetting and editing information being published in the print domain. This has lessened the need for learners to operate at a highly critical level (Shetzer & Warschauer, 2000). In Web-based inquiry, by contrast, learners have to apply new skills to search, locate, and comprehend information within the gigantic space that is the WWW, on top of which they have to simultaneously make judgments about the accuracy and validity of the material. It is evident that to operate in the Web environment with its open accessibility, learners are faced with many additional demands.

The lack of editing and vetting processes has not only had an impact on content on the Web but it has also been found to present challenges to readers because of its structure. Because Web texts have often undergone less rigorous scrutiny than conventional texts, it is not unusual for users to encounter a Webpage that manifests a blend of both advertising and information (Flanagin & Metzger, 2007). This issue is also found to have an impact on the readability of the Web (Nielsen, 1997). These challenges have led educators to think about how to support the development of their students' skills and capacities and to realise the potential of the Web in their classrooms.

2.4.1.3 The World Wide Web and its different forms of texts

As the visual elements are increasingly replacing verbal representation on the World Wide Web (WWW), the ways in which meanings are made have also been altered, requiring different literacy practices. The expanding presence of visual images on the WWW are made possible by changes in technology such as electronic text and hypertext, computer graphics and animation, image and colour reproduction and layout practices (Snyder, 1999). As a result, the information available on Webpages is more complicated than at any previous time. To make meaning of this information, Web readers not only have to

understand the verbal messages; they also need to take into account the messages being represented in multimodal forms. Web users may need to attend to messages being represented in the form of video, image, space, and even the colour of fonts (Gee, 2003; Mills, 2008). The shift from verbal to visual representation has significant implications for the teaching and learning of language. It is clear that being able to understand conventional texts is no longer sufficient in a world that is increasingly being represented as multimodal.

These multimodal textual formations are increasingly dominating the Web. Different modes of representation such as high quality images, hyperlinks, page layouts, symbols, graphs, diagrams, page layouts, colours, hyperlinks, foregrounding, and backgrounding, as well as visual aspects of written text (font type, size and colour) can be produced with a single technology (Kress, 1998). They can even be displayed at the same time on the same page. There is no doubt that the new communication landscape requires high levels of visual literacy in the meaning-making process as well as the integrated skills to evaluate verbal and visual texts. Visual literacy refers to the ability to make meaning of what is being 'said' visually (Gee, 2003; Mills, 2008). Kress and van Leeuwen (2006), prominent authors in this field, emphasised the importance of understanding the grammar of visual design in order to make meaning of information presented on the Web. In Murray and McPherson's (2006) studies, it was found that given the sheer volume of information available on the Web, ESL readers only stop to read in detail when they find what they are looking for. They scan rather than read much of the information on the Web. This nature of online reading makes the understanding of the "system of composition" (Kress & van Leeuwen, 2006) an essential part of using the Web as a source of information.

To successfully read Web texts, which are specially designed to allow multiple reading paths, it is important for readers to understand the three interrelated systems of Web composition (Kress & van Leeuwen, 2006). The systems of the Web composition inform the importance of the Web texts, assisting readers to

locate the information they need. These systems include Information value, Saliency and Framing. The first significant system is Information value. Information value is the placement of information to advise readers about the different values of different zones of information. It is also one of the approaches that Web designers use to speculate what readers will read first in order to position the most important information, or the information they want the reader to grasp. For example, in Western culture, where the reading system runs from left to right, the most important object will be placed on the left side of the page, because it is the first place the reader will look. Nevertheless, not all cultures read from left to right and this system may not be effective for people from non-Western cultures. Since the Internet is a networked system available for people around the world, the Information value system alone may not be sufficient to visually signify the importance of texts.

The second significant system of Web composition is Saliency. It is the element designed to attract the attention of readers. Web designers often use different font sizes, font colours, foreground and background to capture the eye and emphasise the importance or stress the hierarchy of the texts (Kress & van Leeuwen, 2006). The use of different colour and relatively larger font size shows that this information is somewhat important and readers may need to pay more attention. Because the salient elements of the Webpages attract the readers' attention to different degrees, online readers attend to these elements as their cue to carefully read that piece of information or skim it quickly (Mill, 2008). ESL learners who have limited reading comprehension skill make use of the salient information to distinguish information that appears to be relevant to what they are looking for from information which is not so relevant to save time by not having to read closely (Murray & McPherson, 2006).

The last composition element within the system of meaning of a Webpage is Framing (Kress & van Leeuwen, 2006). Framing refers to the dividing frame lines used to describe the relationship between different elements in that space. Framing on Webpages is used to indicate that certain pieces of information do

or do not belong together. Framing devices are important to the use of the Web as a source of information because they divide the unlimited space, made possible by scrolling down the Webpages, into manageable chunks. Framing visually marks information as being distinct or united with other units of information, making it less complicated for online readers to comprehend. On the one hand, it is essential for online readers to understand the Web Framing system; on the other, it can be quite confusing if Web designers do not follow this system and the Webpage content is not properly framed.

These three composition elements are very important to online reading as the Internet often generates an enormous amount of information. These systems assist readers in making informed navigational decisions and constructing reading paths to locate the information they need. Therefore, to develop online literacies to specifically use the Web as an information source, it is no longer sufficient to be only verbally literate. Students need a clear understanding of composition systems to be visually literate as well.

This section discusses three distinct characteristics of the Web that can assist in using the Web as a source of information, or that can hinder if users have not gained experience in the Web environment. The organisation and structure of the WWW was found to help users to deal with a large amount of information without making them feel overwhelmed. However, this organisational structure can also be challenging for students because most of the information is hidden behind links, creating an extra demand to make an inference from limited cues. The open-to-all nature of the World Wide Web is found to be beneficial as an educational tool because students can gain access to information on any topic. Nonetheless, given the lack of an editing process, students may need to adopt a much more critical stance than when reading printed texts. Finally, the new technologies have made it possible to create visually informed texts that are more interesting to read and easier to scan. These visual representations, however, require students to develop additional visual literacy skills in order to make meanings of visually demanding texts.

The next section will specifically review recent empirical studies that have particularly engaged in the use of the Web as a source of information. The discussion is located within the EFL context, as discussed in the first section of this study. The review draws on studies from various disciplines, because it was found to be insufficient to examine this issue from one specific field only.

2.5 A review of recent empirical studies related to the use of the Web as an information source

The first section of this chapter addressed the EFL context and ELT teaching in Thailand to highlight the differences between students who use English as a foreign language and native speakers of English. As discussed previously, there are a number of factors such as historical background, the status of English in Thailand and the test-focused teaching methodology that have an impact on the level of English proficiency of Thai students. Thai teachers have shown interest in integrating technology into the language classroom to enhance their students' English proficiency and increase their exposure to real world language.

However, there is a major gap in the literature concerning EFL students' use of Web sources. Teachers often employ the technology without a complete understanding of how students deal with a new kind of reading practices and information that is presented in a different mode. As a result of this review, it can be argued that, to assist teachers in developing students' online literacy, there is a need to first examine the skills and knowledge that are essential for Thai EFL students for this specific use of the Web.

The changing conceptualisations of literacy in daily work, civic life and the personal sphere, have underlined the importance of preparing students to become literate members of this global society. The New Literacies' emphasis on supporting the development of literacy beyond the traditional literacy conventionally based on the print-based environment has made it an important element within the language-teaching community. This kind of literacy is no

longer adequate for the environment in which today's students operate. Failure to understand and support the development of new literacies, particularly online literacies, would cause students to be excluded from the global literacy community. If this understanding is to be fostered and developed in Thai students, it is important for language and literacy teachers to reconsider what it means to be literate in the 21st century and how students can be best prepared to become attuned to the educational possibilities of integrating the Web into daily classroom practice.

It is clear from the current literature that a number of researchers are investigating the changes that the Web has brought into classrooms from a range of different perspectives. The common concern of these researchers can be broadly described as developing a research base that encourages the effective use of the Web as an educational resource (Kuiper & Volman, 2008). One of the most prominent perspectives represented in the research is provided by those advocating an approach that has been broadly labelled as New Literacies (Coiro, 2003; Leu et al., 2004). Studies in New Literacies often focus on the demands that arise from the new characteristics of the Web. The second perspective is represented by a group of scholars in the field of library information and computer studies. This literature tends to focus on the ways in which learners gain access to information sources (Bilal, 2000; Holscher & Strube, 2000). The third perspective comes from the field of language education, which focuses on how learners manage or process information in their second or foreign language, particularly when it is presented via different modes of communication. Studies in this field often focus on the use of metacognitive strategies as students work through the Web (Anderson, 2003; Pookcharoen, 2010).

Drawing on empirical studies from three disciplinary perspectives, this section synthesises the most important issues in terms of the skills associated with using the Web as a source of information. The aim of this section is to draw attention to the lack of empirical study in the field of EFL in order to better

facilitate thinking about the additional demands that the Internet places on learners.

Even though many studies have explored different aspects of using the Web as a research source, one major area that has emerged as critical is the development of skill sets relating to the three core processes that students need to effectively use the Web. These skill sets are locating information; evaluating information, and using the information that has been found. The skill sets associated with these processes are fundamental to online literacy, and their development is essential if students are to be competitive in 21st century societies. Landmark studies (Bulger, 2009; Coiro, 2007) have shown that to use the Web as a research source, students first need to locate information in an open-ended environment. They also need to evaluate both the relevance and the credibility of the retrieved information. Finally, they need to know how to apply information that they have retrieved to fulfil their intended purposes. While these skills are fundamentally similar to those used with printed texts, Sutherland-Smith (2002) has argued that online literacy requires higher critical reading skills in all three of these areas. In addition to these demands in these key areas, EFL learners are also found to face another layer of challenges, namely, to perform within a language environment that they are not familiar with.

Studies have identified important skill sets for online literacies, but the results of these studies are not entirely applicable to the context of this study. Most of the existing studies have been conducted with native speakers of English as well as in a context in which students have engaged in Web inquiry using their own language. This has left a major knowledge gap in the field of second and foreign language research. The distinctive issues that arise between using the Web as a source of information in one's native language and second or foreign language include the linguistic capability to function in this highly demanding environment. This type of linguistic behaviour needs to be addressed within the specific context. The evidence as to whether students need to develop the

same skill set when engaging in Web inquiry in a different language or whether they need to develop an entire different set of skills apart from their native tongue is still inconclusive. Left unaddressed, these issues can be detrimental to the teaching and learning in EFL classrooms in Thailand.

The following section will specifically address each of the skills identified by previous studies as being essential to the use of the Web as an information source. First, the skills needed to 'search' for information will be discussed in relation to issues of navigation in an open-ended environment before students are able to locate specific information for their intended purposes. The skills involved in the evaluation processes of the information source are then discussed. Lastly, the skills required to synthesise information before communicating the retrieved information to others will be examined. This last section of Chapter 2 will end with the importance of making explicit the skills that have been described in this study. Without these skills being made explicit to teachers, they cannot be taught, leaving students unprepared for the literacy demands of the 21st century.

2.5.1 Search

Several studies have concluded that one of the most crucial components of successful Web use is the ability to find information that meets one's needs (Coiro, 2007; Coiro & Dobler, 2007; Cromley & Azevedo, 2009; Eagleton & Guinee, 2002; Henry, 2006; Holscher & Strube, 2000; Murray & McPherson, 2006). Henry (2006) argued that locating information is the most important function of Web literacy. She considered the ability to search and locate information on the Internet as a 'gatekeeping skill' (p. 616). Without this ability, it is unlikely that learners can move on to other tasks such as synthesising information to complete a project or assignment. These additional demands were found to be a function of the ways in which information is organised on the Internet. As discussed in the previous section, the Web employs the hypertext system to connect information across the limitless space of the Internet. It is in this space that learners operate and the challenges presented go well beyond

the content of printed texts (Coiro & Dobler, 2007). Learners not only need to navigate the open-ended system, they also need to filter an infinite amount of information which may be entirely unrelated to their reading purposes. In this section, the findings from previous studies are organised into sub-skills which contribute to the ability to search, including the ability to navigate in an open-ended environment and the ability to locate information related to its intended purpose.

2.5.1.1 The ability to navigate and perform in an open-ended environment

This distinct characteristic of the Web requires learners to have the ability to construct their own search path to operate in this open, unidirectional system. Studies in cognitive science, computer science and library studies have consistently shown that high prior knowledge or domain-specific knowledge contributes to success in Web-based information seeking. Even though search tasks are common in schools, workplaces, and community, studies of Web searching are mostly conducted within closed or researcher-designed environments (Coiro & Dobler, 2007; Pookcharoen, 2010). This is perhaps because an open-ended environment such as the Internet is too complex for research. Despite studies providing great insight into the ways in which learners read online texts, there is still a lack of complete understanding about how learners gain access to that information. An impressive study by Cromley and Azevedo (2009) addressed these issues by studying four predictors of successful search approaches with middle schools, high schools and undergraduate students in the US. One of the most robust predictors of successful search is the level of background knowledge that students have about the topic. Student results were consistent with prior research showing that higher prior knowledge of the search topic was associated with a better chance of locating relevant information (Muller-Kalthoff & Moller, 2006). The reason for this is because the prior knowledge is associated with other predictors. Students with higher prior knowledge are more likely to locate key pages, find key pages faster and learn more from what they read, whereas learners with

little or no background knowledge are more likely to visit irrelevant pages which fail to result in finding the key page that contains relevant information (Jones, Farris & Johnson, 2005).

Similarly, Holscher and Strube (2000) also found domain knowledge to be an important predictor for successful Web search. In their experimental studies to better understand the type of knowledge important for Web-based information seeking with Internet experts and novices, they found that both types of knowledge contributed to successful Web search. The lack of one type of knowledge or the other led users to engage in compensatory behaviour (p. 345). This was evident when students who have a large background knowledge of the topic but low Web experience relied mainly on the key terms associated with the search topic, while avoiding making modifications to the search strategy, which are more technologically demanding. By contrast, a Web expert with little domain knowledge was found to select one target document for a closer inspection rather than exploring content from different website. The probable explanation for this behaviour was the lack of clear selection criteria; hence the users focused on one document.

Despite establishing a statistically significant association between prior knowledge and success in conducting a Web search, these two landmark studies (Cromley & Azevedo, 2009; Holscher & Strube, 2000) did not contribute to the understanding of how domain specific knowledge impacts on learners' ability to search. This issue was addressed by Corredor (2006), who established the connection between domain-specific knowledge and the ability to set goals for Web search. In this study, Corredor (2006) closely examined the influence of the participants' prior knowledge on the setting of goals when searching for information on museum Websites. Think-aloud protocol method was adapted to tap into the participants' cognitive processes while they surfed the Web. Out of twelve graduate students who participated in this study in the US, four were native speakers of Spanish, while eight spoke English as their native language. The content of the museum Websites was written in English;

nonetheless, the Spanish native speakers were allowed to think-aloud in Spanish to minimise the impact of language proficiency on the data. Half of the participants had a sound knowledge of the field being searched. The results of this study showed that the participants with higher domain-specific knowledge were likely to construct more goals as they searched. This deeper knowledge of the given field allowed them to parse, organise and map the search space, as well as determine the sub-areas of the topic. This knowledge was found to influence the construction of goals, increasing their information-seeking success in the open-ended and ill-structured learning environment of the WWW. Corredor (2006) argued that it is the act of goal-setting that organises other actions. To put this simply, when the participants set goals, they concentrated their efforts on achieving those goals by exploring fewer pages in greater depth rather than trying to cover many pages in a superficial way. The participants with low background knowledge of the topic being searched were found to engage in more random and rapid click behaviour. It can be concluded that prior knowledge is essential to search for information in this open-ended environment because it helps readers to set achievable goals as they try to find relevant information. This understanding helps the researcher to conceptualise the knowledge needed to perform search in the online environment.

2.5.1.2 Ability to locate information related to the learners' intended purposes

In the previous section, findings related to cognitive demands when operating in the open-ended environment have been outlined. Setting search goals was found to be a desirable trait when navigating the complex networked system of the Internet. In this section, findings related to the critical component of achieving the search goals will be examined in detail.

Several studies have tried to observe how skilled readers locate information in the online environment (Coiro & Dobler, 2007; Holscher & Strube, 2000). Their results have shown patterns among experts or skilled readers which are not usually seen within search tasks in a print environment. The new sub-skills that

the learners may require include the ability to generate effective keyword searches, the ability to read and infer which links in the search engine results are likely to be most useful, and the ability to efficiently scan for relevant information on Websites. All of these skills were identified as being essential components for developing the ability to search for specific information on the Web.

The first essential sub-skill needed to locate relevant information on the WWW is the ability to generate an effective keyword search. The keyword search has emerged as a result of the increasing use of search engines. Eagleton and Guinee (2002) have identified two main approaches for learners to access information on the Web; of these, the use of search engines was found to be far more popular than browsing from website to website by entering Web addresses. Consequently, the ability to construct effective search queries is essential to the success of locating relevant information using search engines. Despite being the most popular approach that people use to gain access to information on the Internet, the literature concerning search terms or search queries appears to be scarce. One probable explanation is that operating a search engine has become such a common task in everyone's life that most people have taught themselves how to do it. Nonetheless, this does not always guarantee that they are skilled users. The lack of systematic teaching can lead to difficulties in finding relevant information on the Web, especially for young learners and students who are still developing their language proficiency. It can be argued that research in this field has been neglected because it has not been problematised.

A significant amount of the relevant research literature provides pedagogical advice about the development of effective search terms without providing any empirical evidence for the terms chosen. Given the lack of research in this field, this kind of research literature has nevertheless provided some insights into these issues. Murray and McPherson (2006) proposed that, to operate search engines effectively, learners need to understand how to generate keyword

searches and develop the ability to construct effective search terms. In their studies with ESL adult migrants in Australia, they identified expertise in conducting effective searches as an important ability to acquire for successful Web navigation. Similar to the suggestions put forward by Eagleton and Guinee (2002), Murray and McPherson (2006) suggested that good keyword or search terms should be relevant to the reading purposes. The search engine is not a librarian and cannot interpret or predict a searcher's intent. It takes the searcher's request at face value and is not flexible enough to interpret clumsy queries (Eagleton & Guinee, 2002). Therefore, it is the responsibility of the searcher to predict which words are likely to appear on their target Webpages in order to construct search terms for the search engine to match. In addition to generating search terms that are pertinent to the search task, learners should be able to generate search terms that are recognisable to search engines (Murray & McPherson, 2006). This requires the learner to gain an understanding of how search engines operate. Moreover, learners should be able to modify search terms to broaden or narrow their searches when they fail to locate useful information. Eagleton and Guinee (2002) explained that learners could develop this ability by activating their prior knowledge and recalling their experience relevant to the search task. This information can help them envision hierarchies of categories (sub- and super-topics) which refine the focus of the search and facilitate the selection of appropriate keywords (Coiro & Dobler, 2007; Duke, Schmar-Dobler, Zhang, 2006; Eagleton & Guinee, 2002; Henry, 2006).

Even though this kind of research literature provides logical suggestions regarding what learners should do to conduct effective keyword searches, the lack of an empirical basis means that it does not provide any details about the practices that learners employ to construct search terms. Without this evidence, we mainly rely on what teachers consider to be important skills in using the Web as a source of information, rather than what the learners are capable of. The extensive review of the literature for this thesis revealed only two studies that provided empirical evidence relating to the approaches that learners employ to

construct search terms. These were conducted by Coiro (2007) and Guinee, Eagleton and Hall (2003). In Guinee, Eagleton and Hall's (2003) study, the aim was to evaluate and describe the search strategies that middle and high school students employed. The students were provided with prompts to search for information on the Internet. The data ranged from the researchers' observations of students searching behaviour, the students' own description of their search process and the list of search strings or keywords used by the students. In this study, it was found that the students employed seven methods to construct search terms. The results of the search strings revealed that the use of "topic + focus" (p. 369) was the most popular strategy, and was also found to be the most effective. Unlike the "single term" strategy, which was the second most frequent strategy used, "topic + focus" appeared to be more effective because the "focus" provided a specific area of interest within a broad research topic. The "focus" acted as a filter, allowing only relevant information through which, in turn, assisted the searchers to select only the most relevant information. The third most frequently-used strategy was the use of "phrase", as often found in human natural language, such as "president got stuck" (p. 370). Interestingly, the use of phrases as search terms was found to be a less effective strategy in this study, as the search engine was unable to find a match.

In another major study by Coiro (2007), three student subjects with different online reading abilities were closely observed for their search behaviours. It was found that they tended to use different strategies to formulate initial search terms, and to monitor and revise search terms. The highest performing reader was more flexible in their employment of different strategies. Some of the strategies included using a relevant phrase or relevant topic. When the search results appeared to be too general, she was able to refine the terms by adding more search terms or adding quotation marks around some of the terms. These practices appeared to be dramatically different from those of the lowest performing reader who relied on only one strategy, which was to add '.com' to some relevant keywords such as "www.njpiescarbonmonoxidelearningsite.com" (Coiro, 2007, p. 175). The findings from these two studies suggest that students

employed a range of different strategies which have had varying impacts on the success of the search task. However, all of the results from the empirical studies came from students who used English as a first language. Despite providing great insights into the ways in which students constructed search terms to locate information on the Web, these findings were confined to contexts in which students had already developed a reasonable level of language proficiency. There is therefore still a major gap in relation to the application of these results to EFL contexts. As discussed extensively in the Introduction, the level of proficiency of EFL students in Thailand is exceptionally different from that of native speakers, even those in middle schools. This matter has also been discussed by Murray and McPherson (2006), who contended that, in addition to the skills they need to develop to locate information on the Web, ESL learners also need to develop specific linguistic skills for the same task. The obvious conclusion to be drawn from this is that extensive and situated research needs to be carried out with ESL/EFL learners to better understand how they generate search terms in a language additional to their native tongue. A much stronger research base is required in order to make more targeted pedagogical recommendations for EFL teachers in the digital age.

The second essential sub-skill which it is important for students to gain to locate relevant information on the WWW is the ability to draw inference from hyperlinks. This issue has been frequently addressed in the literature: students are required to select the hyperlink which they believe may be most useful from the search engine result. After the searchers have typed their search queries, the search engine collects Webpages with matching information and presents this information in the form hyperlinks on the search engine results page. Searchers then need to select and click on the link to arrive at their prospective Webpage. It has been acknowledged that selecting the most appropriate hyperlink from the search engine result is not an easy task. Henry (2006) pointed out the importance of having the ability to select the most relevant link, as this immediately filters out many irrelevant links which prevents readers from

becoming overwhelmed by the amount of information. To effectively select the most relevant link, learners need to develop the ability to read and infer in order to predict what kind of information they might encounter at the other end of the hyperlink. Moreover, when learners do not have the necessary background knowledge about the topic being searched, they need to rely on their ability to read the search results and make judgements based on their understanding of that information. Although Henry's (2006) article emphasised the importance of Internet literacy skills, it lacked the research-based evidence that could provide teachers with pedagogical tools to support their students' development of the ability to select hyperlinks pertinent to the search goal. Many important questions were left unanswered; for example: Do students make informed decisions, or do they randomly select links as they read through the search results page? If they make an informed decision, what kind of information is influential in their decision to select or reject a particular hyperlink? By providing generic pedagogical advice that is not based in empirical findings, it is difficult for teachers to adopt this advice in their classrooms.

A more extensive study by Coiro (2007) has provided some answers to questions that have arisen. Following a detailed search of the literature, this is the only study that has examined student practices in conducting search queries that has not emerged from the Human Computer Interaction field. Taking a qualitative approach to identify the practices that students engaged in while selecting hyperlinks on the search engine results page, Coiro's study was able to reveal the rationale behind the students' practices. Additionally, by focusing on only three student subjects with different levels of Internet proficiency, Coiro was able to distinguish the practices that students with different skills engage in. Through a closed observation of the students' online steps and procedures taken to select one hyperlink over another, it was found that high-performing online readers based their hyperlink selection on a range of context cues, such as selecting links that had appeared earlier in the search list, as they believe these links were more relevant to the search task. It was also found that the students focused their attention on the boldfaced words

shown on each link, taking them as an indicator of the link's relevance to the search terms and ultimately their search topic. On the other hand, the low-performing online reader often relied on personal interest and selected hyperlinks randomly rather than making inferences based on task-related cues. Despite these insights into the ways in which students select hyperlinks, these findings may not be applicable to other contexts, given the small number of participants. Thus, more research is needed to provide better understanding of this issue.

Coiro's (2007) study has contributed some understanding of the questions of how students select hyperlinks from search engine results, but the questions concerning students' ability to read and infer meanings from hyperlinks still remain. The hyperlinks that are generated on the search engine results page are often limited in terms of the number of words that accompany the hyperlink. It is not unusual to find that hyperlinks on the search results page provide only half of the title of the Webpage or snippet, with spaces (...) in the middle of the sentence. How, then can students make informed decisions based on this incomplete information hyperlink? This indicates that a certain amount of guesswork takes place when a hyperlink is selected, and because of the absence of information, this requires high linguistic ability to be effectively skilled on the Internet. Even though it is commonly assumed that students today are very fluent in conducting searches, especially in their native tongue, this review of the studies shows that it is, in fact, not easy to select the most meaningful link to obtain specific information.

To search and locate specific information in a Web-based environment, studies have found that students need to develop the skills that are specific to that environment (Coiro & Dobler, 2007). The first two sub-skills, which have already been discussed, are the kinds of skills that are specifically required to conduct searches on the Web. Murray and McPherson (2005) described these specific online reading practices used to conduct searches as "Reading to navigate" (p. xii). These practices occur as the readers are "reading Webpages to find their

way around a website” (Murray, 2005, p. xii). Online readers need to read information presented on the hyperlinks from the list generated by the search engine before selecting them. Once taken to the prospective Webpage, they read, comprehend and evaluate information to locate specific information that is relevant to their search goal. It was shown that the reading comprehension processes that occur during a search are employed to enable readers to ‘find’ information rather than to ‘understand’ information in the traditional approach. The reading purposes that occur online are substantially different from conventional reading goals. The results of other studies also support this argument that once online readers arrive at the Webpage, they scan rather than read much of the information as a means to locate relevant information on the Webpage (Nielsen, 1997; Murray & McPherson, 2006).

It is also reported that to search for information on the WWW, students also need to develop reading skills that are similar to those required to read in print-based environment (Coiro & Dobler, 2007). The subsequent section will examine the ability to comprehend information on Websites as the last set of sub-skills students require to conduct searches on the Internet. The ability to comprehend information is an essential component in the task of reading in a print-based environment and found to be even more important for comprehending online information, and this issue will be discussed below.

The comprehensive study by Coiro and Dobler (2007) extended the knowledge and understanding to the nature of reading comprehension processes that occur online. In this elaborative qualitative study, eleven skilled sixth-graders were observed while completing online tasks. These skilled readers were selected on the basis of a combination of standardised reading scores, reading report card grade, and Internet reading experience. The data collection procedures included think-aloud protocol, field observation, and semi-structured interview. To collect the data, these eleven students were asked to complete two tasks individually by locating the answers to the given questions from a multilayered website and search engine. The method of this study was also

critiqued and used to inform the method used in the research that forms the basis of this thesis. This will be explained in detail in Chapter 3: Methodology. The results of the Coiro and Dobler study suggested that the ability to find relevant information to complete the task contributes to successful Internet reading experiences. Three elements were found to determine this success: prior knowledge sources, inferential reading strategies, and self-regulated reading processes. These elements were found to be similar to the reading comprehension processes in the print-based environment. They were identified as playing major roles in the Internet search task. The next section will outline each of the elements and their contribution to the success of an online search.

Two types of background knowledge were found to be influential in successfully locating information on the Web: background knowledge of the topic and background knowledge of the Web structure. The impact of readers' background knowledge in comprehending texts has been studied extensively in the field of reading research, but only in relation to printed texts (Grabe & Stoller, 2002). This has shown that by activating background knowledge, readers are able to mentally organise information by putting together new information in relation to what they already know (Grabe & Stoller, 2002), which was found to assist readers to better understand texts as well as remember the ideas gained from texts (Weaver & Kintsch, 1991). Britt and Gabrys (2001) confirmed that, for online reading, hypertext reading is more suitable for users with some domain knowledge of the research topic. In a similar manner to the ways in which prior knowledge assists readers in the print environment, online readers in this study who had prior knowledge of the topic were also more likely to integrate the new knowledge with the knowledge they already possessed. Without prior knowledge of the topic, it was difficult for the students to understand new information. In addition to prior knowledge of the topic, Coiro and Dobler (2007) found that to comprehend and locate information on the WWW, online readers also drew upon their knowledge of the structure of the website. This knowledge included how to manage the hierarchical and nonlinear hyperlinks, navigation icons, and toolbars. Because online readers scan much

of the information on the WWW, understanding Web structure emerged as a key component. Studies in the field of multimodal studies have identified the new interactive components on the Web, especially hyperlinks, and moving images as placing additional demands on users. These findings suggest that familiarity with the underlying structure of the website assists readers to make purposeful and effective navigational choices about where and what to read to fulfil their search requirements.

Another critical element that has been found to influence the success of Web searches is the inferential reasoning ability of readers. Similar to sub-skills in selecting hyperlinks on the search results page, Kim and Kamil (2003) explained that online readers often face challenges when locating information, as they are confronted by multilayered Webpage with limited semantic clarity. When readers come across hyperlinks on Webpages, they are faced with unique decisions because there is no way to know in advance what information will be obtained by opening the link. Thus, the interactive and associative nature of Webpages requires online readers to make predictive inference from limited context cues. Because much of the information is hidden beneath several layers of links on the Webpages, online readers who are able to make many forward predictive inferences were more likely to succeed in locating the information needed for their tasks (Coiro & Dobler, 2007).

Finally, a self-regulated reading strategy is found to assist readers in achieving the goals they have set. Kim and Kamil (2003) suggested that, because information presented on the Web can have varying degrees of relevance, students need to develop unique skills, such as the ability to evaluate the relevance of additional information and not get distracted by interesting but unrelated links. By consistently evaluating the relevance of information on the Web, online readers are more likely to stay on track to achieve their goals. Given the immense amount of information available on the Web, this self-regulating ability becomes critically important in avoiding a feeling of being overwhelmed by vast amounts of irrelevant information. Even though self-

regulatory reading strategies such as 'Plan, Predict, Monitor and Evaluate' were frequently used to read printed texts, Coiro and Dobler (2007) found that online readers employ a higher degree of self-regulatory practices as they read within and across Websites. To search for information online, readers first 'plan' how to begin and where to go as they face numerous choices. After developing a mental plan, online readers predict, by drawing on inference, how their plan would work out if they were to select particular hyperlinks. After the hyperlink has been selected, readers monitor whether the information on that Webpage can fulfil their plan. Finally, readers evaluate the success of their plan by drawing on their prior knowledge about the topic and the task. These findings show that additional skills and strategies are required for readers to successfully locate relevant information on the WWW.

This issue is likely to be further complicated when readers are searching for information using their second or foreign language. Nonetheless, because no research has been undertaken in this area, there is still a gap in the understanding of how students employ self-regulated reading strategies when reading in their second and foreign language. To date, it has been found only that students prefer to conduct searches in their own language (Stapleton, 2005a). In his study, Stapleton found that Japanese students preferred to search in Japanese when searching the Internet for information on an English Academic Writing course. This finding confirms that to use the Web as an information resource is a linguistically demanding task. There is a need for further investigation to examine to what extent the findings from studies conducted with students using their native language are applicable to students who operate in a language they are unaccustomed to.

Studies have shown that, to search for information online, students need to develop skills which are both specific to the Web context and drawn from traditional reading skills. These practices are, however, linguistically demanding, and there is a need for students to develop the skills specific to Web search in their second and foreign language. Because of the lack of

research with EFL and ESL students, a clear understanding of the kinds of skills students actually need has not been achieved. This calls for further research relating to the online search process that is specific to second and foreign language contexts.

2.5.2 Evaluate

The previous section has discussed the skills and knowledge relevant to the search skills that are essential for students to effectively use the Web as a source of information. This section will address the second important skill in using the Web as a research source: the ability to evaluate information retrieved online. The availability and accessibility of the Web has turned the WWW into an important source of information, and has made it a great research source due to its large repository of information. As discussed in Section 2.4, the fact that the Web is accessible to anyone who wants to publish on the Web makes it the biggest publishing enterprise in the World, yet editors are nowhere to be found. Allowing access to information which has not been assessed by others is a double-edged sword. On the one hand, learners can find information on almost any topic; on the other, they are at risk of encountering incorrect or unreliable information. When reading from conventional printed texts, readers can be fairly confident that the information they read is accurate; thanks to the rigorous review processes of traditional publishing, the degree to which readers need to evaluate information from conventional sources is not as great as it is in the online environment (Henry, 2006). Britt and Gabrys (2001) explained that the high cost of publishing is the gatekeeper of conventional print media. Even though readers still need to be critical when reading any published information, the cost of publishing has, until recently, restricted the publication of poor quality documents. With the widespread availability of the Internet, these barriers have been eliminated, allowing anyone with access to the Internet to publish whatever they desire. This open access nature of the Web requires users to evaluate and filter the information they encounter, which has clear pedagogical consequences; nonetheless, very few studies have looked into these issues (Kuiper & Volman, 2008).

Generally, the absence of editors for the information published on the WWW signifies that each user needs to assume the role of an editor to assess the information they retrieved. Kuiper and Volman (2008) pointed out that even though readers need to adopt a critical stance towards information presented in any medium, the use of the Web requires much higher-level skills. The lack of regulation on the Web is clearly the main factor to the demand of critical thinking skills. Stapleton (2005b) indicated that because information on the Web has not undergone the same editing process as conventional sources, it must be treated with tremendous caution. Studies on children's use of the Web have shown that very little attempt is made to verify the accuracy of Web information (Hirsh, 1999; Shenton & Dixon, 2003). Moreover, it has been shown that users barely evaluate the reliability or authority of the information. In the studies in which students were found to evaluate the information retrieved from the Web, it was also found that the criteria used for this evaluation were often inappropriate. Some of the criteria used to evaluate the Web include equating quantity with quality (Agosto, 2002), regarding all the results of a search engine as being of good quality (Lorenzen, 2001), and using graphics on the page as an indication of the quality of the Web (Fidel et al., 1999). The findings from these studies prove that it is difficult for learners to assess and evaluate Webpages. For learners operating in a second language, this task is particularly difficult (Stapleton, 2005b).

As the evaluation of Webpages has become recognised as a critical component of online literacy, studies have started to investigate the kinds of practices that are required to utilise the potential of the Internet. Drawing on the skills required to evaluate documents from historical information sources, Britt and Gabrys (2001) identified "advanced literacy skills for the WWW". These are the skills that will enable readers to autonomously read and comprehend the information available on the Internet. This study points to the importance of the ability to evaluate the accuracy of the information retrieved online and the reliability of that source of information. To evaluate the accuracy of the information, they

proposed that learners needed to develop “corroboration” skills (p. 80). Corroboration is the skill of checking facts from one source against other independent sources and is commonly used by historians, print journalists and academics (Wineburg, 1991). Because of the openly shared content nature of the Internet, corroboration is considered a necessary skill for anyone using the Internet for research. Corroboration is an important skill for 21st century research because it enables students to verify the accuracy of information before relying on it too heavily (Britt & Gabrys, 2001). This skill also helps students to identify agreed-upon facts, events and interpretations and to weigh them appropriately. The process of corroboration involves searching for documents on the same topic for comparison. This can be done by the use of sources mentioned on the current Webpage or by collecting bibliographies on the topic area. In addition to corroboration, learners should be able to evaluate the reliability of the sources available on the Internet. For this, Britt and Gabrys (2001) suggested that learners should develop ‘sourcing’ skills. Sourcing involves firstly the act of ‘noticing’ – foregrounding salient information within an online document and then applying evaluative skills to assess the credibility of the information in the document. Two important components of sourcing are Identification of the source, such as the author’s name, affiliation and credentials, and the Evaluation of its trustworthiness, which includes the author’s motives and purpose for writing the document. Identifying the source of Webpages can be difficult for online readers. Unlike printed documents with standard information about the author, a number of online documents do not explicitly provide author information, or this information can only be accessed through an extended link. Even though this study drew on a different perspective to conceptualise the skills which are necessary to evaluate an information source, it did provide for an expanded understanding of the importance of the evaluation of both the accuracy of online information and the trustworthiness of its source. The results highlighted the need for further investigation into the skills and knowledge required to evaluate the WWW as a source of information through empirical studies.

In a qualitative study by Coiro (2007), research related to the critical evaluation of the WWW from four different fields of work – critical thinking, critical reading, information literacy and critical literacy – was reviewed. This review focused on an investigation of the ways in which readers evaluate the accuracy, reliability and commercial bias of the information they encounter on the Web. To evaluate the accuracy of information they retrieved online, the high-performing online reader employed the corroboration strategies. As mentioned above, corroboration is considered by Britt and Gabrys (2001) to be an advanced and desirable skill. An ‘advanced’ reader was found to check the information she had located against a second and independent source. On the other hand, both the medium- and low-performing readers relied mainly on their own background knowledge of the topic in order to assess the accuracy of the information. Interestingly, only students from high and medium performance were able to recognise advertising on informational Websites. The high-performing reader was able to make critical judgments regarding the advertisements by expressing balanced caution that this information might be biased toward the author’s interest. By contrast, the reader of medium online proficiency tended to overgeneralise the advertising features with a blanket decision that the information appearing on that website was “fake” (p. 208). This study has largely extended our understanding of how students evaluate different aspects of the Web. Nevertheless, the remaining question that still needs to be answered is whether students engage in the same or similar practices when operating in their foreign language.

2.5.3 Communicate

After the students have located and evaluated information from the online source, the final action for learners is to communicate the information they have located and comprehended to others. This section will examine the skills and knowledge essential for developing the ability to communicate the knowledge from the information retrieved online. In a study of middle school students using the Web as an information source, Coiro (2007) found that students simultaneously integrated information that they had located from different

sources before synthesising and communicating the information. Bulger (2006) called this process 'knowledge assembly', because readers select, compare and synthesise before assembling the information retrieved from different sources to respond to the problem or question they are trying to answer.

The communicating information practices begin by learners integrating information retrieved from various online resources. This process of integrating information retrieved online was found to be similar to the process learners engaged in when using information from printed sources, but more complex. Rouet (2006) considered writing from a source of information in the printed environment as a challenging task, more so writing which was based on information retrieved from different online resources. The readers first need to read to make sense of the material from their sources before attempting to synthesise the salient elements into a coherent argument. The same process was found to be even more challenging in the online environment because of the amount of information available on the Web and the different text formats. The amount of information was found to contribute to the difficulty of using Web as a research source because the students need to sift through and synthesise an almost limitless amount of information before they could find information that was related to their intended purpose. In addition, online materials are often presented in various media formats such as texts, images, audios or even videos. It is undeniable that these features were found to introduce additional challenges for online learners (Coiro, 2007).

Looking at the issue of communicating online information from an EFL perspective, the important question still remains as to how students integrate information they locate and retrieve online in order to compose texts for communication purposes. Composing texts in L2 has been recognised as being compounded by the extra steps needed to decode thoughts into language. Writing processes in L1 include three main phases – planning, translating and reviewing (Flower & Hayes, 1981). Similar to this process, Roca de Larios, Manchon, Murphy and Marin (2008) identified three main practices in which L2

writers engage when completing a writing task. These practices are planning, formulation and revision. It was found that of all the components, formulation accounted for the majority of time taken to complete the writing task. This result was found to be consistent at all proficiency levels, with the lower-level writers taking slightly more time to formulate sentences (81%) than the advanced writers (62%). These findings were found to be consistent with other studies on L2 processes. Wang and Wen (2002) reported that their L2 participants spent two-thirds of the composing time on constructing sentences. In comparison to L1 learners, L2 participants in Roca de Larios, Manchon & Murphy's (2006) studies spent twice as much time formulating texts to complete the same or similar task. A more recent study by Stapleton (2010) also indicated that formulation can take up to one third of the task time in a research essay writing task. All of these empirical studies suggest that formulating texts in a second language is a difficult task for learners based on the amount of time needed to complete the writing processes.

Drawing on empirical evidence relating to the time taken to formulate new language in L2 writing, it is true to say that it is very important to gain a better understanding of the students' language formulation processes. In a study of higher degree students using the Web as a research source, Stapleton (2010) closely investigated the composition processes of one master student in settings typical of the scenario in higher education. This case study employed in-depth logs, a questionnaire and an interview to examine the composing processes as the participant wrote a 4000-word essay. The data show that a quarter of the time was spent on researching the content of the essay, while one-third of the time was spent on the actual formulation of the sentences. This result is in accord with studies reported in the previous section. Interestingly, this study not only investigated the time taken to formulate language but also the practices that the participant employed to formulate thoughts into language. It was found that formulation took place at word-level, including the use of online dictionaries and a thesaurus. Furthermore, it was also reported that when the participant faced writer's block and could not think of the word to describe

her thoughts, she resorted to the language from the sources to solve this problem. To avoid plagiarism, this participant made changes to several words from the sentences that she borrowed from the source. Thus, borrowing sentences was used as a compensation strategy that related mainly to the linguistic knowledge of the writer. This study brought us closer to an understanding of how students write from sources that suggest a need for pedagogical change. If the students have the ability to search for information online but have not gained the ability to effectively integrate and communicate this information to others, they would not be considered as having successfully completed the tasks using the Web as a source.

Writing from the source was found to be difficult in both L1 and L2 contexts because of the approaches that the student writers took. Howard, Serviss and Rodrigue (2010) proposed that the reason that students find writing from the source difficult is partly because they often write from selected sentences instead of summarising the content of the source. Three main strategies were used to formulate language originally taken from source texts: direct copying, paraphrasing and patchwriting. While copying and paraphrasing are commonly known in the studies of writing processes, patchwriting is a relatively new concept, especially in L2 writing. Howard (1993) defined patchwriting as an activity that involves “copying from a source text and then deleting some words, alternating grammatical structures, or plugging in one-for-one synonym-substitutes” (p. 233). Patchwriting can be viewed as a process between the two ends of a writing continuum that ranges from copying to paraphrasing. While certain strategies resemble copying, others resemble paraphrasing. In Howard’s (1993) study, the students were found to select certain sentences from the source that might be useful to their task then worked on these isolated sentences by lightly paraphrasing, using strategies that included adding or deleting words, or changing grammatical structure. as well as using synonyms. These findings are consistent with Keck’s (2006) studies which observed that most student writers patchwrite and that this strategy occurred most frequently among L2 writers. Surprisingly, Pecorari (2003) found that although students’

writing contained certain textual features that were almost the same as the original source, they did not exhibit any intention to plagiarise. They employed the patchwriting approach as a developmental stage before they could write autonomously. Because the underlying reason for patchwriting is not to deceive readers, all of these studies suggested that students should not be punished. Rather, it would be better for teachers to focus on preparing them to move from this developmental stage to writing autonomously without relying too much on language taken directly from the source. All of these findings have shed light on students' writing behaviour, which could in turn have an impact on pedagogical change. The effective approach to writing from sources can facilitate the overall task completion. To write from the source is one of the most essential skills that students need to develop to enable them to effectively use the Web as a source of information.

The studies in L2 writing have further identified that limited language proficiency could be the reason for patchwriting and copying behaviours. A number of factors have been identified in both L1 and L2 writing contexts to explain why writers copy from source texts, such as differences in cultural attitude (Pennycook, 1996), or the context and purpose of the writing task (Keck, 2006). Of all the factors identified, language proficiency remains the most influential factor in driving novice writers to copy from the source text. Keck (2006) explained that integrating sources into one's own writing is a complicated process. For both L1 and L2 writers, copying is seen as a necessary phase that developing writers must pass through before they can acquire a competent level of writing. A landmark study of ESL student writers by Currie (1998) showed that the textual borrowing strategy was often used as a survival strategy. This study supports the claim that apparent acts of plagiarism do not reflect an intention to deceive; rather, they reflect the developing competence in text-responsible writing (Keck, 2006; Pecorari, 2003). Finally, in comparing low- and high-level proficiency ESL students in completing a summary-writing task at university level, Johns and Mayes (1990) found that the low-proficiency students produced more direct replication and copied directly from the sources.

Although the high-level proficiency ESL writers engaged in a certain level of direct copying, they employed a more paraphrased approach. The findings from these studies have made it apparent that language proficiency is influential on the writing process. Even though we have gained a certain understanding regarding the ways in which students have used sources to compose texts, all of the studies reviewed in this section are based on sources in the printed environment. As the Web has become a legitimate source for scholarly research, more research is needed to understand how Web sources are used by learners (Stapleton, 2005a). The review of the studies in this section shows that the ability to write from the source is as important as the ability to locate information, as well as to evaluate the reliability of the retrieved information.

This review of studies on the skills and knowledge that students need to employ the WWW as a source of information in this section supports the rationale for this study, raised previously in an Introduction chapter. The lack of pedagogical support from teachers in developing the literacies necessary for the digital age was based on two assumptions. However, the review of studies in this section (2.5) has proven these two assumptions to be wrong. Studies from the New Literacies perspective show that even though students today can be considered 'digital natives', they still need specific skills in searching, evaluating and using online resources, especially for education purposes. Moreover, in the limited number of studies within the L2 context, it was also shown that to effectively employ the Web resource in L2, students also needed to develop skills specific that particular language. It cannot be simply assumed that students are able to transfer these skills from their L1 to L2. These reviews of Web-specific skills have informed the research questions of this study, which will be addressed in the last section of this chapter.

2.5.4 Teaching pedagogies addressing the 21st century skills

It has been consistently shown in this chapter that learners of today's technology require a learning environment that supports the development of 21st century skills in order to be considered as a literate member of a global community (Coiro, 2009; Leu et al., 2008). It was also evident from the review of empirical studies that the traditional approaches to literacy learning are not adequate to equip today's students with the necessary skills (Coiro, 2003; Reinking, McKenna, Labbo & Kieffer, 1998). Even though some of these skills can be transferred from traditional literacy learning and built on, many of them are exclusive to the online environment (Afflerbach & Cho, 2007). It has been established by the studies from the New Literacies perspective that this shift in literacy requires new ways of instruction to meet the needs of the students (Kingsley, 2011).

The notion of intervention instruction to develop online reading comprehension skills has mainly been studied with middle school students in the US (Castek, 2008; Coiro, 2007; Dwyer, 2010; Kingsley, 2011; Kuiper & Volman, 2008; Leu et al., 2005). A very limited number of studies has been conducted in ESL or EFL contexts (Murray & McPherson, 2006). Despite being located in different contexts, these studies agreed that explicit instruction is important to the development of language learning lessons. Castek (2008) and Dwyer (2010) found that explicit instruction increased the students' success in implementing the new skills and strategies of ICTs. However, these specific online skills are difficult to acquire without direct and explicit instruction from a teacher (Castek, 2008). In another study, Dwyer (2010) suggested that students needed to activate greater prior knowledge when working in an online environment than when working in a printed context. Prior knowledge was found to assist the ability to search and locate information in online environments. The findings from Dwyer's studies (2010) confirmed that explicit instruction is important to help students make the connection between their prior knowledge and the online search tasks. It also showed that their online literacies ability, especially

self-regulated strategies, had improved as a result of strategy instruction. The review of these studies not only shows that explicit strategy is important to the task of online comprehension but it also shows that the instruction is based on the skills that have been identified as influential to the development of these new literacies skills.

This thesis argues that in order to support the lesson development for 21st century skills, it is first important to make explicit the specific skills that students need to develop. These skills are context-specific and can assist literacy teachers to develop their lesson. There is a need to identify the skills that are essential in the specific context of study. This identification of the necessary skills is significant as it helps researchers to move away from relying on the suggestions from studies which were conducted with native speakers of English. As explained earlier in this section, these skills are linguistically demanding and EFL students may need a different kind of support.

2.6 Conclusion

In the previous chapter, the issues of the lack of understanding of the kind of literacy that Thai EFL students need in order to participate in 21st century practices have been raised. To address these issues, the review of the literature in this chapter was divided into four main parts. First, the context of English Language Teaching in Thailand has been foregrounded to provide an understanding of the need to integrate technology into EFL classrooms. It was clear that Thai English teachers are in favour of using new technologies to increase students' exposure to real world language. Unfortunately, the lack of understanding of the new skills that are important to this context have prevented students from benefiting from the use of new technologies. This has led this study to draw on the literature from the New Literacies perspective to identify what it means to be literate in the 21st century. Through this theoretical framework, this thesis has been able to establish that to become literate in today's society, students need to develop new skills and strategies specific to

this context. The literacy learning based on traditional concepts of the ability to read and write printed materials has fallen short of supporting the students in developing the new skills.

The second half of this chapter focused specifically on the characteristics of the Web and the additional demands that arose because of these new features. The new skills exclusive to the online environment such as searching for specific information, evaluating the trustworthiness of the information retrieved online and the ability to communicate the information synthesised from different Web sources may be needed to participate in literacy practices in the 21st century. Although these studies have identified a number of important skills regarding Web inquiry, it is an issue that has often been investigated in isolation. Moreover, because of the lack of research in EFL contexts, it is still inconclusive whether EFL students engage in the practices in the same way as students in L1 contexts. This was found to be a major gap in the literature which needs to be examined further.

Through an examination of the available literature, it has become crystal clear that if students are to become literate in today's technologically driven society, traditional literacy instruction is no longer adequate for the task of preparing them for this new context. The preparation of students for their civic, work and personal lives is now heavily entangled with a wide range of technologies. Students need to develop literacies that are vastly different from those that teachers have been offering through traditional literacy instruction. However, there has been a lack of pedagogical support because of the assumptions being made about students in the digital age. A close examination of the students' experiences through the review of studies, especially in the last section of this chapter, has highlighted the dangers inherent in these assumptions. Thus, it is important for teachers to support the students' development of the 21st century literacies necessary to allow them to become full participants in civic, social and educational contexts.

The question that arises from this review of the literature is, then, what kind of literacy instruction is needed to equip students with the kinds of skills that will allow them to participate fully in today's digital society? This question cannot be answered until teachers have gained a full understanding of the specific skills and knowledge required by a particular group of students. Without a study focusing on what constitutes necessary skills and knowledge, teachers will be left without important pedagogical tools. In the attempt to address the important issues in the Thai EFL context, this study aims to make explicit the skills and knowledge that are necessary for Thai EFL students to use Web resources as a part of their essential online literacies. The following research question is raised for this thesis:

What are the essential skills and knowledge that Thai EFL students need to develop in order to effectively engage in the task of researching information on the Internet to complete their language tasks?

To answer this research question, two sub-questions also require close investigation:

- 1. What practices do Thai EFL students employ in researching the WWW for information to complete their class-based language tasks?*
- 2. What kinds of challenges do they face while researching the required information?*

The following chapter will conduct a detailed examination of the best methods for investigating these questions. The methodological approach and the data collection procedures were selected on the basis of their suitability to the overall design of the study and the question posed above. The data required to answer these questions needs to be collected on the spot while the students are engaging in the task, using Web-based resources. It appears that traditional qualitative data collection methods, such as observation or interview, are not

adequate to capture these practices and challenges. The criticisms concerning this particular data collection method will also be addressed, as well as the response to these criticisms. Finally, the chapter will end with a detailed data analysis processes.

Chapter 3.

METHODOLOGY

3.1 Introduction

The previous chapter has reviewed the literature concerning online literacy practices. This critical review of the literature has informed the problematising of online literacy practices in the EFL context in Thailand. It has also revealed that inappropriate or inadequate research methods were contributing to the lack of understanding of online literacies in EFL contexts. Many of the studies in this field rely mainly on observation and interview which are greatly dependent on the participants' memory. Thus, some important practices were not observed and the rationale behind such practices remained unclear.

This chapter will provide a detailed description of the methodological approach and data collection procedures that were selected for this study. The procedures were chosen on the basis of their suitability for the overall design of the study and the questions the study seeks to address. The chapter begins with a discussion of the research approach selected for the study and the ways in which this approach has benefited the study. Following this, the research setting and the participants in the research will be explained in detail. The research instruments will then be highlighted, together with the ways in which they were employed to collect the data necessary to answer the proposed questions. At the end of this chapter, a detailed data analysis process is outlined.

The purpose of this study is to understand how Thai EFL undergraduate students engage in online research. The decision to research this topic arose from the problems regarding the lack of support in developing online literacies in

EFL classrooms as detailed in Chapter 1. These problems, together with the critical review of the literature, led me to ask the following questions:

What are the essential skills and knowledge that Thai EFL students need to develop in order to effectively engage in the task of researching information on the Internet to complete their class-based language tasks?

To answer this research question, two sub-questions were closely investigated:

1. What practices do Thai EFL students employ in researching the WWW for information to complete their class-based language tasks?

2. What kinds of challenge do they face with in researching the required information on the WWW?

3.2 Research approach

To appropriately address the breadth and depth of data required for the research questions proposed for this study, a 'case study' was identified as the most appropriate approach. The main characteristic of the case study is its focus on only one instance of the issue to be investigated. In contrast to a large-scale study, the case study concentrates on an individual case to gain an insight into the problem being studied. The rationale for investigating only one case is that by studying a case in depth, the researcher may gain insights that would not have been found using a research approach that attempted to cover a large number of instances. The case study is also used to portray a 'thick' description of the participants' lived experiences, thoughts and feelings relating to a particular situation. While the focus of the study is quite narrow, the case study provides detailed and descriptive data (Denscombe, 2007; Nunan, 1992; Robson, 2002; Stake, 1995; Yin, 2003). For the research that forms the basis of this thesis, the use of a case study has enabled the researcher to investigate specific instances and to capture rich and vivid descriptions of the ways in

which the participants employed practices to use the Web as a source of information.

The particular type of case study employed in this study is an instrumental case study (Stake, 1995). Despite various typologies being classified by researchers in different fields, Stake's classification of case study is found to be the most useful for this study. Some of the prominent typologies of case studies include Stenhouse (1983) and Yin (1984). Nunan (1992) identified four types of case study according to Stenhouse (1983). These four types of case study are neo-ethnographic, evaluative, multi-site and teacher action research. Yin (1984) offered a different categorisation of case studies according to their purpose. His classification includes descriptive, interpretive and evaluative case study. The most useful case study classification for this study is Stake's (1995) and this sets out three types of case study: intrinsic, instrumental and collective. According to Stake (1995), an intrinsic case study is undertaken because of the interest in the case, while an instrumental case study is carried out to examine particular case for the purpose of illuminating a particular issue, problem or theory. In an instrumental case study, the case is of secondary interest; its role is to support and facilitate the understanding of the issue. The last type of case study classified by Stake (1995) is the collective case study, in which groups of individual studies are undertaken to gain a fuller picture. It seems clear that the instrumental case study approach is appropriate for this study because the goal is to gain insights into the issue of using the Web as a research source. The case is still examined in depth, but with the purpose of understanding something else. The case plays a supportive and facilitative role rather than being the centre of the investigation.

In developing my research design, I have drawn upon the distinct characteristics of case studies, namely, in-depth investigation and multiple sources of data collection. Each of these characteristics will be addressed in more detail in this section, along with how this study demonstrates these characteristics.

Firstly, little research has been conducted with EFL students to understand the skills and knowledge they may require to use Web as a research source. To investigate this issue, an in-depth investigation and a comprehensive approach are crucial. Rich data is needed to examine the practices being employed by the students to reveal the kinds of skills evident from these practices.

Additionally, it is even more important to investigate whether the students face specific challenges in order to identify the lack of particular skills. By focusing on one particular case, the data provides a holistic view of students' practices rather than isolated factors that affect those practices. It is also apparent that to systematically investigate this issue, it would be impractical to study many instances because the scale of the data would be too massive to manage.

Secondly, the case study is a research strategy in which a variety of methods of collecting and analyzing data is allowed, rather than one which is restricted to a single procedure (Robson, 2002). To gain an in-depth understanding of the skills and knowledge essential for Web research, multiple data sources are required. Using multiple methods to study one case is indeed the strength of the case study approach. It allows for the investigation to be conducted using a variety of methods, thus providing different viewpoints on the same issue. The use of different sources allows the same phenomenon to be viewed from different points of view, and contributes to a more in-depth understanding of the situation. In this study, the data collected during the period of task completion provided an insight into the practices employed to complete the tasks. The data retrospective recall substantiated the reasons for employing those practices. In addition, another set of data from classroom observation contributed to the probable explanations as to why the students decided to engage in particular practices. The data, which were collected from both inside and outside the classroom, provided the researcher with sufficient information to interpret such complex phenomena, which are often difficult to observe or recognise. This research demonstrates those characteristics of the case study described above.

These unique characteristics of a case study guided me in developing the research design, which will be discussed thoroughly in Section 3.4.

The use of a case study approach as a methodological framework was beneficial to this study in various ways. The researcher was able to fully understand the context of the study by focusing on only one class and ten individual students. Because of the small number of participants, the researcher was able to spend several one-on-one sessions with each student. This opportunity allowed the researcher to exchange casual conversations with the participants beyond the recorded data. The quality of the data was enhanced because of the time spent gaining a comprehensive understanding of the context both in and out of class. Moreover, through these conversations and observations, the researcher gained a much better understanding of the background of each participant. These conversations validate and challenge certain assumptions about digital natives and their experience with the Web. By spending time with each student, the researcher was also able to gain the trust of the participants, which was tremendously important for the selected research methods. The relationship was established through each session and by the end of the research period, it was clearly evident that the students felt confident in revealing their practices while conducting Web research.

Despite being beneficial to this study as outlined above, there are nevertheless some criticisms of the practice of case studies. As pointed out by Bromley (1986), case studies are sometimes carried out in a sloppy, perfunctory, and incompetent manner, as a result of which biased and selective accounts can undoubtedly emerge, even when the research is conducted with good faith and intention. Nonetheless, similar criticisms could be made of any research approach. The issue here is how successfully the researcher has made the case study as authentic and trustworthy as possible (see Section 3.10 below).

3.3 Participants and setting

This study is set in a university in the metropolitan area in Bangkok, Thailand. The participants in this research were first year students majoring in English Education. These students were preparing to become English teachers in primary and secondary schools as well as in vocational settings. The selected class was 2725187 *English Reading Strategies*, offered in the second semester to first year students. To enter the research site, the researcher obtained permission from both the institution and the lecturer of this course. *English Reading Strategies* is a compulsory course for all English-major students in the Faculty of Education. There were two sections, morning and afternoon, taught by the same lecturer. The class met for two hours a week and focused primarily on reading strategies. The topics covered included a range of pre-reading, guided reading and post reading strategies with the emphasis on reading education and related materials for literal and interpretative comprehension.

This class was deliberately selected for a number of reasons. Firstly, the class activities were suitable for the purpose of this study, even though the class focused mainly on print-based strategies. Previous studies suggest that traditional print-based strategies are also important to the task of online reading (Coiro & Dobler, 2007). Secondly, the timing of the course was perfect for data collection. The class took place during the second semester (November – February), immediately after the researcher's Doctoral Assessment. After this the students were on a three-month summer holiday and classes did not commence again until June. The second semester was also good for data collection because there were not as many extra-curricular activities as in the first semester. The students were able to volunteer some of their time to the data collection process outside class hours. Finally, the course had an intensive focus on reading strategies, with two hours a week spent in class on different reading activities, allowing the students to practise the strategies that they had learned. This class provided a holistic picture of the practices employed by the students from both perspectives – inside and outside the classroom.

Regarding entering the research site, the researcher received permission from the institution to collect the data for academic purposes. As a colleague of the class teacher, the researcher had developed a professional relationship with the lecturer of the class. The teacher had a positive disposition towards this kind of research; hence, the researcher was welcomed to observe the class.

Communication prior to the data collection period was conducted via email to establish the grounds for the data collection procedures.

Students were invited to participate in the research and were informed of their right to withdraw at any time if they wished. Additionally, information sheets about the project were provided for the students in Thai and English to explain the details of the project and the level of involvement required. All 52 students enrolled in this class volunteered for the research and signed a written consent in accordance with the UTS ethics requirements (see Appendix 1 for consent forms in English and Thai).

The 52 participants in this class were first year students, and they were selected for this study for the following reasons. Firstly, these students had a command of English appropriate to their level university year and years of study. The level of English is important to this study because the participants need to have a functional level of English to enable them to research information on the WWW. It would be difficult to observe these practices if the participants struggled with basic English. Generally, these participants had eight to twelve years of English learning behind them (six years at secondary level and two to six years at primary level). Even though their levels of English were naturally varied, this group of students had passed a screening test to become English-major students. This test measured four skills – reading, writing, listening and speaking. Therefore, the students' basic English skills were better than their peers in the same faculty even though they were still at the stage of developing more advanced skills.

Secondly, this particular group was selected for this study because of their involvement with new technologies. In terms of age, the participants in the present study were born between 1991 and 1993. At the time of the data collection, their ages ranged from 18 to 20. Regarding their technological ability, Prensky (2001) described the students in this age group as 'Digital Natives'. This term is often used to describe young people and to highlight the significance of technologies in the lives of young people (Gibbons, 2007). Because new technologies have had an impact on the ways in which young people communicate and learn, it has quickly become the defining feature in the lives of this generation (Helsper & Eynon, 2009; Prensky, 2001; Gibbons, 2007). It was also evident that this group of students was generally familiar with the Internet. The participating university is the leading university in Thailand and is situated in the metropolitan area of Bangkok. To complete the enrolment for each semester, students had to register online. Some of the courses also required students to complete assignments and quizzes via the Blackboard Learning Management System (LMS). All of the participants had email addresses and were active on social networking websites such as Facebook and Twitter. They also reported regularly going online to search for general information for both academic purposes and pleasure. Their online participation capabilities were well developed, and they could fairly be described as 'digital natives' (Prensky, 2001). Students from this faculty are normally willing to participate in research projects. It is value-adding because they see an opportunity to extend their experience. They saw this study as an opportunity to reflect their online reading, which might in turn help them to learn more about their own learning process.

3.4 Research design

3.4.1 Nature of the data

To find the most suitable data collection method for the study, the researcher first sought to understand the range and characteristics of potential data by

reviewing similar studies in L1 context. As detailed throughout this thesis, there is a lack of research literature relating to the development of online literacies in EFL contexts. This study therefore drew on L1 studies to inform the understanding of the nature of the data required to answer the proposed research questions. As extensively discussed in Chapter 2, the data essential to the task of identifying important skills for new literacies was found to include the practices employed to search, evaluate and utilise online information (Bulger, 2009; Coiro & Dobler, 2007; Leu et al., 2007). For example, Leu et al. (2007) suggested that to gain access to Webpages, online readers need the ability to operate search engines and then make a judgment on the search engine results. Online readers also need to anticipate the relevance of a hyperlink by reading URLs or the link descriptions. Nevertheless, what's more important is the process of operating search engines and the reasoning behind participants' decisions in hyperlink selection. It is apparent that information about the skills and strategies that underlie the ability to search, evaluate and integrate online information cannot be captured through the use of traditional research tools such as survey, observation or interview. Students' reasoning of their navigational decisions, along with researchers' observation on students' interactive behaviours, would provide far more valuable data. The review of these studies reveals the kinds of data that need to be captured in order to identify relevant practices.

3.4.2 Data collection procedures

To specifically address the proposed research questions, the data collection was divided into two parts. The first part was the class observation and the students' diaries relating to the lessons from each class. The second part of this study was the collection of the data on the practices that the participants engaged in to complete the tasks using Web-based resources. Both aspects of data collection occurred concurrently. The class was observed once a week, on Thursday, while the verbal protocols were collected from each individual participant throughout the week depending on their availability. The three sessions of verbal protocols were collected throughout January to March 2011.

The following table presents the details of the data sources and the data gathered for this study. The data collection procedures will be explained in detail in subsequent sections.

Data source	Research participants	Data gathered	Description of data
Classroom observation	1 lecturer 52 students from 2 sections (Morning + Afternoon)	Researchers' notes from observation schedules	8 sessions observed 2 hours per session
Diary	10 students	Students' diary entries concerning lesson learned from each class	10 diary entries
Think-aloud protocol	10 students	VDO recordings of students' computer screen with accompanying audio Students' written responses to the tasks	3 TAP sessions approximately 1 hour per session 30 drafts of students' responses
Stimulated recall	10 students	The commentary audio on recorded think-aloud episodes	3 SR sessions approximately half an hour per session

Table 3.1 Data collection sources

Given the nature of the data needed to answer the proposed research questions, the above data collection instruments were employed. The following sections discuss each data collection instrument and procedure in depth.

3.4.2.1 Part 1: Class observations and students' diaries

The first research method used in this study was observation. The observation was used to provide descriptions of the context as well as accounts of specific reading strategies that were explicitly taught. These accounts can be used as reference points for subsequent analysis of the practices from verbal protocols. Drawing on literature of the studies in an L1 Web research environment, it was clear that the essential skills that students required fall into the 'reading' category. To gain a more in-depth understanding of the reading practices, I decided to observe an 'English Reading Strategies' class to gain an insight into the lessons the participants were taught. The focus of observation used in this study was not to observe the interactions between teachers and students or students and students. The primary concern was about the lessons being taught and how they were taught. Despite not being the main focus of the study, the data from class observation was found to be useful in enhancing the understanding of students' practices and their background competencies. The researcher took a non-participatory role, as a bystander observing what took place, and did not participate in class activities. The data from the class observation was used to substantiate the findings and strengthen the claims about the students' practices.

To collect this data, the 'English Reading Strategies' course was observed for eight weeks. The researcher applied a combination of structured and unstructured approaches to the observation. As suggested by Dornyei (2007), a concrete observation scheme was developed according to the course syllabus provided by the teacher of the class. The observation scheme was created prior to the observation to provide directions during observation. In anticipation of the criticism that structured or closed techniques might prevent emerging data, unstructured observation was also included. To complement the structured observational data, the researcher observed and took notes on what was taking place in the class before deciding on the significance of the lessons for the research. The focus of the classroom observation was on the traditional print-based strategies that were being explicitly taught. This data enabled the

researcher to recognise these strategies during think-aloud protocols and to pursue further questions in the stimulated recall. The detailed field notes from the class observations were also valuable in the coding development in the data analysis process and provided great insight into the ways in which the participants employed particular practices in conducting Web research.

The second data source for this study was the students' diaries. This set of data was used to complement the class observation field notes to identify the kinds of strategies that the students remembered most. It was also used to collect the data regarding the participants' experience with the strategies taught and their reflections on using these strategies in a real life context. Though the data from students' diaries only comprised a small part of this study, these data became significant as a means of helping the researcher to understand the reason why the students employed particular print-based strategies in online reading.

Diary studies have been employed in the social science research field since the 1970s. They offer the opportunity to capture particular experiences of the subjects being studied in a way that is not possible using other methods. The diary studies approach that was applied in this study is 'solicited diaries', which are produced specifically at the researcher's request. The purpose of using diaries in this study is not to capture the emotions or moods of the participants but to seek participants' own description and interpretation of events and behaviours (Dornyei, 2007).

Only ten key students who were selected to participate in the second part of the data collection procedures were asked to keep a journal of the lessons they learned in the *English Reading Strategies* class (see Stage 1: Participants' profiles in 3.4.2.2 Part 2: Verbal protocols for detailed explanations on how ten key students were selected). They could choose to keep the diaries in English or Thai, and after each class they were asked to send them to the researcher via email. A problem arose because the students soon found it difficult to maintain regular entries; therefore, there was a low number of returns. To solve

this problem, an open-ended question approach was adopted and employed to prompt the participants. The prompts included: “What did you learn in yesterday’s class?”, “Do you find the lessons useful in a real-life context?” and “Do you use these strategies when you read online?”. resulting this way, the data regarding the students’ take-up from the class and their reflections on the lessons were generated.

Nevertheless, because participation in the study was on a voluntary basis and keeping a journal required spending extra time outside class, the number of diaries returned was still low. A total of ten diaries was received after two classes. Despite the small number, the data from the diaries provided many insights into the kinds of reading strategies that were significant to the students’ reading practices as observed in the think-aloud protocol. These diaries provided an account of students’ reflections on the specific reading strategies that they had learned from class, their experiences of applying these strategies in real-life reading, and their experiences regarding the use of these strategies in the online environment.

3.4.2.2 Part 2: Verbal protocols

Verbal protocols are an observational technique in which readers verbalise their thoughts while completing tasks (Pressley & Afflerbach, 1995). Students were encouraged to verbalise anything that was going through their mind while using the online resources. Verbal protocols are used to obtain information about unobservable mental processes such as thoughts, feelings and motives (Dornyei, 2007). Two types of verbal protocol were applied in the current study. The first method was the concurrent verbal protocol, which was used to collect data while students were researching online information. This is also called the think-aloud protocol, and has been widely used in cognitive psychology research (Ericsson & Simon, 1993). The second method applied in the study was stimulated recall, which was implemented after the readers had completed the tasks to avoid interruption (Mackey & Gass, 2005). The video recording was also used to stimulate readers’ recollection of events. The data from two

different types of verbal protocol were used to complement each other. The think-aloud protocol allows the researcher to observe the practices employed on the spot, whereas stimulated recall allows the students to pay attention to their own practices rather than the task. This gives the researcher the chance to gain a more in-depth understanding of the reason behind the participants' practices.

Even though the verbal protocol method has been used in many fields of research for more than 30 years, it is still considered to be a contested methodology (Bowles, 2010). On the one hand, it has been criticised for its reactivity because it is seen to alter the participants' thought processes instead of representing them (Stevenson, 2010). Others believe it to be valuable in capturing data that would not be obtained through the use of other tools (Cohen, 1996). Pressley and Afflerbach (1995) considered verbal protocols to be a maturing methodology and suggested that more research should explore this issue. This study aims to contribute to this methodological debate by providing a detailed description of the experiences of using verbal protocols in an investigation of EFL students' online practices. The researcher is aware of the criticisms that verbal protocols have received and addresses them in the following section.

Criticisms and responses

Firstly, the think-aloud protocol disrupts natural reading processes. The protocol itself acts as an additional task and can interfere with task completion and thought processes. It is believed to alter cognitive processes rather than provide a reflection of the thoughts stored in short-term memory (Bowles, 2010; Dornyei, 2007; Stevenson, 2010). Nevertheless, Pressley and Afflerbach (1995) argue that it is necessary to slow down the natural reading processes to acquire the verbal report of otherwise automatised cognition.

Secondly, the descriptions and explanations, especially responses to the question 'why', which are often generated for the purpose of research rather

than reflecting natural thoughts, are criticised as being invalid. These descriptions are reactive and cannot be claimed to represent thought processes (Bowles, 2010). However, in the later work of Ericsson and Simon (1998), it was argued that even though the verbal descriptions may not reflect spontaneous thinking, they can contribute to a better understanding of human thinking and performance. The reason for this notion lies within the goals of the investigation and what the researchers want to achieve. Both think-aloud methods and socially directed methods can still present genuine educational opportunity.

Lastly, because of the time lapse between task completion and the retrospective interview, there is inevitable information loss. This may result in the reports being incomplete (Bowles, 2010; Dornyei, 2007; Stevenson, 2010). To resolve this issue, Gass and Mackey (2000) suggested that researchers keep the interval time between the task and the retrospective interview to the minimum. It is best when information is collected within 24 hours of the task, while participants' memories are fresh, and the interview should not occur more than two days later. Also, tangible stimuli such as photographs, audio or videos should be used to stimulate recall. By using tangible reminders of an event, participants can retrieve situations more effectively. By being aware of these criticisms, we were able to design our data collection procedures to carefully address them. In the following sections, we will explain the ways in which we employed verbal protocols to investigate online practices in a natural Web environment.

Pilot study

Because verbal protocols are quite new in the field of Second Language Education research, there appears to be a lack of understanding of how to apply verbal protocols within the type of investigation that forms the basis of this thesis. It was decided to pilot the research methods six months before the data collection started with different groups of students to avoid the risks that could flow from piloting the instruments with the main target group. For example, the

participants might gain insights from the pilot study of the think-aloud protocol and might try to improve their practices, which could result in data bias. Thus, the participants for the pilot study were selected from students within the same faculty but in a higher year of study. The participants in this pilot study were studying in their third year, while the participants in the principal study were in their first year.

The main purpose of the pilot study was to allow the researcher to become familiarised with the think-aloud protocol and stimulated recall procedures. Moreover, the pilot study provided the opportunity to trial the tasks, prompts and instructions to be given to the participants in both spoken and written form. Lastly, the data collection procedures of this study involved a number of technological tools such as the Internet connection, the computer, and the screen-capturing software. The pilot study was used to speculate about potential technical problems and to find an approach to minimise them.

The pilot study was found to be incredibly helpful in this study. The researcher was able to identify specific problems and refine the research design before implementing verbal protocols in the real data collection. Three main problems were quickly identified after the think-aloud protocol was piloted to reveal the practices employed by students in their search for online information. Firstly, it was found that the tasks that were short and had only one correct answer would only yield a limited range of observable practices. As a result, little could be determined about the students' decision making and the reasoning behind it. Secondly, the pilot study also showed that some participants did not produce any verbalisations as they did not really understand the concept of 'think aloud'. Finally, the act of interrupting the participants to ask questions when they did not verbalise was found to impede the flow of task completion. Faced with these three problems, the researcher revisited the design of the study, returning to the literature and adapting the data collection procedures in the light of the piloting experience. To address these problems, the final data collection procedures

consisted of four stages: Participants' profiles, Demonstrations and Warm-up trials, Think-aloud protocol and Stimulated recall.

The following sections describe the second part of the data collection procedures in detail. The rationale behind each stage of the collection as well as the important issues in collecting data using verbal protocols are also explained.

Verbal protocols procedures

As noted above, the second part of the data collection procedures consists of four stages: Participants' profiles, Demonstrations and Warm-up trials, Think-aloud protocol and Stimulated recall.

Stage 1: Participants' profiles

An Internet Usage Survey (see Appendix 2), adapted from Coiro and Dobler (2007) and Pookcharoen (2010), was conducted at the beginning of the data collection stage to elicit general information about the participants' experience on the Internet. Fifty-two students from two classes were asked to complete the survey, which was designed to investigate the range of activities that the students participated in as well as the amount of time they spent online on a regular basis. After completing the survey, the participants were categorised into three groups according to their Internet experience: high, medium and low. A total of ten students were chosen to participate in think-aloud protocols and stimulated recalls. There were four participants from each of the high and low Internet experience group and two from the medium group.

The reason for choosing participants from different Internet experience groups was to explore a wide range of practices in order to answer both research questions. It is speculated that students at opposite ends of the continuum will be involved in different practices. When readers are more familiar with the

Internet, they are able to demonstrate higher levels of knowledge and skill relating to the successful retrieval of targeted information (Bilal, 2004; Leu, et al., 2005). In contrast, inexperienced Internet readers tend to be unfamiliar with the Internet conventions and features of search engines that are available to assist them (Eagleton & Guinee, 2002). Coiro and Dobler (2007) also reveal that when novice Internet readers conduct searches, they are likely to bypass useful information because they make hasty and less strategic decisions. The following examples show the different practices employed by experienced and inexperienced Internet readers. The first example shows that an experienced Internet reader is able to adapt the search strategy when facing problems, whereas the practices in the second example demonstrate that an inexperienced Internet reader is less likely to be able to adapt and change strategies when facing problems.

Example 1: MY (Experienced Internet reader)

When struggling to spell out the search term in English (the name of a cape in Phuket), MY started her search by typing in the name of that place in Thai (แหลมพรหมเทพ). After browsing the results on the Google results page, she found that many hyperlinks were related to 'sunset' (พระอาทิตย์ตกดิน). Then she refined her search terms to "*Sunset in Phuket*" (MYTrial_task) and found 'Laem Promthep' (Cape Promthep) in English.

Example 2: KM (Inexperienced Internet reader)

When looking for the reason why people give chocolate on Valentine's Day, KM used the search term "*Valentine's Day*" (KMTask2) because she wanted to search for 'more general information'. She spent more than five minutes looking for the word 'chocolate' on 'Valentine's Day' Webpages; however, she did not find any relevant information that she could use to write the answer. She showed frustration as she said "ไม่ไหวแล้วนะ" (I cannot take this anymore) but continued to look for different links using the same search terms.

By conducting verbal protocol with both experienced and inexperienced Internet readers, this research was able to successfully establish a wider range of practices. Verbal protocol allows researchers to gain a deeper understanding of the nature of both effective and ineffective practices. This is significant for teachers as this information can enable them to explicitly encourage effective practices and teach students how to avoid ineffective strategies. The following table categorises the students' Internet experience according to their answers in the Internet Usage Survey.

Students' initial	High	Medium	Low
AM	/		
TY	/		
PD	/		
JN	/		
MY		/	
NT		/	
KW			/
LN			/
KM			/
MW			/

Table 3.2 Students' Internet experience

The students who were categorised as having high familiarity with the Internet answered 'high' in the following categories: the number of times per week they used the Internet, the amount of time spent on the Internet per visit, and the frequency of usage of Internet applications such as e-mail, chat, social networks, websites (both for entertainment and academic purposes), and so on. Some students were categorised as having 'lower' familiarity with the Internet, based mainly on their answers to the questions regarding the usage frequency of Internet applications. This is because almost all the students visited the Internet at least two or three times a week and spent more than one hour per visit online. Therefore, it was not possible to differentiate between high and low familiarity using the amount of time spent on the Internet alone. The frequency

of use of different applications on the Internet was found to be much more distinctive. When comparing the use of the Web for school-work and for pleasure, the students in the high category used the Web at least once each day, while the students in the lower category only used the Web several times a week. Additionally, the students who were categorised into the category of lower familiarity with the Internet were found to rarely download music, movies or programs from the Internet. They were also found to never play online games or to shop online. The students who were categorised as having medium familiarity with the Internet were those with the medium answer to all of the survey questions. The interesting aspect of the participant profile is that even though some of the students were categorised as having lower levels of familiarity with the Internet than their classmates, they were found to spend a considerable amount of time on the Internet. These findings confirm that the widespread availability of the Internet has brought about profound changes to Thai society. Thais are relying more and more on the Internet to conduct day-to-day activities including, of course, university research. It is important to prepare students to become literate individuals within what Appadurai has termed the global 'technoscape' (Appadurai, 1988).

Stage 2: Demonstrations and Warm-up trials

To address the problem highlighted in the pilot phase, relating to students not producing any verbalisations, demonstrations and warm-up trials were introduced before the data collection. Cohen (1996) has advised that each participant needs to receive demonstrations in order to produce meaningful data. Cotton and Gresty (2006) have also suggested playing a video of a student completing a think-aloud protocol task to the participants. The sample video and task should not encourage direct imitation by the participants, and the authors rejected the idea of explicit training because Ericsson and Simon (1993) had found that this had an impact on participants' performance. This study adopted these suggestions and applied them during data collection procedures.

Demonstrations

First, a sample video of the think-aloud protocol was shown to the participants to give them a sense of what the final 'product' would look like. The video showed one student completing the task recorded during the pilot study and lasted almost three minutes, which was sufficient time for the participants to grasp the ideas of 'think-aloud' (see Appendix 3 for a sample video of think-aloud protocol). Following the video session, the researcher demonstrated the 'process' of think-aloud protocols. Even though this process is similar to watching a video, it was important for the participants to get the feel of the 'process' of think-aloud. By seeing both the final product and the live demonstration, the participants understood what was expected of them. This process was incredibly valuable because the participants no longer focused on the process of think-aloud; instead, they focused on the task at hand. This is considered the most delicate procedure as it can send the message 'do as I do' to the students (Pressley & Hilden, 2004). Pressley and Hilden (2004) suggested minimising the risk by concentrating the verbalisations on direct thoughts, rather than describing the processes. Even though this step involves some risk, it is necessary for participants to watch a live demonstration. It is unlikely that participants would know what is meant by 'thinking-aloud' without seeing how it is done (Pressley & Hilden, 2004).

Warm-up trials

After watching the demonstration, warm-up tasks were given to the participants as a trial and they were asked to report their thoughts while completing the task. They were given as much time as they needed to complete the task until they felt comfortable verbalising their thoughts. Warm-up trials ensure that verbal protocols do not interfere with the task at hand (Ericsson & Simon, 1993). It was found that once the participants understood what they were expected to do, they could pay full attention to the task and not be distracted by the think-aloud process.

Following the demonstration and warm-up trials, the students were found to be more comfortable in reporting their thoughts and were able to complete the protocol without interruption. This is highly evident in the second and third think-aloud protocol sessions when students produced verbalisations on their own without interruptions by the researcher.

Stage 3: Think-aloud protocol

In this stage, an open-ended think-aloud protocol was conducted. First, the participants were given the task on a digital MsWord file and asked to complete this task by researching information from the Internet. In the pilot study, participants expressed their preference for typing their responses rather than writing them down on paper; hence, the digital file was provided for the actual study. Then, the verbal instruction in Thai was provided to the participants. The translated version of this instruction is “Please respond to the given questions as you would complete a class assignment. Do what you would normally do when you are at home. Speak whatever is on your mind, your voice will be recorded along with the computer screen”. The participants were asked whether they had any questions before the task began. Finally, the recording on Camstudio started as the researcher opened the task file and gave the participants the laptop to complete the task. To assist the students’ participation in the research, the researcher was positioned beside the participants as they undertook the task. At times, the participants asked for clarification regarding the task instruction; however, they were informed that the researcher would not answer questions regarding the task itself. Some of the questions about the task that arose during the pilot study include “What does this word mean?”, “Is this the correct answer?”, and “Do I need to look up more information?”. The participants were given approximately an hour to complete the task, but most did not take the entire hour. The computer screens and movements on the screens, such as mouse clicks and cursor movements, along with students’ verbalisations, were recorded using software called CamStudio (see Appendix 4 for a sample video).

After conducting three sessions of think-aloud protocol, the researcher found the need to address the following issues relating to research design. These issues concern the nature of the tasks and prompts, and will be explained more fully in the following sections.

Tasks

There is no universal standard for the design of think-aloud protocol tasks. However, an important guiding principle is that tasks should be specific to the context of each study. Ideally, task design should facilitate the gathering of data that directly addresses the research questions. The task should not limit or hinder the gathering of meaningful data. In the pilot study, one of the questions given to the students was “*Who wrote the poem ‘Stopping by Woods on a Snowy Evening’?*”. It was found that a majority of students simply copied the title of the poem, pasted it into the Google search bar and arrived at their answer within a minute. The researcher had only observed a number of practices that are used to search and evaluate information, but this task was too simple to allow the possibility of ‘synthesise the retrieved information practices’ to emerge. Through trial and error involving a range of different tasks, the researcher derived a set of inquiry tasks that provided a context for the emergence of the important skills suggested by studies in L1 contexts.

Prompts

Prompts can lead to bias or act as an unintentional force when they are specific to particular practices or strategies. However, according to Pressley and Afflerbach’s (1995) impressive review of studies applying verbal protocols, the thoughtful deployment of certain prompts can avoid the problem of incomplete data. In the pilot phase, the need to provide prompts to particular students was identified when there were relatively long periods of silence. The prompts were kept as general as possible and only served as a reminder for the participants to speak. Examples of these prompts are “Please tell me what you are thinking”, “Please think-aloud as you read” and “What are you thinking now?” (Pressley &

Hilden, 2004). It was found that the number of prompts was reduced in the later think-aloud protocol sessions as students became more comfortable with verbalising their thoughts.

Limitations on practicality

The original research design was to collect the data from ten participants. Unfortunately, the video data from two students were damaged during the process of recording due to unforeseen circumstances. The laptop overheated and crashed before the files could be saved, and the recorded files only played the video without sound. These problems indicate that dependence on technology involves certain risks, and researchers need to take into account these possible risks when designing research. The data from those two participants was not included, resulting in a decrease in the number of the participants in this study to eight.

Stage 4: Stimulated recall

To address the criticisms concerning inevitable information loss, stimulated recall was introduced as the last stage of the data collection process (Bowles, 2010; Dornyei, 2007; Stevenson, 2010). After completing each think-aloud protocol session, participants were asked to provide commentary to their own video recorded during the think-aloud protocol. Because of the fact that participants verbalise some time after task completion, data that is gathered retrospectively can be inaccurate and incomplete. This may simply be because participants forget what they were thinking or doing while completing the given tasks, but because of the time lapse between task completion and retrospective interview, there is inevitable information loss. However, the quality of retrospective data can be improved by keeping the interval time between task and retrospective report as short as possible. It should not exceed two days, and should preferably be within 24 hours. Stimulus should be used to support the recall; for example, tangible stimulus (visual or aural) can be used as a

reminder of an event to stimulate recall to an extent that the respondents can retrieve and then verbalise (Dornyei, 2007; Gass & Mackey, 2000).

In this study, after completing a think-aloud protocol, the researcher played back the entire recordings of the students' think-aloud episode (CamStudio video recording). The participants were asked to explain more about their actions and what they were thinking, and to clarify their reasons for a particular choice. They were given the control to pause the video at any time they wished to provide more explanation. The participants were also asked further questions regarding particular actions that the researcher had observed and noted during the think-aloud protocol sessions. This process occurred immediately after each think-aloud session to avoid information loss due to the time lapse between task completion and recall. This process was found to be very helpful as it enabled the researcher to collect a very rich data set on the reasoning behind students' navigational decisions. Some of this data was not evident during the think-aloud protocol sessions. Stimulated recall also allowed the researcher to remain at a distance during the task completion, allowing the participants' thought to flow naturally. The researcher no longer needed to interrupt the think-aloud protocol to ask questions but kept them until the stimulated recall session. The participants were also found to produce more meaningful data during the stimulated recall as they paid full attention to their online practices, instead of completing the tasks. Stimulated recall provided clarification for their actions and the reason behind them.

3.5 Data analysis

To address the research questions fully, elements of new literacies theory (Coiro, 2007; Leu et al., 2004) were applied to the development of a theoretical framework that would allow for clear identification of both effective online literacy practices and possible challenges that EFL readers face using online resources. It is first important to define the terms 'practices' and 'challenges' for the purpose of data analysis. As defined in Chapter 2, online literacies are

defined for this study as the capabilities that it is necessary for Thai EFL students to acquire to enable them to engage in language tasks using online resources. Thus, the term 'practices', in this study, is defined as the 'actions and behaviours' that the participants applied both consciously and automatically. These practices are often referred to in the reading literature as 'strategies' which learners deliberately plan and use to construct meaning and comprehend texts (Dole, Duffy, Roehler, & Pearson, 1991; Duffy, 1993; Pressley, 1998). An example of conscious practice occurring in this study was found when participants planned to read only the headings of the Webpages or the first sentence of each paragraph when trying to locate relevant information. On the other hand, the kinds of practices that are employed automatically are often referred to in the reading literature as 'skills'. Skills are the acquired ability to perform well. This refers to automatic behaviours which readers usually use effortlessly (Dole, Duffy, Roehler, & Pearson, 1991; Duffy, 1993; Pressley, 1998). In this study, some examples of automatic actions include right-clicking to open a Webpage in a new tab or pressing the C key while holding down the Ctr key to copy texts. While there are some variations of automatic actions, these actions seemed to emerge as common practices among all of the participants in this study. These terms are defined here in order to assist the readers in comprehending the following sections regarding the analysis of the data.

For the purpose of data analysis in this study, the term 'practice' is used to refer to both types of practice explained previously. The rationale for selecting this term is that both types of practice are deemed important to the identification of online literacy. Moreover, because of the different data sources applied in this study, the data on both conscious and automatic practices were captured. The data on deliberate practices were mainly gathered through students' verbalisation during the stimulated recall session. As explained in the previous section, during these SR sessions, the participants provided complementary recounts of their online practices captured during the think-aloud protocol session. Through recalling these practices, the participants usually only

verbalised the practices that they remembered. As a result, some of the important practices they employed automatically were missing. This problem was solved by using think-aloud protocol and screen capturing software. Through this process, the researcher was able to observe the practices that students engaged in automatically without having a deliberate plan.

The term ‘challenge’ in this study refers to the kind of practices that had the potential to impede or hinder the task completion. Two types of challenges were identified through the analysis process- challenges that resulted from a set of ineffective practices and challenges that resulted from the lack of skills and knowledge required to complete the Web research task. An example of the kinds of challenge that were found to be a consequence of ineffective practices include the inability to locate specific information as a result of broad search terms or the inability to locate information promised in the title of the Webpage because of the use of speed reading strategies. On the other hand, the kinds of challenges that resulted from the lack of necessary skills included the inability to generate a search term in English that represented the search intent or the use of an uncritical blanket assumption to evaluate Webpages. Making explicit these challenges was deemed necessary to the task of identifying the essential skill-sets and knowledge required for Thai EFL students to effectively conduct Web research. The following table summarises the data sources, the type of data collected and the types of data subjected to analysis.

Data Source	Types of data	Data subjected to analysis
Class observation	Researcher’s notes	Lessons taught
Diary studies	Students’ diaries	Lessons learned
Think-aloud protocol (TAP)	Video recording of students’ computer screen movements, mouse movements, hyperlink selection, and keyboard strokes	- Practices employed to complete task - Challenges faced during task completion
	Students’ verbalisation while completing the tasks	

Stimulated recall (SR)	Recounts of online practices collected after the task completion	- Practices employed to complete task - Challenges faced during task completion

Table 3.3 Summary of data subjected to analysis

As shown in the table above, the data was generated both in the classroom and from Web-based research tasks outside classrooms to suit different purposes. Thus, the data analysis was also separated into two parts to assist the analysis of these different types of data. The first data analysis dealt with the data from classroom observations and students' diaries. This analysis focused specifically on the lessons taught in this particular course and the lessons that the students learned or adopted from the course. This analysis was used to complement and enhance the understanding of the practices employed to complete the tasks. The second part of the analysis focused particularly on the data from think-aloud protocols and stimulated recalls. The data from these two data collection instruments were analysed for the practices that the participants employed to achieve the goal of the tasks. This analysis provided the main findings of the study regarding the practices and challenges related to Web-based research.

3.5.1 Data Analysis Part I: Class observations and students' diaries

The purpose of collecting the data related to classroom activity was to build up an understanding of the students' practices. As mentioned previously, the literature in L1 suggests that many of the practices that were employed in using the Web as a source of information are closely related to reading practices. The types of reading strategy being taught were found to enhance the understanding of some of the reasons why the participants employed particular practices. This data was supported through the analysis of the students' diaries regarding the types of strategy that they were able to employ to the tasks outside classrooms.

The data from classroom observation and students' diary entries were also subjected to thematic analysis. Thematic analysis is appropriate for this study because of the nature of the data collected. As thematic analysis is a data-driven approach, themes are identified through careful consideration after reading and re-reading the data. This process allows themes to emerge, enabling the researcher to group the themes and develop categories for analysis. Unlike grounded theory, the thematic analysis in this study guided the research questions that arose from the research context and a critical review of the literature. The themes for the analysis of the data collected through class observation and students' diaries were partly pre-determined. This is because the first part of the analysis aimed at identifying specific reading strategies being taught by the teacher, as well as the lessons being learned or taken up by the students. The findings from the first part of the data analysis procedures were used to identify the kind of practices the students employed while completing the Web-based research tasks in the second part of the analysis.

Some of the themes to emerge from the class observation include the types of reading strategies being taught, such as reading only the first sentence of each paragraph, scanning, and finding specific information in a given passage. Several themes were fairly obvious, because the lessons corresponded to the course syllabus and course book (Andersen, 2009). These themes are shown in the table below namely "Survey, Question, Read, Review, and Recite". These themes were the reading strategies that were taught to increase the students' reading fluencies. They were often referred to by the teacher of the class as "SQ3R strategies" according to the course book (Anderson, 2009). These themes were explicitly and consistently emphasised by the teacher throughout the eight weeks of class observation. Thus, it was clear that the fluency strategy was the focus of the course. The table below shows an example of class observation from 27 January 2011 (Unit 9 Chapter 2). The codes or themes assigned to the observation data are also shown in the table. Please note that most of the tables in this thesis were written in two languages- English and

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Thai. The first part is the English translation of the data, translated by the researcher. The second part that is written in the brackets is the actual data collected through the class observations, students' diaries and verbal protocols. This data is written in both English and Thai as the participants frequently used both languages.

Teacher	Students	Themes
What if the time is almost up and you need to read 600 words, what are you going to do? (เวลาหมดแล้ว ต้องอ่าน 600 คำ จะทำยังไง)		Survey (S)
	Survey (Survey)	
What is the first thing you should do when surveying a text? (ขั้นตอนที่ 1 ของการ survey จะต้องดูอะไร)		
	Read the title (อ่านชื่อเรื่อง)	
After reading the title, what else do you have to do? (การที่จะ survey ได้ จะต้องอ่าน title แล้วอ่านอะไรต่อ)		
	Look for main idea (หา main idea)	
But the time is almost up and you have not found the main idea yet, what should you do? (แต่ถ้าเวลาหมดแล้ว ยังหา main idea ไม่เจอ)		
	Read only the first and last sentence (อ่านประโยคแรก กับประโยคสุดท้าย)	

In the situation where you do not have enough time, all you need to do is read the first sentence (เวลาหมดแล้ว อ่านแต่ประโยคแรกพอ)		
	Yes, read the first sentence of each paragraph (อ่านประโยคแรกของแต่ละ paragraph)	
Close your book (ปิดหนังสือ)		Question (Q)
After surveying the text, the second step is to ask questions (หลังจากที่เรา survey เรียบร้อยแล้ว กระบวนการที่ 2 เราจะตั้งคำถาม)		
We are going to ask questions about the text, not just read it (เราจะไม่แปลเฉยๆ แต่ตั้งคำถามไปพร้อมๆกัน)		

Table 3.4 Sample of data from class observation on 27 January 2011

While the data from class observation provided broad themes regarding the strategies explicitly taught, the data from the diary entries provided more detailed descriptions of the strategies learned. As discussed in the data collection procedures, the questions were used as prompts to generate responses from the students in their diaries. The purpose of this analysis was to extend the understanding of the strategies that the participants learned and employed in reading situations outside class. The data from the students' diaries were coded and categorised into themes. Interestingly, the themes that emerged were found to be much more specific than the themes derived from class observation. For example, while the data from class observation suggested that the teacher focused on SQ3R strategy, emerging themes from the students' diaries mainly revealed strategies used to survey (S) the texts. Samples of the data from students' diary entries and their corresponding codes

can be found in the table below. Themes that were found consistently include “Scanning” (ALL), “Reading only the first sentence of the paragraph” (AM, KW, MY), and “Focusing on salient texts such as headings, boldfaced fonts” (TY, MW, MY, NT). The analysis of this data has enabled the researcher to recognise when particular strategies were used during the think-aloud protocols. The data was found to be invaluable to this study as it greatly explained why the students employed particular strategies when locating information on the WWW. The table below shows the response to the question ‘What did you learn from yesterday’s lesson?’ from students’ diary entries.

Student	Response from diary	Themes
AM	I learned the technique of reading only the first sentence of a paragraph (เทคนิคการอ่านแบบอ่านประโยคแรกประโยคเดียว)	Read only the 1st sentence of a paragraph (Survey)
KW	I learned a new technique to comprehend and remember the passage. When I read a long passage, I usually can't remember the text. So, I find the technique of reading only the first sentence of a paragraph very effective. (ได้เรียนรู้วิธีใหม่ในการเข้าใจและจดจำ passage ค่ะ เวลา passage ยาวๆ ก็จำไม่ค่อยได้ แต่ถ้าใช้วิธีอาจารย์เขาที่จำเฉพาะประโยคแรก หนูว่าเวิร์กดีค่ะ)	Read only the 1st sentence of a paragraph (Survey)
MW	I learned how to survey the passage first, read the headings and the first sentence of each paragraph (อาจารย์บอกให้สำรวจเรื่องที่จะอ่านก่อน อ่านหัวข้อประโยคแรกของทุกย่อหน้า)	Survey Read heading Read only the 1st sentence of a paragraph
	I also learned the scanning technique. Look for specific words or sentences in the passage (Scanning โดยหาว่าประโยคที่เราต้องการว่าอยู่บรรทัดไหนในเรื่อง)	Scanning for specific information

Table 3.5 Sample of data from students’ responses in diary entry

The first part of the analysis of the data from both class observations and students' diary entries greatly enhanced the analysis of the data from verbal protocols. This analysis has assisted the researcher in interpreting the rationale behind some of the important reading strategies which were employed repeatedly throughout the data collection.

3.5.2 Data Analysis Part II: Think-aloud protocols and stimulated recalls

3.5.2.1 Transcribing data and preliminary organisation from Verbal Protocols

Data analysis for data generated through verbal protocols was conducted in several phases. Preliminary organisation and analysis took place as scripts were prepared to allow the researcher to combine, analyse and code the data collected using different tools. First, the data from think-aloud videos and stimulated recall audio recordings had to be transcribed before the analysis process. The think-aloud protocol videos were transcribed in a step-by-step reconstruction of the participants' actions. The action trail of the keystrokes, hyperlink selections, typed responses, skimming text with the mouse, navigational decisions and so on was transcribed. Next, the accompanying audio was transcribed verbatim and added to the script. The digital audio recordings were also transcribed to provide a verbatim record of the stimulated recall. Finally, the transcripts from TAP and SR were organised into meaningful segments with time stamps, ready to be analysed. Meaningful segments are a chronological sequence of actions combined with the associated complementary audio transcription (Coiro, 2007). Time-stamped action trails were used to combine scripts from the think-aloud protocol and stimulated recall together. This allowed the researcher to refer to multiple data sources of the same event to interpret what the participants were doing and why they decided to take a particular action. This process was found to be particularly useful, since at times, the participants did not think aloud. The data from stimulated recall helped the researcher to understand what informed their decisions

throughout the task completion process. The data from class observations and students diaries were already written and did not need to be transcribed.

3.5.2.2 Thematic analysis

Thematic analysis was also applied in the second part of the data analysis in order to identify the kinds of practices that participants employed to complete a Web-based research task. Through this identification, the researcher was able to conceptualise the online literacies necessary for Thai EFL students. The data analysis was conducted in five stages: Open coding, Axial coding, Categorisation of codes, Revision of coding scheme, and Application of the new coding scheme to student data. These processes were deemed necessary because of the complexity and richness of the data.

Open coding was first applied to individual students to look for practices involved in task completion using online resources. After these codes emerged from each student's transcript, axial coding was applied to students' codes as a means of connecting data from different students. This involved the placing of codes in groups to determine their relationship. This process revealed themes that recurred in the categorisation. As a result, a total of 54 preliminary codes or themes resulted from the TAP and SR transcripts of eight students.

These 54 preliminary themes were grouped according to common relationships in the Categorisation of codes stage. For example, all of the themes relating to the tasks were classified together. This stage truly highlighted the codes that stood out as distinct from the other themes. Consequently, the initial pattern of codes emerged from this grouping. This demonstrated common practices that were employed among and across the participants. From this pattern, the framework provided by Coiro's (2007) Six Phases of Online Reading Comprehension proved to be relevant and useful in the next stage of the analysis. However, because of the different context of study and the native language of the participants, this framework needed to be modified to respond to the data of the study. The number of phases was reduced from six to five and

the names of the phases were also modified, as will be explained in detail in a later section (see Thematic Analysis Stage 4). In this stage of the analysis, main and subthemes were then sorted into one of the five phases before they were used to recode the students' data in the application phase.

Finally, the rich and detailed information about students' online practices were sorted into the 'Five phases of online literacy practices' analysis framework based on Coiro (2007). This process resulted in a better understanding of the strategies applied by the students to complete online reading tasks outside the class.

Although complex, the staging of the analysis in this way proved to be really important and significant in terms of the richness of the data that were gathered. The following sections present a detailed explanation of the processes involved in each of the five stages of the data analysis described in general terms here. The examples are provided to highlight the quality of the data required to answer the proposed research questions.

Thematic Analysis Stage 1: Open coding

Open coding (Strauss & Corbin, 1998) was applied to the transcripts of individual students to look for practices engaged in by participants while they were completing the tasks. The transcripts were read and reread as the researcher labelled practices with 'codes' to describe the actions or behaviours being observed. In the event that the practices were unclear from the reading of the transcript, the researcher consulted the screen-casting videos for a fuller description. Some examples of codes include reading task instruction, selecting hyperlinks on Google, scrolling past text quickly, pausing at headings, and so on. This process was repeated in all the transcripts from eight participants. A short excerpt from one student's sample of a coding scheme is illustrated in table 3.6 below.

Turn	Time	Think-aloud protocol transcript	Stimulated recall transcript	Codes
1	0- 1.30	Read task question aloud	<i>Read it once, but went back to read part of it again</i> อ่าน รอบหนึ่ง แต่ก็ไปย้อนมีย้อนบางช่วง	Read task instruction
2	1.30- 2.01	Re-read task question	<i>I think I read the instruction three times. I looked for the answer after reading it the first time. Then I read it again.</i> รู้สึกว่าจะอ่านโจทย์ไปสามรอบ รอบแรกอ่านเสร็จแล้วหาหาเสร็จแล้วกลับมาอ่านโจทย์ใหม่	Reread task instruction
3	2.01- 2.16		<i>I had no idea what it is.</i> ไม่รู้จกเลย ไม่รู้ว่ามันคืออะไร	Background knowledge
4	2.29	Type 'facial toner' into Google search bar <i>"I think this is the word"</i> <i>"รู้สึกว่ามันจะเป็นคำนี้แหละ"</i>		Use main topic as the first search term

Table 3.6 Sample of coding scheme from Open Coding

As the researcher coded the transcripts, a coding scheme was developed for consistency. In the table below, the descriptions of codes and examples from participants' think-aloud protocol transcripts were also assigned to each code for clarity.

No	Codes	Description	Turn	Sample actions
1	Read task instruction	S reads task instruction given by the researcher	1	S: Read: <i>It is said by the food network</i>
			2	S: Mumble : <i>each person consumes at least ten pounds of chocolate every year</i>
2	Construct search terms	S types in search terms search engine	22	T: type: Valentine history
3	Select link from Google	S selects a hyperlink from Google result page	23	S: choose first link, right click : Open Link in New Tab "History of Valentines Day"

Table 3.7 Coding scheme from open coding

Thematic Analysis Stage 2: Finding a common pattern from each participant's codes

This stage of the analysis aimed to find a common pattern across eight participants after open coding had been applied to distribute each participant's data into categories. In this process, codes from one participant were compared to the codes that emerged from a second student's data. This process revealed themes which appeared to recur, as well as themes which appeared to be distinctively different. The distinct codes were noted at the end of the table to highlight the differences between the two coding schemes. The new coding scheme which resulted from a combination of the codes from the first and second participants was then applied in the same manner to the codes of a third participant. Again, this process revealed the recurring themes and the distinct themes, which were added at the end of the table. This process was repeated for all of the coding schemes from eight students, revealing 54 preliminary codes in total. The table below shows an example of this process. The far left

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column contains the codes from the first student, LN, followed in turn by the recurring codes; the distinct codes are noted in writing.

Codes from LN's data	NT's data (turn)	KM's data (turn)	MW's data (turn)
Read task instruction	1	1	2
Reread task instruction	1	2	
Identify main topic	2	3-4	4
Identify task questions	3		
	14 Read beginning section of website	29	
	16, 22 Identify relevant info using key questions		16 41 45 46
		10 Discard website-doesn't have relevant info	23 25 27
			32 Select 'searches related to ..'

Table 3.8 A Sample of common pattern of practices

Thematic Analysis Stage 3: Categorisation of codes

After identifying preliminary themes across the eight participants, it was clear that certain themes are related to one another. In this stage, the 54 codes were grouped according to common relationship. This grouping process resulted in the main categories and sub-categories shown in the table below. For example, read task instruction, reread task instruction, identify main topic of the task, and identify key question from the instruction were grouped under the higher level theme 'task instruction'. Another example of how themes are related concerns the themes used as 'search terms'. Themes relating to search terms include: typing the main topic as a search term, copying the main topic from the task instruction and pasting it to Google, typing the key question identified from the task into Google, and copying words from the task instruction and pasting it into Google. These themes were found to be related to the construction of search terms for the purpose of conducting a search on Google. They are categorised under the main theme 'Constructing search terms'. Through this process, the researcher was able to make connections between the codes, allowing patterns of online practices to emerge. The following table presents a sample of main and sub-themes, as well as identifying student' practices that were sorted into themes.

Students			NT	MW	LN	KM
Theme	Sub-themes					
Task instruction	1. Read		X	X	X	X
	2. Reread		X		X	X
	4. Identify task questions		X		X	
	42 Speculate key questions					X
Main topic	3 Identify main topic		X	X	X	X
	7 Develop concepts	Image			X	
		Thai				X
Search &	5 Google		X	X	X	X

Locate	14 Construct search terms	A Use main topic as search terms	X	X		X
		B Use questions			XX	
	8 Modify search terms	A Thai			X	
		B Add	X	X	XX	
		C Delete			X	
		D Grammar			X	
		E Copy from task				X
		F from GG		XX		XX

Table 3.9 Sample of main and sub-themes

Initial patterns of online practices emerged as a consequence of the categorisation of codes. These patterns demonstrated the kinds of practices commonly used among students that needed to be pursued in more detail. These patterns proved to be useful as they were found to be similar to the ‘Six Phases of Online Reading Comprehension’ introduced by Coiro (2007). The six phases included 1) Understanding the task directions, 2) Selecting and revising search terms, 3) Reading to evaluate the relevancy of hyperlinks in search results and websites, 4) Critically evaluating information within and across websites, 5) Synthesising information across three websites to make the best choice and 6) Communicating answers to online information requests.

This framework (Coiro, 2007) was selected for application in this study because it is the only framework that provides comprehensive coding categories for the practices that emerged as the students engaged in Web-based research tasks. However, it was also found that there were certain themes from this study that did not fit into any of the six phases. On the other hand, there were also themes that were found to match more than one of the phases. Thus, the researcher revised the coding scheme to fit the data that emerged from the present study.

Thematic Analysis Stage 4: Revising coding scheme

Because there were themes that could not be sorted into any of the existing phases, it was necessary to revise the coding scheme to be more appropriate to the emerging data. The six phases of online reading comprehension (Coiro, 2007) were revised and reduced to five phases in this study. Studies on online literacy practices were used as a guiding framework for this revision. In this section, the researcher explains in detail how each of the phases was modified. The details of the findings of these phases will be reported in the next chapter.

Firstly, Coiro's Phase 1 'Understanding task instruction' was found to be too narrow for the data that emerged from this study. Students were found to not only try to understand the task instruction but also to explicitly identify the main topic and the key questions of the task, as well as the 'keyword', which was not directly taken from the task but generated from students' own background knowledge. Students were found to continuously refer to these keywords when generating search terms and locating relevant information. Bulger (2009) described the function of these practices as 'Goal-setting' which was more appropriate to the data that emerged from this study. The table below shows the initial comparison between Phase 1 and the themes from this study.

Coiro's Phase 1	Themes emerged from data	
Understanding task direction	Task instruction	1. Read
		2. Reread
		4. Identify task questions
		42 Speculate key questions
	Main topic	3 Identify main topic
		7 Develop concepts
		- Image
		- Thai

Table 3.10 A comparison between Coiro's Phase 1 and the themes from this study

The second phase was named 'Selecting and revising search terms' by Coiro (2007). It was renamed as 'Generating search terms' in the description by Eagleton and Guinee (2002) as a part of Internet literacy skills. It was evident that the participants in this study also constructed their own search terms which did not fit into this phase. Also, they were found to monitor their search terms and recognise when these terms failed to generate relevant information. These practices led to the revision of search terms; thus, the name of the phase was revised. The table below shows the comparison between Coiro's Phase 2 and the themes emerging from this study.

Coiro's Phase 2	Themes emerged from data	
Selecting and revising search terms	Search and locate	
	5 Google	
	14 Construct search terms	A Use main topic as search terms
		B Use questions
	8 Modify search terms	A Thai
		B Add
		C Delete
		D Grammar
		E Copy from task
		F From Google

Table 3.11 A comparison between Coiro's Phase 2 and the themes from this study

The third phase 'Reading to evaluate the relevancy of hyperlinks in search results and websites' was renamed as 'Locating relevant information'. It was found that students did not only engage in reading practices but they also engaged in navigating practices (Murray & McPherson, 2006). The name of the phase was revised as an expansion to include practices other than reading. The term 'locating' was used because all the practices in which the students engaged appeared to have the same goal, namely to locate information relevant to the task. Similar to Coiro's description of this phase, the students were found

to first evaluate the relevancy of the hyperlinks on Google search results before making a selection and again trying to evaluate the relevancy of the information on the website. Moreover, they were found to employ different strategies to locate relevant information once they arrived at their selected website. Given the amount of information available on the Internet, the participants tended to locate the relevant information first, before reading the information more carefully. The table below shows the comparison between Phase 3 described in Coiro's study (2007) and the themes that emerged from this study.

Coiro's Phase 3	Themes emerged from data	
Reading to evaluate the relevancy of hyperlinks in search results and websites	13 Locate info	A Scan for relevancy
		B Slow down to read relevant info
		C Use headings
		A Scan for relevancy
	15 Q&A Forum web	
	16 Word match (link & task)	
	17 Evaluate web difficulty	
	20 Vocalise relevant info	
	27 Refer to task	
	28 Identify 'genre' of website	
	36 Identify irrelevant info	
	38 Speculate link/page	
	11 Comprehension	A Headings
		B Rereading
		C Read slowly
		D 35 Read out loud
		E 34 Reread to guess vocab
	12 Discard Website	A Contain ad
		B Unable to locate info
		C Q&A
		D Unable to understand

Table 3.12 A comparison between Coiro's Phase 3 and the themes from this study

The fourth phase described by Coiro (2007) is 'Critically evaluating information within and across websites'. Although the criteria for this phase put forward by Coiro appeared to work well with the data, the name of the phase was revised to reflect the level of evaluation that occurred in this study. From the themes shown in the table below, it is apparent that students evaluated both the reliability of the website and the accuracy of the information presented there. The name of this phase was therefore renamed as 'Evaluating reliability and accuracy of the retrieved information'. The table below shows the comparison between the themes that emerged from this study and Phase 4 in Coiro's (2007) study.

Coiro's Phase 4	Themes emerged from data	
Critically evaluating information within and across websites	22 Evaluating the reliability of the website	Author's credentials
		Source of information
	23 Evaluating the accuracy of information	Information found matches the students' background knowledge
		Information repeated on different websites

Table 3.13 A comparison between Coiro's Phase 4 and the themes from this study

Finally, Coiro's (2007) last two phases, 'Synthesising information across websites to make a best choice' and 'Communicating answers to online information requests', were combined into one phase. This is because the data in this study shows that the synthesizing practices and communicating practices occurred simultaneously. In this study, most practices demonstrate an act of copying and pasting information from different websites before assembling them

to answer the task question. Therefore, these two phases were combined and renamed to 'Using online information to respond to task'. The students' responses were also used to complement the analysis of this phase. The findings will be reported in depth in the next chapter. The table below shows the comparison between Coiro's Phase 5 and Phase 6 and the themes from this study.

Coiro's Phase 5 and Phase 6	Themes emerged from data	
Synthesising information across three websites to make a best choice + Communicating answers to online information requests	Compose Answer	23 Copy
		24 Compose
		25 Edit A Add B Delete C Paraphrase D Use part of copied text
		31 Refer back to Webpage
		50 Read pasted text
		52 Check Webpage for spelling

Table 3.14 A comparison between Coiro's Phase 5 and Phase 6 and the themes from this study

Thematic Analysis Stage 5: Applying new coding scheme

After these phases had been re-labelled, students' data on both tasks were sorted into these new phases. Consequently, the sub-themes were also renamed to be more appropriate to the phases. The revised coding scheme is presented below in three levels of codes. The codes shown in single numbers such as "Phase 1. Goal-setting" and "Phase 2. Generating search term"

represent the main goals of each phase. The codes shown in one digit numbers such as “1.1 Setting initial search goal” and “1.2 Modifying search goal” are the sub-goals of each phase. Finally, the codes shown in letters such as “a. Using the main topic identified in the task instruction” and “ b. Using the key questions identified in the task instruction” are the specific actions that the students employed in order to achieve each sub-goal. The following table (Table 3.15) is the final version of the themes and categories used to code the data.

Phase	Sub-goals	Practices
1. Goal-setting	1.1 Setting initial search goal	a. Using the main topic identified in the task instruction
		b. Using the key questions identified in the task instruction
		c. Interpreting question and set their own search goal
		d. No explicit goal
	1.2 Modifying search goal	a. Using different key questions
		b. Using Thai
		c. Constructing their own search goal
		d. Constructing search goals based on information they have encountered on the Web
	1.3 Identifying knowledge gap	
	1.4 Developing concept when they are uncertain of the main topic	a. students use a Google function : Image
		b. students use a Google function : Translate
2. Generating search terms	2.1 Constructing initial search terms	a. Typing directly into search bar
		b. Copying words from task
		c. Selecting search terms from dropdown bar
	2.2 Revising search terms	a. Recognising when the existing search terms cannot generate information they want

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3. Locating relevant information		b. Using words from task : use key questions, use words from task instruction
		c. Using words from Google : searches related to “ ”
		d. Using their own interpretation of search terms
		e. Using their native language, Thai
	3.1 Selecting links from Google results	a. Using the positions of hyperlinks - Select the first link - Select links chronologically - Select random links (no explanation)
		b. Using the words shown on the links - Select links with words that match task Q - Select links with words that match their own search goal - Select links with words that match words in the instruction
		c. Selecting links generated by Google : searches related to “ ”
	3.2 Locating relevant information on Webpages	a. Previewing whole page
		b. Reading only the beginning sections
		c. Reading only ‘Answer’ ,‘Best Answer’ part
		d. Using web visual design to help locate information
		e. Scanning and passing ‘not so relevant’ information quickly
		f. Identifying irrelevant information / unable to find relevant information
	3.3 Identifying potential answer / relevant info	a. Using information which included the same terms as their search goals
		b. Using information which was repeated from other/same websites
		c. Using the content of the page
		d. Using the title of the page

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	3.4 Making sense of materials	a. Skimming quickly to get the main idea
		b. Reading potentially relevant information slowly/ carefully
		c. Reading relevant part of information out loud
		d. Using L1 to mediate comprehension
		e. Attempting to synthesise relevant information from various sources
	3.5 Closing websites when	a. Students cannot find relevant info
		b. Information on the website does not mention/ show the words from their search goals
		c. The Web contains irrelevant information
		d. Cannot understand information
		e. The Web is found to be an advertising website
4. Evaluating the reliability and accuracy of information	4.1 Evaluating reliability and credibility	a. Using the external/ independent sources as criteria
		b. Using the type of Webpages as criteria
		c. Using the images as criteria
		d. Using the statistics/ numerical information as criteria
	4.2 Evaluating the accuracy	a. Using their background knowledge as criteria
		b. Checking against other websites
5. Using online information to respond to task	5.1 Extracting information from the Web	a. Identifying 'potential answer' from websites
		c. Copying 'potential answer' and pasting onto task document
	5.2 Transforming information from website into a response suitable to answer task question	a. Paraphrasing and typing response in their own words
		b. Connecting pasted texts (more than 1 pasted text)
		c. Modifying the copied and pasted text - Adding words - Deleting words / phrases that do not cohere

		with the rest of the task - Paraphrasing the pasted text into their own words

Table 3.15 Revised coding scheme

After these codes were finalised, they were applied to the data again and the results of this categorisation are reported in the Findings chapter.

3.6 Conclusion

In this chapter, I have outlined the research design of this thesis. The rationale for choosing a case study was discussed in depth along with the benefits of choosing a case study as the research approach. This chapter also described the selection of the research setting and participants. These particular setting and participants are important for answering the proposed research questions.

A major section of the chapter is devoted to research methods used in this study: classroom observation, students' diaries, think-aloud protocols, and stimulated recalls. Because there is still some controversy around the use of verbal protocols as a research instrument, especially in educational research, the criticisms and responses were also discussed. The chapter also highlighted the rationale for the complexity of the data and the data collection procedures. To answer the proposed research questions thoroughly, it was necessary to employ this particular research design. As a result, because of the nature of the data generated through this research design, the researcher was able to identify online literacy practices and gained an understanding of the rationale behind the use of these practices.

Lastly, along with the research methods outlined above, the five stages of data analysis provided the researcher with a common pattern of the online literacy practices employed across the participants. Through this analysis, the researcher was also able to grasp the connection between the classroom

teaching and the practices being employed autonomously. These significant findings were uncovered because of this particular research design.

The next chapter will report on the five phases of online literacy practices as outlined in the data analysis section. Within each phase, the common practices in which the participants engaged, along with the results of those practices, will be explained in more detail.

Chapter 4.

FINDINGS

4.1 Introduction

In Chapter 3, four different data collection methods were described and their contribution to a close examination of the practices and the results of those practices were considered. The data collection methods were think-aloud protocol, stimulated recall, classroom observation, and students' diaries. The data from the think-aloud protocol showcase the students' practices while they were engaging in a range of practices in *real time*, while the data from stimulated recall provide a fuller reflection of the students' practices and the challenges the students faced. The data from stimulated recall reveal a number of important issues which could not have been established using think-aloud protocol alone. These two sets of data were strengthened by the classroom observation and the students' diary entries, bringing even greater in-depth analysis to the study. Together, these four sets of data provided a holistic picture of the practices that occurred both within and outside the classroom. These multiple sets of data assisted the researcher in making informed judgment on the students' practices and the challenges students faced in undertaking Web research.

This chapter will report the results of the in-depth analysis of the practices that eight participants engaged in while completing the two tasks using the Internet. Firstly, a brief overview of the five phases will be explained to orientate the reader to the important concept of the recursive cycle. Each phase will then be described with a fuller explanation of the practices employed by the participants, as well as the results of those practices.

The aim of this study was to gain a deep understanding of the step by step thinking and acting undertaken by the students as they went about their tasks. The use of the term 'practices' has a critical importance to this study and it is important to provide a detailed explanation of the provenance of this term and the way in which the term is used within this thesis. Through an in-depth analysis of the students' practices and their results, natural groupings of these practices under five related themes emerged. A further investigation revealed that these themes corresponded to the results of the studies by Coiro (2007) and Bulger (2009), although two of these studies employed different terminology to group and describe the practices that students engaged in while researching the Web. Bulger (2009) explained these practices as a *cycle* of correlated processes, and each process was described in terms of its outcomes. She emphasised the necessity of taking this holistic approach because the outcomes of each practice reflect the efficacy of the process as a whole. In a different study, Coiro (2007) employed the term 'phases' to foster the analysis and comparison of particular reading strategies. It was also used to represent the organisation of the variations in strategy use in relation to separate phases. As explained in the Data Analysis section, the data of this study is consistent with the conceptualisations of both the Bulger and Coiro studies. However, the present study employs the term 'phase' to represent 'a set of practices' in which the students engaged to achieve a particular goal. The term 'phase' was used to demarcate the end of one set of practices employed by the students to achieve a goal before the commencement of another set of practices used to achieve a different goal. Phase, then, is to be understood as a practice within the context of the goals the student is working towards. The term is also used in this thesis as a point of reference to indicate where particular practices have occurred. Phases are divided into various stages to provide more precise information about practices and their interrelationships within the phase. Although the term is suggestive of the end of one set of practices before another set begins, phases should not be conceived of as isolated practices. Rather, there are overlapping dimensions between and across the phases. It is also important to note that phases do not occur in a linear fashion: students

may employ one set of practices to achieve two goals at the same time. In this case, two phases appear to occur simultaneously. Moreover, it was found that after students had moved on to a new phase, they went back and employed different practices to achieve new outcomes in previous phases. This underscores the importance of perceiving practices as occurring within the context of goals, and it is this conceptualisation of phase that is applied to the representation of findings in this chapter.

The widespread use of new technologies, especially the Internet and the WWW, has changed the ways we access information and make use of it. Students in the 21st century must become proficient in accessing and analysing information so that they can convert it to useable knowledge and complete assigned tasks (Sutherland-Smith, 2002). However, it can be argued that the common assumption that the so-called Internet generation is 'tech savvy' has led to a lack of classroom-based support for students to develop the necessary literacies for the new learning environment. Moreover, the lack of research into the required literacies for the Web means that the research base for effective classroom practices around Web-based technologies remains weak, especially for EFL students, and has resulted in a failure to understand the ways in which students learn to become proficient in Web research. This study has set out to address this issue by examining students' practices and the results of these practices in order to gain a better understanding of this phenomenon in the context of Thai students using English to perform online searches.

The data on the practices and the conclusions drawn in relation to each of the phases discussed in this chapter originate from four different data sets. As explained in Chapter 3, the observable practices that the students engaged in while they were completing the task are drawn from think-aloud protocol. The rationale behind their practices are mostly drawn from the audio data from stimulated recall. These two data sets are the main data used for the analysis of findings in Phases 1 to 5, whereas the data from class observation and students' diaries specifically inform the analysis of practices employed in Phase

3. The table below shows the ways in which different data sets inform the analysis and the findings of this chapter.

Data sets	Findings
Think-aloud protocol	Phases 1 - 5
Stimulated recall	
Class observation	Phase 3 & General disposition
Students' diaries	

Table 4.1 The data sets that inform the findings of this study

To conceptualise and make explicit the online literacy practices specific to Web-based research, this study aims to answer two research questions: What practices do students engage in while performing Web research to complete tasks in EFL classrooms? and What are the outcomes of these practices – do they assist students to achieve task goals or do they impede task completion?

4.2 Five phases of online literacy practices

As indicated earlier, the observed and reported practices of students were grouped under five recurring themes that emerged through the analysis of the students' performance of the Web research tasks. These themes appear to reflect the 'goals' of online reading practices within a classroom context. The five themes include setting the search goal, generating search terms, locating relevant information, evaluating the reliability and accuracy of online information, and using online information to respond to the task. These five phases are specific to the context of this study where students are given tasks in EFL classrooms to gather information on the Internet and write a response to the tasks. This section provides an overview of the five phases, and each phase will subsequently be explained in detail.

Phase 1: Setting the search goal

This phase occurred as the students read the task instruction and started to plan their search. The search goal here refers to the concept, idea, or even lexical term that students have in mind during the search. Students appeared to look for this same concept or lexical term when selecting hyperlinks on the search engine and locating relevant information on Webpages. The search goal provides students an objective they can return to when they lose sight of the direction or purpose of the search.

Phase 2: Generating search terms

In this phase, students transformed their search goal into search terms that could be used in the search engine. In this study, all the students used Google as their primary search engine, which requires users to generate search terms to collect hyperlinks to related websites. The fact that the students gain access to online information mainly through a search engine such as Google makes the ability to generate search terms even more important. Constructing appropriate search terms is considered to be one of the new and challenging literacy skills that students need to develop. EFL learners in particular are often faced with additional challenges in coping with the demands of both language and technology.

Phase 3: Locating relevant information

This phase emerged after the search engine generated a list of hyperlinks to different Webpages according to the generated search terms. The students were required to select hyperlinks proceeding to their prospective Websites. In this study, the students rarely read information on the Webpage from the beginning to end. Rather, they were found to attempt to locate a section of information that appeared to be most relevant to their tasks; only then did they read a specific text carefully. Locating relevant information appeared to be the longest phase of all the five phases. Given the immense amount of information available on the Internet, the students spent a significant amount of time trying to find the most relevant information as well as comprehending it. The non-

linearity characteristic of Web texts makes this phase distinct from reading print materials. Online readers take an active role in constructing the texts that they are reading through their selection of hyperlinks and location of information on Webpages.

Phase 4: Evaluating reliability and accuracy of information retrieved online

Unlike print materials that have been through a long process of editing, online information is largely unfiltered. Once the students located information relevant to their tasks, some evaluated its reliability and accuracy. All of the students showed awareness of the unreliable nature of the information on the Internet, though only a few students attempted to evaluate the information. The fact that most students simply used the information they found without assessing it, despite understanding the unfiltered nature of the Internet, shows that these students lacked the skills to evaluate the information.

Phase 5: Using online information to respond to the tasks

After identifying a piece of information that was relevant to the tasks, the students extracted information from the Web to use to complete the tasks. This phase included the practice of identifying 'potential answers' and extracting that information from the whole website. Such practices help to differentiate between the useful and relevant parts of the website and the irrelevant parts. They also help students to easily find the information they want again at a later time. The students subsequently integrated the information from websites and constructed responses that were suitable for answering the task questions. A range of integrating strategies was undertaken by the students in this study.

Recursive cycle of online practices

As explained at the beginning of this chapter, the five phases were not approached in a linear fashion. Rather, these phases can be seen as occurring in a recursive cycle. A recursive model enables a deeper understanding of the relationship between each phase. The term 'recursive' was used in this study

because it was found that the students' practices evolved in a repetitive cyclical order. When the students had achieved the whole cycle but still needed more information, they were found to repeat the cycle. The term 'cycle' is used to describe the relationship between each phase, although it was also found that the students did not follow the cycle in order. They did not always start from phase one and move through each of the phases until they completed the cycle; instead, they proceeded back and forth between two particular phases, especially when it appeared that they faced challenges. For example, when students faced problems in locating information relevant to the task in Phase 3, some decided to revise their search terms, which are the goals of the practices of Phase 2. Similarly, when students struggled to compose a response in Phase 5, they employed practices to gather more information by engaging in practices of Phase 1 – Phase 3. These practices are indicative of the nonlinear, cyclical order of the practices that emerged in this study. The following figure represents the five phases of Online Literacy Practices Cycle.

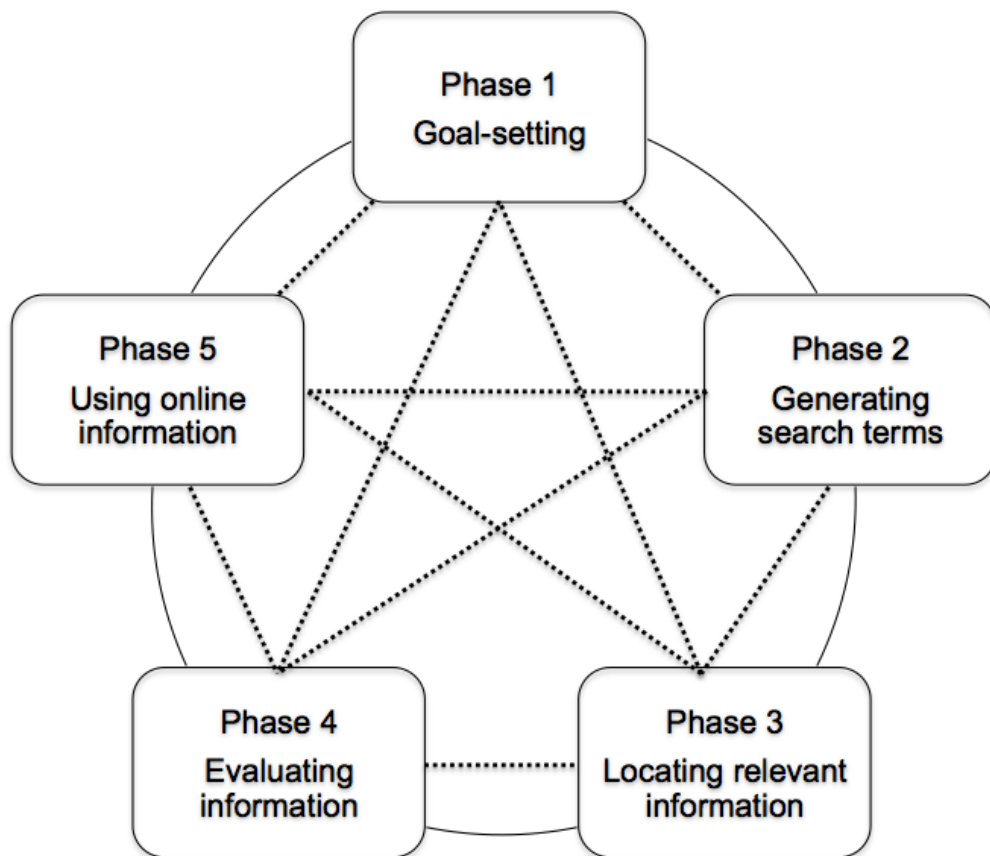


Figure 4.1 The five recursive phases of Online Literacy Practices Cycle

The above figure shows the connection between the five phases. These five recursive phases of online practices are specific to the context of the study. It is common in EFL classrooms for teachers to assign tasks to students requiring them to research information on the Internet and construct a response in writing. The dark circle shows the ideal path that students will follow as they perform Web research. The online practices would naturally begin with setting the search goal in order to generate search terms to be used on a search engine such as Google. The next step would be to try to locate relevant information on Webpages, either through the search engine or directly on the Webpages. Students would then evaluate the reliability and accuracy of the retrieved information and finally integrate it to respond to the task. When

students want more information to answer a different question, they repeat the entire cycle. Having said that, the participants in this study hardly ever proceeded through this ideal cycle when researching online. The different circumstances that they faced as they performed Web research were found to alter this ideal pathway. The dotted line demonstrates the ways in which students may engage in the practices of one phase, omit the next phase, and employ the practices of the subsequent phases. In contrast, students may repeat a phase when they find that they have not fully completed it.

The tasks undertaken by students that formed the basis of the observation

This section discusses the two tasks that were used to collect the data in this study. It is essential to understand the nature of each task in order to understand the results of this study, because they form the basis of the observation. It was found that the tasks themselves had a substantial impact on the students' decision and selection of practices. Below are the instructions given to students for both tasks. A detailed discussion of the task demands is also provided.

Task 1 : Facial Toner

Maria, an enthusiastic Cleo Magazine, reader wrote a letter to Australian Cleo Beauty Editor, Rachael Mannell. Below is her letter.

Dear Rachael,

I have been a Cleo member for over a year now and I am a big fan of the 'Beauty' section. Lately, I have noticed that 'facial toner' is highly recommended by many beauty gurus. I would like to know more about it and whether it is necessary. Also, can you please explain more about how to use it effectively in case I decide to buy one at a future date? Thanks in advance, Cleo rocks!

Cheers,

Maria

If you were Rachael Mannell (Beauty Editor), how would you respond to Maria's letter?

Figure 4.2 Instruction for Task 1

Task 1 requires the students to collect and evaluate information, and produce an original response. This task is guided by three questions that students need to answer – what is facial toner, is it necessary to use it, and how should it be used effectively. While the first and last questions are fairly straight forward and only require the students to find facts about facial toner, the second question requires students to use higher order thinking skills. Because there is no right or wrong answer regarding the necessity of facial toner, students need to make their own judgment based on the information they find. Even though the quality of writing was not the main focus, the students were expected to produce a piece of writing appropriate to the level of proficiency of EFL undergraduate students.

Task 2: Chocolate and Valentine's Day

It is said by the Food Network that "each person consumes at least ten pounds of chocolate every year". It is most often purchased for, and consumed on, Valentine's Day. It is also considered to be a classic gift to give on this occasion and is chosen by lovers from generation to generation, regardless of culture, age or gender. Why do you think people choose to give chocolate as a gift on Valentine's Day?

Figure 4.3 Instruction for Task 2

Task 2 is more open-ended than Task 1. The instruction provides the background to the task, allowing students to interpret the task instruction and construct their own search direction. Students are able to pursue different directions to find their answer – scientific, historical, etc. This task also requires the students to collect and evaluate information from the Internet before producing a reasonable response to the task. The students need to show originality in their response as well as quality writing.

The main difference between the two tasks is the nature of the question. While Task 1 could be considered as a 'fact-finding' task, Task 2 is considered to be 'research-oriented'. Task 2 requires the students to research information before deducing their own answers. The instruction gives only background information on the task, but it provides opportunities for students to interpret the question. The findings of this study are specific to the EFL classroom context where students are assigned tasks to look up information on the Internet. The tasks undertaken in this study are consistent with the inquiry-based task that was described Chapter 1 and are common in EFL classrooms. These tasks are referred to as T1 (Task 1) or T2 (Task 2) throughout this thesis.

The following sections will report on two types of findings – the practices employed to complete these tasks and the challenges that appeared to impede task completion. Some of these challenges were found to be outcomes of the practices that the students employed, while others were found to result from the lack of skills or knowledge necessary to conduct Web research. Naturally, there

are a number of factors that might influence the outcomes of the practices. The same set of practices with which the students engaged might lead to different outcomes if they were used in different circumstances. These factors make it difficult to analyse the outcomes of the practices. In this section, I choose to report on the particular outcomes that were more apparent because not all of the outcomes of each practice could be determined. Nonetheless, the outcomes of the practices that appeared to impede or slow down the task completion process seemed to be quite significant. Because the students had to slow their research to attend to these challenges, this type of outcome stood out from others. This was found to be significant to the task completion, because some practices prevented the students from completing the task in a timely manner. Because the various practices cannot be isolated, they will be reported as a set of practices that occur within each phase. As there are multiple stages within one phase, the practices employed within a range to complete each stage will be reported as they emerge. The challenges that the students appeared to face while engaging in particular practices, the stage and phase will also be explained in more detail.

4.2.1 Phase 1 of the Online Literacy Practices Cycle: Setting the search goal

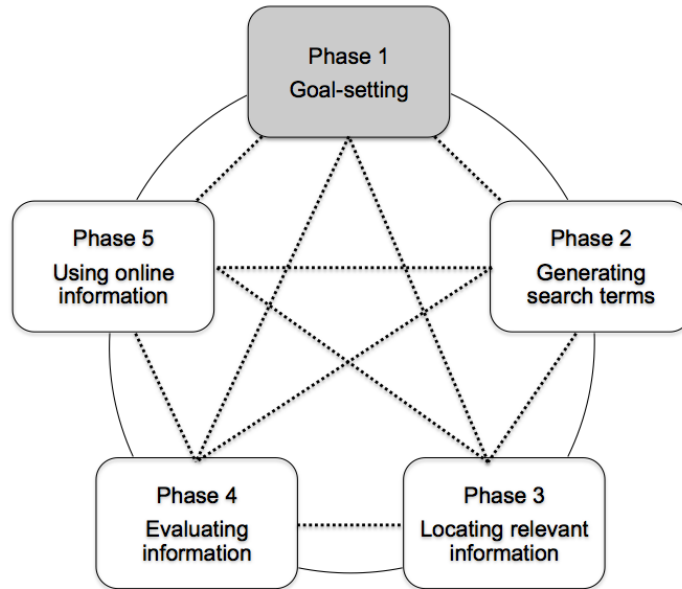


Figure 4.4 Phase 1 of the Online Literacy Practices Cycle

The first phase of the Online Literacy Practices Cycle occurred as the students engaged in practices to set the search goal for the given task. In this study, ‘search goal’ refers to the concept or idea that students have in mind during their search. The search goals in this study also included the concept, idea and lexical terms that students kept in mind throughout the search processes (Phases 1-3). These practices were frequently referred to by the students as ‘looking for keyword’. They were found to keep these keywords in mind when trying to construct search terms (Phase 2) and locate relevant information (Phase 3). It was an approach taken by the students as they sifted through huge amounts of information, looking for information that was important to the search task. This demonstrates that students set goals when performing Web research. The search goal provides students with a resource they can return to when they lose direction or forget the purpose of the search.

The data from think-aloud protocol (TAP) and stimulated recall (SR) show that the students constructed two different types of search goal when performing

Web research. The students were found to set the initial search goal after they were presented with the task instruction. These were pre-established goals which the students set before commencing the search. At this stage, the students resorted to information presented on task instruction as well as the knowledge they brought to the task. After commencing their searches, the students were found to revise these initial goals based on the context of the search, as well as the content of the information found on new Webpages. This stage is referred to as 'Modifying search goal'.

The following sections will report on common practices that the students employed when setting and modifying search goals. The challenges they faced while trying to set goals, as well as the consequences of their search goals, will also be examined.

4.2.1.1 Stage 1: Common practices and challenges in setting the initial search goal

Data collected in relation to the initial search goal comes from two sources. The first source is the students' own verbalisations. This type of goal was explicitly voiced by the students, who were found to verbalise the goals that they were working towards. These goals were often an extension of the task instruction. By contrast, when the students did not explicitly verbalise their goals, it was still possible to identify the goals by analysing their subsequent practices. These practices formed a chain, and following this chain enabled the researcher to form the goals that the students had set. The rest of this section demonstrates different types of verbal data as well as highlighting the chain of practices.

The explicit search goals were not difficult to identify. In these instances, the students were found to explicitly verbalise what they planned to search for. In this study, this type of search goal was found to be the students' own interpretation of the tasks as well as the extension of the task questions. These goals appeared to be more specific and targeted than implicit goals. For example, in Task 2, TY set his goal to search for the "*connection between*

chocolate and “valentine’s day” (TYT2Turn6) whereas he only planned to search for the main topic of Task 1, ‘toner’.

For implicit goals, the students were found to resort to the task instructions to construct their initial goals. In most instances, it was not obvious what students’ goals were as they proceeded directly to the search engine without verbalising what they were looking for in their search. In these particular cases, the participants went straight to the search engine and used the wording of the task instruction to generate their search terms. Despite the lack of verbalised data, a further analysis of the traces of the students’ decisions on their selection of hyperlinks on the Google search result page and the information they chose to read on a Webpage showed that the participants had, in fact, set search goals before commencing their search. These search goals were similar to the task questions or closely associated with general information about the main topic of the task. Thus, the students did not explicitly verbalise their search goal. For example, in Task 1, MY started her search using ‘facial toner’ as the search term. She selected three Webpages from the Google search results page – Facial Toner Wikipedia, Should you use a facial toner, and Six reasons why you should use facial toner. MY returned to the task instruction and read aloud “*why is it necessary to use facial toner*” (MYT1Turn7). These practices demonstrated that MY set her search goal to try to answer Question 2 of Task 1, although she did not explicitly verbalise her goal. The table below compares the students’ initial search goals in both Task 1 and Task 2. The examples of the differences between search goals and search terms will be provided in Phase 2: Generating Search Terms.

Student	Task 1	Task 2
KW	-	I am looking for why, chocolate and valentine (Turn 5 คราวนี้ก็หา why, chocolate, valentine)
NT	General information about facial toner (Turn 6 เอาธรรมดาก่อน)	-

Chapter 4

MW	-	I was thinking that I will look for these two words chocolate and valentine (Turn 5 ก็คิดว่าเหมือนกันว่าจะเอาสองคำนี้ chocolate valentine)
LN	What is it (facial toner)? (Turn 9 คืออะไร)	-
KM	I'll just look for this word (facial toner) and see whether it can be the keyword for the search (Turn 6 คำนี้ละกัน เอาไปหาดูเลยว่า จะเป็น keyword ได้มัย?)	I have to find the reason. I am looking for gifts, history of gift giving tradition (Turn 5 ให้เราหาเหตุผลออกมา ก็คิดว่าจะมี gifts, history ของ gifts)
AM	Mainly I have to answer what it is, whether it is necessary, and how to use it (Turn 5 สำคัญๆก็ต้องตอบว่า มันคืออะไร สำคัญมัย ใช้อย่างไร)	Reason (for giving chocolate on Valentine's Day) (Turn 7 reason)
MY	I will just look for why we need to use it (Turn 7 แต่เดี๋ยวหาว่าทำไมต้องใช้ก่อน)	Why do people give chocolate on Valentine's Day? (Turn 2 ทำไมคนถึงให้ช็อคโกแลตในวันวาเลนไทน์)
TY	-	I want to search the relationship between Valentine's Day and chocolate (Turn 6 คือต้องการจะ search ว่า valentine กับ chocolate มันเกี่ยวข้องกันอย่างไร)

Table 4.2 Initial search goal from Task 1 and Task 2

To set an initial search goal, the majority of students were found to make use of the wording of the task instruction as the basis for their goals. The table above demonstrates three different approaches in which the task instruction was used to set the initial search goal. The first approach involved using the main topic

that they had identified in the task instruction, such as “facial toner” (NTT1Turn6), “chocolate and valentine” (MWT2Turn5). The second approach involved using key questions that they had identified in the task instruction, such as “What is facial toner” (LNT1Turn9) and “Why do people give chocolate on Valentine’ s Day” (MYT2Turn2). The last approach involved developing their own search goals through their interpretation of the task instruction such as “the relationship between Valentine’s Day and chocolate” (TYT2Turn6). The following sections will report the use of each approach in setting the initial search goal in more detail.

Approach 1 Using main topic to develop initial search goal

After reading the task instruction, the students were found to identify the main topics which they applied as their search goal. In Task 1, three students were found to employ the main topic as the initial search goal. NT tried to look for “general information about facial toner” (NTT1Turn6). KM looked for ‘facial toner’ because she was not familiar with the term, so she hoped that by using the main topic as the initial goal, she would learn more about it (KMT1Turn6). By contrast, TY used the main topic because he was familiar with it and revealed that it would lead to relevant information. The following example shows the detailed practices collected through the TAP and SR sessions. In this example, NT demonstrated the ways in which she identified facial toner as the ‘main topic’ before developing it into her initial search goal. In her TAP data, NT read and reread the task instruction for 1.5 minutes before identifying ‘facial toner’ as the main topic of this task. She explained in her SR that she was confused by the many specified names such as Rachel, Maria and Cleo Magazine, so she had to go back and reread the task before being able to identify what the main topic really was. She then identified the three key questions asked in the task. “I have to find out about facial toner. Know more about what it is. What it is and whether it is necessary to use it, how to use it effectively”). She then typed ‘facial toner’ in the search bar on Google and read a list of suggested keywords that popped up. NT scrolled down to browse the

suggested keywords and toggled back to the task instruction page. After rereading the task instruction, NT toggled back to Google and clicked search. She provided an explanation of her practice here as “I want to get general information first”. (NT T1Turn6)

The main topic was also found to be used when students did not have background knowledge about the topic. In Task 1, KM identified ‘facial toner’ as the main topic, although she revealed that she was not familiar with it. Her initial goal was to “Try using this word on Google and see if this can be the keyword that generates relevant information” (KM T1Turn6). In this case, the task instruction became an important resource for the participant. It seems impossible that KM could look for something on the Internet when she had no idea what she was looking for. By using the main topic as the initial goal, KM had a means to start her search and could move on to narrow her search once she had grasped the concept of the main topic.

Approach 2 Using key questions to develop the initial search goal

The second approach to setting the initial search goal is to use key questions. The majority of the students were found to use this approach to set their goal (Task1: LN AM MY TY; Task2 : KW LN KM AM MY). Students who used this approach were found to have more direction in their search than those who used the main topic as their initial goal. The following table shows a transcript of verbal protocol episode showing AM using key questions to set his initial search goal in Task 1 (see Appendix 5 for Task 2).

Turn	Think-aloud protocol data (TAP)	Stimulated recall data (SR)
Task 1		
5	The most important part is I have to answer what it is, is it necessary and how to use it (สำคัญๆก็ต้องตอบว่า มันคืออะไร สำคัญมั้ย ใช้อย่างไร)	
7	Type search terms: facial toner + how to	Because I want to answer three

		questions, and I think I can find what facial toner is by using 'how to' as well (เพราะอยากรจะตอบคำถาม 3 แล้ว how to น่าจะครอบคลุมไปถึงความหมายด้วย)

Table 4.3 Verbal protocol: key questions to set initial search goal

This excerpt from verbal protocol transcript shows that AM drew out key questions from a short paragraph of task instruction first before he transformed it into his initial search goal. To begin the first task, he revealed that “The most important part is I have to answer what it is, is it necessary and how to use it”. AM then opened Google and typed ‘facial toner + how to’ which he explained in his SR that “Because I want to answer three questions, and I think I can find what facial toner is by using ‘how to’ as well”. In the second task, AM used the same strategy to set his initial search goal. After reading the key question section of the instruction ‘Why do you think people choose to give chocolate as a gift on Valentine’s Day?’, he typed ‘reason’ on his answer sheet. He identified the keywords and the key questions from the task and put them in bullet points, making them more noticeable when he needed to return to them at a later time. These examples show that when AM used key questions to set his search goals, the search seemed to be more targeted and had a clear direction. Even when he did not use these questions as his search terms, he had a clear idea of what he was looking for.

Approach 3 Interpreting the task instruction to develop their own initial search goal

The last approach that students used to set the initial search goal was through their own interpretation of the task. A minority of students did not use the main topic or key questions to set the search goal. Instead, they resorted to their own

background knowledge to interpret the task. In the following table, KM revealed her interpretation of Task 2 in setting the initial search goal.

Turn	Think-aloud protocol data (TAP)	Stimulated recall data (SR)
6	Type search terms: valentine's day In case I will learn the origin of this gift giving tradition (เพื่อมันจะมีข้อมูลว่า ที่มาของการให้)	At first when I searched for Valentine's Day, I was looking for gifts, or history of gifts (คือตอนแรกที่ search Valentine's Day ก็คิดว่าจะมี gifts, history ของ gifts ที่ให้)

Table 4.4 Verbal protocol: Interpretation of task to set initial search goal

This excerpt from verbal protocol transcript shows that KM's interpretation of the key question 'Why do people give chocolate on Valentine's Day?' was to look at the history of the occasion and find out how the tradition of giving chocolate on Valentine's Day came about. The search goal 'history' became the prominent part of KM's search throughout her task completion.

Challenges in setting the initial search goal

It is clear that task instruction and background knowledge of the topic have an impact on the ways in which the students set the initial search goal. It is not surprising that the challenges that the students faced in constructing the initial goal were mainly related to the lack of background knowledge of the main topic presented in the task instruction. These challenges were identified by the following students – in Task 1: MW, LN, MY, KM, and in Task 2: MY. In Task1, MW and MY revealed that they did not know what facial toner was before they proceeded to search. Both students were found to face challenges in locating information relevant to the task (see Section 4.2.3 Phase 3 of Online Literacy Practices Cycle: Locating relevant information). A more in-depth analysis shows that when the students did not have any prior knowledge of the topic being searched, they often resorted to the wording of the task instruction to construct their search goal. The wording of the instruction was the only resource available

to the students; however, the students faced challenges in locating information when employing this approach because the goals that were set based solely on the wording of the task instruction, such as ‘facial toner’ or ‘chocolate’, were too broad to capture the essence of the task. Thus, students who employed this approach had difficulty locating relevant information on Webpages in Phase 3.

Nonetheless, it was also found that two students who lacked knowledge of the topic tried to solve this problem by conducting a pre-search to develop the concept of the main topic of the task. In the first task, LN and KM tried to address their lack of background knowledge by developing the concept of facial toner before commencing their search to answer the task questions.

Developing a concept of the main topic is found to be a useful technique to set an initial search goal. Students started their search by developing the concept of the main topic when they did not know or understand what it was. In this study, two students developed the concept by using visual aids and their native language. In Task 1, KM and LN revealed at the beginning of the task completion that they did not know what facial toner was. LN started her search by using the search term ‘facial toner’ on Google, but instead of searching for Webpages, she selected the ‘Images’ function. Google generated pictures of bottles and a girl wiping her face with cotton pads. LN revealed in her TAP data that, “It is used to wipe the skin” and in the SR, “I learned that it’s a cosmetic” (LN T1Turn7-8). The figure below shows the screenshot taken during LN’s think-aloud protocol session.

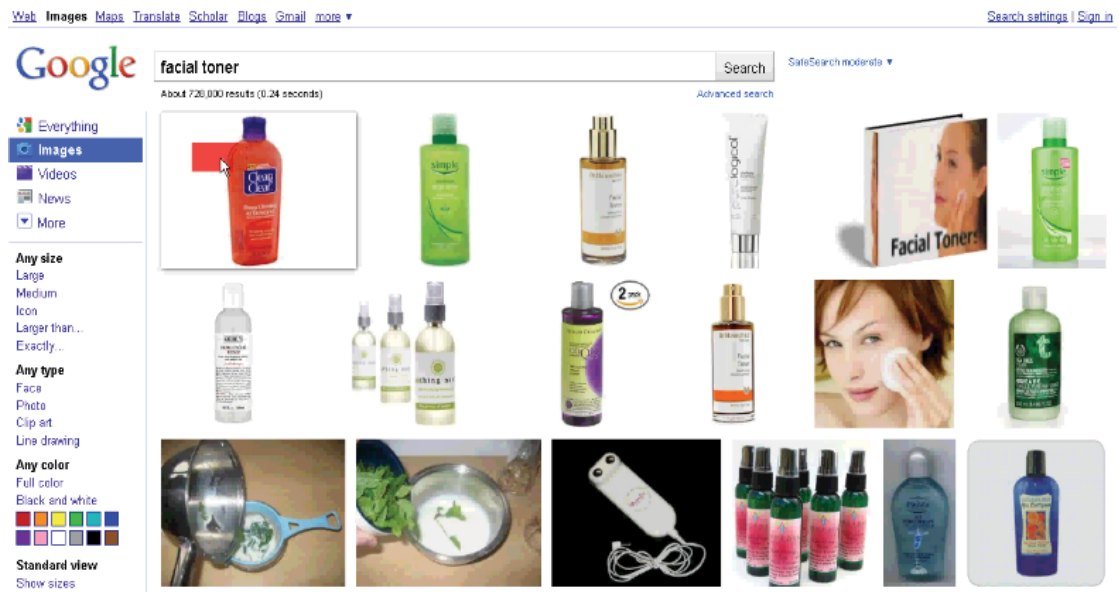


Figure 4.5 Screenshot: Usage of Images function to set initial search goal

Similarly, KM, who also revealed that she did not know what facial toner was, used a Google function to develop the concept of facial toner. KM told the researcher that even though she did not know what facial toner was, she would try her luck with typing 'facial toner' as her search term. She selected the first hyperlink to appear at the top of Google search result page, which was Wikipedia. After opening Wikipedia, KM browsed the page quickly and revealed that she did not understand. She speculated that since she did not know what facial toner was, how could she understand these texts? KM decided that she need to know more about facial toner. She selected the 'Translate' function on Google to help her understand what facial toner is in her native language. The English to Thai translation shows "Toner that nourishes facial skin" (โทนเนอร์บำรุงผิวหน้า).

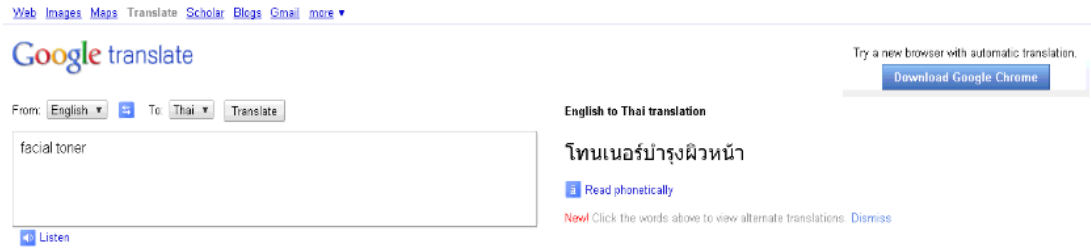


Figure 4.6 Screenshot: Usage of Translate function to set initial search goal

These challenges demonstrate that the students in this study recognised the need to fully understand the task requirements, especially the main topic of the task instruction. These students were found to require a starting point to begin their search due to the non-linear nature of the connections between the different information sources that form the Internet. Without fully understanding the main topic of the task or the task instruction itself, they faced difficulty in knowing what to search on the Internet.

One student was found to face a challenge in setting the search goal because of her misinterpretation of the task. This challenge was not recognised by the students; however, it is essential to address this problem as this challenge was found to have a significant impact on other phases and prevented the student from completing the task. Even though KM had already developed the concept of 'facial toner' by looking up its meaning on Google Translate, she still faced the problem of interpreting the task instruction. This task asked three main questions – what is facial toner, is it necessary to use it, and how can it be used effectively. However, her understanding of the task instruction was “This person wants to buy a facial toner and wants some advice, but what is wrong with her skin?” (KMT1Turn13-14). After rereading the task instruction and the questions, she insisted on her misinterpretation of the task: “It seems like this person wants general advice because she did not specifically say what kind of facial toner she wants” (KMT1Turn15). As a result, this misinterpretation influenced KM’s decision in selecting particular hyperlinks on Google. In her stimulated recall session, KM explained that the reason she selected a hyperlink called

'Skin Care: The 4 Basic Skin Care Needs' was that "In Thai websites, there is usually information that tells you the type of toner that is suitable for a specific type of skin. I wanted to find this kind of information when I chose this website, but I couldn't find it here" (KMT1Turn16). This example demonstrates that misinterpretation of the task at the preliminary stage can lead to challenges in other phases. Because of this misinterpretation, KM faced an overall challenge in completing the task.

The next section reports on the common practices and challenges in Stage 2 of Phase 1 of Online Literacy Practices Cycle: Setting the search goal.

4.2.1.2 Stage 2: Common practices and challenges in modifying search goals

The data that emerged from this study shows that the students did not maintain only one goal throughout their searches. Rather, they were found to modify their goal as they proceeded through other phases. The modified goal was negotiated between the initial goal and the content of the websites, as well as the contexts of the search. The content of the Webpage is the specific knowledge that users find on the website, while the context of the search is more situational and varies across participants. Three context-influenced situations were found to have an impact on the modification of search goals. These situations were: where students wanted new information, where they had trouble understanding the content of the Web (linguistically and conceptually), and where they realised that they could not complete tasks using their initial goals. This section investigates these practices in detail.

Approach 1 The modification of search goals influenced by the content of the Webpage

In this study, the initial goal was modified when students came across intriguing information on a Webpage and wanted to find out more about that new information. This practice is very prominent in MW's think-aloud data during the

completion of Task 2. MW first encountered the word 'Aztecs' in an Ezinearticle.com website feature titled 'Why Chocolate for Valentine's Day?' in the sentence, "Since the days of the Aztecs, chocolate has been used as a gift". She explained that the information on this website did not give her the answer to why chocolate is given on Valentine's Day, as the title promises. Nevertheless, this piece of information made her question the relationship between Aztecs and the reason people give chocolate on Valentine's Day, and she wanted to know more. This also influenced her search goal because she kept looking for information related to Aztecs. It is clear from the think-aloud protocol data that her search goal after that was no longer 'Why do people give chocolate on Valentine's Day?' but how the Aztecs were involved in the history of chocolate and Valentine's Day. MW eventually revised her search terms to Aztecs chocolate (see Appendix 6 for TAP and SR data).

The data show that MW's new and modified goal changed the direction of the whole search to how the Aztecs were involved in the history of chocolate and Valentine's Day. Though the new goal was found to be relevant to the topic of chocolate and Valentine's Day, it was not meaningful to the overall task goal. This was found to be a challenge in a research-oriented task when students did not know exactly what to look for. They were heavily influenced by Web content that appealed to them or, as in this case, was found repeatedly on different Webpages. The students needed to be aware that it was important to monitor their goal and to question whether it was meaningful to the task, as well as to attain the goal that they established prior to the search. This requires an advanced level of self-regulation but is essential to avoid feelings of being overwhelmed when performing Web research.

Approach 2 The modification of search goals influenced by the contexts of the search

In addition to the modification of search goals influenced by the content of Webpages, modified goals also emerged as a result of the influence of the search context. In this study, the context-influenced situations were the search situations which influenced the students' decisions to modify their search goals. Three context-influenced situations were identified in this study, namely, situations where students wanted new information, which therefore took the search in a new direction; situations where students faced problems understanding the information; and situations where students had chosen a particular Webpage that they subsequently realised would not provide them with relevant information to satisfy the initial goal.

The first context-influenced situation arose when students wanted to look up information to answer a new task question. In such instances, students resorted to the task instruction to revise their goal. This was particularly evident in the first task concerning facial toner, because the task required students to search for three different pieces of information. The following table shows the modified search goals that arose from the task questions.

Student	Modified search goals	Observational, TAP & SR data
NT	What is facial toner	I intend to find out what facial toner is (19 คือตั้งใจจะหาว่า facial toner คืออะไร)
MW	How to use facial toner	78 Add 'how to use' to facial toner
LN	What is facial toner	What is .. I want to know this in English in case I'm missing something (22 What is อยากรู้ภาคภาษาอังกฤษ เพื่อมีสรรพคุณอย่างอื่น)
AM	How to use facial toner	I'm looking for how to use it (25 หาวิธีใช้)

Table 4.5 Verbal protocol: key questions to modify search goal

The second situation in this study in which students were found to revise the search goal was when they were unable to understand the information on the websites. In LN's case, she did not know what facial toner was so she started her search by developing a concept of facial toner through the use of the Images function on Google. After learning that it was a cosmetic product, LN went on to search using the term 'facial toner is'. She selected the Askville.com website article with the title "What does facial toner do for your skin? Is it important". After reading it, she reported that she could not understand the information presented there. LN decided to revise her search goal to "I think I am better off to search in Thai" (LN T1Turn13) and then modified her search term from 'facial toner is' to 'facial toner คือ' which holds the same meaning. This practice shows that because of her lack of linguistic ability, LN resorted to her L1. After that she appeared to have a better understanding of facial toner, enabling her to continue her search.

The last context-influenced situation was when the initial goal was negotiated because of the type of website that the students selected. In this study, AM was found to take the type of website into consideration when revising the search goal. When trying to answer questions 'Why do people give chocolate on Valentine's Day?' in Task 2, AM revised his search goal to be more appropriate to the type of Webpage that he had selected. After selecting a Wikipedia Webpage, he moved the cursor past the first paragraph quickly before scrolling down to the 'Table of Contents' section at the bottom of the page. He explained that when reading information from a Wikipedia page, he rarely read everything but focused more on the Table of Contents. For this task, he also revised his search goal from 'why' to 'chocolate' and 'gift', as he did not think that he would be able to find 'why' on the Wikipedia Webpage (AMT2Turn33-35). This finding demonstrates that knowledge of the Web also has an influence on the construction of search goals. This example shows that AM was aware of the different genres of Website. His prior knowledge about Wikipedia helped him to revise his search goal to make it more suitable to the selected Webpage.

It is apparent in this study that to set the initial search goal, students relied on the task instruction and their background knowledge, while modifying the goal using content on the Web and the context of the search. The data show that the goals that were consonant with the task instruction resulted in a more meaningful and successful search. To construct goals that are meaningful to tasks, students need to have a clear understanding of the task instruction. In this study, this was achieved by identifying the main topic and the key questions. Once the search goals were consistent with the given task, the search appeared to be more successful, while the misinterpretation of the task resulted in challenges arising in locating relevant information, as was clearly evidenced in KM's Task1 Turn13-16. Moreover, where students lacked background knowledge about the task, they attempted to develop it with the assistance of Web functions such as 'Translate' and 'Images'. The help of the students' L1 and the images provided them with the domain specific knowledge necessary to set the goal for the search and provide them with the direction to complete further phases.

In summary, the data show that the students engaged in practices to set search goals at the beginning of the task. To set the initial goals, the students employed their most available resources such as the wording of the task instruction and the knowledge they brought to the task. Even though some goals were not explicitly verbalised, the chain of practices which were evident in the later phases showed that all of the students had some goals in mind before they commenced their searches. The range of initial goals was found to extend from broad and unfocused goals, such as the main topic of the task, to more specific goals that included the key question or the students' own interpretations of the task instruction. The students were also found to keep these initial goals in mind as they generated search terms and located relevant information (Phases 2 and 3). The search goals provided the students with the direction they needed to search for relevant information in the open-ended space of the Internet. The data also shows that as the students performed Web research, their initial search goals were negotiated with the content they encountered on

the Web as well as the context of search. Those search goals that were modified were consequently a result of the negotiation between the initial goals, the content of the Webpages, and the context of the search. The modified goals provided the students with more relevant directions suitable for different search contexts. The students who possessed a higher knowledge of the Web were found to have the skill to revise the goal to be more suitable to the selected Webpage. However, some students were distracted by new information and this changed the direction of search. Thus, critical awareness of different types of Webpages is shown to be essential for effectively using the Web as a research source. Not all of the students in this study demonstrated these skills.

4.2.2 Phase 2 of the Online Literacy Practices Cycle: Generating search terms

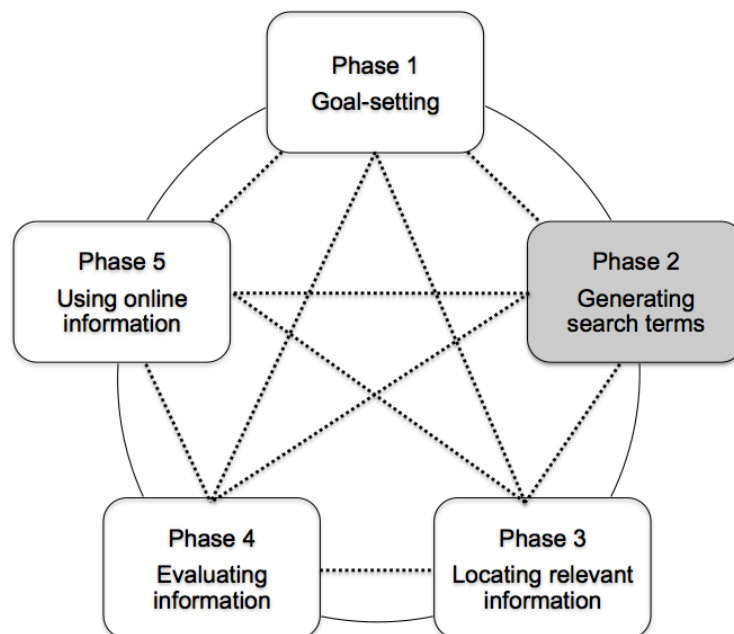


Figure 4.7 Phase 2 of the Online Literacy Practices Cycle

The second phase of the Online Literacy Practices Cycle occurred as the students engaged in practices to gain access to Webpages using the search engine. After reading the task instruction, the students opened a Web browser such as Mozilla Firefox or Google Chrome and selected Google as their search

engine. All the students in this study selected Google as their primary search engine; therefore, the discussion regarding the effectiveness of search terms will be based on the functionalities of Google. As explained in Chapter 2 (see Section 2.3.1.2 Ability to locate information related to learners' intended purposes), Google operates on a text-matching technique using advanced search syntax. Users are required to type search terms in the search box which Google then uses to search Webpages. A list of links to Webpages is generated and presented on a 'search results page'. These hyperlinks are ranked according to the frequency of the search terms that appear on the page as well as the frequency of the connection between each page.

In this phase, the students engaged in practices to select and generate words to be used as search terms on Google. Two stages of generating search terms emerged from the data – constructing initial search terms and modifying search terms. Constructing initial search terms was found to be closely related to the goal-setting phase which occurred at the beginning of the task, whereas modifying search terms occurred throughout this phase and was more influenced by the content on the Web. The second stage occurred when the students decided to change the direction of their search. The following sections will begin by reporting on the differences between the search terms and the search goal. Following this, the analysis of a range of search terms used in this study will be reported. Finally, common practices employed to generate and modify search terms will be examined, as well as the challenges that the students faced during this phase.

As explained earlier, even though search goals and search terms appeared to be alike in many instances, there were still a number of instances where the students' search terms were found to be different from their search goals. In these cases, the students were often found to use broad search terms when setting search goals to look for more specific information. The following table highlights the differences between KM's search goal and search term in Task 2,

as manifested in the data from both the Think-aloud protocol and Stimulated recall.

Turn	TAP data	SR data
6	Why.. Why give chocolate Let's try broad terms first in case I will learn the origin of this gift giving tradition Type search terms: valentine's day (ทำไม ทำไมถึงให้ ช็อคโกแลต เราลองเอาใหญ่ๆก่อน เพื่อมันจะมีข้อมูลว่าที่มาของการให้)	At first when I searched for 'valentine's day', I was looking for gifts, or history of gifts (คือตอนแรกที่ search valentine's day ก็คิดว่าจะมี gifts, history ของ gifts)

Table 4.6 Verbal protocol: differences between search goal and search terms

In this example, it was obvious that there was a mismatch between KM's search goal and her search terms. The data from TAP shows that KM set her search goal to find specific information on "the origin of this gift giving tradition". However, she proceeded to construct her search term as "valentine's day", which was found to be quite general and provided no focus to her search. The data from stimulated recall, as shown in the table above, also highlight these differences. This set of practices was found to be quite common among all of the participants in this study. The students often generated broad search terms to allow every possible hyperlink to appear on the search engine and then employed another set of practices to evaluate the relevance of each hyperlink and to locate specific information on different Webpages, as will be reported in Phase 3. These practices show that instead of using Google to filter out irrelevant Webpages to narrow their searches, the students chose to do this task themselves. The challenges that emerged as a result of these practices will be reported later in this Phase.

The following sections will first report on the two main types of search terms used by the students in this study: discrete and natural search terms. This will be followed by an analysis of the common practices used to both generate initial search terms and modify search terms. Phase 2 of the Online Literacy Practices

Cycle will end with the challenges that the students faced while constructing search terms, and as a consequence of implementing their search terms.

The analysis of the search terms

In this study, the students were found to employ two main types of search terms: discrete terms and natural language. These search terms were varied in terms of their effectiveness for the task of searching for information on the Web. The following sections report on the analysis of the search terms and their consequences in subsequent phases. Because the students in this study gained access to online information mainly through search engines, it is essential to understand both the process of generating search terms and the outcome of that process. In this section, the search terms that the students generated will be analysed. The results of the analysis will be shown in detail.

Discrete search terms

The first kinds of search terms that were found to be used by all of the students were 'discrete search terms'. Discrete search terms here refer to terms that have a search string composed of single or multiple discrete terms in a specific area. Unlike natural language, such as phrases or questions, discrete terms are not connected. It was shown in this study that most of the students used discrete terms as their initial search terms (see Table 4.7 for Task 1 and Table 4.8 for Task 2 for initial search terms entered by students). A further analysis shows that the use of discrete search terms resulted in broad and untargeted initial terms in both tasks. These terms were usually made up of the main topic identified by the students in the task instruction. However, for modified search terms, the discrete terms were found to include not only the topic but also the focus providing a clearer direction for the search. The following table compares concrete search terms generated by KM in Tasks 1 and Task 2.

Turn	Topic	Focus
6	Facial toner	
18	Facial toner	Advice
26	Facial toner	Recommended
40	Facial toner	Choose

Table 4.7 Examples of discrete search terms (Task 1)

Turn	Topic	Focus
6	Valentine's day	
19	Valentine's day	+ chocolate
42	History of chocolate	+ valentine

Table 4.8 Examples of discrete search terms (Task 2)

Natural language search terms

In addition to discrete search terms, students also resorted to natural language when generating search terms. Natural language search terms are those search terms that are made up of phrases or questions, and all the words in the search strings are connected. For example, LN copied her search terms directly from the task instruction of Task 2 – ‘Why do you think people choose to give chocolate on Valentine’s Day?’. The students were found to resort to natural language when they struggled to generate discrete search terms. In Task 2, KM revealed that she wanted to use discrete terms such as “why, give and chocolate” but she did not know how to put them together as search terms, so she employed the natural language method by “putting them all together” (KMT2Turn61). After she resorted to natural language, she was able to construct the search terms in the form of the question “why do people give chocolate?”, which was found to be more successful in generating relevant hyperlinks than her previous search terms “history of chocolate + valentine” (KMT2Turn42).

The students were also found to use natural language when they were unable to locate relevant information using the existing terms. In modifying the search

terms, the students in this study were found to use natural language more often than discrete terms. This could be because the task instruction provided the key questions for the students, which could be simply used as search terms without the need to change them to discrete terms. After the students failed to locate relevant information using broad discrete initial search terms, therefore, they resorted to the questions given in the task instruction. In Task 1, after LN failed to locate relevant information using the discrete terms ‘facial toner’, she decided to use the question “What is facial toner” as her search term. In this example, natural language was found to be more helpful in generating search terms because it provided direction and focus in the search terms. The following table demonstrates that after using natural search terms, LN’s search terms were found to have more direction and to be more focused.

Turn	Modified search terms
9	Facial toner is
16	Facial toner is necessary
22	What is facial toner
25	How to use facial toner effectively

Table 4.9 Examples of natural language search terms

It was found in this study that the students employed natural search terms not only for their convenience, but also because turning natural language into discrete terms was found to be a difficult task for EFL students. In this study AM was the only student who could construct the search term ‘reason’ from the question ‘why’ (see Table 4.12). The rest of the students either started their search using broad discrete terms such as “valentine’s day” (KM) or using the whole task question such as “Why do people choose to give chocolate on valentine’s day?” (LN). Because of the limited linguistic ability of EFL students, using natural language could be an alternative strategy when they struggle to construct discrete search terms. This issue will be addressed further in the Discussion chapter.

The next section will report on the practices that the students employed to generate search terms. These can be grouped into two stages – Constructing initial search terms and Modifying search terms. The following sections will report on the common practices employed to generate search terms and the challenges faced by the students in each stage.

4.2.2.1 Stage 1: Common practices and challenges in constructing initial search terms

To construct initial search terms, the students were found to resort to the search goals that they had already set. However, there seemed to be a number of inconsistencies in the students' search goals and search terms. The table below illustrates that their search goals seemed to be more specific and had more focus, while their search terms were found to be quite broad and general. For example, in Task 2, MY wanted to find out the answer to the question 'Why do people give chocolate on Valentine's Day?'; however, she constructed "chocolate, valentine, gift" as her search terms. The data from TAP, SR and follow-up interviews revealed that the students employed broad search terms first so that they would have more choices to select from. They could then filter them by looking for specific information; hence constructing a more focused search goal. The filter practices will be explained in more detail in Phase 3.

Students	Initial search goals	Initial search terms
Task 1		
LN	What is it (facial toner)? (Turn 9 คืออะไร)	Facial toner
MY	I will just look for why we need to use it (Turn 7 แต่เดี๋ยวหาว่าทำไมต้องใช้ก่อน)	Facial toner
Task 2		
KM	History of gifts	Valentine's day
MY	Why do people give chocolate on Valentine's Day?	Chocolate valentine gift
TY	How does chocolate relate to Valentine's Day	Valentine's history

Table 4.10 Differences between initial search goals and initial search terms

Similar to the ways in which they set their initial search goals, students mainly resorted to the task instruction to construct their initial search terms. However, there are distinct differences in the ways students construct search terms to complete each task. In Task 1, all of the students generally employed the same search terms, while none of the students employed the same search terms in Task 2.

In the first task, five out of eight students used ‘facial toner’ as their initial search term, while only two students used different search terms. Of the other two students, AM used the main topic and one of the task questions ‘facial toner + how to’ and TY used “Toner”, which was how he referred to facial toner in Thai. The following table demonstrates the students’ initial search terms in Task 1 and their verbalisations during the TAP and SR sessions.

Students	Initial search terms	TAP & post task SR data
MW	Facial toner	Type : Facical toner Google auto corrects to ‘Facial toner’
KM	Facial toner	I don’t know what it is. I’m going to try and see if this can be the keyword (ยังไม่รู้ว่าคืออะไร ลองดูว่าเป็น keyword ได้มัย)
NT	Facial toner	I want to keep it general first (เอาธรรมดาก่อน)
LN	Facial Toner	Copy ‘facial toner’ from task instruction
AM	Facial toner + how to	I want to answer 3 questions. How to should give me the description of facial toner as well. (อยากจะตอบ 3 คำถาม แล้ว how to น่าจะครอบคลุมไปถึงความหมายด้วย)
MY	Facial toner	Copy ‘facial toner’ from task instruction
TY	Toner	I love this topic. I am using ‘Toner’ now. (เรื่องนี้หนูชอบมาก นี่ก็ใช้โทนเนอร์อยู่)

Table 4.11 Initial search terms and verbal protocol data (Task 1)

In contrast, none of the students used the same search terms in the second task. Students were found to take different approaches to construct their search terms. Broad search terms ranged from the main topic taken directly from the task instruction to the students' own interpretation of the task. Broad search terms employed in Task 2 included "Chocolate valentine, Valentine's Day and Valentine history" as shown in the table below. Three students, KW, LN and AM applied the key question identified in the task instruction as their search terms. While KW and LN generated the search terms directly from the key question, AM changed the question word 'why' to a noun; hence, AM's search terms were 'Reason give chocolate + valentine'. Lastly, only one student, MY, was influenced by the search terms suggested by Google which appeared after she typed her search terms 'chocolate valentine'. MY then decided to use 'chocolate valentine gift' as her initial search terms. The following table demonstrates a range of approaches that the students employed to generate initial search terms in Task 2. These approaches include using main topic of the task, using students' own interpretation of the task, using key questions and using search terms suggested by Google.

Approaches	Initial search terms	Students
Using main topic	Chocolate valentine	MW
	Valentine's day	KM
Using their own interpretation of task	Valentine history	TY
Using key questions	Why chocolate valentine's day	KW
	Why do people choose to give chocolate as a gift on Valentine's Day	LN
	Reason give chocolate + valentine	AM
Using search terms from Google suggested list	Chocolate valentine gift	MY

Table 4.12 Various approaches in generating initial search terms (Task 2)

It is interesting to observe such differences in the ways students generated initial search terms in the two tasks. The way in which the tasks were phrased

may have had an impact on the ways in which the students constructed search terms. In the first task, most students constructed the same search terms even though they set different goals. The SR data shows that students explained that they chose the search term 'facial toner' because it contains the 'keywords' for this task and is broad enough to generate hyperlinks to websites that contain answers to all three key questions. The term 'facial toner' is used as the main category with three sub-categories – description of facial toner, the need for it, and ways of using it. On the other hand, Task 2 does not include such 'keywords' in the same way as Task 1. The key question 'Why do you think people choose to give chocolate as a gift on Valentine's Day?' was open to broader interpretation and there was no one correct way to answer this question. Students were found to interpret this question and identify the possible keyword in different ways.

Challenges arising from initial search terms

Even though most of the students resorted to the task instruction and did not encounter challenges in the process of constructing the initial search terms, they did face challenges as a result of the search terms they selected. These included those search terms that were influenced by the students' misinterpretation of task instruction, based on their background knowledge, and search terms that were too broad and not consistent with the search goals. The challenges arising from these search terms were evident when the students tried to locate information relevant to their tasks in Phase 3. The following sections demonstrate these challenges and highlight the direct relationship between the practices employed in Phase 1 and their results in Phase 2, which also had an impact on practices in Phase 3.

It is evident in this study that search goals which the students had set in Phase 1 were influential in the students' selection of search terms in Phase 2. One of the challenges that prevented students from generating effective search terms was the interference of background knowledge that was not consistent with the

task. In Task 1, TY claimed that he was very familiar with the topic of facial toner. He had previously used it and had looked up information about facial toner before. He went directly to the Google page and typed “toner” in the search box. “Toner” was the term by which he referred to ‘facial toner’ in Thai. This search term had led him to select the “Toner-Wikipedia” Webpage. After reading the opening section of this Webpage, TY realised that it concerned the type of toner used for laser printers and photocopiers. He claimed that “Wikipedia generated wrong information” (วิกิ เผลอพลาด TYT1Turn9). TY did not realise that the search term ‘toner’ that he selected had various meanings. This example illustrates that search goals influence the ways in which students generate search terms. Thus, search goals which are not consistent with the task can lead to challenges in later phases, as is evident in this study.

The students were also found to face challenges when their initial search terms were too broad and did not provide a clear direction for their search. For example, in Task 2, KM wanted to look for specific information on ‘the history of the tradition of giving chocolate as a gift on Valentine’s Day’; however, she used the broad search term “valentine’s day” on Google. The use of such generic search terms resulted in challenges in Phase 3, where KM struggled to find any Webpages associated with history or chocolate. The selected search term ‘valentine’s day’ generated 868,000,000 results. Even though KM did not read all of the results, she still had to employ a set of practices to filter out irrelevant information before she was able to locate relevant information. The figure below shows the Google search results page captured through the use of think-aloud protocol.

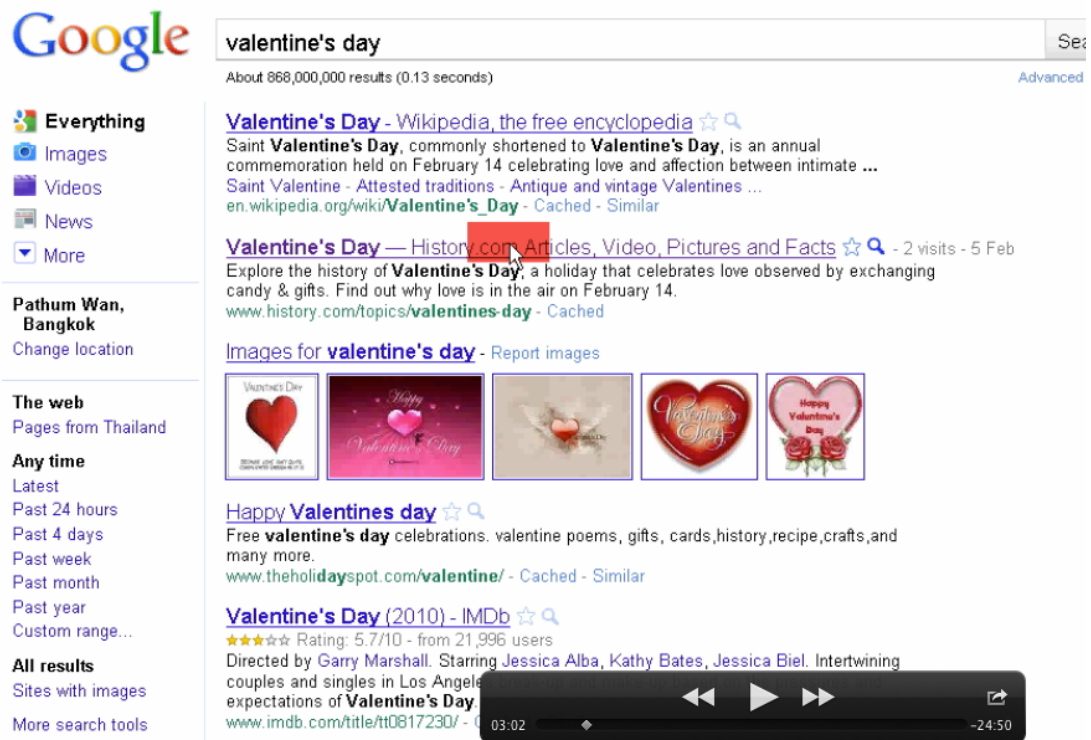


Figure 4.8 Screenshot: Google search result page generated by search term 'valentine's day'

As shown in this figure, the search term 'valentine's day' generated Webpages which were not likely to provide KM with information related to Task 2. From this list, KM selected the second Webpage from the top- "Valentine's Day- History.com". However, after spending two minutes on this page, KM was unable to locate information related to 'chocolate', which is an essential part of this task. These practices led KM to revise her search terms to include the term 'chocolate'.

4.2.2.2 Stage 2: Common practices and challenges in modifying search terms

After the students had generated their initial search terms, they proceeded to other phases such as locating relevant information, evaluating information and using information to respond to the task. Nevertheless, they were found to revisit Phase 2 several times to modify the search terms before they were able to complete the task. The reasons for modifying the search terms are explained

later in this section. The approaches employed to modify search terms indicate that the students had monitored whether their search terms could lead them to relevant information. In this study, they demonstrated that they were able to recognise when their search terms did not generate relevant information; thus, they needed different or more specific search terms. These practices were particularly evident when TY decided to narrow his search by adding the term 'chocolate' after his initial search term 'valentine's day' did not lead him to relevant information (TYT1Turn6-13, see Appendix 7).

Two factors were found to influence the students' decision to revise their search terms. The analysis in this study shows that the reason why the students decided to revise their search terms was because the initial search terms did not generate relevant information. Firstly, the search terms were found to be too general to capture the essence of the task, leading the students to too many irrelevant results. For example, in Task 1, more than half of the students used "facial toner" as their initial search term. All of them had faced challenges in locating relevant information and later modified their search terms to include the key questions from the task (see Table 4.13 for A comparison between initial and modified search terms in Task 1). Secondly, the students were also found to revise their search terms when the combination of multiple terms generated information that was not meaningful to the tasks. For example, in Task 2 the search terms 'Valentine's day', 'chocolate' and 'gifts' were found to be the most common terms among the participants. However, the combination of these three words had led all of the students to commercial Webpages (see Appendix 8 for TAP and SR data from MY). Because Google searches the WWW for Webpages that contain all of the search terms used, this particular combination led the students to E-commerce Webpages that sell 'chocolate' as 'gifts' on 'Valentine's Day'. Consequently, many students decided to modify their unsuccessful search terms. The following sections report on different approaches used to modify search terms.

Only two reasons for the students' decision to revise their search terms were identified in this study, but the students also revised their search terms in other situations. However, the reasons behind these practices were unclear and are not reported here. The next section will report on the different approaches taken to revise the search terms.

Students were found to engage in a range of practices to modify search terms. This study found that students drew on four different resources when revising search terms, the first of which was task instruction. The majority of students added key questions to their search terms specifically to make their search more targeted. In many instances, students referred back to the task instructions to revise their search terms. These practices were found to provide more targeted direction to the search than the initial search terms. The following table highlights the differences between the initial and modified search terms in Task 1.

Students	Initial search terms	Modified search terms
NT	4 Facial toner	18 What is facial toner
LN	7 Facial toner	9 Facial toner is
		16 Facial toner is necessary
		25 How to use facial toner effectively
MY	4 Facial toner	26 Facial toner how to use
MW	5 Facial toner	78 How to use facial toner

Table 4.13 A comparison between initial and modified search terms (Task 1)

The second resource that was used quite often to modify search terms was the online information that the students had encountered on Google and on Webpages. Students often browsed the search terms suggested by Google when typing terms into the search box. Most students were found to reject those words as not really relevant to the task, but a few students found these words useful, especially when they had difficulty generating search terms. For example, after opening five Webpages in Task 1, MW scrolled to the bottom of a Google search result page and read 'Searches related to facial toner'. She

selected ‘benefit of using facial toner’ and explained that she wanted to narrow her search to be more specific (MW T1Turn32). This example shows that Google has some influence on the ways students revised their search terms which set the direction for their search. The figure below shows MW’s selection of Google suggested search terms, as captured during think-aloud protocol.

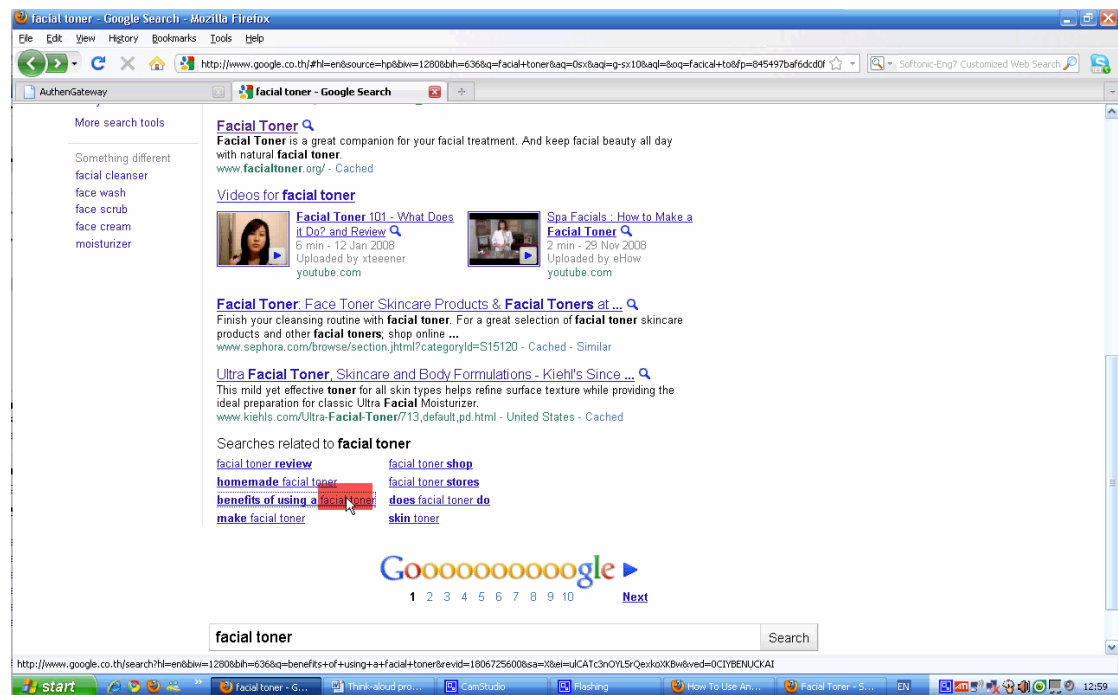


Figure 4.9 Screenshot: Searches related to facial toner

Another type of online information that appeared to have an influence on students’ modification of search terms was the information found repeatedly on the Webpages. This is significantly evident for one of the students, MW, who decided to modify her search terms to ‘Aztecs’ to answer the question why people give chocolate on Valentine’s Day. As explained in the previous phase on practices employed to revise the search goal (also see Appendix 6), MW revised her search terms to ‘Aztecs chocolate’ because she encountered the word ‘Aztecs’ repeatedly on different Websites. She revealed in the SR data that because this word appeared on a number of websites, she thought it might be important and could become a search keyword.

The third resource that students resorted to when modifying search terms was their own background knowledge of the topic. In the first task, TY explained that he was really familiar with the topic, yet he faced problems when trying to comprehend information on several Websites. Thus, he decided to search for a blog that he had used previously. His search terms, based on his background knowledge, were “Pupe so sweet”, which is the name of a Webblog of a girl named Pupe (TYT1Turn32). In a similar situation, KM revealed that, based on what she had read on a Thai website, she should be able to find information regarding the type of facial toner that was suitable for different skin types. Using her background knowledge, she revised the search terms to ‘choose facial toner’ (KM T1Turn40), even though this was not directly related to the key questions.

The last resource used to modify search terms was the student’s native language. In the first task, LN failed to understand the information generated by the search terms “facial toner is”; therefore, she decided to modify her search terms using Thai. She explained in her SR data that she could not understand the information in English, and even after looking up images of facial toner, she was still unsure of what it was. She finally decided to modify her search terms from “facial toner is” to “facial toner คือ” which conveys the same meaning. She revealed that the use of her native language had helped her to conceptualise ‘facial toner’ before she conducted further search (LN T1Turn13).

Challenges in modifying search terms

Students faced challenges in several instances in revising search terms, even though they had demonstrated certain skills in modifying search terms. The challenges that the students faced during the search term revision stage included difficulties in constructing the ‘right’ terms, and in spelling the terms.

In this study, KM was the only student who struggled to generate search terms. This problem was mainly a consequence of her misinterpretation of the task in

the previous phase. Because of her misinterpretation of the task instruction, the information she required to write her response was different from the task goal. Therefore, the search terms she needed for that information could not simply be taken from the task instruction, as was done by other students. KM had to come up with a new term which was the source of much struggle and frustration (KMT1Turn24, 38).

Turn	TAP data	SR data
24	I don't think the word 'advice' is working for me (Advice มันคงใช้ไม่ได้แล้ว)	I tried so hard to think of a word but I couldn't (นี่คือพยายามหาคำมาก แต่ว่าคิดไม่ออก)
38	Attempt to modify search terms Read Google suggestion for new search terms Which word should I use? (จะใช้คำว่าอะไรดีน้อ)	I tried to come up with a new word but I was hitting a brick wall. I couldn't think of any word (เริ่มหาคำใหม่ ซึ่งตอนนี้ตันมาก คิดไม่ออกเลย)

Table 4.14 Verbal protocol: challenges in generating search terms

After realising that she had wasted considerable time trying to construct her own search terms, KM went back to the task instruction and identified the word 'recommend' as being meaningful to the task. She then copied this word and used it as a search term (KMT1Turn26).

Another challenge faced by the students faced in trying to revise search terms was the problem of spelling. Though this problem may seem trivial and insignificant for those who use English as their native language, it was found to impede the Internet research process for EFL students because it increased their frustration. In Task 1, MW typed her search term into the Google search box as "facical toner", without realising that this was not the term used in the task instruction. Even though Google autocorrected the search terms to 'facial toner', MW kept reading these words as 'facical toner', not realising that Google has changed the word. Because these terms were corrected automatically by

Google, there was no impact on other practices. This example, however, emphasises the importance of the search terms used on a search engine. Online users, especially ESL and EFL students, need to make sure that they have the correct spelling for the words they want. If the incorrect spelling of search terms has a meaning in English, Google will generate hyperlinks according to those terms, leading students to select hyperlinks that are irrelevant to the task. Another challenge with the spelling of search terms was found when KM tried to construct the search terms but could not correctly spell words. In Task 2, she tried to answer the question 'Why people choose to give chocolate as a gift on Valentine's Day. She wanted to use the word 'choose' in her search terms but struggle to spell it, and typed "cho", "choi", "choe", "chode" before ending up with the word "chose". This shows that KM knew the term that she wanted to use but she faced the challenge of spelling it out because of her limited vocabulary. The problem of language proficiency that undermines the ability to use the Web as a source of information should not be ignored by EFL educators.

To sum up, two types of search terms were observed in this study. Even though discrete search terms were employed more often than natural language search terms, it was found to be more difficult for EFL students in this study to turn natural language into discrete terms. A range of practices was employed to generate initial search terms, which provided the students with different levels of details. To construct initial search terms, the students mainly resorted to the task instruction. The main topic was found to be used most often, even though it provided the students with limited search details. These practices often led to challenges in locating relevant information in the next phase. Thus, following these failures, the students engaged in another set of practices to modify the search terms. The modified terms were found to provide a focus and direction for search. The students employed a wider range of resources in modifying search terms than they did with the initial terms. These resources included the information that the students encountered on the Web, and their background knowledge about the topic, as well as their native language. These practices

were found to narrow the search and assist the students in locating information relevant to the task. This direct relationship will be highlighted in the next section.

4.2.3 Phase 3 of the Online Literacy Practices Cycle: Locating relevant information

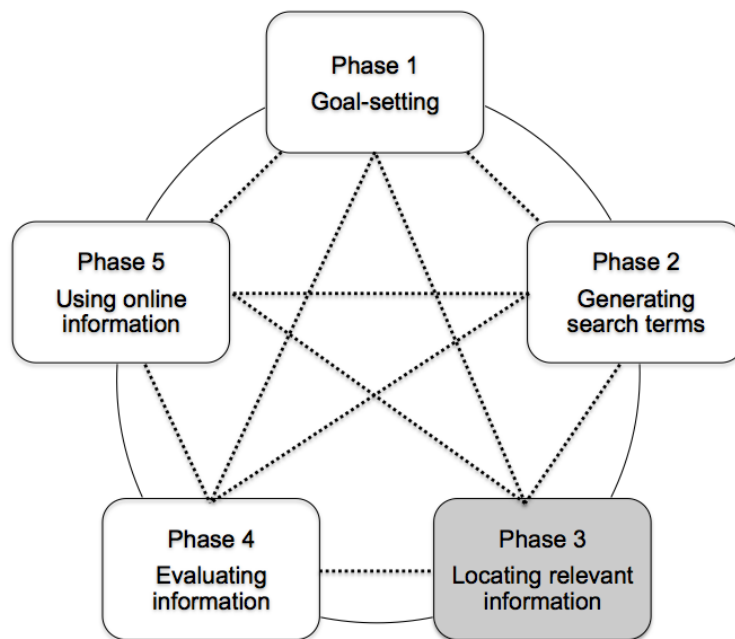


Figure 4.10 Phase 3 of the Online Literacy Practices Cycle

Through the analysis of the data from think-aloud protocol and stimulated recall, a group of practices associated with locating information relevant to the tasks emerged as the third phase of the Online Literacy Practices Cycle. This phase emerged after the students typed their search terms into Google and a list of hyperlinks associated with those terms was generated. This list of results was presented on the search results page. The practices related to locating information were carried out in two contexts – the search results page and the selected Webpage. From three different sources of data (think-aloud protocols, stimulated recall and diary entries), it was apparent that the students tried to locate information relevant to the task before they started reading information on the Webpages in detail because they wanted to complete their tasks as

quickly as possible. The students were found to select hyperlinks that appeared to be most relevant to the tasks from a list of hyperlinks presented on the search results page. Once they arrived at the prospective Webpage, they also attempted to identify the most relevant section of the Webpage before reading it in detail.

Data from all of the students revealed that speed appeared to be a major concern which was consistently demonstrated throughout this phase. The issue of trying to read quickly is related to three important factors in using the Web as a source of information. These major factors include the sheer amount of information on the Web, the difficulty of screen reading and the limited linguistic ability of EFL students. Firstly, the tendency to read quickly was found to be a reaction to the overwhelming amount of information available on the Internet. The students reported that by distinguishing the relevant information from the irrelevant, they were able to put their effort into reading the more relevant information instead of wasting time on reading less relevant items. Secondly, most of the students reported that screen reading was not comfortable for their eyes. They revealed that they had eyestrain when they read online materials extensively because they had to stare at the screen for a long time. Thus, they tended to identify a Webpage or a section of a Webpage that was most relevant to the task before reading it in detail. By using this approach, they were able to quickly locate relevant information before suffering from eyestrain. Finally, all of the students explained that reading materials on screen in English took longer and required more effort than reading in their native language. Reading their L1, Thai, they could quickly grasp the main idea of texts, whereas they needed to attend to words, sentences and paragraphs before they were able to make meaning of texts in English. For these reasons, the students in this study employed a range of practices to narrow the scope of the information they needed to read before starting to read it more carefully.

The following sections report on common practices employed in locating information relevant to the task. This is followed by a discussion of the

challenges that appeared to hinder the completion of this phase. The first section is the report on the practices and challenges that the students employed in Stage 1- Selecting hyperlinks on Google search results page. The second section is the report on the practices and challenges associated with Stage 2- Locating relevant information on the Webpages.

4.2.3.1 Stage 1: Common practices and challenges in hyperlink selection on Google search results pages

The findings of this study showed that the most common practices employed by the students to select hyperlinks on Google search results pages were the use of the information provided through the hyperlinks and the ranking of the hyperlinks on the search results page. The next sections explicate each of these practices in detail.

Approach 1 The use of hyperlink information to locate relevant information on search results pages

In this study, the students were found to make decisions on the selection of hyperlinks on the basis of information presented on the search results page. As shown in Figure 4.11 below, the information on the search results page includes a 'title', which is the first line of the search result. The title of the search results works as a hyperlink and is most often the title of the Webpage. To reach the prospective Webpage, users have to click on this link. Next, in green, is the 'URL', which is the Web address of that result's Webpage. The last component of the information provided for each item on the search results page is the 'snippet'. This is a short description of the Webpage, and can include excerpts of text from the page. These three types of information make up one search result. Additionally, the search terms used by searchers are always highlighted in boldface font in these search results. This makes it easier for searchers to decide whether the Webpage to be selected is relevant to their task.

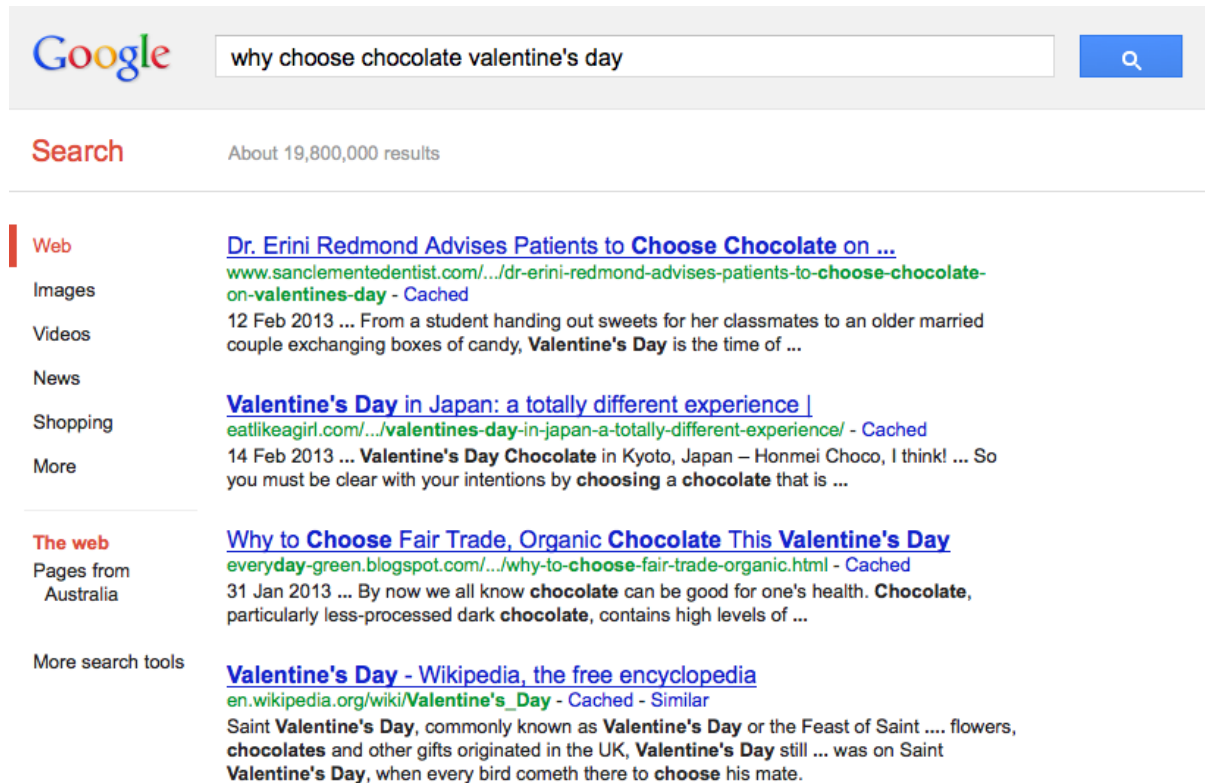


Figure 4.11 Screenshot: A common search results page

In this study, the students were found to make use of the information of the hyperlinks in a variety of ways. The practices employed to select the hyperlinks included surface level lexical matching and inferential associative meaning. These two strategies were found to influence the students' decisions in selecting the hyperlink in different ways. The following sections will report the use of these two strategies in detail.

The first strategy employed by the students to select the hyperlink was the lexical matching strategy. The students selected hyperlinks that contained identical lexical terms to those contained in their own search terms as well as their search goal. The table below demonstrates that LN and TY employed a lexical matching strategy approach when selecting hyperlinks to locate relevant information. The verbal data from TAP provided additional reasoning to the observational data.

Students	Search terms	Selected hyperlink and TAP data
LN Task 1	25 How to use facial toner effectively	26 Facial toner Learn how you can make your own facial toner ... effectively I am trying to find 'effectively' (พยายามหา effectively)
LN Task 2	3 Why do you choose to give chocolate as a gift on Valentine's day	6 Why we give chocolate treats on valentine I think this is it (อันนี้แหละ)
TY Task 2	39 The history of chocolate	41 History of chocolate Valentines, Timeline Results for History
		66 History of Valentines Greetings- Now Valentine's Cards

Table 4.15 Verbal protocol: select hyperlinks with identical wording to search terms

In addition to selecting the hyperlink with identically worded search terms, the students also selected hyperlinks with the same wording as their search goals. At the beginning of Task 2, KM set her search goals to look for “history of this gift giving tradition” (KMT2Turn6). Despite her broad search term “valentine’s day”, KM managed to select a hyperlink titled ‘Valentine’s Day-History.com’ which corresponded to her search goals. In a similar situation, MY had set her search goal to find the answer to the question: “Why do people give chocolate on Valentine’s day” (MYT2Turn2). Though she employed the broad search terms “chocolate valentine”, MY decided to select a Webpage titled ‘Why Chocolate for Valentine’s Day’. She also revealed in the TAP data that she had found exactly what she wanted (MYT2Turn9). These two examples demonstrate that students resorted to the lexical terms generated during Phase 1: Setting the search goal to select the hyperlink. These practices, then, suggest that the lexical terms the students constructed both as search goals and search terms had a strong influence on their decision to select a particular hyperlink. Thus, this study was able to identify the direct relationship between

practices that the students employed to set search goals in Phase 1, to construct search terms in Phase 2, and to locate relevant information in Phase 3.

Apart from using identical lexical terms, the students were also found to employ inferential meaning strategy in selecting appropriate hyperlinks. In contrast to the use of the lexical terms strategy, where students demonstrated their reliance on the surface level (that is, the matching of lexical terms to select a hyperlink), in this strategy, the students were found to engage in higher-order thinking by forming inferences based on the titles of the hyperlinks. For example, TY selected a hyperlink titled 'Valentine's Day History, Symbols, Folklore & Phobias' (TYT2Turn74). He revealed in his stimulated recall that he selected this link because of the word 'symbol'. This practice showed that, unlike others, TY did not simply search for the terms "why" or "chocolate" or "valentine's day". TY was able to infer that chocolate is often seen as a symbol of Valentine's Day. Thus, information regarding the reason why chocolate is a popular gift on this occasion could be found on this Webpage. The approach taken by TY shows that he had the ability to employ a more advanced inferential strategy to locate the most relevant information. The distinction between these two approaches is significant and seems to have its origins in the students' level of linguistic competence in L2 . This understanding could be used to inform teaching in the future, and is an issue that will be taken up later in the Discussion chapter.

Approach 2 Using the ranked position of hyperlinks to locate relevant information on the search results page

The data show that, while the students often relied on the information provided around the hyperlinks when selecting them, they also considered the ranking of the hyperlink in which they appeared on the search results page. The common approach used by the students in this study was to read the search results from the top of the page then proceed to the bottom. When they encountered results

that appeared to be useful to the task, they usually opened them in a 'new tab' of the Web browser to read later. Moreover, the students were also hesitant in opening the second or third page of the search results page. For example, TY explicitly revealed in his SR session that "When using Google, we all know that it is more likely to find relevant information on the first page. If we can't find it on the first page, it is less likely that we would find it on later pages" (TYT2Turn61). This excerpt shows that TY considered the ranking of the search results as important when forming his decision to select his favoured link.

The use of search result position as a criterion for the selection of hyperlinks was very evident, because the students encountered many results presenting similar information. In Task 2, MW encountered three hyperlinks with similar titles. MW only selected the first two hyperlinks from the Google search result page while ignoring the third. She provided further explanation during the SR session that "The first three links are all related to the history of chocolate. I only selected the first two links because the third one would be similar to the first two anyway" (MWT2Turn38). These examples demonstrate that the position of the link has an impact on the students' decision.

The use of lexical terms and the ranking of hyperlink selection as criteria show that the students are aware of the need to strategically select hyperlinks. It indicates that they understand the need to curtail the numerous possibilities that can overwhelm them by selecting the hyperlinks that are likely to provide the information most relevant to their tasks. However, at times these two criteria were found to be insufficient for selecting the hyperlinks that were most relevant to the task. The following section will report on the challenges that the students faced when using these approaches to select hyperlinks on the search results page.

Challenges in selecting hyperlinks to locate relevant information

The most common challenges that emerged during this stage resulted from the practices in which the students engaged in the previous phase. In this study, the students faced challenges in selecting hyperlinks from a list of search results which were generated by search terms that did not represent their search goals (see Section 4.2.2 Phase 2 of Online Literacy Practices Cycle). For example, in Task 2, MW generated the search terms “chocolate valentine” to find information on “why people give chocolate on Valentine’s Day”. MW revealed that she struggled to find any hyperlinks that matched this search goal. During the stimulated recall session, she revealed that she tried to look for the term “why” but had trouble finding it in the first two search results pages. After a considerable length of time, MW finally located one hyperlink with the term “why” on the third page of the search results (MWT2Turn6-12). This clearly shows that MW faced challenges in selecting hyperlinks because her search terms (‘chocolate valentine’) were too broad and did not represent her search goal (‘why people give chocolate on Valentine’s Day’). Even though the two main key terms were used as search terms, MW still had to search through three pages of search results before she could locate a hyperlink that had the potential to answer her search question. Significantly, this challenge shows the importance of the practices employed in setting search goals (Phase 1) and generating search terms (Phase 2). Even though the consequences of these practices were not evident during the first two phases, they had a direct implication for the practices and challenges employed to achieve the goal of Phase 3.

Another challenge that the students commonly faced occurred as a result of their hyperlink selection. When students selected hyperlinks that were not directly relevant to their search goals, they often had difficulty locating relevant information once they arrived at their selected Webpages in Stage 2 of this phase. This is because the search results that appeared on the search results page often provided limited information, e.g. the title of the Webpage and a

short description. On several occasions, this led the students to select hyperlinks which were not relevant to the task. As expected, the students could not locate information relevant to their goal on those Webpages. For example, KM selected a hyperlink titled 'Valentine's Day-History.com, Articles, Videos, Pictures and Facts' hoping to find information to complete Task 2. She later discarded this Webpage because she could not find any information related to 'chocolate' in 'Valentine's Day-History.com'. She revealed that she had tried different techniques such as reading the headings or the first sentence of a paragraph, but still could not find 'chocolate' anywhere on this Webpage.

It is clear that this student did not face challenges in locating relevant information on the Webpage as a result of the approaches she employed to locate information, but rather because of her earlier decision to select an irrelevant hyperlink. This challenge also highlights the relationship between the practices in Stage 1 and Stage 2 of this phase. The challenges reported in Stage 1 also show that selecting a hyperlink that is most relevant to the task is an advanced skill. Readers need to develop specific skills and knowledge to predict the results of selecting particular links, as well as English proficiency for the purpose of reading and making predictions from limited information. The skills and knowledge essential to the selection of hyperlinks will be discussed in more detail in the Discussion chapter. The next section will report on Stage 2 of the phase Locating relevant information, as the students arrived at their selected Webpages and tried to locate relevant information.

4.2.3.2 Stage 2: Common practices and challenges in locating relevant information on selected Webpages

Even though the students had already selected the hyperlinks that they believed to be relevant to the task, they still employed a range of practices to locate the most relevant section of the selected Webpage. This was partly because the hyperlinks did not provide as many clues about what information would be present on the Webpage due to the limited nature of the hyperlinks. They were also found to employ practices specifically to locate particular sections of the

Webpage that could contribute to the answer to their tasks. It was established through three sets of data that the students did not read every Webpage that they opened, nor did they read the information on the Webpages from beginning to end. Rather, they attempted to locate the most relevant section of information on the Webpage before reading it carefully. It was found that the students employed different approaches to identify specific parts of the Webpage that could be used to answer the task questions, or to inform their answers. This section will report on the range of practices employed in this study for the purpose of quickly locating relevant information. The most common practices included speed-reading strategies, literal-matching strategies focused on lexical terms, and visual elements of the Web. These practices were found to be helpful in assisting the students to locate information relevant to the task, but they also posed challenges to the students and prevented them from completing the tasks in a timely fashion.

Approach 1 The use of print-based speed-reading strategies to locate relevant information on the Webpages

The data show that the students were concerned with the speed of their reading time because of the sheer amount of information that they needed to sift through when trying to locate information relevant to the task. It appeared that they employed speed-reading strategies to fulfil two purposes, namely, to evaluate whether Webpages were relevant to the task and to locate a 'potential answer' on each Webpage that could then be read in detail. The speed-reading strategies generally used by the students in this study included a preview reading of the title of the Webpage, reading only the beginning sections of the Webpage, and scanning. The following sections will illustrate the ways in which the students employed these strategies to locate relevant information.

Previewing the Webpage

Previewing the Webpage refers to the act of quickly scrolling to the bottom of the Webpage without paying attention to specific information. By previewing the

Webpage, the students revealed that they were able to quickly identify whether the page contained important information for their tasks which needed to be read in detail. The students were found to preview the Webpage when they encountered a huge amount of information. This strategy was employed to identify relevant sections of a Webpage without having to spend a lot of time reading the entire Web. For example, MW revealed that she scrolled down to preview the Webpage, especially when she encountered a lengthy one (MWT2Turn46). Similarly, KM also previewed a lengthy Webpage “in case there is any important information” (KM T2Turn 52). By previewing an entire Webpage, the students were able to get a sense of its length and difficulty. For example, TY claimed that by previewing, he could tell whether the Webpage was too difficult for him to read. This strategy helped him in making the decision to continue reading or to close the Webpage. The previewing strategy was not only used to evaluate the relevance of the Webpage but also to assess the students’ own ability to comprehend it.

Using the title of the Webpage as an absolute criterion

As discussed in Stage 1, the students often selected those hyperlinks that contained the same lexical terms as their search goals or search terms. Because the information in the hyperlinks mainly consisted of the title of the Webpage, the students were found to use the title of a Webpage to establish the connection between that page and their search goal. Once the Webpage was identified as being relevant to the task, students proceeded to locate a particular section of the Webpage that contained information which was promised in the title. For example, in Task 2, KW selected the website titled ‘Why Chocolate for Valentine’s Day’, saying that the title matched her search goal. She read the first two paragraphs before commenting that this Webpage might not be relevant to the task because “It is more about the legend of Valentine” (KW T2Turn11). However, KW persisted in reading it again more carefully because she earlier identified that this Webpage was irrelevant to the task. She revealed in the SR session that she continued to read this Webpage because the title of the Webpage matched her search goal perfectly. The

reason she provided for not being able to find relevant information was that it was her own fault for scanning too quickly.

In a similar situation, after selecting a Webpage titled 'Mackin's Blog: Why do people give chocolate on Valentine's Day', KM stated that the title of the Webpage was exactly what she was looking for. She revealed that even though it was quite lengthy, she was willing to read it carefully because of the exact match in the title (KMT2Turn62). After almost two minutes of thorough reading, she realised that it was a personal blog, yet she continued reading because, as she stated again, she believed she could find the answer there. These two examples demonstrate the ways in which the students in this study used the title of the Webpage as absolute criteria when trying to locate information on the Webpages. These practices led the students to face several challenges which will be explained in a later section.

Reading only the beginning section of texts

The data from think-aloud protocol shows that the students often read only the beginning sections of the Webpage. The beginning sections here referred to the first paragraph and the first sentence of each paragraph. Like other speed-reading strategies reported earlier, reading only the first section of the Webpage was practised to speed up the task completion time. In this study, the students were found to employ this strategy when facing lengthy and wordy Webpages without visual elements such as headings or sub-headings. NT revealed that when she was faced with Webpages like this, she did not know where to start. Luckily, when she started reading only the first and the second paragraph, she was able to find the answer and did not need to continue (NTT1Turn14-15). The TAP data also shows that MW read only the beginning sections carefully, moving quickly beyond the rest of the Webpages. Only when she came across information that might be relevant to the task did she stop and read the content in that paragraph in detail (MWT2Turn13). MW further explained in her SR session that she employed this strategy, which she had learned extensively from an English Reading Strategies course. To her, the first sentence of each

paragraph was the topic sentence; thus, if the topic sentence was not relevant to the task, there was no need to waste time reading the rest of the paragraph.

Scanning

Scanning was the strategy that the students referred to most in their diaries. When asked about the strategy that they used to search for information online, most of the students revealed that they employed scanning to identify the most relevant part of the Webpage. They also revealed that because there was a lot of information, they were unable to read texts on the entire Webpage in detail without feeling overwhelmed. Therefore, they scanned texts quickly and stopped to read when they found potentially relevant information. The following are data from KW and NT's diaries:

"For online texts, I have to read quickly because there is a lot of information. I scanned texts first then I read in detail" (KW_Diary)

"It is important to scan when reading online texts. If we don't scan first, we will not know if the information is relevant or not. By scanning, I was able to complete the task more quickly and more accurately" (NT_Diary)

A close examination of the use of reading practices shows that these were largely taught as part of fluency strategy (SQ3R) in an English Reading Strategies course. From classroom observational data, it was clearly evident that the lecturer emphasised the use of speed-reading, especially when the students encountered long texts. SQ3R is a group of strategies taught specifically to increase fluency in specific types of reading. For this reading task, the students were required to read a text and answer a set of questions based on the given text. The 'S' in SQ3R refers to the 'Survey' strategy. The students were taught to read the title and the first sentence of each paragraph to get an overall impression of the texts. 'Q' refers to 'Question'; students need to ask questions based on the first sentence of each paragraph of the given text. This strategy was taught to help students to predict the story before reading it in

detail. Next, '3R' refers to 'Read, Review and Recite'. After reading the texts, students need to review whether they can answer the questions that they have previously raised. Lastly, the students were taught to recite by completing the exercises given to check their comprehension. The purpose of SQ3R is to increase students' fluency in reading English texts, as well as to improve their comprehension, by engaging them with texts through asking questions, reviewing answers and completing the exercise. Samples of the class observation data can be located in Appendix 9.

It was found that the speed-reading strategies employed by the students in this study resembled the 'Survey' part of SQ3R. Nonetheless, It is evident in the classroom observation data that the survey strategy was only meant to prepare the readers to read the text. The students still needed to question, read, review and recite the information thoroughly to fulfil the aim of these strategies. Because these strategies were reiterated and re-emphasised at every session, the data from the students' diary entries shows that the survey strategy was the strategy that students remembered most from the course and appeared to be the most influential on their online practices. Samples of the diary data can be located in Appendix 10.

A closer examination shows that the use of speed-reading strategies was only helpful in terms of assisting the students to quickly distinguish between relevant and irrelevant Webpages, but posed challenges in other situations. The following sections report on the challenges faced by the students as a result of the use of the following strategies: reading only the first section of the Webpage, using the title as the absolute criterion, and ineffective use of scanning.

Challenges resulting from the use of print-based speed-reading strategies to locate information on the Web

In this study, the students were found to face challenges when they employed speed-reading strategies learned from the print-based environment to locate information in the online context. The common challenge that students faced in the Web environment was the absence of the information promised by the first sentence or first section of the Webpage. In one example, MW announced that she had found relevant information after reading the first sentence of the third paragraph, ‘Why does chocolate evoke so many feelings and emotion for us?’ (MWT2Turn19, see full paragraph in Appendix 11). However, she did not find the answer after reading the content in detail. A close examination of the content of the Webpage shows that the answer to this question in fact appeared in the fifth paragraph. Unfortunately, MW did not read this paragraph in detail because the first sentence of the paragraph was associated with chemicals, which MW thought was irrelevant to the task (“Another important substance found in chocolate is phenylethylamine, which is part of a group of chemicals known as endorphins” – see full paragraph in Appendix 12). These examples show that because Web texts are created by both expert and amateur writers, they do not always conform to composition rules in the same way that the students had learned from the texts edited specifically for EFL classrooms. Thus, the students needed to be aware of these differences when transferring the strategies that they had learned from the print-based reading context to the online context. This also suggests the need for explicit teaching, which will be discussed later in the Conclusion.

The students were also found to face challenges when using the title as an absolute criterion. In this study, students were frustrated when they were unable to locate information that was promised in the title of the Webpage. As reported earlier, they continued to read particular Webpages even though they had initially failed to locate relevant information. This was because the title of the Webpage matched their search goal perfectly. In the previous example, KW

further revealed in her SR that the content of the Webpage should reflect its title; therefore, she believed that she had scanned that Webpage too quickly and missed the relevant information (KWT2Turn11). This belief led KW to read the Webpage again. However, because the nature of the WWW allows anyone with Internet access to publish anything they desire, there is no editor to make sure that published information conforms to these general rules of composition. Thus, KW had wasted a huge amount of time trying to locate information which was not present in the first place. These examples show that the use of this particular speed-reading strategy is not always suitable for Web texts.

The last challenge that the students faced as a result of the use of speed-reading strategies was the ineffective use of scanning. Scanning was a speed reading strategy that all the students frequently employed to locate relevant information on a Webpage. As explained previously, many students revealed that they employed the scanning strategy because they wanted to find the answer and finish the task as quickly as possible. This was mainly due to the sheer amount of information on the Internet, the difficulty of screen reading and their limited linguistic ability. However, many of the students were found to face challenges when they tried to scan the texts on Webpages too quickly, and they missed important information. For example, when trying to complete Task 2, MY tried to examine the reason why chocolate is often given as a gift on Valentine's Day. After opening a Webpage, she complained that there was a lot of information (MYT2Turn11). She scanned the first two paragraphs before copying and pasting these paragraph into Microsoft Word (MS Word) document. Later during stimulated recall, she explained that the information relevant to the task was, in fact, written below the paragraphs she had copied, but she often scanned texts so quickly when she read on screen that this led her to miss important information (MYT2Turn12). Similarly, TY revealed in his SR that he closed one Webpage after he had quickly scanned it and not found any relevant information. However, after failing to find information relevant to the tasks elsewhere, he revisited this page and read it carefully, and was able to locate information to answer his questions (TYT2Turn37). This study has identified the

use of traditional speed-reading strategies as one of the approaches that students used to located relevant information on the Web. Even though these strategies allowed the students to quickly established a connection between the selected Webpages and their tasks, they were found to be inadequate for the task of locating specific information on the Webpage. This is due to the profound differences between the print and online reading environments, as explained previously.

Approach 2 The use of lexical terms to locate relevant information

As explained in the previous section, a common speed-reading strategy was scanning, which the students employed to locate particular information. The data show that once the students arrived at their selected Webpage, they scanned for lexical terms which were identical to the 'keyword' they had in mind as a way to find information that was 'worth reading'. This strategy was found to be used to distinguish information that was relevant to the tasks from information that was only partially relevant and which they appeared to ignore. The following section reports on the use of lexical terms to identify irrelevant information and Webpages. The analysis shows that the students employed lexical terms as indicators to discard certain information without even reading it, and often mentioned these lexical terms without context. The following sections report on practices related to the use of lexical terms that the students employed. In this study, the students were found to employ three types of lexical term – lexical terms from search goals or search terms, lexical terms found repeatedly on a different Webpage, and lexical terms that indicated the answer.

Lexical terms from search goals or search terms

The data show that the students often employed a range of lexical terms as cues to relevant information. The first type of term that was commonly used mirrored terms that the students had set as their search goals, as well as the search terms derived from these goals. The students were found to scan for

lexical terms to identify the relevance of a Webpage as well as to identify a section of a Webpage that was relevant to the task. For example, TY quickly scanned the page for the term 'chocolate' after selecting a Webpage titled 'History of Valentine's Day' (TYT2Turn10). He scrolled past ten long paragraphs and mumbled "chocolate, chocolate, chocolate" as he was searching for this word. In his stimulated recall, TY revealed that while he was previewing the Webpage related to 'history of Valentine's Day', he tried to search for the term 'chocolate' to see whether there was a specific part of the Webpage that was related to chocolate. This is because he had set his search goal to find out about "the relationship between chocolate and Valentine's Day" (TYT2Turn6). Luckily, there was no information related to 'chocolate' in this 'History of Valentine's Day' Webpage, thus the use of lexical terms was helpful in this situation because the practice of scanning for a specific lexical term (chocolate) helped TY to save time and effort by not reading information that was not relevant to the task.

The students were also found to employ the same strategy to locate an answer and to avoid reading the whole Webpage. To complete Task 1, three students, NT, MY and KM, revealed that they scanned for the terms "how to use" as they tried to answer the question 'how to use facial toner effectively'. The think-aloud protocol data shows that after MY modified her search terms to "how to use facial toner", she selected a Webpage titled 'How To Use and Apply Facial Toner'. Once she arrived at this Webpage, MY quickly scrolled past information regarding 'facial toner' and the main heading 'What are the benefits of using facial toner'. She only paused after seeing a smaller heading 'How to apply facial toner properly' and copied information under the subheading 'Step 1, Step 2, and Step 3' without reading the actual information regarding those steps. These examples illustrate the ways in which the students in this study employed lexical terms as cues to relevant information. Because these terms were easy to recognise, the students were able to identify the relevance of each Webpage, and sections of Webpages that warranted more attention, without having to put a lot of effort into a detailed reading of the information on the Webpage.

Lexical terms found repeatedly on the same and different Websites

In addition to paying attention to lexical terms from search goals or search terms, the students were found to pay extra attention to terms they repeatedly found on the same and different Webpages. At first, these lexical terms did not appear to the students to be distinctive; however, after finding them repeatedly on various Webpages or various paragraphs, the students shifted their attention to focus on these terms. They revealed that they believed the repeated terms must be important to the search topic. This practice was highly evident when MW tried to complete Task 2 and shifted her search to locate the term 'Aztecs'. MW first came across the term 'Aztecs' on a Webpage titled 'Why Chocolate for Valentine's Day' (MWT2Turn14). After scanning this Webpage, it was clear that the term 'Aztecs' was repeated many times (MWT2Turn14-21). Later, MW decided to revise her search terms to include 'Aztecs' (MWT2Turn37). The analysis of the rest of MW's practices showed that she no longer looked for the reason why people give chocolate on Valentine's Day but shifted to the relationship between 'Aztecs' and Valentine's Day, which shows that by being influenced by the terms presented on the Webpage, MW misjudged the relevance of the Webpage to the task. This example illustrates that the frequency of particular lexical terms can have an influence on the direction of her search.

Lexical terms suggesting answer

The data also show that the students employed lexical items to identify potential answers instead of trying to understand the main idea of the text. For example, KM did not read the whole text and draw out meaning when trying to find the reason why people give chocolate on Valentine's Day. Instead, she tried to locate the term 'because' as she was convinced that after locating this word, she would find the answer to the question 'why' (KMT2Turn72). The sentence from the Webpage reads: "Some people think that chocolate is a good thing to give because it fits into a heart shaped box, or chocolate can be formed into hearts" (Mackin, 2011). Although KM revealed that she did not really agree with

this information, she used it as a part of her task response anyway because the term 'because' suggested that it was the reason for giving chocolate on Valentine's Day. This example clearly demonstrates that KM relied heavily on the surface level cue in locating information relevant to task.

Challenges resulting from the use of lexical terms to locate relevant information on the selected Webpage

It is evident from the data for this study that the students were at times over-reliant on the process of matching individual lexical items found on the Web with the 'keyword' they had in mind. Even though the use of lexical terms was found to be helpful in establishing the overall connection between the selected Webpage and their tasks, it was insufficient for locating a specific section of a Webpage. The students' approach to scanning for specific terms prevented them from locating relevant content, especially when relevant information was not written in the same lexical terms that the students had in mind. The following sections describe the challenges resulting from the use of lexical terms to identify relevant information on the Webpage.

The first challenge that the students faced using the 'scanning for lexical term' approach arose when useful or relevant information used different lexical terms from those that the students had in mind. This is because when students focused on scanning for specific wording, they overlooked the main idea, the meaning and the content of the Webpage. For example, when KW tried to complete Task 2, she selected a Webpage titled 'Why Chocolate for Valentine's Day' because the title matched her search goal. During the think-aloud protocol session, KW scrolled past the first two paragraphs and only stopped at the third paragraph to read information in detail. She revealed that she paused at the third paragraph after seeing the word 'why'. After reading the whole sentence 'Why does chocolate evoke so many feelings and emotions' (KWT2Turn4), KW skipped this paragraph and scrolled down to read other paragraphs. She explained in the SR session that she did not think this paragraph was relevant to the task because it was only about 'feeling' and 'emotion', and the word

'valentine' was not present in that paragraph (KWT2Turn5). These practices show that KW relied on the lexical terms on the Webpages to establish a connection between this paragraph and her task. Because the term that she believed to be the keyword of this task was not present, it was not worth the effort of reading the Webpage in detail. Interestingly, close analysis showed that even though the term 'valentine' did not appear in this paragraph, the author of that Webpage did, in fact, explain the reason that chocolate was often associated with Valentine's Day because it has long been a symbol of "passion, romance and love" (see full text in Appendix 11). This further analysis shows that information in this paragraph had the potential to inform the students' thinking in their attempts to deduce the answer for the task question. Unfortunately, KW's approach in scanning for specific lexical terms prevented her from identifying relevant information on the Webpage.

The students were also found to face challenges when trying to scan for the answer by looking for exact terms. An in-depth analysis shows that these students discarded several Webpages after quickly browsing without reading them because they could not find an exact answer. A close reading of the Webpages suggested that there was information that could be used to answer the task; however, it was not phrased using the key terms that the students had searched for. Because of the absence of the keyword or targeted lexical terms, the students ignored this information.

Two examples from the data that effectively represent the challenge that arose from over-reliance on the matching of individual lexical items are drawn from instances when students tried to locate information to answer the question 'What is facial toner?'. In the first example, KM selected a Wikipedia Webpage when she set her search goal as 'facial toner is'. She explained "in case I can find 'is' or something like this" (KMT1Turn8). However, after failing to find 'facial toner is', she closed the Webpage (KMT1Turn10). KM's practices showed her reliance on the expectation that the lexical item 'is' would guide her to relevant information. In the second example, when trying to answer the same question,

NT revealed that she wanted to find the “exact wording of what facial toner is” (NTT1Turn19). Even though NT found the description of facial toner from beautyadvices.com, which read “Facial toners, known also as tonics, lotions, astringents are solutions that remove surface skin cells, soap residue and oil from the skin”, she was still not sure what she should write. For this reason, she tried to search for a different Webpage that would give her the exact wording that she could use as her answer. These examples show that, for these EFL students, information retrieval skills alone were not sufficient for the task of using the WWW as a source of information, because when reading in English, they did not have the ability to deduce the answer from the information given. For this reason, most students relied on a keyword, or lexical terms, that could easily be appropriated as the answer to their tasks. These practices were also found to lead to further challenges in Phase 5 as the students tried to use the information retrieved from the WWW to respond to their tasks. This challenge will be explained in greater detail in Section 4.2.5 Phase 5 of the Online Literacy Practices Cycle: Using online information to respond to the task.

These examples clearly demonstrate the ways in which the students in this study relied on individual lexical items when locating relevant information on a Webpage. Their attitude towards searching the Web was that there must be information somewhere on the Internet that they could use as the answer – their job was to keep searching until they found it. The quickest way to search for this answer was to remain at the surface level and use lexical items without attempting to interpret or infer meaning. The data from MY revealed that the linguistic barrier was the reason for her reliance on using lexical items to identify potentially relevant information. MY explained that when searching in English, she often scanned for certain lexical terms because they were easier to notice (MYT1Turn44). To her, searching in English was different from searching in Thai. She revealed that when searching for information on Thai Webpages, all she had to do was to glance through texts and she could grasp the main idea, whereas grasping the main idea in English texts took a great deal of effort to comprehend. Having limited linguistic ability required students to make extra

effort to arrive at the same result. Students therefore tried to save time by searching for words that were easy to recognise and noticeable when locating relevant information on a Webpage.

Approach 3 The use of visual design to locate relevant information

Even though texts are still the dominant element on informational Webpages, visual design is the feature that makes a Webpage look attractive and invites readers to read. Similar to their use of speed-reading strategies and lexical terms, the students were found to employ a range of visual features on Webpages to serve two goals – establish a connection between the selected Webpage and the task, and locate relevant information on the selected Webpage. In practice, these visual elements were used to assist students to locate information relevant to the task without having to read and comprehend texts on the entire Webpage. The visual elements that were commonly found to be employed by the students in this study were the headings and boldfaced fonts, as well as the images that appeared on the Webpage. The following sections will report on the common practices the students engaged in when using these visual elements. Subsequently, the challenges related to the visual elements will be reported in detail.

The visual elements that were found to be used most often were the headings and subheadings of the Webpage. The headings inform the importance of the texts, as well as the hierarchy. The data from TAP show that all the students in this study attended to the headings and sub-headings on the Webpages they visited. This was especially evident when students encountered information that was presented in dense and extended Webpages. The students employed the headings to both evaluate the relevance of the Webpages to the tasks and to locate a relevant section on a Webpage. The headings were found to influence decisions on whether to stay on the Webpage or to close it. In this study, the Webpage headings assisted the students to quickly identify the Webpage's relevance to their task without needing to read the information in detail. This

was evident in Task 2 after KM opened a Webpage titled 'History of Chocolate' from Wikipedia. She scrolled down past the headings 'Mesoamerica history', 'Exported outside the Americas', 'Europe' and 'Trade' before closing this Webpage. She provided the explanation in her stimulated recall that she had read all the headings but found that they were not relevant to the task. She claimed that the information about chocolate presented on this Webpage was not related to Valentine's Day, so she decided to close it (KMT2 Turn37-39). The use of headings in this task saved KM from wasting her time on a Webpage which was irrelevant to her task.

Even after students had established that a Webpage was relevant to the task, they still attended to the headings and sub-headings of the Webpage as a means to locate a section of the Webpage that was relevant to the task. It was consistently shown that the students appeared to avoid reading Web texts unless they had identified that they were relevant to the task. Thus, they made use of headings and subheadings to quickly identify their relevance. The students often scanned a Webpage by quickly scrolling down, passing information but pausing or stopping to read the headings. When a heading appeared to be relevant to the task, the students would read the information under that particular heading thoroughly. This was evident in the first task as MW selected many Webpages and appeared to scan through a lot of information. The think aloud data showed that she read many headings; however, she did not read the information under all the headings. After opening a Webpage titled 'Is Toner Necessary' from about.com, MW scrolled down the Webpage, passing many paragraphs. She paused at the heading 'The Beauty Experts Who Promote Toner' but did not read the information under this heading as she did not find it relevant to the task (MWT1Turn47). On the other hand, after opening a Webpage titled 'Benefits of using toners and face masks', MW copied the information under the heading 'How to apply facial toner properly' even without reading it carefully (MWT1Turn52). Similarly, MY also copied information under the heading 'How to apply facial toner properly' without reading it in detail. During her stimulated recall session, she explained

this practice by saying that headings were more eye-catching, so she only paid attention to this information. After reading this particular heading, MY copied the information under it without further reading by explaining that “because this heading is relevant to the task, information under the heading must be relevant as well” (MYT1turn29-30). It is apparent that students used the headings to identify whether a particular section of a Webpage was relevant to the task and could be used to write a response to fulfil the task goal. These practices show that students rely greatly on the visual elements of the Webpage as a way to avoid reading. This is consistent with the use of speed-reading strategies and the use of lexical terms. The rationale behind these practices will be discussed in the next chapter.

In addition to the headings, the students were found to exploit other salient information such as boldface fonts when locating relevant information on the Webpage. In this study, students were found to use bold font to help them locate and evaluate whether the information was relevant to their tasks. By locating information in bold font, students were able to quickly find information that was emphasised on the website. This prevented students from spending unnecessary time on websites that were not relevant to the tasks. An example taken from MY shows the ways in which she used the bold fonts to establish the relevance of a Webpage to the task.

After opening a Webpage titled ‘Chocolate Valentine’s Gifts’, MY quickly scanned the first paragraph before identifying that this Webpage was not relevant to the task. The opening paragraph read: ‘In the **Totally Chocolate** cookbook, we discovered a few simple but ..’ with the emphasis on ‘**Totally Chocolate** cookbook’” (MYT2Turn22). MY explained that the emphasis on this Webpage was related to how to make chocolate because the word ‘cookbook’ was written in bold. Without reading any further, MY decided to close this Webpage. This example demonstrates that MY used the existence of bold fonts to establish a relationship between the Webpage and the task without spending time reading it in detail.

Finally, students were also found to employ images to evaluate the relevance of the selected Webpages. In the second task, KM opened a Wikipedia page titled 'History of chocolate' (KMT2Turn36). After quickly previewing this Webpage and reading the headings, she decided to close it, explaining that it was not relevant to the task. During her stimulated recall session, KM provided further explanation that she not only evaluated the relevance of the page based on the headings, but she also made this decision using the images that appeared on the Webpage. She revealed that the images and their descriptions showed that they were related to chocolate but not Valentine's Day. For this reason, she made her decision to close this Webpage. The following figures show the Screenshot of KM's think-aloud protocol video episode (video minutes 8.15 and 8.46).



Figure 4.12 Screenshot: Wikipedia-History of chocolate



Figure 4.13 Screenshot: Wikipedia-History of chocolate (cont.)

Challenges relating to visual elements of the Web

The students demonstrated general visual literacy that informed their judgments about the different levels of importance of particular texts, but they still faced many problems related to visual design of the Web when they tried to locate relevant information on Webpages. This section reports on the different challenges the students faced in relation to the visual elements on the Webpages they viewed. These included being highly dependent on the visual elements, the challenges posed by in-text advertisements, and the apparent dissonance between visual elements on the Webpages.

Firstly, all the students in this study appeared to be so highly dependent on the visual elements of the Web that at times they overlooked the importance of the written texts. In this study, most of the students avoided reading text on Webpages when it was found to be lengthy, without clear headings or paragraphs. They claimed that it was more difficult to read such texts, so they could use their time more profitably finding Webpages that were easy to read.

The students were also faced with challenges when their visual literacy was challenged by the in-text advertisements commonly found on websites. In Task 1, TY revealed that he could not read and understand the Web texts because the Webpage looked very cluttered, and this discouraged him from reading it more carefully (TYT1Turn29). Hence, he did not understand the information presented on the Webpage and discarded it without finding any relevant information. A close examination of this Webpage showed that the information on the page was interrupted by advertisements (Ads by Google). There were sections of ads after each paragraph of text, and these were advertisements for facial toner with embedded, underlined hyperlinks in blue, which made them more eye-catching than the main text, which was black. An analysis of the information on this Webpage shows that the information regarding facial toner was written in simple language intended for people who did not have a background of facial toner knowledge. Unfortunately, because of the challenge presented by the distracting design, TY did not retrieve useful information from this Webpage. The images below show the screenshot of TY's think-aloud protocol video episode. These images show the ads that were not properly framed and looked as if they were part of the text. These in-text ads made the content of the Webpage look cluttered, messy and difficult to read because it was not clear which sections of the page were advertisements and which was the main text. The following figures show in-text ads that TY encountered on a Webpage titled 'What is Skin Toner' (video minutes 6.33).

wiseGEEK

What is Skin Toner? [Like](#)

Ads by Google [Dry Skin Moisturizer](#) [Toner](#) [Skin](#) [Toner for Face](#)

[Skin Toner](#)
[Skin Toners](#)
[Dry Skin Toner](#)
[Natural Skin Toner](#)
[Sensitive Skin Toner](#)
[Facial Skin Toner](#)
[Toner For Oily Skin](#)

A skin toner is a liquid or light lotion that is used in several different applications of skin care. Of these, the most common is to use a toner, usually with [witch hazel](#) or alcohol to clean the skin and perhaps reduce oil on the skin and prevent [acne](#) breakouts. These are often called astringents.

Another type of skin toner used is called a tonic. They typically contain a smaller amount of alcohol than do astringents, but they may still have that somewhat prickly or stinging feel you note when you place alcohol on the face. They also often feel cooler than plain water. They do help clean the skin, and women or men who have combination type skin, with [dry skin](#) on the cheeks and more oily skin on the forehead and nose (called the T-zone) may prefer a tonic to an [astringent](#).

Ads by Google

[Collagen Products / Drink](#) Antiaging Skin Hair Nail rejuvenate Hyaluronic Acid, Amino Acids, Vitm C [www.freshfacecollagen.com](#)

[Skin](#) Find practical business information on skin. [www.aibusiness.com](#)

[ShirleyPrice Aromatherapy](#) Special offers on ShirleyPrice training, essential oils, skincare [www.ShirleyPrice.tv](#)

[Top 10 Skin Whitening](#) We review Skin Whitening products. Vote for your favorite skin cream! [SkinCareCap.com/Reviews](#)

[Facial Exfoliation](#) Microfiber Cloth, Pumpkin Peel With Glycolic, Lactic & Salicylic Acid [NCNSkinCare.com](#)

Some skin toners contain little to no alcohol. Instead, such a toner might use [citric acid](#), rosewater, or a variety of other ingredients to simply freshen the skin. This explains the names used for this type, fresheners or bracers. Using a small amount of acid can help give a freshening feel to the skin when fresheners or bracers are used.

Often people buy a skin toner as part of a cosmetics line. Companies like Clinique®, typically sell lines of cleaning and treatment products for the skin. Clinique three-step process, which includes washing the face with specially formulated soap, using a toner, and then applying a [light moisturizer](#) is very popular. Of course, you don't have to buy every product in a skin cleaning line, and some people prefer to use regular soap and a toner, or just a skin toner and water to cleanse the skin.

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[Skin Toner](#) [Skin Toners](#) [Dry Skin Toner](#) [Natural Skin Toner](#) [Sensitive Skin Toner](#) [Facial Skin Toner](#) [Toner For Oily Skin](#)

Ads by Google [Natural Skin Toner](#) [Refill De Toner](#) [Skin Exretic for Skin](#) [Silver Reed Toner](#)

Women and men may use skin toner available in local drug stores and even many grocery stores. In fact, [after shave](#), with its high alcohol content is a toner of sorts. Common brands in stores like Neutrogena® and SeaBreeze® come in simple bottles and are not feminized, which means that teens of either gender are likely to use them, though they're still used more often by women.

Ads by Google

[Buy Bulk Ferulic Acid](#) Ferulic Acid CAS # 1135-24-63 Package Sizes 5 Kg, 10 Kg, 25 Kg [www.mckinleyresources.com](#)

[Buy Green Herb Face Peel](#) Chemical Peel Alternative - Use as a Mask, Scrub or Peel-Free Sample [www.herbal-power-peel.com/peel](#)

[25% Discount Eminence](#) \$6.99 Flat Rate Shipping Cheapest Deals on the internet [www.unSalon.com](#)

[Ayurvedic Herbal Products](#) Ayurvedic and Herbal raw materials, essential oils, and food ingredient [www.ruved.net](#)

The common method for applying skin toner is to dab some on a [cotton](#) ball and apply it to the face. A few toners come in spray bottles and you just spritz your face with them. In most cases, you don't have to wash off the toner, as it's meant to be a finishing step in a skin-cleaning regimen. You should be careful when applying toner, especially any types that contain alcohol. Typically you should not apply the toner too close to the eyes. Also, if you have areas of the skin that are badly broken out, you want to dab those areas last, so you don't transfer bacteria from one part of the skin to the other, which may possibly result in more breakouts.

Ads by Google

[Karin Herzog Oxy Skincare](#) For great skin. Full range, special offers and free delivery! [www.herzog.com.au](#)

[Effective Chinese Herbs](#) Effective Chinese Patent Medicines For Chronic Diseases [www.china-herbs.com](#)

[PsoEasy Relieve Your Skin](#) Natural from Dead Sea Minerals Save on Special Web OFFER! [www.psoeasy.com](#)

[Tips on Skin Care](#) Do you look older than your age? Proven techniques for better care [www.officalskincare.com/](#)

Related wiseGEEK articles
[How Do I Choose the Best Dry Skin Toner?](#)
[What Is Clarifying Toner?](#)
[What Is Clarifying Lotion?](#)

Figure 4.14 Screenshot: In-text ads on 'What is Skin Toner?' Webpage

Lastly, the students reported that they relied on the images to establish a connection between the selected Webpages and their tasks. For example, AM believed that the image presented on the Webpage should be related to the content of the page. Therefore, when he found an image of roses when trying to answer the question 'Why do people give chocolate on Valentine's Day' he did not bother to read it. He concluded that this Webpage was not relevant to the task because the picture of 'roses' was apparently not related to 'chocolate'

(AMT2Turn39). AM acknowledged that by using image as his absolute criterion for Webpage selection, he might fail to retrieve relevant information because he would not pay attention to a Webpage with an apparently unrelated image. This practice shows that AM applied a criterion used to evaluate print-based materials to the websites. His criterion of a related image would work with print-based text where editors filter image and text, such as in magazines or books. However, the authors of Web 2.0 could be anyone, from an amateur to an expert. There was no guarantee that he would retrieve credible information, as he would from edited texts.

To sum up, to locate information relevant to the task, the students engaged in practices to first select a hyperlink generated by Google. Then, after arriving at the selected Webpage, they engaged in another set of practices to locate a section of the Webpage that appeared to be relevant to their tasks. It was discussed at the beginning of this phase that the speed of locating relevant information was seen by the students as a significant task when working in an online environment, not only because of the sheer amount of information that they had to sift through on the WWW before finding a relevant piece of information, but also because they were faced with the difficulty of reading in a foreign language. Having limited linguistic proficiency, the students in this study employed a range of practices and strategies to help them locate the most relevant section of information before reading it carefully. A further analysis shows that these strategies were largely learned from the print-based learning environment. The students employed speed-reading strategies learned from EFL contexts and from the English Reading Strategies course they undertook during the period of data collection. The use of lexical terms to identify information relevant to the task also resembles a traditional strategy. The use of visual elements on the Web as a guide to salient and important information helped the students to identify sections of Webpages that were relevant to the tasks. Nevertheless, because these abilities were transferred from what had been learned in the print-based context, many of these strategies posed challenges for the students when they were employed in a Web-based

environment. These findings suggest that the students in this study possess the necessary information retrieval skills, but that these skills alone are insufficient for the task of using the Web as a source of information in EFL classrooms. Skills and knowledge that are specific to the EFL context are needed for the development of online literacies when the Web is used as a source of information.

4.2.4 Phase 4 of the Online Literacy Practices Cycle : Evaluating the reliability and accuracy of information retrieved online

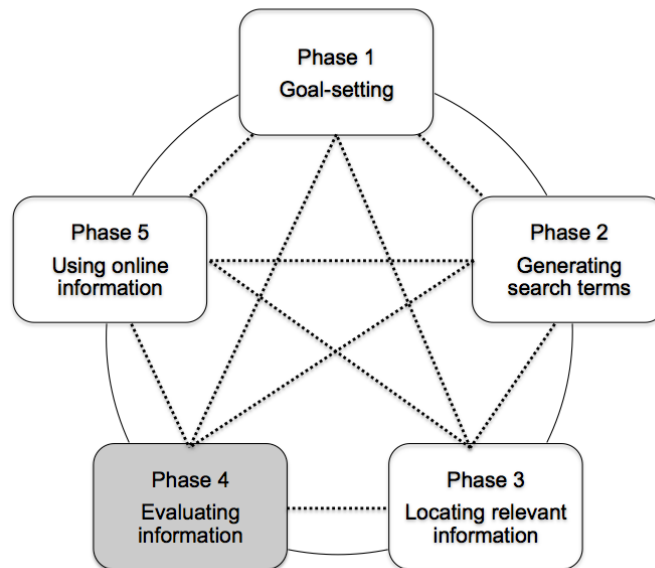


Figure 4.15 Phase 4 of the Online Literacy Practices Cycle

This phase occurred as the students attempted to evaluate the accuracy of the information on the selected Webpage as well as the reliability of the Webpage itself. As discussed in the Literature Review, unlike print materials that have been through a long process of editing, online information is largely unfiltered. Anyone can publish anything on the Web as long as they have the technology and skills. The data show that all of the students were aware of the need to evaluate the content on the Web. Despite consistently showing that they were aware of this open-to-anyone nature of the Web, the students did not take any

deliberate actions to evaluate the information retrieved online. It was clear in this study that acting on this awareness was difficult, particularly when the students are under time pressure and have limited language proficiency. The analysis of the practices shows that they took no deliberate actions to evaluate the reliability of Webpages nor the accuracy of the Web.

In the first three phases, the term 'practices' refers to actions employed to achieve a particular goal, such as to generate search terms or to select relevant hyperlink. The term 'practices' in this phase; however, does not conform to this definition. In this phase, the students did not deliberately employ any practice to evaluate the reliability of the Webpage or the accuracy of the content on the Web. To analyse this data, a particular strategy was used to uncover the data relating to the evaluation of online information. Instead of analysing the 'practices', the researcher resorted to the comments or verbalisations which were made by the students during the think-aloud protocol sessions. Through the use of verbal protocols, it was found that the students were aware of the need to evaluate the reliability and accuracy of the information, yet they applied the blanket assumption in an uncritical way. The following section will report on the students' attempts to evaluate the information presented on the Webpages. This section begins with the data that reveals the ways in which the students commented on the need to evaluate the trustworthiness of the source, despite not taking any proactive actions to evaluate them. Following this, the data on the students' attempts to evaluate the reliability of the Webpages, as well as the students' attempts to evaluate the accuracy of the content of the selected Webpages will be examined. Finally, Phase 4 will finish with the challenges that the students faced as a result of their superficial approach to evaluating the reliability and accuracy of the Web.

Awareness of the need to evaluate the trustworthiness of the Webpage

The data show that the students consistently made comments regarding the trustworthiness of the Web and the retrieved information, despite not being

explicit about their approach to evaluating the reliability and accuracy of information on the Web. They were found to repeatedly comment on the openly-shared nature of the World Wide Web and the need to evaluate the source, given that anyone can publish anything on the Web. Nonetheless, the ways in which they applied this awareness was found to be superficial and uncritical. For example, the students often exhibited shame in using Wikipedia. To complete Task 1, MW selected Wikipedia as the first Webpage. She explained during the stimulated recall session that she did not want to choose Wikipedia, but since it appeared on the search results page, she had a quick look. After reading it, she did not find the information useful anyway (MWT1Turn7). Similarly, to complete both Task 1 and Task 2, KM selected Wikipedia and showed a little embarrassment that she had to use a Wikipedia page again (KMT1Turn9, KMT2Turn36). On the other hand, these students demonstrated trust when the Webpage cited an external source such as Food Network as a reference (KMT2Turn73). These examples demonstrate that the students were aware that it is necessary to evaluate the accuracy of information posed on Wikipedia and other Websites that allow end users to edit its content. The data show a pattern of behaviour in all students, which can be assumed that this was a learned understanding.

4.2.4.1 Common practices in evaluating the reliability and credibility of Webpages

In the previous section, it was shown that even though the students did not employ practices to evaluate the reliability of the information with deep deliberation, the data show that there were a number of instances where the students commented on the need to evaluate the trustworthiness of the Webpage. In this section, their attempts to evaluate the reliability and credibility of Webpages will be addressed. Two stages were pursued in the evaluation of the Webpage. In the first stage, students attempted to identify the source or the author of the Webpage before proceeding to evaluate the credibility of that source.

Identifying the source and the author of the Webpage

The analysis reveals that the students in this study attempted to identify the source or the author of a particular piece of information by making use of two different types of information to identify the source, namely: external sources cited on the Webpage, and information about the author that appeared on the Webpage. This section discusses in more detail the ways in which the students in this study applied these two types of information.

The data reveal that the students made use of information about an external source when making judgment about the source of a particular piece of information. For example, in Task 2, KM revealed that she had decided to use one particular piece of information because the author of this blog cited the 'Food Network' as a reference (KMT2Turn73). She revealed that initially after reading from one blog that one of the reasons people give chocolate on Valentine's Day is because the chemicals in chocolate make people feel happy (KMT2Turn67), she believed that the information was not accurate. However, because the author of this blog had cited an external source, she felt that it increased the credibility of the information. Therefore, she decided to include this information in her answer in spite of her initial rejection of it. The data show that because of the inclusion of a 'reference' (KMT2Turn73), KM found this piece of information accurate and reliable. This strategy was found to be superficial because KM did not visit the cited source and made no further investigation of the primary source. She did not take any action to investigate whether the information regarding chemicals in chocolate was really taken from the cited source, the Food Network. or whether this piece of information was accurate based on other Website. It can be concluded that KM accepted this information simply because it had an external reference.

In addition to blindly trusting external references cited on the Webpage, the students were found to uncritically accept information on the website about the authors' credentials. In this study, the students found Webpages that included

words such as ‘experts’ or ‘dermatologist’ in their content to be more reliable than Webpages with the word ‘personally’. For example, to complete Task 1, MY employed this approach when deciding which information she should use. She selected ‘About.com’ and noticed the term ‘personally’ in the first response. She revealed that because of the word ‘personally’, she felt that this response only came from one person’s opinion; therefore, it was not reliable. However, after she scrolled down the same Webpage, she noticed a hyperlink titled ‘Read what experts on both sides of the fence think about toners’. She decided to select this hyperlink and explained that she found the experts’ opinions and would thus use information from this extended Webpage instead (MYT1Turn12-13). Similarly, AM discarded the same Webpage after seeing the term ‘personally’ used in the content (AMT1Turn16), whereas MW decided to read the information from the extended hyperlink ‘Read what experts on both sides of the fence think about toners’ (MWT1Turn42). The students’ failure to investigate further as to who these acclaimed ‘experts’ were demonstrates their uncritical use of the source. The author of the Webpage might simply have included the word ‘expert’ to increase the credibility of their Webpage. The two criteria that the students in this study employed to identify the source were found to be inadequate. This issue will be taken up in Section 4.2 Challenges in evaluating the reliability and accuracy of retrieved information.

Evaluating the trustworthiness of the source

The second stage of the practices, after the students had identified the source, was to evaluate the trustworthiness of the identified source. In evaluating the trustworthiness of the source, the students were found to rely on features such as the type of website the information was published on, the author’s motives and the information that appeared on the Webpage. The following sections will report on each feature used by the students to evaluate the trustworthiness of the source in more detail.

Types of website

It was found that the students in this study considered a particular type of website unreliable and that the information from that particular type of Webpage could not be used to complete the task. Through an in-depth analysis of the think-aloud protocol episodes, the students were found to have a negative attitude towards websites that allow end-users to contribute and edit content. In this study, a majority of students showed their disapproval of Webpages such as Wikipedia, Ask.com and Yahoo Answer. Many students expressed guilt and shame when selecting a Wikipedia Webpage (MW, TY, KM). AM announced, in English, that he did not use Wikipedia because "it sucks" (AMT1Turn8). He further explained that he did not use Wikipedia Webpages because of the openly-shared nature of the site. Many students repeatedly describe information on Wikipedia as being unreliable because anyone can write and edit the content. Given the openly-shared nature of this type of website, the information on the site may or may not be correct. It is interesting that even though the majority of the students showed a negative attitude towards this type of Webpage, five out of eight students started their search in Task 1 using Wikipedia. Moreover, KM revealed that she did not trust information from 'Weblog' because it belonged to one person; therefore it only presented information about the topic from one person's viewpoint (KMT2Turn65). Nevertheless, she ended up using information from a blog to write the response to the task. These examples not only reveal the students' bias against the type of Webpage that allows end-users to write and edit the content, they also reveal major contradictions between their awareness of possibly unreliable information and their actual practices in using information from this type of Webpage.

The author's motives and bias

Students were also found to be mindful of the author's motives and potential for bias. This was especially found when the students noticed advertisements on the Webpage. For example, KM revealed that when she saw images, numbers, and the dollar sign (\$) on any Webpage, she instantly assumed that they were advertising Webpages. She would close them without taking a closer look or

reading the page (KMT1Turn23). The data from MW's stimulated recall clearly illustrates the reasons behind this pattern of behaviour. MW explained that when she saw advertisements, she often associated them with commercial or E-commerce websites that tried to sell products. To her, these websites only presented one side of the information, usually only the good side of the product, because their goal was to increase sales. Therefore, she believed that these Webpages were biased and could not be used to complete the tasks (MWT1Turn39). These practices reveal that students in this study seemed to doubt the motives of the authors and the purpose of the Webpages when they noticed advertisements on Webpages. This shows that they were aware of the potential bias of the content of the Webpages, especially the commercialised sites. Because these patterns of behaviour are recurrent, it can also be assumed that they were the result of precepts instilled by other classes. The students had interpreted and simplified these precepts to reach the conclusion that all commercial websites were unreliable. The result of conceptualising advertisements as being unreliable will be taken up further in Section 4.2 Challenges in evaluating the reliability and accuracy of retrieved information.

Information appearing on the Webpage

The last type of information used to evaluate the trustworthiness of the source is the information or content that appears on the Webpage. It was found that the students considered Webpages that included a statistic (numbers and percentages) to be reliable. For example, while trying to locate relevant information in Task 2, KW explained that she found a section of a Webpage more reliable because it included numbers and percentages. She stated during the stimulated recall session that "it said something about men 50% and women 50%, it sounded credible" (KWT2Turn5). KW found the Webpage that presented statistical information reliable because this type of information is usually obtained through a study or research. Even though KW was the only student to explicitly reveal the use of a statistic as a criterion to evaluate the trustworthiness of the Webpage, this data is important for substantiating the point that the students in this study employed a superficial approach in

evaluating the reliability and credibility of Webpages. They did not further investigate the source of this information or whether the study indeed exists. The next section will report on the students' attempts to evaluate the accuracy of the content of the Webpage.

4.2.4.2 Common practices in evaluating the accuracy of the retrieved information

In addition to the attempts made to evaluate the reliability of the retrieved information, the students were also found to attempt to evaluate the accuracy of the content on the Webpages. They were found to employ two different resources to evaluate the accuracy of the information: their own background knowledge and similar information from a different website.

Background knowledge

The majority of the students were found to rely on their background knowledge to evaluate whether or not a piece of information they had located was accurate. It was shown through think-aloud protocol data that when the students found information that agreed with what they knew, they appeared to believe that it was accurate. However, this type of practice was only evident when the students were familiar with the search topic. They appeared to be drawn to information that confirmed what they had known prior to commencing the task. In Task 2, while MY was reading information concerning different chemicals in chocolate, she revealed that she had known prior to the task that certain chemicals in chocolate make people feel happy. Therefore, after reading 'It contains an endorphin called phenylethylamine, levels of which in the brain have been linked to falling in love' (MYT2Turn28), she decided to use this information to write her answer to the task. She revealed in her SR that this information confirmed what she knew about chocolate, so she believed that it was correct (MYT2Turn28). Likewise, after reading a Webpage titled 'Why Chocolate for Valentine's Day', KW started to copy information from this

Webpage and pasted it to her task document, even though she initially explained that she did not believe this information yet because she did not know who the author of this Webpage was. She however decided to use this information because it was in agreement with her prior knowledge (KWT2Turn9). These examples demonstrate that the students relied heavily on their own background knowledge to evaluate the accuracy of the information they located.

When background knowledge was used to check the accuracy of the retrieved information, the students also encountered some information that contradicted what they had previously known. For instance, when reading about different types of facial toner on Wikipedia, MW came across this information: 'It may give a burning sensation'. She paused and raised her voice as she read "burning, huh?" (MW T1Turn11). MW later explained in her SR that if facial toner caused a burning sensation, it must be bad. Therefore, she judged this information to be inaccurate because it contradicted her prior knowledge about facial toner, which was supposed to improve the skin. Later, MW decided to discard this Webpage and selected a new one. These examples demonstrate the ways in which the students in this study mainly relied on their background knowledge to evaluate the accuracy of the information found on the Webpages. Information repeated on different websites

The students in this study also determined that a piece of information was accurate when they had encountered it previously on a different website. This practice mostly occurred incidentally, because the students did not specifically search for this particular information. Rather, the students judged the information published on the Webpage to be accurate when it was consistent with the content of other Webpages. They revealed that if different Webpages published the same information, it must be true. For example, after reading that 'Phenylethylamine is produced in our brains when falling in love' (TYT2Turn82) in Task 2, TY revealed that he had seen this word (phenylethylamine) before. Despite not knowing what phenylethylamine was, TY decided to copy this term

to use in his answer (TYT2Turn105). He revealed that it was probably correct because it was consistent with other Webpages that he had seen previously. This example shows that despite his lack of understanding about this particular piece of information, he resorted to his general knowledge about Webpage to evaluate the accuracy of the information retrieved from the WWW.

Challenges in evaluating the reliability and accuracy of information retrieved online

The practices employed by the students to evaluate the reliability and accuracy of information in this study were found to be largely unintentional, as noted earlier. The gap between what the students knew about the need to evaluate Web-based resources and the lack of deliberate approaches to evaluate the information published on the Web was found to be a major challenge in itself. Additionally, the accidental approach to evaluating the information was found to be inefficient and frequently posed challenges for the students. As indicated in previous sections, the students were found to rely on the precepts that had been instilled in other classes. This was especially evident when the students selected Wikipedia and E-commerce websites, because the students had drawn the conclusion that they should not use information from Wikipedia, and that all E-commerce Webpages were biased. These understandings proved to be unhelpful and this issue will be explained further in this section. The findings show that this ineffective approach was a result of the students' lack of tools specific to the Web-based environment that would allow them to effectively evaluate the retrieved information. The following sections report on the challenges in the established criteria as well as the challenges resulting from the students' failed attempts to evaluate the reliability and accuracy of the retrieved information.

The data show that the students developed criteria to evaluate the information retrieved from Web-based resources based on precepts instilled from the print-based learning environment. For example, they were found to use the

references and words cited on the Webpage, as well the type of Webpage, as the main criteria. However, the application of these criteria was inadequate and did not assist the students in attaining their search goals. The use of references cited as criteria to evaluate the trustworthiness of a Webpage was found to be insufficient in this study. These references were considered to be secondary sources that needed to be investigated further to find out about the primary sources. As reported previously, MW and MY revealed that they trusted the information on one Webpage because it cited the 'experts' (MWT1Turn42, MYT1Turn12), while KW showed that she considered Webpages to be reliable when they showed statistics and numbers (KWT2Turn5). However, these students did not further investigate who these 'experts' really were or where the statistics came from. By relying solely on the words or numbers used on the Web to evaluate the reliability of a particular website, the students showed their lack of critical literacy. The authors of the Webpages could have simply included these words and references to make the website look more credible.

Additionally, the bias against Webpages that allows end-users to share and edit their content prevented the students from gaining access to potentially relevant information. This judgment was found to be superficial and unhelpful to the task. This was especially evident when the students selected Wikipedia, because they overlooked information that was explained in a simple way and was easy for the general public to understand. Although the conventions of their university required that they should not cite Wikipedia as a reference, Wikipedia was nevertheless a good place to start the search, especially for students who were not familiar with the topic. These practices show that the students were applying blanket superficial judgments to sites rather than questioning the assumptions underlying these judgments.

The students were also found to face challenges as a result of their attempts to evaluate the information associated with the advertisements on Webpages. The students in this study doubted the authors' motives because they perceived Webpages that included advertisements to be commercial or E-commerce Webpages, and therefore not credible. Thus, they discarded these Webpages

because they believed they presented biased information. Through a more in-depth analysis of the Webpages that students identified as E-commerce pages, it was found that some of these Webpages were in reality informational Webpages that included advertisements at the side of the page. In one example, LN announced that her selected Webpage was ‘advertisements’ and quickly closed the page (LNT1Turn34). Further investigation of this Webpage showed that the images of facial toner on both sides of the text belonged to Amazon.com. However, the main, centre text was not for commercial purposes. The images below show the content on LN’s computer screen as she was completing the task. The analysis of the content of this Webpage shows that the information has the potential to inform LN on the ways facial toner works to clean the skin. Nonetheless, because LN was highly cautious when she saw advertisements, she overlooked information that was potentially relevant to the task. The following figure shows advertisements that LN encountered on informational Webpage.

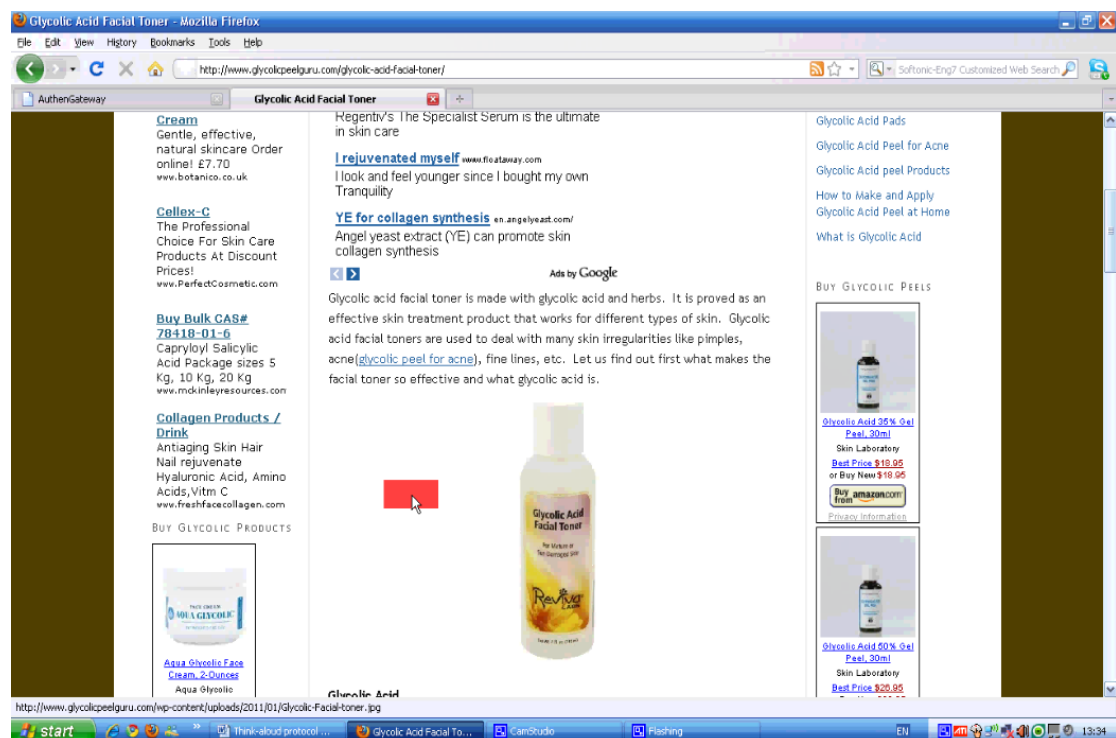


Figure 4.16 Screenshot: Advertisements on informational Website

Another challenge resulting from the ineffective attempts to evaluate the trustworthiness of the information was the over-dependency on the lexical terms that appeared on the Webpage. In this study, the students often identified certain Webpages as being advertising Webpages and discarded them. A closer analysis showed that these practices were a result of the over-reliance on the lexical terms that the students encountered on the Webpages. For example, MW discarded a Webpage titled 'What are facial toners' [sic] actually for?' from Yahoo Answers Webpage because she noticed the word 'benefits'. MW explained that she perceived this website to be biased because it only reported on the 'benefits' of facial toner and wanted to sell products (MWT1Turn39). However, deeper examination of this Webpage would have shown that the information on the benefits of facial toner was simply informational and could potentially inform the reader about the reason why facial toner was necessary. Unfortunately, because MW was overly sensitive to the word 'benefits', she overlooked the usefulness of this information. Similarly, KM and LN faced this kind of challenge when reading certain information on Webpages. KM read the following sentence and raised a question as to whether this Webpage attempted to sell something: 'The following types of toners can be seen in the market' (KMT1Turn49). A possible explanation could be that KM saw the word 'market' and thought of it as an advertisement. During LN's think-aloud protocol, she put the cursor over the abbreviation 'FAQ' and paused. She explained during the stimulated recall session that because she did not know what the term 'FAQ' meant, she thought it was another advertising page (LNT1Turn36). These examples show that the students were overly aware of advertisements, even though there was nothing that really suggested advertisements on the Webpage. A possible explanation could be that the students had made this judgment after previously selecting many Webpages which turned out to be advertisements. Because the students were overly cautious when the Webpages included images, they overlooked information that was useful for the tasks.

Lastly, the students were also found to fail to evaluate the accuracy of the retrieved information when they had faced problems locating relevant information in the previous phase. They were found to value immediacy over the quality of the information. They mainly focused on locating information relevant to the tasks without being concerned about its accuracy. This was especially evident when the students were uncertain about the accuracy of the information but because they could not find any other information, they decided to use it anyway. For example, in Task 2, TY was unable to locate any information relating to the 'reason why people give chocolate on Valentine's Day'. After struggling to find relevant information for ten minutes, TY revealed that "anything would do" (TYT2Turn65). He explained that even though he always looked for reliable sources when using online information, he was happy to find anything that could be used as the answer after struggling for such a long time. These examples show that students understand the need to evaluate the reliability and accuracy of the information on Webpages. However, other factors had an impact on the lack of practices employed to evaluate the accuracy of information and reliability of the Web sources.

In short, the data in this phase shows that the students were well aware of the need to evaluate Web sources. However, the blanket assumptions which were instilled from the print-based learning environment had prevented them from making informed judgments. These understandings not only led the students to engage in practices that were not meaningful to the openly-shared nature of the Web-based resources, but also prevented the students from attaining their search goals. The empirical data from this study suggest that there is a need to systematically develop the ability to evaluate research sources which are specific to the Web context. This issue will be taken up in the Discussion chapter.

4.2.5 Phase 5 of the Online Literacy Practices Cycle: Using online information to respond to the tasks

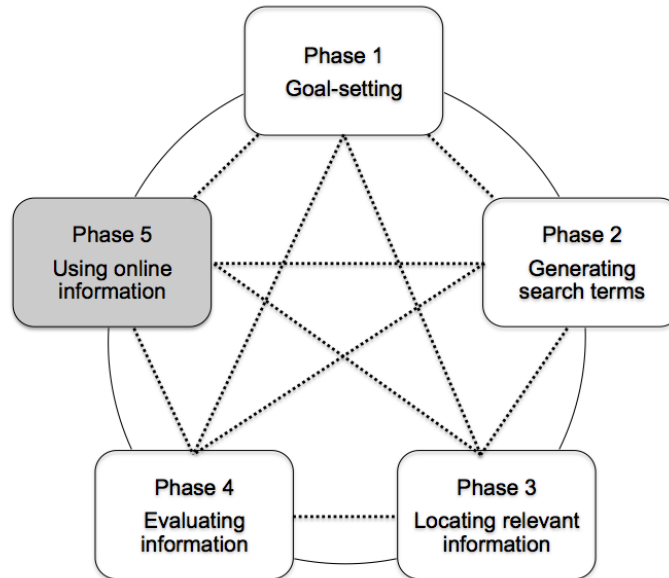


Figure 4.17 Phase 5 of the Online Literacy Practices Cycle

This phase commenced after the students had located and evaluated information retrieved from Web sources and occurred as the students decided to write a response in order to complete their language tasks. The analysis of the students' practices shows that 'Using online information to respond to the tasks' appeared to be the last phase of the Online Literacy Practices Cycle. The practices in which students engaged in this phase were found to be closely associated with practices in which they engaged in Phase 3, Locating Relevant Information. After the students had located a relevant section of a Webpage and read it carefully, the data showed that they then identified whether that piece of information was useful for writing a response to the task, or whether it was unusable.

These 'useful' sections or sentences were then mostly copied and pasted to the students' electronic document for later use. Although not every student copied the useful piece of information from the Webpage, they were found to engage in a variety of practices to 'save' those Webpages or a specific piece of

information so that they could easily revisit them later. These practices will be examined in detail in the next section. After the students were found to be satisfied with the information they had, they started to write their responses using the information retrieved from online sources. A range of practices was employed to write the responses and had different impacts on the written responses. The following sections report on common practices undertaken by the students in this phase. The first section reports on the practices in which the students engaged in Stage 1: Identifying useful information, in order to draw out useful information from Webpages, as well as the challenges they faced by adopting those approaches. The second section reports on a range of practices in which the students engaged in Stage 2: Integrating the retrieved information in order to construct responses appropriate to the tasks. These practices ranged from direct copying and patchwriting, to paraphrasing and writing from their own background knowledge. The ways in which the students employed these practices and the challenges resulting from their practices will be explored in detail.

4.2.5.1 Stage 1: Common practices and challenges in identifying useful information

As they were trying to locate relevant information on different Webpages, the students attempted to identify information that was useful to the tasks. The two most common criteria used to identify information as 'useful' in this study were the use of the content of the Webpage as well as the use of language features.

Approach 1 The use of the content of the Webpage to identify useful information on Webpages

The majority of the students were found to identify information as being useful to the tasks after they had established that it was relevant to the tasks. The information that the students identified as helpful included information relating to the main topic of the task, task questions, and students' own search goals. The data from think-aloud protocol and stimulated recall clearly show the ways in

which the students identified a useful section of a Webpage before copying it to their documents. For example, AM revealed that when he tried to identify useful information to answer the question ‘Why do people give chocolate on Valentine’s Day?’ in Task 2, he kept asking himself if the information that he read had answered his question. When he found a piece of information that seemed to answer the question, he copied and pasted it into his MS Word document. To illustrate this point further, AM was found to copy “put them in a good mood”, “In chocolate, there is a chemical called Serotonin which stated as a happy chemical”, and “It is considered as a tradition, newly married couples would feed one another chocolate in anticipation of their wedding night, moreover a marketing plan” from a range of different Webpages (AMTask2).

Approach 2 The use of language features to identify useful information on Webpages

The use of language features to identify useful information was less common, yet very interesting. A few students employed language features to help them identify a sentence or a section of a Webpage that was helpful in responding to the tasks. For example, KM relied greatly on the language features to identify useful information in Task 2. One of two instances was the use of the word ‘because’ on a Webpage as an indicator of useful information as previously explained in Section 4.2.3. Furthermore, KM also revealed that she included two reasons why people give chocolate on Valentine’s Day even though she only agreed with one of the reasons identified from source texts; however, because the author of the Webpage wrote the term ‘reasons’ with an ‘-s’, she decided to include the second reason (KMT2Turn74). Significantly, these two examples show the ways in which EFL students made use of grammatical and language features when identifying useful information. The reason for this alternative strategy in identifying useful information could be a result of their linguistic ability. This was shown through LN’s practices in Task 2. As LN selected a Webpage titled ‘Why we give chocolate treats on Valentine’s Day’ (LNT2Turn6) to complete Task 2, she complained that this Webpage was

lengthy and difficult to read. Thus, she started reading the first sentence of the first paragraph before jumping to read the first sentence of the second and third paragraphs. After reading the first sentence of the fourth paragraph, LN revealed that she had found the answer then she copied this entire sentence to her MS Word document (LNT2Turn12). Interestingly, the data from the think-aloud protocol shows that LN announced that she had found the answer after reading only the first half of the sentence 'So the tradition of giving chocolate gifts to the one you love on Valentine's Day has roots in the belief that ...'. Upon finishing reading the rest of the sentence ('chocolate's mysterious properties would seduce a beloved's heart and cause him or her to return the feelings, which many still hope to be true today'), LN clearly showed that she did not understand it or which part of this sentence was, in fact, the reason why people give chocolate on Valentine's Day. This example shows that because LN's English proficiency had prevented her from understanding source texts, she had to resort to an alternative strategy by using the language features to navigate to potentially useful information. The results of these practices will be discussed in the Challenges section.

Two approaches were employed by the students in this study to identify useful information, as explained above. This information was then 'saved' by the students for later use. The next section will report on another approach used to save useful information.

Approach 3 The use of the 'copy and paste' function to save useful information

The analysis shows that the most common approach employed after the students identified a piece of information as being meaningful to the task was 'copy and paste'. In this study, the data show that the majority of the students copied a section of the Webpage that they had found to be helpful and pasted it into their answer task file to save it for later use. For example, in Task 2, KW selected a Webpage titled 'Top ten reasons to choose dark chocolate for

Valentine's Day gifts'. After reading the first three reasons, KW revealed that she believed these reasons could be used to answer the task and she was going to copy all of the reasons first and would read the page in detail later. KW also pointed out in her stimulated recall session that after reading the top ten reasons carefully, she did not use the second reason because she did not find it very relevant. Nevertheless, she explained that she employed the 'copy and paste' function first so that she would not have to go back and try to find this piece of information again (KWT2Turn19-24). These practices appeared to assist all of the students in the later stage when they tried to construct the response to the task.

The students had difficulty re-locating the useful information when they did not employ copy-and-paste approach to save that piece of information. Because of the huge amount of information available on the Internet, the students were challenged if they needed to find a piece of information they had located previously. For example, after spending ten minutes reading information related to facial toner to complete Task 1, MW decided to write the answer. As she started to type "As you may know that toner can help to", she asked herself what she should write after "to" (MWT1Turn54). MW revisited all four Webpages that she had previously selected before she decided to copy "remove surface oils and debris which may be helpful for oily or acne-prone skin" (MWT1Turn56). She had to open and close all of these Webpages and browse through them again before she was able to identify useful information. This practice was found to take considerable time and drew MW's concentration away from constructing the response. Similarly, TY claimed that he had wasted a significant amount of time just trying to locate one piece of information that he had located previously. This problem was found to be a result of the practice of opening multiple Webpages at the same time. The students revealed that by having to navigate through different Webpages again just to locate one sentence or one section of a Webpage which they had seen previously was considered a waste of time; thus, they often employed the 'copy and paste' function to save a piece of useful information. The following table shows a

range of texts copied by the students in this study. They range from phrase level, to sentence level, and to paragraph and multi-paragraph level.

Students	Texts copied from Web	Level of copying
AM	put them in a good mood	Phrase
MY	chocolate is more than food	Phrase
KM	because it fits into a heart shaped box, or chocolate can be formed into hearts. One of the most pleasant effects of eating chocolate is the "good" feeling.	Sentence
MW	Aztecs believed that wisdom and power came from eating the fruit of the cocoa tree.	Sentence
LN	Chocolate contains phenylethylamine, which is believed to be responsible for the feeling of being "in love." James Wadsworth (1768-1844) wrote in A History of the Nature and Quality of Chocolate: "Twill make old women young and fresh, Create new motions of the flesh. And cause them long for you know what, If they but taste of chocolate." So the tradition of giving chocolate gifts to the one you love on Valentine's Day has roots in the belief that chocolate's mysterious properties would seduce a beloved's heart and cause him or her to return the feelings, which many still hope to be true today.	Paragraphs

Table 4.16 Different levels of copy and paste approach

The next section reports on common practices employed by the students to integrate the information they retrieved from Web sources.

4.2.5.2 Stage 2: Common practices and challenges in integrating the retrieved information to construct responses appropriate to the tasks

After the students had identified information which could be used to write a response, the data showed that they employed a range of practices to integrate

the retrieved information so that they could construct responses to the tasks. The majority of the students were found to use information from different websites, which had resulted in employing a range of different practices to construct cohesive responses. It was found in this study that the students employed four main approaches in integrating information retrieved from Webpages: direct copying, patchwriting, paraphrasing, and writing from the students' own prior knowledge. It was also found that the students employed a combination of these four approaches to construct the responses. This will be discussed at the end of this section.

Approach 1 Direct copying

The first approach employed by the students in this study was the direct use of texts copied from the Web. The level of copying ranged from words, phrases, sentences, and paragraphs, to multiple paragraphs, as explained in the previous section. Only simple editing approaches such as deleting odd symbols, changing font, font size and colour were used to edit texts. Unrelated words and phrases were also removed from the rest of the text. The responses that were created using this approach were found to be mere reproductions of the source text. The example in the table below highlights the use of the direct copying approach.

To complete Task 1, KM copied the first section from a Webpage titled 'Skin Care Tips on Guide on Choosing Facial Toners'. It was found that she deleted only the following phrases, which were found to be unrelated to the task: 'But what do they do? What is their role in facial skin care? Are they necessary? Read on to find out more". The highlighted texts show that the content of KM's response remained the same as the content of the Webpage she copied.

Original text	KM's response
Facial toners are skin conditioners. But what do they do? What is their role in facial skin care? Are they necessary? Read on to find out more. Facial toners complete the cleansing processing by removing traces of cleansers and oil left behind by the facial cleansers.	Facial toners are skin conditioners. [It] complete the cleansing processing by removing traces of cleansers and oil left behind by the facial cleansers.

Table 4.17 Comparison between original texts and KM's response to Task 1

Approach 2 Patchwriting

The second approach employed by the students was the use of different text devices to connect information copied from different sources in order to address the tasks. This approach was similar to the strategy referred to by Howard (1993) as 'patchwriting' discussed in Chapter 2. The data show that the students employed this approach to accompany the first approach after they had copied information directly from the source. Some words were deleted or substituted using synonyms and certain grammatical structures were changed. This study also found that by patchwriting, the students in this study employed a range of text devices as a means to form a cohesive response. This was found to be an extension from Howard's (1993) original definition of 'patchwriting'; nonetheless the concept remains the same. The textual features of the students' response were almost the same as the original source but there was no intention to copy directly from source texts. For example, the students used conjunctions such as 'however' and 'then' as well as constructed phrases or sentences to connect information copied from different Webpages. An in-depth analysis of the responses shows that the students often constructed an introductory sentence for the paragraph as well as a closing sentence to conclude the paragraph. The quality of the responses constructed using this approach was found to be better than responses created by direct copying. The responses were found to be better directed to the task questions and more

cohesive. Nonetheless, the content of the response remained the same as that copied from the Webpages.

The following example resembles the use of patchwriting approach. The analysis of MY's response to Task 1 shows that the content was drawn from three different Webpages – Wikipedia, About.com and Beauty-advice.com. The data from think-aloud protocols shows that MY constructed an introductory sentence to introduce her response (I have already read your letter about the importance of 'facial toner' and how to use it effectively) and a closing sentence to conclude the paragraph (Thank you for being our big fan. If you have any question, please contact us or check out our website at www.facebook.com/cleoclub). In the middle of the texts, MY also inserted phrases such as "but it's necessary to" and "However, if you want to know how to use it effectively, this is the easy step to use it" to form a cohesive paragraph. The response from MY is provided in the figure below and it was reproduced with the original mistakes uncorrected. The information that was copied directly from the Webpages was italicised, while the sentences and phrases that MY constructed were in bold. The underlined texts were the hyperlinks which MY copied directly from the Webpages without changing them.

Dear maria,

I have already read your letter about the importance of 'facial toner' and how to use it effectively. toner refers to a lotion or wash designed to cleanse the skin and shrink the appearance of pores, usually used on the face, but it's necessary to People with extremely oily or acne-prone skin and those of us who want extra cleansing after wearing a lot of makeup. However, if you want to know how to use it effectively, this is the easy step to use it.

Step 1 Wash your face

Splash your face with warm water and make sure your hands are clean. Apply the cleanser to your face with circular motions. Make sure you cover all the areas вЂ” forehead, chin, nose, cheeks and neck then rinse with lukewarm water.

Step 2 Apply the facial toner

A toner should always be applied to a cleansed face. It should be applied with a cotton pad. Saturate the cotton pad and pat the toner gently over your face and neck area. Apply it to the

forehead, cheeks, chin and nose, or to the whole face. Never rub your skin when applying toner.

Step 3 Apply moisturizer

After applying facial toner your skin may feel a little tight and dry and that why you need to apply a facial moisturizer after toning your skin.

Thank you for being our big fan.If you have any question,please contact us or check out our website at www.facebook.com/cleoclub

Yours Sincerely,

Rachael

Figure 4.18 MY's response to Task 1

The patchwriting approach was found to be the most commonly used approach among the students in this study. Other examples of the use of patchwriting are included in the table below. The students revealed that the use of patchwriting assisted them to avoid plagiarism, as well as providing cohesiveness to their responses.

Students	Texts created through patchwriting approach	Function
MW	As you may know that toner can help to	Introductory sentence
	You can only clean your face with pure water everyday instead of using toner	Concluding sentences
	To have a healthy skin, don't forget to look at your purse	
NT	The first step is that	Transitional signal
	However	
	Then	

Table 4.18 Texts created using patchwriting approach

In addition to composing texts by connecting copied source texts to make the response more coherent, the students were found to alter the vocabulary and grammatical rules of the retrieved source texts in order to avoid plagiarism. This was highly evident when the students attempted to paraphrase texts in their own words but did not completely understand the source texts; thus, they failed to use fresh language. These failed attempts led the students to resort to the grammatical structure of the source texts in order to make changes to the

original texts. For example, in Task 2, KW identified information regarding ‘Top 10 Reasons To Choose Dark Chocolate For Valentine’s Day Gifts’ as being useful to the task. Despite not being able to understand the scientific terms used on this Webpage, KW connected information regarding each of the ‘reasons’ together using the grammatical rules that she had learned. She revealed in think aloud protocol and stimulated recall that even though she did not understand certain information, she was able to ‘connect’ them by identifying words that were repeated in source texts. She noticed that the words ‘reduces’ and ‘improves’ were used repeatedly, so she connected five of the ‘top 10 reasons’ that began with “It reduces...” (KWT2Turn33-47) together into one sentence (Reasons 3,4,6,5 and 8). Furthermore, she employed the same approach to connect the other two reasons which began with ‘improves’ into another sentence (Reasons 7 and 10). The following table compares the original texts and KW’s responses, emphasising the use of the patchwriting approach to produce a response to the given task. The information that was copied directly from the Webpages is italicised, while the sentences and phrases constructed by KW are in bold.

Original texts from “Top 10 Reasons”	KW’s response
3. Reduces bad "LDL" cholesterol (via polyphenols).	For health, it reduces (3) bad cholesterol, (8) risk of high blood sugar, (4) blood pressure, (6) blood clots and (5) improves the fat composition of your diet, (8) insulin resistance.
4. Helps reduce blood pressure (the effect on nitric oxide reducing blood pressure)	
5. Improves the fat composition of your diet (via oleic fatty-acid a good omega-9)	
6. May reduce blood clots. Flavanoids keep fatty substances from sticking together).	
8.Improves insulin resistance to reduce risk of high blood sugar.	
7. Keeps you energized without excessive effect of caffeine (via the compound theobromine). It has also been found to help those with chronic fatigue.	In addition, (10) it provides important minerals and (7) keeps you energized without excessive effect of caffeine.
10. Provides important minerals like copper, manganese, and magnesium.	

Table 4.19 A comparison between original texts and KW's response using patchwriting approach

It was evident from the think-aloud protocol that KW had concentrated mainly on reformulating the sentence syntax of the original texts by putting similar information together without fully understanding its content. These practices demonstrated that KW employed a lower level of paraphrasing strategy. The changes were made at a syntactic level within the text, but the actual content remained a near verbatim reproduction of the original text.

Approach 3 Paraphrasing

The third approach that the students employed to construct responses to the tasks was the use of paraphrasing and synthesising the retrieved information. In this study, the approach undertaken by the students to paraphrase included a restatement of source texts using fresh language, with only keywords retained. The data show that the students attempted to paraphrase retrieved information using their own words. These practices were employed when the students appeared to have a better understanding of the information they retrieved. They were found to write this information in their own words, expressing the same ideas that they had read from the Webpages with only some keywords retained from the original passage. The following table shows the comparison between the original texts and NT's response. Because the data from the think-aloud protocols included the practices employed while the students were completing the tasks, the researcher was able to identify the exact excerpts that NT had read before constructing her response. The second table compares NT's response to each of the original texts. The italic font was added to highlight the keywords retained from the original texts (see NT's full response in Appendix M).

Original texts	NT's response to task
1. Facial toners, known also as tonics, lotions,	Facial Toner is a lotion used for removing

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astringents are solutions that remove surface skin cells, soap residue and oil from the skin.	surface skin cells and soaping residue and oil from your face.
2. A good toner will remove surface oils and debris which may be helpful for oily or acne-prone skin	It might be useful for oily or acne-prone skin.
3 you can go without a toner	it's no need to use a toner.
4 but those with oily or acne-prone skin swear by toners as they keep their skin clean and fresh and remove the excess oil from the surface of the skin.	However, if you have problem with oily or acne-prone skin, you can use facial toner to make sure that your face is completely clean.
5 Apply facial toner properly: Step #1 Wash your face Splash your face with warm water and make sure your hands are clean. Apply the cleanser to your face with circular motions.	How to apply facial toner properly, the first step is that you have to wash your face with cleanser and make sure your hands are clean.
6 Step #2 Apply the facial toner A toner should always be applied to a cleansed face. It should be applied with a cotton pad. Saturate the cotton pad and pat the toner gently over your face and neck area. Apply it to the forehead, cheeks, chin and nose, or to the whole face. Never rub your skin when applying toner.	Then, apply a toner. Always remember that a toner should be applied to a cleansed face. You should apply with a cotton pad. Apply it to the whole face and neck area and do not rub your skin.
7 Step #3 Apply moisturizer After applying facial toner your skin may feel a little tight and dry and that's why you need to apply a facial moisturizer after toning your skin.	After applying facial toner, your face may feel tight so it is recommended that you should apply a facial moisturizer.

Table 4.20 A comparison between original texts and NT's response to Task 1

The analysis of the response shows that NT employed a number of different practices to restate the original texts in her own words. Despite one instance of near verbatim reproduction shown in instance 5, the approaches that NT used to paraphrase the original texts were found to be of a higher level of competence than the practices of other students. NT retained the keywords from the original passage, such as 'surface skin cells' (1) and 'oily or acne-prone skin' (2)(4) when constructing her response. She also employed the following practices to restate a passage in her own word. The change of vocabulary was frequently found to be used to paraphrase original texts such as the change from 'skin' to 'face' shown in (1)(4)(7) and 'helpful' to 'useful' shown in (2). It was also found that NT paraphrased original texts by reformulating sentence syntax. For example, she changed a sentence that was written in passive voice "It should be applied with a cotton pad" to active voice "You should apply with a cotton pad" (6). A total paraphrase which contains no trace of direct borrowing was also evident, as shown in (3), when NT wrote "it's no need to use a toner" from the original text "you can go without a toner".

An in-depth analysis of NT's think-aloud protocol data shows that her response to Task 1 does not fall into one category of text borrowing strategies. Rather, NT employed different practices ranging from direct copying, patchwriting and different degrees of paraphrasing. At this point, it is clear that the practices that the students employed in their use of information from online sources to respond to the tasks represent various abilities along a continuum. Naturally, some students were found to be on the left end of the continuum, using lower levels of textual borrowing practices, while others were found to use higher levels of practices. This understanding can potentially inform EFL teaching pedagogy by focusing on writing from the source. This issue will be taken up further in the Discussion chapter.

Approach 4 Writing from students' own background knowledge

In this study, TY was the only student to employ this approach. However, the use of this approach was found to have a great impact on the process of constructing the response as well as the final written product. It is, then, necessary to examine these practices in detail. To complete Task 1, TY revealed that he already knew the answers to all of the key questions. Although he looked up information from one Webpage in Thai, he did not draw on the information when writing his response. In fact, he constructed the whole response based on his own prior knowledge of facial toner. Through an in-depth analysis, it was found that TY struggled to construct the response in English, although he was able to answer the task questions in Thai. From Turn 41 to the end of the task (Turn 74), TY struggled to construct a response that represented the ideas he already had in mind. Not only had he faced trouble finding the right English vocabulary to describe the concept that he already had in Thai, he had also faced grammatical problems as he tried to construct sentences in English.

Regarding vocabulary, it was found that TY frequently tried to find an English word by using an online dictionary. He selected 'dict.longdo.com' which is a Thai to English and English to Thai dictionary. He typed 'ปรับ' (adjust or change/ fine or penalise) (Turn 41) in the search box, and as he was scrolling down to see other words he revealed that he could not find the right one. He refined the search word to 'ปรับสภาพ' (to refine/ to change condition) but still could not find the vocabulary that really represented his idea. At last, TY toggled back to the task document and typed the word 'clean' instead. He revealed that it was the closest word to the one he had in mind. Throughout the entire composition process, TY was found to look up many of the key terms from the online dictionary. At times, he was able to find the words he wanted such as 'moist' (ชุ่มชื้น Turn 54), 'suit' (เหมาะสม Turn 62), 'allergic' (แพ้ยา Turn 66). Nonetheless, there were also instances where he could not find the right words to represent in English an idea he has in Thai, such as 'ให้ชุ่ม' (Turn 68), and 'ลุน' (Turn 70).

The analysis of the response shows that TY also had a problem with word choice and grammar. Many of his expressions were found to be a direct translation from Thai to English. For example, TY wrote “We have many kind of toner” (TYT1Turn53) when he meant ‘there are many kinds of toner’. Likewise, the sentence “Toner is easy to use, first one you should find the best toner that suit to your face” (TYT1Turn65) was the result of a direct translation from Thai to English. This sentence actually means ‘Toner is easy to use. First, you should find the toner that is most suitable for your skin condition’. There were also other grammatical errors; for example, he wrote “It also improve” (TYT1Turn49) instead of improves with singular verb form (and “it’s can burn” (TYT1Turn74) with an additional is in front of the modal verb can. There were problems with his choice of words, such as “Beware the best toner for you should not contain alcohol” (TYT1Turn71), by which he probably intended to indicate the concept of ‘be aware’.

The use of background knowledge in Thai instead of Web texts in English was found to lead to more challenges than successes. These practices clearly indicate that TY faced challenges in constructing the response because of the lack of source texts in English. Even though he had looked up one Thai Webpage, it only provided him with the content but did not provide the language model. A comparison with NT’s practices in writing the response shows that, even though she constructed many of the sentences in her own words, she was able to retain the key terms from the Web texts to construct her response. The differences in the problems faced by TY and NT indicate that EFL students need a language model – key vocabularies and grammatical structures – when writing from the source. This insight can provide EFL teachers with an essential understanding of the ways in which students employ source texts. This issue will be addressed in detail in the next chapter.

Challenges in using retrieved information to respond to the task

To construct responses to address the tasks, two main problems can be identified. Firstly, through an in-depth analysis of the students' practices and their written responses, it was found that the responses were heavily plagiarised as a result of the students' practices in Stage 1. Secondly, the students were found to face challenges during the process of integrating information. This was found to result from the lack of language proficiency and knowledge of how to use source texts. The students struggled when trying to rephrase/paraphrase information taken from the sources as well as when they tried to describe the ideas they had in Thai in English sentences. These challenges will be reported in detail.

Plagiarism

It was evident in this study that the ways in which students identify useful information from Web sources had influenced their written responses. As reported in Stage 1, most of the students copied source texts and pasted them into their own task documents after identifying information that was relevant and useful for their task. The students did not explain the reasons why they copied and pasted instead of writing their responses in their own words. It appeared to be quite natural for them to complete the task using this approach; two of the students, KM and LN, did not even attempt to produce a response in their own words. Moreover, because the texts were already pasted into the students' MS Word documents, it was quite easy for them to connect information retrieved from different Webpages using the patchwriting approach (see Section 4.2.5.2 Patchwriting), as shown by the TAP data. It can be speculated that the use of the direct copying approach might be responsible for the ways in which students plagiarise. This was significantly evident from the one student who did not employ the direct copying approach, whose work was found to be the least plagiarised.

In this study, NT was the only student who did not employ a copy and paste approach in identifying useful information in Stage 1 of this phase. Rather, she opened both the Webpage window and her task document window at the same time. The Webpage was opened as a full screen, while the task document was minimised as a half screen. This practice allowed NT to read the content from the Webpage and write her response at the same time. This approach may have had an impact on the way in which NT used the retrieved information, because she rarely used a direct copy approach; rather, she engaged in more advanced practices such as restating source texts in her own words. Figure 4.19 is a screenshot of NT completing Task 1, showing both the Webpage window and the task document window open as she wrote her response.

Other factors such as idiosyncratic strategy may also have an impact on the ways students employed retrieved information, and it is interesting to note the different approaches adopted by the students to identify useful information in Stage 1 and the approaches employed to write the responses in Stage 2. These various approaches suggest that there is a direct relationship between the practices employed by the students at different stages of task completion. Thus, to support the development of the ability to write from source texts, EFL teachers may need to consider the ways in which students identify useful information. This issue will be discussed further in the next chapter.

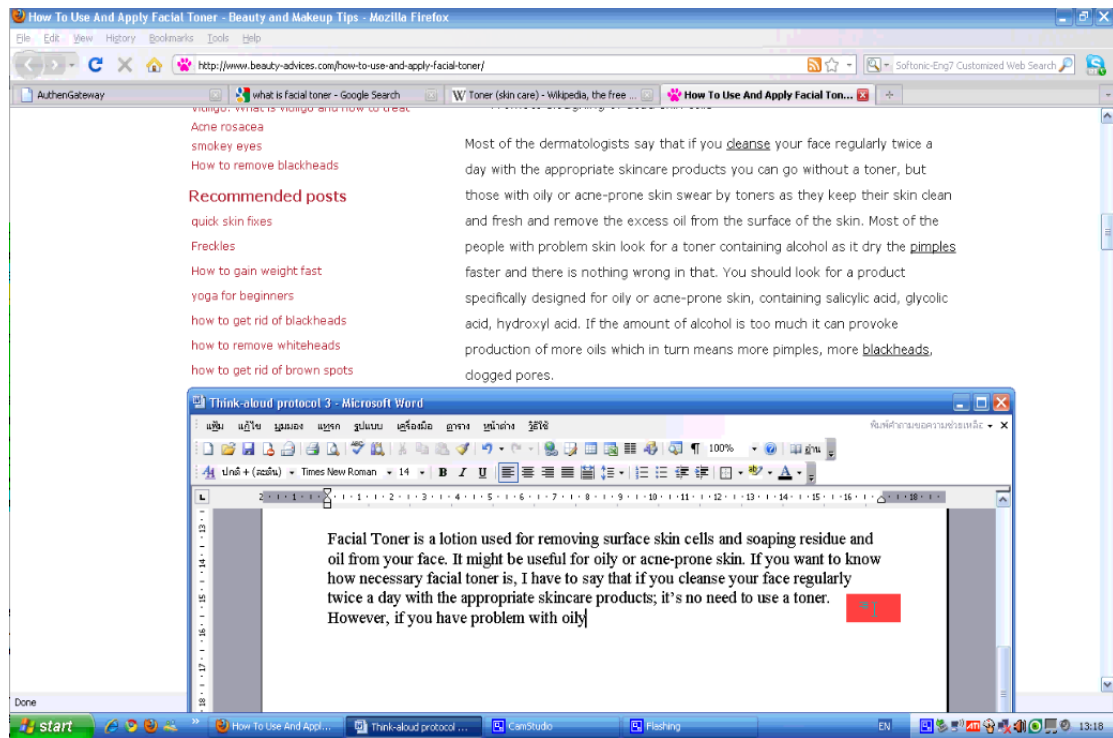


Figure 4.19 Screenshot: Webpage window and task document window opened at the same time

Language-related challenge

All of the students in this study were found to face challenges during the writing process in addition to the problems they experienced concerning the written responses. This problem was found to be associated with the level of language proficiency necessary to construct a response to address the tasks. These language challenges ranged from minor issues which slowed the students down but did not impede the process of task completion to challenges that were more severe and appeared to be real obstacles. The following sections report on the challenges related to language and students' language proficiency.

One minor language-related challenge was the spelling of English words, with which some students experienced difficulty. When MW attempted to construct a response in Task 1, she struggled to spell the word 'probably'. She solved this problem by looking up the word on the Webpage where she had seen it previously (MWT1Turn65). In the same task, MW was found to misspell the word 'necessary' as 'necesessary'. She recognised that she had misspelled this

word because it was marked with red underline. She solved this problem by using the right-click function in MS Word and selecting the correct spelling (MWT1Turn66). These practices demonstrate that MW had sufficient computer literacy to find a solution for the challenges she faced. It also shows that she understood the function of the red underline in MS Word. Even though these challenges appeared to be trivial and did not obstruct the completion of the task, it is necessary to address this issue in the EFL context because misspelling may compromise the quality of the students' responses. Besides, it is possible that not all students will have high computer literacy, thus they might not be capable of intuitively employing the various assistive functions of new technologies.

In addition to misspelling words in English, the students in this study were found to make a number of grammatical errors in their responses. For example, KW noticed green underline under the word 'reduce' while integrating information related to the benefits of dark chocolate. She spontaneously used the right-click function and selected the suggested word 'reduces' (KWT2Turn44). These practices show that KW also had an understanding of the different functionalities of MS Word because she recognised the symbol and was able to correct her error. Similarly, MW also employed the right-click function to change 'are contain' to 'are containing', as suggested by MS Word (MWT1Turn74).

In relation to problems that were found to be more severe and specific to the EFL context, the students in this study appeared to have trouble finding the best words in English to describe the concept, or the word they already had in mind in Thai. This was especially true when the students tried to write a response using their own words. For example, AM, who had little difficulty writing the response, nevertheless faced a challenge in finding the word to describe his concept of 'marketing strategy'. He started by using the word 'methods' then later changed it to 'marketing plan' (AMT2Turn55). Similarly, after struggling to find the right word to describe “รสชาติ”, TY looked up its equivalent in English before finally deciding to use one of the words suggested in the online Thai-

English dictionary. The problem of finding the right words in English to describe the concepts the students had in Thai was also found to extend to sentence level. In Task 1, MY often revealed that she struggled to construct a sentence in English despite already having ideas that she could explain in Thai. MY explained that she wanted to write an introduction to the steps required to use facial toner (จะบอกว่าขั้นตอนข้างล่างเนี่ยคือวิธีการใช้ MYT1turn34), but she did not know how to write it in English. She typed and deleted the sentence many times before constructing “However, if you want to know how to use it effectively, this is the easy step to use it” (MYT1Turn35). MY further explained during the stimulated recall session that she had taken some time to write this sentence because she was not working in her native language. She did not know how to put the words in the right order, so she had to construct a sentence in Thai first and translate it little by little into English. This was found to be a common practice among other students as they wrote their responses to the tasks. These challenges were classified as language-related problems because the students had shown that they already had the ideas or concept that they wanted to convey, but they struggled to form logical and grammatically correct sentences. The students’ limited language proficiency was found to prevent them from clearly expressing their ideas, which undermined the quality of the responses. This suggests that teachers should not only focus on the end product but should also review the process of task completion. This issue will be addressed in much greater detail in the Discussion chapter (see Section 5.4).

To sum up, this study identified two stages which are essential to the construction of suitable responses to the given tasks. The students engaged in practices that would enable them to identify useful information which could be used to write a response, as well as a range of practices to integrate information retrieved from Web sources. This study found a direct relationship between the two stages, identifying that students who employed the copy and paste function as an approach to retrieving useful information in Stage 1 were more prone to engage in a direct copying and patchwriting approach in Stage 2. These practices were found to lead to the problem of plagiarism, because the

responses were found to be too close to the source texts. On the other hand, the students who did not employ a copy and paste approach were more likely to write the responses in their own words. Also, because of their limited proficiency in English, it was found that many students struggled to find the right terms to explain a concept that they could express in Thai. The problem of limited proficiency also resulted in low quality responses. As consistently emphasised throughout this chapter, this study has made explicit the strategies and approaches employed by Thai EFL students in using the WWW as a source of information. The empirical evidence in this study has the potential to inform EFL teaching pedagogy on the need to develop online literacies.

4.3 Conclusion

This chapter has drawn on the data collected using four research methods. The analysis of the practices that the students employed to use the Web as a source of information was made possible because of the richness and depth of the data. This study has not only uncovered the ways in which the students engaged in a range of practices to achieve different research goals, but it has also identified the general disposition and rationale behind these practices. Moreover, through the use of four data sets, the researcher was able to examine the practices from a holistic perspective. This holistic view of data has enabled the author to identify the direct relationship between the practices that the students engaged in to achieve the goals of different phases. This type of data is invaluable for informing the development of online literacies and highlights the need for a complete skill set to be developed that will operate effectively in the Web-based environment.

As is evident throughout this chapter, the students were found to resort to their general knowledge about conducting research in the print-based environment, to compensate for their limited English proficiency. Unfortunately, many of the practices that were transferred from the knowledge of print-based research

caused the students to face additional challenges in conducting Web-based research. This data suggests that to effectively use the Web as a source of information, EFL students need to develop skills and knowledge that are specific to the online environment in which they operate. The following themes have emerged from the findings concerning the skills and knowledge essential for conducting Web-based research: the skills and knowledge necessary to search and locate information relevant to the task, the skills and knowledge necessary to evaluate the accuracy and reliability of the information retrieved online, and the skills and knowledge necessary to effectively use information retrieved from various sources for its intended purpose. These themes form the central discussion of this study which will be taken up in the next chapter.

Chapter 5.

DISCUSSION

5.1 Introduction

Chapter 4 presented findings in relation to the common practices that Thai EFL students employed in each of the identified phases of the Online Literacy Practices Cycle. The detailed analysis of the data in the previous chapter clearly established that the practices employed by the students were quite varied in terms of their effectiveness, both in relation to the specific demands of each phase as well as to those of the task as a whole. While certain practices led some students to success in using Web-based resources to complete the language tasks, others led to obstacles that in turn created new challenges. By making these practices and challenges explicit, it was possible to identify the skills and knowledge that EFL students need to be able to use the Web effectively as a research source. This understanding of essential skills can potentially be used to inform EFL teaching pedagogies that are more appropriate to the learning and teaching context of the digital age.

The findings that were detailed in the previous chapter suggest that the students engaged in five phases of online practices. It is important to reiterate that the term 'phase' has been used to loosely group practices, strategies and their variations according to the cumulative goals that lead to the final successful completion of the task. In Phase 1, the students first set the direction for their search by setting search goals. The search goals were then transformed into search terms to be used as the command on a search engine during Phase 2. In Phase 3, the students selected hyperlinks from the search results page to gain access to Webpages that were deemed to be relevant. Several print-based reading strategies and visual elements of the Web were commonly used as a means to evaluate the relevance of each Webpage to the

tasks. In Phase 4, the students showed their awareness of the need to evaluate the trustworthiness of the pages. Interestingly, all of the practices employed to evaluate the accuracy and reliability of the information were incidental. Finally, the information retrieved from different Webpages was used to construct suitable responses for the tasks in Phase 5.

The author closely examined the significant patterns of online practices that emerged from the findings and used these to make explicit the essential skills and knowledge that EFL students require to be effective users of online resources. In making these skills explicit, this chapter drew on two significant patterns of online practices. The first pattern of practices consists of meaningful and effective practices. These are the practices that were found to assist students in completing the task. By employing these practices, the students were found to be more effective in achieving the goals of each phase as well as in the overall task. The second pattern of online practices relates to the kinds of practices that the students struggled to employ, or that were employed but led to new challenges. This type of online practices is significant for this study because they show that by not having particular skills, it is difficult for students to achieve the task that had been set. Through the analysis of the two types of patterns, it was possible to identify three important skills that Thai EFL students need to develop in order to effectively use the Web as their source of information. The term 'skills', as defined in Chapter 3 (see Section 3.5 Data Analysis), refer to the ability to effortlessly employ the meaningful and effective patterns of online practices in order to achieve Web-based research tasks without facing with any challenges.

The practices that the students employed to achieve the goals of the five phases of the Online Literacy Practices Cycle appeared to resonate with the results of the studies by Coiro (2007) and Bulger (2009). Broadly speaking, these practices were found to constitute the three main goals of the use of Web as a source of information, which was previously reviewed in Chapter 2 (see Section 2.5). The analysis presented in the previous chapter demonstrates that

when using the Web to complete language tasks, Thai EFL students also employed a range of identifiable practices associated with these three goals. The online practices were used to search for relevant information, evaluate the accuracy and reliability of the retrieved information and use or apply online information for their intended purposes. These findings, then, suggest that to effectively use the Web for the specific purpose of completing English language tasks, Thai EFL students need to develop more deeply and more consciously the skills and knowledge to search, evaluate and use information retrieved from the Internet.

The current study also found that each of the phases is interrelated, forming a chain of practices linking one phase to another. The practices that the students engaged in in earlier phases appeared to have a direct impact on the practices in subsequent phases. The results of the practices engaged in one phase did not always become evident during that phase; rather, the results of the practices became highly evident in the following phases. These new findings have provided two profound insights. Firstly, the success in each phase was not only determined by the practices employed in that phase but also by the practices being employed in the earlier phases. The cascading 'knock on' effect of unsuccessful practices in the latter phases was quite marked. For example, it was found that when the students faced challenges in locating specific information relevant to their tasks during Phase 3, one of the main factors for this challenge was because of broad search terms generated in Phase 2 (see Section 4.2.2.1). Similarly, through a rigorous process of analysis, it was found that the problem of plagiarism as a result of direct copying practices employed in Phase 5 was, in fact, partly a consequence of students' broad search goal in Phase 1, which continually influenced practices in the latter phases (see Section 4.2.5.2). These observations revealed an important understanding of the direct relationship between the practices that the students employed in different phases. This concept will be highlighted throughout this chapter.

Secondly, because of the 'chain of practices' referred to above, the information that formed the texts that the students read and used to complete their tasks was, in fact, the direct outcome of their own decisions made in the first three phases. This type of text was referred to by Sutherland-Smith (2002) as a text that has been 'co-authored' by the readers themselves. This type of text is a result of the students' search goals which set the direction of search (Phase1), search terms that are used on the search engine (Phase2), the selected hyperlinks, the selected Webpages and even the specific headings and subheadings of the Webpages that the students chose to read or ignore (Phase 3). Seeing the kind of information being read by the students online in this way emphasises the importance of taking a holistic view of the skills relating to the processes of searching and locating information relevant to the task. For this reason, this new understanding of the practices highlights the need to develop online literacies as a complete and interdependent set of skills. The development of each individual discrete skill would not be sufficient to develop the online literacies necessary to use the Web as a research source. Even though the following sections discuss each skill separately, the relationships between them will be highlighted and explained in detail. This discussion will also address the gap in the literature which generally focuses on identifying and developing each essential skill separately (see Section 2.3 for an extensive review).

In addition to the direct relationship between the phases, this study has also identified a new insight regarding the use of compensatory strategies. The compensatory strategies were especially used to search and locate information relevant to the task. Because of the students' limited English proficiency, they revealed that to read and navigate through a huge amount of information on the WWW required considerable time and effort. Thus, they employed various strategies in a compensatory manner as a means of avoiding close reading much of the information which was presented on screen. In this study, the students were found to frequently rely on different types of strategies, including their knowledge of the reading strategies learned in the traditional classroom

and their knowledge of visual design. Even for these students, who are considered to be advanced language learners, comprehending English texts online takes a lot more effort in comparison to the same form of texts written in Thai. These strategies were found to be unique and very specific to EFL contexts. This result clearly underscores the obvious point that 'language' plays a big role in Web-based research and the language needs of students in this context need to be explicitly supported. This issue has not been examined in the context where EFL students use English Webpages as a source of information; more research is needed to fully comprehend this issue. Despite using various strategies to compensate for their limited English proficiency, the students were still faced with a number of challenges. This was because the students drew on the kinds of strategies they had learned from the print-based environment, which is vastly different from the online research context. The strategies that they had learned in the printed context are not easily transferable to a different environment. Students need to be supported with the kinds of strategies pertinent to their particular research environment. The important skills required to use compensatory strategies to search for information on the WWW will be discussed in more detail later in this chapter (see Section 5.2.3). This new understanding of the ways in which Thai EFL students read and navigate the WWW can then inform literacy pedagogies in the future.

The following sections discuss each of the three important skills. Firstly, the skills important to the task of searching for relevant information will be examined. Within this section, the strategies used to compensate for limited language proficiency will also be discussed. Because of the relative importance of the ability to search for relevant information to the task of using the Web as a research source, this discussion on the skills related to 'search' is the most extensive section. The second section focuses on the skills and knowledge related to the ability to evaluate information retrieved online. Drawing from the data, the students consistently commented on the need to evaluate the reliability of the Webpages before using them for their intended purposes. However, their practices during the actual task revealed that the students made

very few attempts to evaluate the retrieved information. This section draws on the data from the previous chapter in order to discuss the reasons behind such seemingly contradictory practices and the kind of skills that need to be developed. Finally, the skills and knowledge required for EFL students to make effective use of online information to construct appropriate responses to their tasks will be discussed.

5.2 Searching for relevant information

The practices that the students employed to achieve the goals of the first three phases – Goal-setting, Generating search terms and Locating relevant information – all contributed to the task of ‘searching’ for relevant information. The skills involved in these phases appeared to be the most important skills in terms of the development of online literacies. As explained in the introduction to this chapter, the ability to search for relevant information is a major determinant of the success of the task. The practices employed to search for relevant information not only determined the information being read but were also found to have direct implications for the practices employed to evaluate and use the information retrieved online. As shown in the Findings chapter, it was clearly evident that when the students faced difficulties in locating information, they tended to omit Phase 4: Evaluating online information, even though they were well aware of the need to conduct an evaluation. It was found that the students were more likely to use information retrieved from the Web regardless of its reliability and accuracy when facing the problem of locating information. The direct relationship between the practices used to complete the task highlight the importance of the searching skills. The students also realised the importance of locating the information most relevant to their task because they spent most of their task completion time searching for such information. The following sections discuss the ways in which the practices and challenges reported in the previous chapter inform the essential skills and knowledge required to effectively search and locate information on the WWW.

The skills and knowledge related to the ability to search for information will be discussed in relation to two important issues. The first section (5.2.1) discusses the skills essential to the task of navigating the WWW and the second section (5.2.2) discusses the ability to read information presented on the Web. As discussed in Chapter 2 (see Section 2.2.5 Web as a source of information), there are characteristics specific to the Web environment that make searching for information on the Web quite distinct from searching for information in print environments. Online readers were found to take a more active role in trying to locate information on the Web. In this study, the practices that the students employed were found to resonate with the reading activities that Murray (2005, p.xii) describes as “*Navigating to read, reading to navigate*”. These two types of reading activity are distinct but interrelated. Reading to navigate refers to the reading activities that readers engage in to find their way around a website. On the other hand, navigating to read refers to the navigational actions used to find information which readers can then read to achieve other language-learning goals (Murray, 2005; p.xii). In this study, these two types of reading activity were found to occur simultaneously and were necessary for students to engage in to search for information on the WWW. The following sections discuss the important skills and knowledge related to the ability to search for relevant information on the WWW in terms of these two themes – navigating and reading. Even though these practices are interrelated, it is also important to explain them individually to highlight their respective importance.

5.2.1 The ability to navigate the Web to locate relevant information

In reading to navigate, the students were found to reconstruct texts based in part on the knowledge drawn from the text as a result of their navigational decisions. The data show that the texts the students read were products of their navigational practices to reach certain Webpages. These texts were a result of the search terms that they generated to collect hyperlinks, their decision on the selection of hyperlinks without knowing in advance what information would result, and their decision to read only particular sections of Webpages in depth

(Sutherland-Smith, 2002). The data suggest that the skills required to navigate the WWW are immensely important to using the Web as a source of information because of their impact on the texts reached at the end of the search.

The specific skill-set required to navigate the Web for the purpose of searching and locating information relevant to the set task in this study includes the knowledge and understanding of the nature of online contexts as well as the ability to operate the search engine. The analysis of the practices deployed by students shows that the students engaged in practices that were specific to the online environment, which implies that the students were aware of the differences between working in the print-based environment and the online environment. The students also demonstrated a level of proficiency sufficient to search for information and navigate the WWW. Nonetheless, they were still found to engage in practices that were not meaningful to the Web environment and other practices that also impeded success in locating relevant information.

Drawing a comparison between a set of practices that lead to successful task completion and those practices that seem to increase the dimensions of the challenges students face leads to the conclusion that a comprehensive understanding of the nature of the WWW is the key determinant of these differences. As their working environment has changed from print to online, the students have altered their practices to respond to the new environment in order to complete tasks efficiently. Despite their attempts to refine the practices to make them appropriate to the new research environment, a number of practices that were not so meaningful to the research task were still evident. An in-depth analysis shows that this was mainly a result of the students' lack of understanding of the open nature of the online environment and knowledge of the ways in which their selected search engine operated. Regardless of their alleged familiarity with this new research environment, this use of ineffective practices demonstrates that their understanding of these technologies has not been fully developed.

Unlike many studies discussed earlier in Chapter 2 that impart pedagogical advice without supporting data, the skills discussed in this study emerged from the empirical data and a rigorous process of analysis. Knowledge of the Web-based environment is found to be critical to assisting students to effectively employ the Web as a research source. The first type of knowledge is the understanding of the nature of the Web-based environment as an open space that does not provide the reader with a predefined sequence of steps to follow. This understanding was found to have an impact on the practices used, and a better understanding of the environment led the students to employ the kinds of practices that were more effective for the task of searching. The second type of knowledge of Web-based technology that is important to the task of searching is the understanding of search engine. Because the students employed the search engine as the primary means of access to Webpages, a clear understanding of the ways in which search engines operate was found to help the students gain access to Webpages that were more relevant to their task. By making explicit the important skills and knowledge related to Web-based technology, EFL teachers could use them as tools to support the development of online literacies as well as a means to compensate for students' limited English proficiency.

5.2.1.1 Knowledge of the nature of Web-based environment as an open space without a predefined sequence of reading steps

The analysis shows that one of the most important knowledge to facilitate the use of the Web as a research source is an understanding of the nature of Web-based environment that does not include a predefined order of actions. Online users need to take an active role in searching for information they want on the Internet. The data show that those students who demonstrated this understanding were found to engage in practices that were more successful, particularly in relation to locating relevant information. The data also show that the students in this study demonstrated a certain degree of understanding regarding the open nature of the Web-based environment as discussed in Chapter 2 (Corredor, 2006; Kuiper & Volman, 2008). This was evident from the

students' engagement in a range of practices used to construct their own navigational path to locate information relevant to their task.

As detailed in the Findings chapter, the students appeared to be aware of the open nature of the WWW as they tried to locate information most relevant to the given task by constructing the search path. The practices that formed the basis of the search path were evident in Phases 1, 2 and 3 (see Figure 4.1 The five recursive phases of Online Literacy Practices Cycle). The search path was first constructed through the practices employed to set search goals (Phase1). When the students set a specific search goal, they could easily locate specific information. The practices employed to modify search terms after failing to locate relevant information (Phase2) and to select specific hyperlinks on a search results page (Phase3) also suggest that the students understood the importance of having a clear search path in order to locate information within the vast network. They were also found to employ a range of practices and compensatory strategies (see Section 5.2.3) to avoid feeling overwhelmed and getting lost in the Web-based environment.

A clear understanding of the key aspects of the Web-based environment is important to the construction of a clear search path. This study found that the search pathway is the main determinant of the success of locating specific information on the WWW. In the print-based environment where students have frequently encountered, information units are arranged linearly and readers are able to progress through a predefined sequence of a text. On the other hand, information presented in the online environment is often networked and can be processed in any order (Chun, 2001). To progress through Web text, the students in this study developed a search pathway that required them to make a number of decisions before they could navigate to the target information. It was evident that those who recognised the Web as an open space without a preset information sequence were able to tailor their practices in ways that enabled them to capitalise on this key feature of the Internet.

The data show that there were nevertheless many instances in which the students did not realise the importance of setting a targeted search path to locate information on the WWW. This was especially clear when they constructed broad search goals and search terms and believed that they would be able to skim through a huge amount of information and locate specific information by themselves. As a result of the lack of a targeted search path, the students had to filter out an immense number of unrelated Webpages and irrelevant information, leading many to feel frustrated and overwhelmed. (see Section 4.2.3 Phase 3 of Online Literacy Practices Cycle: Locating relevant information). These practices not only undermined the students' search skills, but also hindered the practices employed to evaluate and use retrieved information for their intended purposes. Thus, this significant pattern of online practices highlighted the importance of having specific knowledge of the environment the students were operating in.

Even though there are other features of the WWW that are necessary for the task of searching and navigating, the data from this study show that understanding the open nature of the Internet had the most profound impact on the practices employed by the students. A clear understanding of this feature of the WWW impacted on the students' awareness of the need to construct a clear search path. This is the key factor that assists successful task completion or slows down other online practices. Because of the direct relationship between the practices described in the introduction of this chapter, this understanding of the open nature of the Web is the most critical aspect of the practices used to search for relevant information. The students who felt overwhelmed when facing with a large amount of information as a result of the absence of a clear search path had difficulty evaluating and using the information retrieved online (see Section 4.2.4 and 4.2.5).

5.2.1.2 The skills and knowledge important to operate the search engine

In the Literature Review, the use of a search engine as the means to search for information on the WWW is discussed. It was reported in the Findings chapter that Google was used exclusively as the search engine by all the participants. Therefore, it is useful to recall some of the key aspects of this search engine, especially the functionalities of Google, because of their relevance to the important skills required to search for information. Google operates using advanced search syntax, which is based on a 'text-matching' technique that searches Webpages for the frequency and location of the keywords searchers have selected (Henry, 2006). Search terms are the words that Google tries to locate on the Webpages. These words act as commands and provide the input that gives Google the direction to find the search query provided by searchers. The search engine generates a list of hyperlinks to Webpages and presents it on the search results page. These hyperlinks are ranked according to the frequency of the search terms that appear on the page, as well as to the frequency of the connection between each page. Consequently, hyperlinks that appear on the search results page are those Webpages that contain the same script or the same text as the search term.

Nevertheless, this does not mean that all of these Webpages are conceptually relevant to the search goal. There is often a mismatch between the search goal and the search terms used as the Google command. By not having a full understanding of the operation of the selected search engine, the students faced challenges in locating relevant information. For example, TY set his search goal to look for 'facial toner' but he only used the search term 'toner' on Google. This search term led him to open a Webpage relating to 'toner' for laser printers, which contain the same script as facial 'toner' but has a completely different meaning. This challenge was clearly a result of the student's limited English vocabulary that he did not recognise that 'toner' has two different meanings. On top of that, this challenge also demonstrates the lack of

understanding of how Google searches for ‘scripts’ or ‘texts’ on the Webpages rather than interprets the searcher’s intention. These kinds of challenge were evident throughout the study, and this data suggests that students need to develop a clear understanding of their selected search engine to develop the skills to generate the search terms that are most meaningful to the task.

The students in this study showed a general understanding of the ways in which their preferred search engine, Google, operates. They were able to generate and modify search terms (Phase2) and to select hyperlinks presented on Google to reach the Webpages they desired (Phase3). Some of the strategies commonly used to construct search terms in this study included the use of words presented in the task instruction, words constructed as search goal and words found on Webpages (see Section 4.2.2 Phase 2 of Online Literacy Practices Cycle: Generating search terms). The analysis of the search terms shows that these search terms varied in terms of effectiveness. The search terms that were targeted and specific provided a clear direction for the search engine to retrieve appropriate Webpages, while broad search terms often led to the collections of huge amounts of irrelevant information that required filtering. These results suggest that a clear understanding of how the search engine works and the ability to use it effectively are immensely important to the task of searching and navigating the WWW. The next section will discuss the skills essential for constructing meaningful search terms.

5.2.1.3 The skills and knowledge important for generating search terms appropriate to the search engine

Drawing on the data on the practices employed to generate search terms (see Section 4.2.2), the following sections discuss the three types of skill and knowledge that appeared to be essential for this group of students to generate search terms to use on the search engine. These skills and knowledge are: the ability to communicate the search intent to the search engine, the ability to employ search terms as a filter, and the ability to construct recognisable search terms.

The data analysis reveals that the ability to communicate the search intent to the search engine is essential for the effective use of the search engine to conduct Web-based research. As discussed above, Google operates on a text-matching basis and takes the searcher's intent at face value. Thus, it is the role of the searcher to communicate their intent as clearly as possible to avoid miscommunication. As shown in the Findings chapter, there were a number of instances where the students selected hyperlinks that contained the same words as their search terms, but the selected Webpages were nevertheless far from relevant to their search queries; for example, the use of the single search term 'toner' to find information related to 'facial toner', as explained previously. Because Google takes search terms at face value, it cannot interpret the searcher's intent and is not flexible enough to understand nuances in the way the human mind does (Eagleton & Guinee, 2002). An important skill for students to develop is the ability to 'predict' the kind of website that would contain the information needed to complete the task. This will help students to predict the 'terms' that are likely to be found on prospective Webpages. Without this skill, it is difficult for them to locate information in a timely manner and may put them at risk of being overwhelmed by the amount of information. This was evident when the search terms "*chocolate, valentine, gift*" were found to lead the students to advertising pages, which the students identified as irrelevant and could not use to complete the task. By contrast, one student interpreted the key question and generated the search terms based on his intention by using the term "*reason, give chocolate, valentine*" (AMT2), which led to a successful search. It was clear in this study that many students failed to locate information relevant to their search intent because they did not clearly communicate their intention to the search engine. The fact that there were several successful instances showed that students have the potential to communicate the search intent to the search engine, but they may need explicit instruction to systematically develop the skills specific to the Web research context.

In addition to the ability to communicate the searcher's intent in the form of search terms, the data also suggested that the ability to employ search terms to filter out irrelevant information is essential for researching on the Web. The number of Webpages available on the Internet is the key factor that makes this particular skill essential to Web research. By using words such as 'chocolate' or 'Valentine's Day' as search terms on Google, students were faced with millions of search results that they needed to filter by employing another set of practices so that they could locate only the relevant results. It was impossible for the students to read through all of the results that appeared on the search results page, especially those in the foreign language. Many felt overwhelmed when faced with too many irrelevant returns to their queries. It was found that this problem resulted from search terms that were too general to capture the essence of the search task, and was especially evident when the students had trouble constructing search terms and had to resort to the wording of the task instruction to generate search terms. By selecting several words from the task instruction without context, the search terms were often too general and untargeted. This resulted in the retrieval of too many irrelevant hyperlinks on the Google search results page.

Interestingly, many scholars did not agree with the suggestions on the Google official 'Tips and Tricks' page that suggests that searchers "keep it simple" when generating search terms. A number of prominent researchers have found that an 'adequate level of detail' in the search terms can help Google to grasp the intent of the query put forward by the searchers (Barron, 2011; Eagleton & Guinee, 2002). The present study agrees with other research studies that the 'keep it simple' strategy does not necessarily work, especially when using Google in a foreign language. By keeping the search terms simple, the students would have to put extra effort into filtering out information which is not relevant to their task. As is evident in this study, the students often kept their search terms 'simple' when generating the initial search terms (see Section 4.2.2.1 Common practices and challenges in constructing initial search terms). These practices then led the students to many Webpages which were irrelevant to

their task. The students then modified their search terms to provide detail and direction for their search (see Section 4.2.2.2 Common practices and challenges in modifying search terms). It was clear in this study that the strategy suggested by the Google 'Tips and Tricks' page is inappropriate for EFL students. This apparent contradiction shows that students need specific strategies for conducting Web research when using a foreign language. To conduct a Web search in English, EFL students need to develop skills to employ search terms as their filter. This study shows that the students were less likely to be faced with hyperlinks which were irrelevant to the task if they provided appropriately targeted detail. Thus, it is essential for students to understand the need to generate search terms in sufficient detail to avoid feeling overwhelmed by unrelated information, and to enable them to locate relevant information in a timely manner.

Finally, the data also highlighted the need for students to generate search terms which are recognisable to the search engine. To do this, students need to have a clear understanding of how search engines operate and the kinds of search terms that are 'recognisable'. In this study, the students were found to attempt to construct and employ 'discrete' search terms, such as individual disconnected words – 'chocolate, valentine, gift'. However, this presented problems for the students in this study. Even though they were not explicitly revealed, the students' attempts to construct discrete terms demonstrated their belief that Google operates on the basis of individual words rather than on natural language, such as phrases or questions. Many students struggled to construct discrete English words that could convey all of the meanings they wanted to communicate to the search engine. As a result of this struggle, students resorted to the wording of the task instruction as an alternative resource which was readily available (see Section 4.2.2.1). Because of this practice, more challenges occurred because the search terms that were taken directly from the task instruction were found to be quite generic and did not capture the essence of the task, as explained previously. These search terms led the students to the kind of information that needed to be filtered again.

Interestingly, the analysis of the search terms used in this study shows that the attempt to construct discrete terms is unnecessary. Google also recognises search terms that are written using 'natural language', such as phrases or questions. As demonstrated in Phase 2 (see Section 4.2.2) the practices employed to construct phrases and questions are less complicated than those required to form discrete terms. This is because there is no need to pack meanings into discrete words. Rather, students had the flexibility to explain their intentions using language that was more natural to them. Although previous studies have claimed that using natural language in the form of phrases and questions is less effective because search engines do not understand or recognise it (Guinee, Eagleton and Hall, 2003), the data from this study suggest otherwise. The findings of this study show that this argument is no longer valid because search engines have dramatically improved in the past ten years. The use of natural language search terms provides more focus for the search which will potentially lead students to more relevant information. The data for this study was collected at the beginning of 2011, almost eight years after publication of the study by Guinea, Eagleton and Hall (2003). There have been a number of improvements and developments to the functionality of both search engines and Web2.0 since then. Web 2.0 now supports User-Generated Content (UGC) Webpages that allow end users to post and share information on different websites (Greenhow, Robelia and Hughes, 2009). In this study, the participants were often led to this type of Webpage, written by end-users using natural language, when they themselves employed natural language for their search terms. The UGC Webpages that were found frequently in this study include Ask.com, YahooAnswer and Webblog. In Ask.com or YahooAnswer, a user posts a question and other users answer with their comments. Because the content is written in a less formal manner, natural language is often used. Thus, it can be argued that limited knowledge of the workings of a Web-based search engine can hinder students' progress and create challenges. The misconception that Google only operates on the basis of 'discrete terms' prevented many participants in this study from communicating their search

intention to the search engine. Even though all the students claimed to have a general understanding of their selected search engine, this study shows that they would benefit from an explicit teaching method on how to operate a search engine using a foreign language. It was clearly evident that the use of natural language not only eased the process of generating search terms, but it also provided clear direction to the search engine. Thus, it is essential for students to develop precise knowledge of their selected search engine as well as the ability to take advantage of it.

5.2.2 The ability to read information on the Web

As discussed at the beginning of this chapter, this study identifies that the practices that the students employed to complete the task using Web-based resources closely resemble Murray's (2005) concept of "Navigating to read, reading to navigate". Both types of 'reading' were found to facilitate the task of searching for information in order to complete the language tasks commonly assigned in EFL classrooms. The previous section discussed the skills and knowledge that emerged from the data and were identified as being essential for Thai EFL students to 'navigate to read' information on the WWW. The next section will discuss the skills and knowledge necessary for these students to 'read to navigate' in this Web-based environment.

It was clear from the analysis of the practices employed that all of the students demonstrated certain skills and knowledge that allowed them to navigate the Web-based environment. On the other hand, the lack of these skills and knowledge was found to hinder these practices. To read information on the Web to achieve successful navigation, the analysis shows that students need to develop a set of 'component skills in reading' as part of an interactive approach to reading. Although this perspective on a reading approach is based on print-based materials, these component skills are also found to assist reading practices online (Grabe, 1991). A set of component skills in reading simultaneously allows readers to gain access to online information. The specific language skills and knowledge that were demonstrated by the participants as

being essential to Web research were vocabulary and syntactic knowledge, background or content knowledge and metacognitive knowledge. The following sections will discuss each of these components in relation to reading information on the World Wide Web.

5.2.2.1 Vocabulary and syntactic knowledge

It is arguable that the most important components of the skill-set needed to read effectively on the Web are those relating to vocabulary and syntactic knowledge, since Google operates on a text-match basis which requires users to construct search terms to be matched in cyberspace. As detailed in the Findings chapter (see Section 4.2.2 Phase 2 of Online Literacy Practices Cycle: Generating search terms), the students faced problems in constructing meaningful and focused search terms based on the given task instruction. It was identified that the cause of this major problem was the lack of vocabulary and syntactic knowledge related to the tasks. Students naturally possess less vocabulary knowledge in their second language than in their native language. Fluent L1 readers can recognise 10,000-100,000 words, while L2 readers recognise a far smaller number of words, ranging from 2,000-7,000 (Grabe, 1991).

Vocabulary knowledge clearly has an impact on the ability to construct search terms to search for specific information on the WWW. As reported in the previous chapter, the students faced problems in constructing search terms in English even when they had already set a clear search goal that was verbalised in Thai. The analysis shows that one of the main problems in converting the search goal in Thai to a search term in English was the lack of vocabulary and syntactic knowledge. The students frequently faced this problem when trying to modify search terms after failing to locate information relevant to the task (see Section 4.2.2.2 Common practices and challenges in modifying search terms). As the students attempted to narrow their search, they revealed that the key problem was finding the 'right' search terms to represent the search goal. As a result of not being able to find appropriate search terms, the students resorted

to the wording of the task instruction which barely represented the students' search goals. As discussed earlier, these practices led the students to face additional challenges in filtering out irrelevant information before they were able to locate information relevant to the task. In contrast, students with a large working vocabulary were able to access their vocabulary pool to construct effective search terms. Fluent readers also demonstrated the ability to modify search terms when they were found to lead to irrelevant information. Because of the direct relationship between the practices employed to achieve the goals of Phases 2 and Phase 3, it is essential for EFL students to develop vocabulary knowledge specific to each task. This is consistent with the framework used by the teachers in the Murray and McPherson's (2005) study. It is apparent that a good knowledge of language structure and a large recognition vocabulary is indispensable for EFL students to conduct Web research.

Vocabulary knowledge is not only essential for students to generate search terms in Phase 2; this study found that it is also important to the task of locating relevant information in Phase 3 of the Online Literacy Practices Cycle. As reported in Phase 3, the students employed lexical terms as a means to establish the relevance of each Webpage to the task. Rather than making a judgement on the relevance of information based on the content of Webpages, the students evaluated relevance based on the wording of the information presented on them. These particular reading practices indicate that students employed lower-level language processes when evaluating the relevance of the Webpage to the task. They attended to individual words as they employed reading to navigate practices. This type of reading practice was referred to as a 'bottom-up' approach, as discussed in Chapter 2. The bottom-up approach to reading is the process whereby readers start by decoding letters, then build up to clauses and sentences (Hudson, 1998). In efficient reading, the three components, which consist of word recognition, syntactic parsing and semantic proposition formation, work together in working memory (Grabe & Stoller, 2002). These processes have been established as being more difficult for L2 reading because researchers have estimated the recognition vocabularies of L2

fluent readers to be five to ten times lower than the vocabularies of first language reading. It is clear that to become fluent in reading for the purpose of navigation, EFL students need to develop vocabulary knowledge specific to the task being undertaken.

The limited range of vocabulary knowledge is central to the development of the reading practices employed in this study. Rather than trying to comprehend Web texts, the students in this study skimmed and scanned texts looking for comprehensible key words (Abbey, 2000). This resulted in students facing a number of challenges when looking for comprehensible terms on the Web. An inadequate pool of resources prevented them from recognising keywords which were not written in exactly the same terms. The students were not flexible enough to recognise synonyms or collocation; instead, they frequently fixated on a group of two or three specific terms (see Section 4.2.3). These findings suggest that for EFL students to effectively employ the strategy of using lexical terms, there is a need for them to build a vocabulary pool specific to the individual task before conducting online search. This understanding has not been established in research concerning L1 online reading but it can greatly inform EFL reading pedagogy in the 21st century.

5.2.2.2 Content and background knowledge

As explained extensively in this chapter, searching for information in an open-ended environment can be highly demanding for EFL online readers. These readers are not only reading to comprehend information in a language in which they have not gained full expertise, but they are also required to make judgements about whether the information they have found is relevant to the task at hand. In this context, search goals assume critical importance, because without a clear and directed search goal, the students are at risk of getting lost in the immense amount of information.

In this research, background knowledge or content knowledge of the topic was found to play a significant role in the construction of the search goal. This was

reported in the first phase (see Findings, Section 4.2.1 Setting Search Goals). Students used the resources immediately available to them as they set their goals. In this study, the two most frequently-used resources were the task instructions and students' own background knowledge. A comparison of the search goals based on the task instruction and goals set in accordance with students' background knowledge showed that the latter led to more directed goals. When the students relied solely on the main topic of the task instruction, the search goals were broad, had no focus and were insufficient in terms of capturing the essence of the search task. In contrast, goals set in accordance with content knowledge of the topic to be researched were much more focused and provided the students with a much clearer search path (see Section 4.2.1.1 Common practices and challenges in setting initial search goals). The findings in relation to background knowledge are consistent with the results of Corredor's (2006) research, which highlighted that background knowledge of the topic is crucial for learning in an open-ended environment. To construct a meaningful search path and avoid getting lost in an ill-structured online environment, readers need to use field knowledge related to the topic and task to set the search goal. When field knowledge was used to set the search goals, it was also found to have an impact on the search terms, which became better focused and more directional. The analysis of students' practices also shows that the students were aware of the importance of the content knowledge of the topic in setting the search goal and search path. This was clearly evident in the first stage of the 'Setting search goal' phase of Task 1; several students who did not possess any background knowledge of 'facial toner' sourced images of facial toner and also consulted an online dictionary for a translation of the term before they constructed their initial search terms. The students were aware that without a certain understanding of the topic, it was difficult for them to generate search terms that would enable them to construct a search path in the open-ended environment.

This type of background knowledge was found to assist the students in modifying the search terms by expanding terms when they could not find

relevant information, or narrowing terms when the search was too broad. This is because possession of prior knowledge of the topic enables students to envisage the hierarchies of categories that constitute the topic (Eagleton & Guinee, 2002). Additionally, in their attempts to construct a search path, the students in this study were drawn to information that they could recognise from their own background knowledge. It was found that such background knowledge helped the students to parse, organise and map the search space to determine relevant information from the many options on the Website. This background knowledge was also used to make sense of new incoming information as students navigated the WWW (Coiro & Dobler, 2007; Corredor, 2006). Therefore, it is not surprising that the students in this study were found to constantly activate their background knowledge about the given topic. The data supports the conclusion that to read and navigate the Web, prior knowledge of the topic is a robust predictor of the success of locating information in this networked environment. This is also consistent with the research outcomes described by Cromley & Azevedo (2009).

Even though background knowledge was found to facilitate 'reading to navigate' practices, this study also found that certain aspects of background knowledge could be a hindrance. It was established through the analysis of the data that this problem occurred when there was inconsistency between a student's background knowledge and the task. In this study, for example, there was inconsistency between the student's background knowledge of the term 'toner' in Thai and in English. As shown in the Findings chapter (see Section 4.2.3 Phase 3 of Online Literacy Practices Cycle: Locating relevant information), TY claimed that he was really familiar with the topic of 'facial toner' because he had used it and had previously read widely on this topic. He proceeded to construct his search term as 'toner', which is the term he referred to as 'facial toner' in Thai (โทนเนอร์). However, this search term led him to select a Wikipedia page on the 'toner' used for printers and photocopiers, because this term carries more than one meaning in English, of which the student was not aware. This type of background knowledge attached to loan words in Thai from English can

create confusion, particularly for students who are still developing their linguistic proficiency with a limited pool of English vocabulary. It is apparent that prior knowledge of the topic alone is not sufficient for EFL students to construct a clear search path. They also need knowledge of the language associated with the content knowledge in the target language. This language-specific knowledge is essential for EFL students to effectively locate relevant information on the World Wide Web. This insight is significant in the EFL context as it demonstrates the additional demands of reading to navigate practices for EFL students. It also signifies the remarkable differences between Web research in native and foreign language. This new understanding points to the risks of using the 'activating background knowledge' strategy commonly taught in the EFL reading classroom. Despite greatly facilitating reading practices, students need to use it with caution when searching for information on the WWW in their foreign language. This issue needs to be further explored in future research.

5.2.2.3 Metacognitive knowledge (Self-regulated reading ability)

Even though this study did not set out to explore the relationship between students' metacognitive knowledge and their success in locating relevant information on the WWW in the same way as other studies on reading on the Internet (Anderson, 2003; Coiro & Dobler, 2007; Kymes, 2007; Pookcharoen, 2010), the data analysis of the practices shows that this type of knowledge has significant impact on participants' success in locating information relevant to the task. The data suggests that throughout the five phases, the students employed a range of self-regulated reading strategies to read and navigate the WWW. Consistent with previous studies, the students were found to use metacognitive knowledge in information-seeking processes such as those found in print-based contexts – planning, testing self-comprehension, checking the effectiveness of strategies being used and revising those strategies (Grabe, 1991). They also employed a high degree of self-regulatory practices as they read within search engines and across websites.

The open-ended characteristic of Web-based environments places additional demands on students' self-regulation skills that have a direct impact on reading and navigating. The practices that students employed in this study appear to reflect four cognitive strategies necessary for online reading (Coiro & Dobler, 2007). These strategies include *Plan, Predict, Monitor, and Evaluate*, as discussed in Chapter 2. The planning strategy was evident during Phase 1: Goal-setting as the students developed a search direction through the construction of goals. They were also found to make a prediction while generating the search terms that would allow them to achieve those goals in Phase 2. The prediction practices appeared to continue to Phase 3 as the students selected hyperlinks that would allow them access to the Webpages with the most relevant information. These practices required a higher degree of self-regulatory ability on the part of the participating students than similar information-seeking in print-based environments. This is because it is the nature of online reading and searching that readers do not know in advance what information will be presented as an outcome of selecting the hyperlink. On arriving at their selected Webpage, the students were found to monitor whether information was relevant to their goal. At the same time, they also monitored their comprehension. Finally, the students evaluated whether their practices had led them to useful information, as they had intended. They were also found to evaluate whether they should quickly skim the information and scan through the content, or whether they should read it more carefully. They evaluated whether their selected Webpage was appropriate for their task and if not, whether they should move to a deeper level, select a related topic, or modify the search goals and start again.

This study shows that metacognitive knowledge is essential in reading in the Web environment. The students who demonstrated such self-regulating abilities were able to recognise when they had selected unrelated Webpages and were able to move on without wasting time reading because they had effectively monitored their search goal. As the findings show, some students solved these problems by modifying their search terms and by selecting different hyperlinks.

These practices allowed them to resolve problems quickly without getting lost in cyberspace. The absence of this ability appeared to have an impact on the students' navigational decisions. It was found that, having selected the Webpages, some students read them without purpose or knowing whether they were relevant to their task. These practices led many of them to feel overwhelmed by the immense amount of information that they had to read before being able to locate information relevant to their tasks. They also felt frustrated because they did not know where the problem had occurred; thus, they were unable to solve it. It is evident that to locate relevant information in an ill-structured environment, students are required to develop high, self-regulated reading ability. Being unable to locate information relevant to the search task, the students could not proceed to further phases to complete the language task.

5.2.3 The ability to employ compensatory strategies to search for information in a Web-based environment

As discussed in previous sections, the students in this study were found to employ practices relating to navigating the Web to find information to read as well as reading the information to navigate in their search for information in the Web-based environment. During this process, it was found that the students also employed a number of practices to compensate for their poor reading to navigate ability. The compensatory strategies that significantly influenced the online literacy practices in this study were the use of print-based reading strategies and the use of visual elements on the Webpages (see Section 4.2.3 Phase 3 of Online Literacy Practices Cycle: Locating relevant information). The following sections discuss the rationale for using these strategies and the impact of these strategies on students' ability to search.

The analysis shows that the students often felt that their limited linguistic proficiency had a great impact on their reading to navigate ability. When reading to navigate in English, the navigational speed was much slower than reading in Thai. Even though these students could be considered as advanced English learners, their level of proficiency in English was nowhere near native speaker

proficiency. They not only had to deal with information written in a language in which they had not achieved a high level of expertise, but they also had to work with limited resources such as a limited pool of topic-related vocabulary, idioms and grammatical structures. Thus, to maintain the speed of navigation, many resorted to a range of strategies to refrain from 'reading' to locate relevant information on the WWW.

The speed of navigation appears to be a critical aspect of searching for information on the Internet. It was found that the longer time the students spent on reading to locate relevant information, the less effort they put into reading information on the Web for comprehension. This act of reading led to problems such as plagiarism because instead of reading the content of the Web to deduce answers to the tasks, students often copied what they referred to as 'potential answer' (see section 4.2.5 Phase 5 of Online Literacy Practice Cycle). This is because to locate any information on the WWW, the students needed to sift through a huge amount of information. This task required both time and effort before the students could locate a piece of information relevant to their task. To avoid feeling overwhelmed with the sheer volume of information students had to read, many tried to locate the potential answer as quickly as possible. Moreover, the hasty practices were associated with the discomfort of screen-reading. The students found it unpleasant to read on screen for long periods of time. Unlike reading on paper, the students frequently expressed an issue with eyestrain when they had to spend a long time reading from a computer screen. For these reasons, the students felt under pressure to maintain the speed of navigation as they searched the Webpages. These factors were found to be influential in the act of swift navigation. Thus, an effective use of compensatory strategies is important to assist students to search and locate information on the WWW as well as to achieve overall task.

The two most significant compensatory strategies identified in this study were the use of traditional speed-reading strategies and the use of the visual elements on Webpages. Even though many of these approaches had

successfully assisted the students to locate relevant information quickly, many were found to lead to additional challenges. As extensively discussed in Phase 3 of Online Literacy Practices Cycle (see Section 4.2.3), many of these challenges were found to be the result of the students' lack of awareness of the differences between reading in a print-based environment and reading in a Web-based context. Most of the strategies were transferred from their knowledge of reading in a print-based context, but because of the differences in the principles of text organisation on the Web, some of these approaches failed to lead to successful navigation. In addition, because of the lack of consistency in visual and multimodal elements on the Web, the students also faced challenges when relying on visual elements as a means of compensating for deficiencies in the ability to read and comprehend. In the following sections, the skills and knowledge that EFL students need to develop to effectively employ compensatory strategies will be discussed in more detail.

5.2.3.1 The use of traditional reading strategies as a compensatory strategy

The analysis of the data shows that to compensate for their limited linguistic proficiency, these students employed traditional reading strategies, especially those they had previously learned from the English Reading Strategies course, which was observed in the initial stages of this study. As described in detail in the Findings chapter, the speed-reading strategies included reliance on the use of the organisational features on the Webpages as a means of quickly locating information relevant to the task. The results of the analysis of these practices are also consistent with the data from the class observation and students' diaries. The participants in this study scanned for keywords while attending to organisational structures such as the title, headings, and paragraphing of the selected Webpage. Only when they had located and assessed that a piece of information was relevant to their tasks would they stop and carefully read that information in depth. They used information presented on the organisational features to assist them in predicting whether they would be able to find the potential answer on that Webpage or in that particular paragraph before

investing energy in reading it carefully. These results are consistent with the researches conducted with native speakers of English (Nielsen, 1997a) and ESL migrants in Australia (Thurstun, 2005).

The data also showed that the participants in this study appeared to have a good knowledge of the generic aspects of text structure which they had learned from the class under observation, as well as from previous EFL classes. Even though the use of these organisational features of texts appeared to help students to read and comprehend an immense amount of information on screen in English, the students still faced many challenges as they navigated the WWW. This was evident as they attempted to apply their existing structural knowledge of print-based texts to locate information in the Web-based environment, without being aware of the differences between the organisational structures of the two environments. This study was able to identify three differences between texts presented in the print-based environment in class and those encountered in Web-based environments. These differences appeared to contribute to the challenges discussed previously. Firstly, the reading strategies that are commonly taught in EFL classes mainly focus on prefabricated texts designed specifically for EFL classrooms. This type of text is often followed by a set of comprehension questions that target a given passage, hence by using these reading strategies, students should be able to answer the given questions, because these texts are designed specifically to teach reading skills to students who have less exposure to authentic texts. The passage often includes text devices such as keywords suggesting the answer and always follows conventional rules of writing. For this reason, the students struggled when they applied the same speed-reading strategy to locate information on authentic Web texts which were not tailor-made for questions posed by the researcher.

Secondly, Web texts are also formatted and presented in particular ways to facilitate screen reading (Thurstun, 2005). Morkes and Nielsen (1998) claimed that, to improve the readability of online texts, authors needed to reduce the

number of words in a document by half. To present texts with the same meaning as print-based materials, Web authors resort to 'chunking' by presenting information in concise units using fewer words. This chunked text is more lexically dense, with frequent nominalisation (Thurston, 2005). Thus, traditional reading strategies, such as previewing to quickly identify the main idea, do not appear to be the most efficient way to read dense Web texts. The challenges resulting from the use of print-based strategies to read and navigate Webpages show the need to develop English reading strategies specifically for this reading context.

Lastly, the unregulated and participatory nature of Web 2.0 was also found to contribute to the challenges in locating relevant information using traditional knowledge of the organisational structure of text. Naturally, students may face a mixture of standards on the Web, ranging from the reproduction of print-based materials, like a newspaper or magazine, to the types of material that are shared by end-users, such as personal weblogs and online discussion forums. Webpages, which are not regulated by publishers and editors for standard and quality, often lack the forms and regularities that are enforced by print materials (Stapleton, 2005), and they do not always follow the structural rules that are part of traditional conventions (Kirk, 2002). Thus, the students' common understanding of English writing prose and principles of organisation was often challenged, especially when reading Web texts shared by end-users. The kind of challenge that was found to result from the participatory nature of the Web included the inability to locate information as promised in the title, heading, or topic sentence of a paragraph (see Section 4.2.3.2 Common practices and challenges in locating relevant information on selected Webpages). Because the students in this study frequently employed these features of texts as their criteria for locating relevant information, it is essential for them to learn how to adapt these strategies for this specific reading environment. They need to develop a full understanding of the differences between the principles of organisation underlying print-based environments and Web-based environments to enable them to tailor their practices according to the

environment they are working in. To effectively search for relevant information on the WWW, students need to be aware of the limitations of the strategies they employ. Language teachers can better prepare students for 21st century reading practices by teaching new strategies and developing necessary skills to enable their students to feel comfortable in the vast ocean of language and information made available to them via the World Wide Web (Thurston, 2005).

5.2.3.2 The use of visual elements of the Web as a compensatory strategy

As shown in the Findings chapter, the students in this study also relied on visual elements of the Web in reading to navigate. In fact, to refrain from reading much of the information on the Web, the students used the visual elements as a compensatory strategy. These visual elements, such as boldfaced fonts and framing, are used to visually inform readers of the importance of texts. Thus, it is important for students to understand the Web systems that writers use to visually inform readers. Similar to the ways in which students followed the structure of the Webpages to locate relevant information, they were also drawn to visual elements as they navigated the WWW.

Generally, the students in this study demonstrated their understanding of the 'interrelated systems of Web composition', which include information value, salience and framing (Kress & van Leeuwen, 2006), as discussed in Chapter 2. It was highlighted in the Findings chapter that the students relied heavily on the aspect of 'salience' when trying to locate information on the Web. To navigate to the most relevant information, the students scanned the Webpages quickly while only attending to the headings and the information presented in boldfaced fonts. It was found that they also employed the visual elements of the Web as a means to compensate for their limited ability to read and comprehend Web texts in English. By following salient information, they were able to distinguish a section of a Webpage that was more relevant to the task from sections that were not so relevant. As the students claimed that reading in English takes a lot of effort, this information helped them to narrow the amount of information they

needed to read. Moreover, the students demonstrated their general understanding of 'Framing', as was evident from their use of paragraphs. The students demonstrated their understanding that a paragraph is made up of information under the same topic. By reading only the topic sentence of particular paragraph, they were able to identify whether the information in that particular paragraph was relevant to their task. They only stopped to read the rest of the information in the paragraph in detail when the topic sentence of that paragraph was found to be relevant to the task. These practices show that the students were quite efficient in applying the knowledge of the composition of the Web to search for relevant information on the Web.

Nonetheless, because the students relied heavily on the visual elements of the Web as a means of locating relevant information, they faced challenges when these visual elements did not follow the general rules of composition systems of the Web (Kress & van Leeuwen, 2006). This study found that the advertisements, the lack of regulation and the participatory nature of Web2.0 are responsible for the dissonance created by these visual elements. The students' level of visual literacy for printed material was found to be insufficient for them to effectively locate information relevant to their tasks. This was evident when their knowledge of visual elements was challenged by in-text advertisements. The students were often confused by advertisements that were not properly framed and appeared as if they were part of the text. The in-text advertisements were written using 'hypertext' and underlined with a different colour, making them visually more prominent than other texts. The look of these in-text advertisements drew students' attention away from the main texts, and many students found them distracting. Since these ads were not properly framed with lines or spaces, the students found the Webpages confusing, as well as finding it difficult to differentiate between ads and texts. It was not clear to them which part of the Webpage was an advertisement that they could ignore and which part was the main text, which they should read. It is apparent that their common knowledge of 'Framing', which informs which category particular information belongs to, was challenged by the inclusion of these in-text ads on

the Webpages (Kress and van Leeuwen, 2006). Lastly, the students reported confusion when faced with conflicting visual and verbal texts. Many students revealed that they employed the images as a means to identify whether the Webpage was relevant to their task. However, since the content on the WWW is openly shared and there are few regulations, there is a high possibility of encountering Webpages bearing images that contradict the overall message on the site. It is then essential for the students to be aware of the possibility of visual dissonance and recognise this when researching information in a Web-based environment.

An understanding of the visual elements on Webpages and in particular the understanding of visual dissonance on the Web are incredibly important for Thai EFL students. The data from this study clearly show that the students relied heavily on visual elements on the Web to locate potentially relevant information as a kind of compensatory strategy when they were unsure of the linguistic elements. It is essential for Thai EFL students to develop a clear understanding of the 'language' of visual elements when navigating the Web in order to augment and update the skill sets they need to work effectively in this environment.

This section (5.2) discusses the skills and knowledge demonstrated by the participants in this study as being essential to effectively 'search' for information on the Web. It was evident that the skills essential for navigating the WWW are as important as the skills required to read online texts. These reading practices are unique to the online environment; thus, students showed the need to develop specific Web-based skills and knowledge. Moreover, because the students in this study conducted their searches in a foreign language, they had to resort to a range of compensatory strategies to read and comprehend information in English. These strategies frequently presented the students with additional challenges because the strategies they employed were transferred directly from the print-based environment, without adaptation. These results suggest that students not only need to develop the skills and knowledge specific

to the online environment, but they also need to possess language-specific skills in order to effectively search for information.

5.3 Evaluating information retrieved online

The use of the Web as a source of information has received wide criticism, especially for academic purposes (Slaouti, 2002; Thompson, Morton & Storch, 2012). One obvious reason for this criticism stems from the fact that the WWW is open to everyone to publish anything they want. Even though many Webpages have undergone similar screening and editing processes as print-based materials such as newspapers or refereed journals, many have also been created by amateur users who simply have an interest in the topic (Slaouti, 2002). Consequently, the Web is still considered to be much less reliable than printed resources, which have undergone rigorous review processes. Thus, the need to evaluate information retrieved online has often been highlighted in discussions about the Web as a source of information for academic purposes.

Despite showing that there is an awareness of the need to evaluate resources on the Internet, the analysis of the practices in this study reveals that very few attempts were made to evaluate the accuracy of the information retrieved online, or the reliability of the Webpages, during task completion. The next section will first discuss the rationale behind these contradictory practices, based on the data shown in the Findings chapter. Various strategies used by the students to evaluate online information will then be examined in terms of their effectiveness. Finally, the skills and knowledge that appear to be essential to the task of evaluation as shown in the analysis will be discussed in more detail.

5.3.1 Contradictions between knowledge and practices

As highlighted in the Findings chapter, the practices relating to the effective evaluation of information retrieved online were found to be the least utilised

among the three types of practices. Drawing from the data in this study, the students seemed to have a clear understanding of this characteristic of the Web. The Internet was often referred to by the students as a resource that ‘anyone can write’; therefore, the kind of information presented on the Web is not always accurate. This type of comment was made repeatedly throughout the entire task completion. Moreover, the students considered certain types of website to be less reliable than others. This was highly evident when the students selected a Wikipedia Webpage. Despite selecting this particular website, the students showed a negative attitude toward Wikipedia because it is open for all contributors to edit its content. Even though the entire network of the Internet is open to all, Wikipedia is categorised as a ‘User-Generated Content’ (UGC) website. This type of website has features that allow any end-user to easily edit and publish content without having to reveal their identity (Greenhow, Robelia & Hughes, 2009). The fact that the students in this study were aware of the need to identify the author of a source indicates a certain level of critical literacy in using the Web for information.

In spite of being aware of the need to evaluate the source, the analysis shows that the failure to engage certain practices was a result of the value of immediacy over the quality of information. This was especially evident when the students faced difficulty in ‘searching for relevant information’ in a timely manner (see Section 4.2.3 Phase 3 of Online Literacy Practices Cycle: Locating relevant information). Some students even revealed that when they struggled to find information relevant to their tasks, they would use any piece of information they could find, regardless of its credibility. In their words “*It is better to have an unreliable piece of information that can be used to complete the task than to have nothing at all*”. These findings emphasise the relationships between practices that occurred in different phases, as discussed at the beginning of this chapter. The practices employed in the first three phases to search for relevant information is greatly influential on the practices employed to evaluate the information retrieved online. The failure to explicitly use practices to evaluate the credibility of online information, even though the students were clearly

aware of their importance, emphasises that efficient searching skills are also necessary to the development of evaluation skills.

5.3.2 Strategies used to evaluate Internet sources

Despite the constant comments that have been made about the Internet as a 'not-so-reliable' source of information, attempts to evaluate the information online appeared to be far fewer, and most of these practices seemed to be ineffective in the task of evaluating information retrieved online. The significant pattern of practices suggests that the students made many blanket assumptions in an uncritical way. These blanket assumptions were made with regard to the use of User-Generated Content websites and websites with advertisements. A pattern of practices shows that students considered Webpages that allow users to create and edit the content to be untrustworthy. Even though it is important to be sceptical when using Web-based resources, the blanket assumptions actually prevented the students from locating information useful to their task. The most popular UGC Webpages identified in this study were Wikipedia, Ask.com, YahooAnswer and Weblog. Like other sources, UGC Webpages have their strengths and weaknesses. One of their greatest strengths is the vast coverage of topics. This is because they are open to a large contributor base from diverse backgrounds (www.wikipedia.org). Thus, when the students tried to find information using the search engine, Wikipedia usually appeared on the first page of the search results. By applying the blanket assumption that Wikipedia and other UGC Webpages are a source of inaccurate information, the students lessened their opportunity to find information relevant to the task. The argument that arises from this analysis of the data is that students will benefit more from developing the skills and knowledge to evaluate this type of resource than they will by applying the blanket assumption in an uncritical way.

Similarly, students were found to apply the same kind of blanket assumption to Webpages with advertisements. As reported in the Findings chapter (see Section 4.2.4 Phase 4 of Online Literacy Practices Cycle: Evaluating information retrieved online), students in this study referred to the Webpages

with advertisements as 'commercial' websites (E-commerce sites). In this context, the students' view of the commercial website is that it is a kind of website that sells products. Therefore, the information presented is 'biased' and cannot be used as a reliable source of information. These findings are consistent with Flanagin and Metzger (2007), who found that people rated commercial and entertainment Webpages as being less credible than other Web genres, such as news. The analysis of the Webpages used in this study shows that not all the Webpages which the students claimed to be 'commercial' websites were E-commerce sites. In fact, they were information Webpages which included advertisements on the sides of pages as well as between texts. The students demonstrated by these practices that they lacked an understanding of the distinction between E-commerce sites, which sell things and make money from the products they sell, and content websites, which make money primarily from advertising. By equating content websites with advertisements with E-commerce websites, the opportunity to locate information was reduced. The likelihood of finding Webpages without advertisements is slight. This shows that the use of an uncritical blanket assumption led to challenges in locating information and had an impact on the approaches employed to evaluate the information.

5.3.3 The skills and knowledge essential for evaluating information retrieved online

The contradiction between the observed practices and students' statements highlighting an awareness of the need to evaluate the information retrieved online shows that there is a need to systematically and explicitly develop skills that will allow students to evaluate both the accuracy of the information and the reliability of the Webpages when using Web-based resources. The discussion of the analysis presented above indicates that there are two skills that Thai EFL students need to develop in order to be able to evaluate online information. These skills are *sourcing* and *corroborating*. Britt and Gabrys (2001) considered these skills to be most important for reading and comprehending complex texts in the Web environment. The findings show that a number of students were

working towards this in their attempts to evaluate Web-based sources. As with other aspects of practices uncovered in the findings, there is much that explicit teaching could build on and form into solid and continuous ways of working with online texts. The next section takes up the issues of sourcing and corroborating in more detail.

5.3.3.1 Sourcing

The data suggested that the students attempted to identify the sources of the Webpages before evaluating their trustworthiness; however, the data shows that they relied only on secondary sources, such as the references cited on the page and words expressing the credentials of the authors. Although these practices demonstrate the students' attempts to evaluate the source, they were found to be insufficient. Studies investigating students using the Web as a research source (Britt & Gabrys, 2001; Stapleton, 2005) have agreed that identifying the source of Webpages is difficult for online readers. Unlike printed documents with standard information about the author, many online documents do not provide explicit information about the author, and sometimes this information can only be accessed via an extended link. Because of the difficulty, and perhaps the lack of skill and knowledge, evident in identifying the source of the Webpages, the students relied mainly on the information presented on the Web to evaluate the information retrieved online.

A large number of Webpages fail to include author information and the date of publication (Stapleton, 2005). The absence of this crucial information highlights the vital need to develop essential skills to enable students to critically evaluate information retrieved from the Web. To do this, Britt and Gabrys (2001) suggest that online readers develop 'sourcing', which is the ability to notice and evaluate the source of documents to assess their credibility. Two components of sourcing are 'identification of the source' such as the author's name, affiliation and credentials, before proceeding to 'evaluate the trustworthiness' of that source, which includes an assessment of the author's motives and purpose in writing that document. Even though the data show that the students attempted

to identify the sources as well as evaluate them, their current practices were not adequate for Web evaluation. There is a need for students who are increasingly being exposed to online materials to develop the essential skills to effectively identify the source of the Webpage beyond the sources being cited. The students' ineffective approach in evaluating the reliability of the source not only put them at risk of using unreliable information in their task but also limited them from gaining access to potentially relevant information.

5.3.3.2 Corroborating

The data suggests that the students were also aware of the need to examine the accuracy of information retrieved online. Even though the students did not adopt an intentional approach to evaluate the accuracy of the information, they revealed that they found that information repeated on different websites was more accurate than other information. This is because when trying to locate information on a Webpage, the students were often drawn to notice a piece of information that had been mentioned previously. To them, finding the same information on a different Webpage meant that it must be the fact that many people have agreed-upon. This kind of information is then considered as being accurate and could be trusted.

These practices are unquestionably in accordance with the 'corroborating' approach proposed by Britt and Gabrys (2001). As previously discussed in Chapter 2, corroboration is the skill of checking facts from one source against other independent sources. This is commonly used by historians, print journalists and academics (Wineburg, 1991). Because of the openly shared-content nature of the Internet, corroboration is considered to be a necessary skill for anyone using the Internet for research. In this study, although the students did not adopt an intentional approach to evaluate the accuracy of the information, they demonstrated the potential to apply corroboration when researching information on the Internet. Since they have shown the potential to corroborate facts, this skill should be systemically developed so that the students can apply it in their future online research. Corroboration can be

considered as being an important skill for 21st Century research because it enables students to verify the accuracy of information before relying on it too heavily (Britt & Gabrys, 2001). This skill also helps students in identifying agreed-upon facts, events and interpretations, and weighs them appropriately. The process of corroboration involves searching for documents on the same topic for comparison. This can be done through the use of sources mentioned in the current Webpage or by collecting bibliographies on the topic area.

In this section (5.3), the contradiction between the students' practices and their awareness of the need to evaluate online resources has been highlighted. The skills and knowledge that could assist students to systematically employ evaluation practices were also discussed. In the following section, the skills and knowledge necessary for Thai EFL students to use the information retrieved from online resources to complete their language tasks will be examined. Drawing from the data in this study, the practices which occurred in earlier phases were found to have an impact on the ways in which the students integrate the information retrieved from the WWW for their intended purposes. These practices highlight the direct relationship between phases and point to the need to develop online literacies as a complete skill set.

5.4 Using online information for intended purposes

Consistent with previous studies, as reported in the Literature Review (Chapter 2), this study found that EFL students faced a number of difficulties in using information retrieved from online sources for their intended purposes. The analysis shows that English proficiency is not the only determinant of success in completing a language task based on online resources. This success also depends greatly on the ability to search and locate relevant information, as well as on the skills in evaluating information, as discussed earlier in this chapter. These results also show that there is a direct relationship between the practices that the students employed to retrieve information in the earlier stages of the task completion and the practices employed to integrate that information for

research purposes. As highlighted in the Introduction to this chapter (5.1), it is argued that, because the *chain of practices* was prominent in this study, EFL teachers may need to support more than writing ability in English to encourage the effective use of the Web as a source of information. Drawing directly from the data, this study found that two types of skill are essential for the task of using and integrating information retrieved from online sources: the ability to identify useful information and the ability to produce responses suitable to the task.

5.4.1 Ability to identify useful relevant information

As detailed in the Findings chapter (see Section 4.2.5 Phase 5 of Online Literacy Practices Cycle), many students failed to produce an original response to the task. Their responses to the task questions were largely verbatim reproductions of the source texts. These practices were evident in Phase 5 while the students identified certain words, phrases, or even sections of the Webpages as being useful information before copying those particular words, phrases or sections from the original source and pasting them into their task file. Minimal changes were made to the pasted texts, such as the deletion of unrelated words or phrases, before the work was submitted as a finished piece of writing. The extent of the of copying and pasting ranged from copying almost 100%, to writing short sentences to connect the copied texts, to copying half of the online texts and writing another half in their own words, to only copying one or two sentences.

As a result, the final draft of the response usually appeared to be a combination of multiple sentences from the original source (see Tables # and # for MW's and MY's responses to Task 1). The data indicate that the approach taken to locate relevant information was very much responsible for the failure to produce original responses. This was because the students were working on the sentence level of the source texts and were consequently unable to develop a deeper understanding of the topic, which prevented them from elaborating on the content of the retrieved information in their own words (Howard & Davies,

2009). These practices led them to copy texts because they were unable to construct new ways to describe information taken from original sources. To avoid the problem of having to form new sentences, they relied on these copied source texts.

Two factors were found to be influential in the development of this heavy reliance on the original source texts. Firstly, the lack of proficiency was the main driver for encouraging the students to copy. The students revealed that when they discovered that the texts from online sources were well written, they tended to copy because they could not find a better way to rewrite the material. This was consistent with previous studies in the area of writing from the source in both L1 and L2 contexts, which concurred that language proficiency is the main reason why writers copy from source texts (Currie, 1998; Keck, 2006; Howard, 1996; Johns & Mayes, 1990; Shi, 2004). Secondly, difficulty in composing L2 texts could be another reason why the students copied much of the information from the source texts. Compared to the writing processes of L1, composing in L2 requires the extra step of decoding the writers' thoughts into language (Roca de Larios et al., (2008). Many studies have reported that, instead of spending the composition time on planning or reviewing (Flower & Hayes, 1981), L2 students spend the majority of their writing time on formulating the language (Stapleton, 2010; Wang & Wen, 2002). Given the time taken to search for relevant information, it was not surprising that the students in this study relied heavily on the copy and paste approach once they had identified useful information on the Web.

This analysis indicates that to improve the ways in which L2 students use information from online resources, teachers may need to consider supporting and developing students' ability to identify relevant information. By focusing on the need to understand the content of the sources instead of using the information that contains keywords, students may gain the flexibility to rewrite from original sources. The ways in which students can improve their online

search ability have been discussed previously in this chapter (see Section 5.2 Searching for relevant information).

5.4.2 Ability to produce responses suitable for the task

Drawing from the data in Stage 2 of Phase 5 (see Section 4.2.5), the students employed three main approaches to integrate information retrieved from online sources to respond to the given tasks. These practices consisted of direct copying, patchwriting and paraphrasing, as well as using background knowledge to compose the response. These approaches were found to lead to a number of problems, as reported in the Findings chapter (see Section 4.2.5).

Previous studies have shown that the ideal approach to writing from the source is for students to write the response in their own words, based on the content of the source texts. However, it was shown in this study that this task is extremely difficult for EFL students. Students are operating in a language in which they are not fluent, and they also first need to employ certain practices to search for source texts. Thus, this study argues that patchwriting is an essential stage for EFL students when they are writing from online sources. Of the three approaches identified as common practices in using online resources, patchwriting was found to be the most effective approach for avoiding plagiarism and has the potential to support independent writing.

As shown by the common practices used in writing responses from online sources, it was found that the students demonstrate different degrees of patchwriting. It was observed that this approach was used as a way of avoiding the risk of plagiarism. The students made a range of modifications to source texts, such as the substitution of synonyms, or alternation of grammatical structure, to address the task. By patchwriting, the students were able to incorporate the language copied from different sources without it appearing to be an exact reproduction of the source texts. This approach was found to be more effective than direct copying because the written responses generated

through the direct copying approach lacked originality in terms of both language and ideas.

The patchwriting strategy was also found to be more effective in terms of writing process. This was evidenced by the difficulty experienced by a student who attempted to write a response in his own words, based on his own background knowledge, who struggled to construct words in English to explain a concept that he could express clearly in Thai. There were many more grammatical errors in his written response than in the responses from students who patchwrote. By writing from his own background knowledge, this student did not have a language model or English resources on which to draw. Even though he had a clear concept of what he wanted to write in Thai, he faced a great difficulty in finding the right vocabulary in English, as well as constructing grammatically correct sentences. This was especially difficult when the student consulted a Thai-to-English online dictionary but could not find equivalent terms for the words he wanted to use. In comparison to the writing of his counterparts, his final piece of writing contained many more grammatical mistakes. It is clear that these problems occurred because of the lack of English resources. For EFL learners, it is essential that they learn from examples before they are able to write independently from the source.

While many institutions' academic integrity policies classify patchwriting as a form of plagiarism, the findings of this study support the argument put forward by Howard, Serviss and Rodrigue (2010). Howard et al. (2010) argued that patchwriting should be considered as a learning strategy rather than an act of moral failure. It was shown in the data that the students engaged in patchwriting practices as they attempted to paraphrase or summarise the original texts. This approach can be seen as an intermediate stage between copying and summarising, which is a common approach employed among non-native speakers of English, even at an advanced level of writing such as doctoral dissertations (Pecorari, 2003; Shi, 2004).

Thus, this study considers patchwriting to be an essential stage of L2 writing from the source for EFL learners. Patchwriting can be systematically developed as a means to weave source texts into the learners' arguments and as a "pass en route to a stage in which their own voices can emerge" (Pecorari, 2003; p.320). As evidenced in this study, it can be used to avoid the risk of inappropriate copying as well as to minimise the struggle in decoding thoughts into language. The analysis of the practices employed to use information retrieved from online sources and the final written responses produced by the students highlighted in the Findings chapter support this argument. To effectively use information retrieved from online resources, EFL students need to develop the skills and knowledge discussed in this section.

5.5 Conclusion

Drawing from the practices employed to complete the task and the challenges that students faced in the five phases of online practices, this study has found that there is a direct relationship between the practices that were observed in different phases. This understanding demonstrates the importance of developing the skills necessary for the five phases rather than developing discrete skills.

This study has also found that to search for information relevant to the task, the students relied greatly on compensatory strategies. These strategies were employed as a way to minimise reading practices on the WWW. However, because these compensatory strategies were found to stem from the students' knowledge of reading in traditional print-based environments, these strategies caused the students to be confronted by new challenges rather than assisting them to complete the task. Thus, it appears to be essential for EFL teachers to develop these strategies along with the obviously important language proficiency in English. In addition, another insight into the practices employed to evaluate online resources was discovered. This study observed the contradictory behaviour of the students given their awareness of the need to

evaluate their sources and their failure to implement this practice. In the few instances in which students attempted to evaluate the accuracy of the information they retrieved online and the reliability of the Webpages they accessed, their practices were found to be inadequate. These results show that students need to be supported in developing the skills and knowledge appropriate to the specific task of evaluating online resources.

Lastly, this study found that patchwriting was the most appropriate approach for EFL students when writing from online resources. Even though some institutions consider patchwriting to be plagiarism, the empirical evidence in this study suggests that patchwriting should be considered as an essential stage for EFL students when working in a language which they have not fully developed. It was seen to be difficult – indeed, almost impossible – to expect EFL students to sift through the immense amount of information on the Internet to locate useful information and compose a completely original response. Rather than aiming for an impossible task, EFL teachers could benefit from systematically developing the ability to patchwrite and avoid inappropriate copying.

These findings are tremendously important to EFL teaching in the digital age, since the Internet has become the primary source of information for students. What this study has provided is a localised understanding which originates from empirical evidence. It has shown that students need to be supported with literacies that are specific to both EFL and Web-based contexts because of their limited proficiency in English, and the knowledge of reading and writing that they have gained in the traditional, print-based classroom. Without this support, students will be left with no tools to enable them to independently engage in the tasks that are necessary in the Web-based environment.

Chapter 6.

CONCLUSION

6.1 Introduction

The ultimate aim of Education is to empower students with the skills and knowledge required for their future work, civic, and personal lives. The role of English Education in Thailand is to facilitate the development of literacies that contribute to this empowerment. Thai people particularly need to be literate in both English and Thai to progress in their career, because unlike other foreign languages, English plays a significant part in professional advancement. The importance of the teaching and learning of English as a foreign language is too often underestimated in the English-speaking context. For most Thais, English is so much more than an interest; on the contrary, to enhance income and survive in the working environment in Thailand today, Thais need to be proficient in English.

So what kind of English proficiency do Thai students need in the second decade of the 21st century? The rapid change in technological advancements has greatly impacted on understandings around literacy practices. Students no longer read and write from a single mode on printed texts and instead are now required to deal with multiple modes of meaning in both print-based and Web-based environments. Thus, it is undeniable that to be literate in English, students need to be able to engage effectively in the kinds of practices that are essential in the online environment. Since one of the most important online tasks is to efficiently use the Internet as a source of information, this study has specifically examined the skills and knowledge that are essential for Thai EFL students to use online resources to complete their language tasks. These skills and knowledge are integral to the development of the literacies that are appropriate for today's learning environment. As a consequence of the

widespread increase of technology in both social and academic contexts, research using the Internet has become a relatively common classroom activity in EFL classes as well as in everyday life. To ensure that our students are well prepared to engage in today's technologically-driven society, teachers need to support the development of those skills and knowledge necessary for the new working and learning environment.

The Internet and other ICT tools have been integrated into EFL classrooms in Thailand for the purpose of increasing EFL students' exposure to real world English, as well as to enhance their knowledge of content and concepts. Even though teachers today recognise the importance of the Internet, Internet-specific skills have not been systematically or explicitly taught in class. Reading is often taught as a separate skill because of its importance to the development of the necessary literacies. Nevertheless, given that the Internet is the largest source of reading materials, the teaching of reading needs to be updated to prepare students for a new type of reading practice. As was found in this study, online reading practices are vastly different from those that occur in the print context, and it is necessary for students to develop suitable literacies for the specific environment in which they operate.

In the Introduction, a number of factors were addressed with respect to the reason for the lack of support in developing necessary literacies in the classroom. Some of the factors include assumptions regarding 'digital natives', the ability to transfer online literacies from L1 to L2, and teachers' inability to support the development of the skills and knowledge necessary for the digital learning environment. The discussion of various studies presented in the Literature Review proved these assumptions to be wrong. Even though students today can, on some levels, be considered digital natives, they still need to systematically develop online literacies (Coiro, 2007, Bulger, 2009, Passanisi & Peters, 2013). Despite being fluent in gaming, chatting or social networking, many still face challenges when using online resources for school-related tasks (Passanisi & Peters, 2013). Thus, it is clear that teachers need to

acknowledge and support the development of the necessary literacies, which are vastly different from those that are appropriate to the print-based environments that, until recently, dominated the learning environment. Moreover, previous studies conducted with L2 students found that even though some students developed online literacies in their L1, they were unable to seamlessly transfer these skills to use in their L2 (Murray & McPherson, 2006; Stapleton, 2003). In an attempt to address these issues, this study focused on identifying the kinds of literacies that are essential for students who use English as a foreign language to effectively exploit the potential of English online resources.

In the Literature Review, it was shown that even though there is an increasing amount of research into the online literacy practices required to use Internet resources in L1 (Bulger, 2009; Coiro & Dobler, 2007; Kuiper & Volman, 2008), there is still a significant gap in the literature in the EFL field. This thesis has argued that to develop appropriate pedagogical support, the skills and knowledge relevant to the online literacies of specific groups of EFL students need to be made explicit. EFL teachers can then support the development of these skills rather than relying on generic guidelines that have emerged from studies in L1 contexts, or their own intuition. By making explicit what constitutes 'online literacies', teachers can be empowered with the 'teachable tools' required to construct the right level of support.

To make explicit the online essential skills and knowledge, this study closely observed and identified the kinds of practices in which the students engaged when using the Web for classroom research in the natural context. Through a close investigation of practices as well as the evaluation of their effectiveness, this thesis was able to identify two significant patterns of practices; those practices that led to successful task completion, and those that led to new challenges. Through the use of the verbal protocols method, along with classroom observation and students' diaries, a number of significant findings emerged from this study. One such finding shows that Thai students engage in

online practices to achieve three important goals – to search for, evaluate, and apply online information. These goals are in line with those of the studies conducted on students using Web research in their L1. However, this study established that to achieve the same goals, EFL students engage in practices that are quite different from those described in L1 studies. These findings suggest that a different pedagogical approach may be needed for EFL students. The skills and knowledge identified as being essential to the task of Web-based research in this study are specific to Thai EFL students in the tertiary setting, which can serve as a starting point to assist teachers in developing the online literacies that their students need in the 21st century learning context. These empirical findings offer new insights which can change the face of English language instruction and the curriculum in Thailand, to better prepare students for the 21st century society.

In this final chapter, the significance of the research in terms of pedagogical implications, as well as methodological implications, will be discussed. The limitations of the study will then be addressed before recommendations for future research are made to end this thesis.

6.2 Significance of the research

In Chapter 1, the author argued that the significance and contribution of this study lay in the area of teaching practice and groundbreaking methodology. In this section, each area will be addressed in detail.

6.2.1 Implication of the study for current policy and teaching practice

The results of this study indicate that EFL teachers need to rethink what it means for their students to be literate in the 21st century, and what should be included as a part of literacy instruction to prepare students to become full members of a literate society. The current study not only problematised those literacy practices which are no longer sufficient for today's learning and

professional environments, but it also conceptualised the skills and knowledge that are necessary in this environment. The findings strongly suggest that students need to be supported in developing the kinds of literacies that are both context specific and language specific. The results of the present study will inform EFL teaching pedagogy as well as policy makers.

The implications that arise from these findings are likely to impact EFL teaching pedagogy in two ways. Firstly, for Thai students to effectively exploit the potential of online resources in English, they need to be supported with skills and knowledge that are language-specific. This means that the skills students have already developed that are specific to reading Thai materials are not sufficient for reading texts in English online. It is then a responsibility of English teachers to support online literacies specifically for English resources. It was consistently found throughout the study that many of the practices the students deployed in their use of Web-based resources to complete English language tasks were linguistically demanding such as practices employed for 'generating effective search terms' and 'reading to navigate'. To construct meaningful search terms in English, Thai students not only needed a working knowledge of the Web-based environment and search engine (see Section 5.2.1), but they also need to have the appropriate vocabulary and syntactic knowledge of the search topic in the target language before they can successfully communicate their search intent to the search engine (see Section 5.2.2.1). It was reported in the Findings chapter that at times, some students identified a clear intention for their search but were unable to generate meaningful search terms because of their limited English vocabulary. These findings suggest that the responsibility for developing students' online literacies should not fall solely on the teachers of Information Technology (IT). Because these online practices are language-specific, Thai EFL teachers should also take on this role to assist their students in developing the necessary literacies in the target language. The skills and knowledge identified in this study as being essential for Thai students to use the Web as a research source for their English language tasks had not been shown in other studies where students used Web resources in their L1. Without

problematizing these issues of 21st century literacies, students may be left unsupported, without the skills and knowledge required to function in today's context.

The second implication is specific to the EFL pedagogical approach to developing reading skills. This study identified that the students employed online literacy practices for the purpose of achieving three main goals (see Chapter 5) and that to achieve these goals, the 'reading to navigate' ability was found to be the most significant skill (see Section 5.2.2). The students in this study employed both traditional and Internet-specific reading strategies to enable them to read and navigate Webpages in English. Lacking the explicit and systematic support of reading strategies specific to the Web context, all the participants in this study relied on what they knew about reading and resorted to strategies that they had previously learned from the print-based environment. It was found that the students had the ability to transfer reading strategies from one reading environment to another; however, they were not able to adapt them to the specific reading context. As a result of employing print-based reading strategies, students were faced with a variety of challenges because of the stark differences between the two environments as well as the reading purposes (see Section 5.2.3.1). The use of speed-reading strategies specifically learned for the print-based environment resulted in many new challenges, such as the inability to locate information relevant to the search task. These findings suggest that EFL teachers might need to consider how best to build on and expand traditional reading instruction to incorporate Web-specific strategies. They may need to point out the differences between reading practices in various environments and for various purposes. The skills and knowledge that have been identified in this study as being important for Thai EFL students in using Web-based resources to complete English language tasks can be used to inform the teaching pedagogy, especially for reading instruction.

This study also pointed out the need to systematically support the skill of evaluating information retrieved online. The study highlighted the contradiction

between the students' awareness of the need to evaluate information presented on the Web and their failure to do so. As discussed in the previous chapter, when the students struggled to locate information related to their tasks as a result of the sheer amount of information and their ability to read and navigate the WWW, they did not make the evaluation practices their priority. It was clear that language proficiency was one of the main factors that had a direct impact on the ability to evaluate a source. Even in the rare instances in which students attempted to evaluate online resources, they were found to apply many blanket assumptions in an uncritical way. Because of their inability to comprehend and evaluate the huge amount of information, they instead relied on a range of strategies to evaluate the source. Nevertheless, the strategies based on blanket assumption were not purposeful or meaningful to the task of evaluating online resources; for example, the assumption that all User-Generated Content Webpages and Webpages with images were unreliable (see Section 5.3.2). Because the use of Web-based resources has become such a common task in EFL classrooms in Thailand, this study suggests that it is necessary for teachers to support the development of online literacies to assist students to specifically evaluate online resources in their second and foreign languages as a means to avoid the use of uncritical blanket assumptions. Without full support in the development of the necessary literacies, students may be at risk of retrieving information from inaccurate or unreliable online sources. Based on empirical findings of the students' existing ability to evaluate information online, this study identified 'sourcing' and 'corroborating' as the skills that EFL teachers should develop in their students. The outcomes of this study contribute to the understanding of the need to reshape EFL instruction to better prepare students for 21st century literacies.

Finally, this study also addressed the need for EFL teachers to support the development of essential skills in writing from the source retrieved from the Internet. It was found that students had difficulty with writing processes that were based on sources retrieved online. This was because they first needed to locate information relevant to task and evaluate the accuracy of that information

before they could synthesise and write from the source (see Figure 4.1 the five recursive phases of Online Literacy Practices Cycle). Drawing from the findings of this study, the thesis argues that for Thai students to write from the source in English, patchwriting is an essential developmental stage that can be further developed into independent writing. These findings enhance our understanding of FL writing processes from online resources. To avoid direct copying from source texts and unintentional acts of plagiarism as a result of having limited language proficiency, it is important for students to be supported to reach an achievable writing level. These findings from the present study have shed light on EFL students' writing behaviours, and could have a significant impact on the pedagogical approach in EFL classrooms.

This study has raised awareness of the need for EFL teachers to more fully integrate technology into their teaching and of the need to systematically develop essential multiliteracies. To prepare students for new learning and working environments, teachers may need to shift the teaching parameters to extend support to include online literacies. Moreover, the current study also provides some of the teachable tools for teachers based on the findings. To enhance students' experiences in learning through the online environment, teachers no longer need to rely on generic guidelines provided by studies from a completely different learning context, but rather can employ these tools as a means to develop the necessary literacies for Thai EFL students. These implications for EFL teaching pedagogy are specific to the English learning context in a tertiary setting in Thailand.

In addition to having a number of important implications for EFL teaching pedagogy, this study also has the potential to impact significantly on current policy settings. Policy makers need to be aware of the additional skills that students require to engage in tasks using Web-based resources in English. A range of essential skills and knowledge needs to be developed before students can take full advantage of the new technologies. There is also a need for EFL teachers to develop their knowledge about integrating technology into the

English classroom, and to enhance their ability to support students in developing the necessary literacies. For the potential of Web-based technology to be realised, policy makers in Thailand need to ensure that teachers are ready for this integration before rushing into imposing technology on the English classroom. This calls for additional support in Profession Development for in-service teachers who may not be familiar with new technologies, as well as a shift in teaching parameters to develop a comprehensive understanding and online literacies for pre-service teachers to ensure that they can fully integrate technology into their EFL classes in the future.

6.2.2 Implications for research methodology

Many studies using verbal protocol techniques have emerged in the past ten years, but very few have provided a detailed description of their data collection procedures (Cotton & Gresty, 2006; Young, 2005), and very few are located in EFL classrooms. To assist in moving forward the use of verbal protocols as data collection instruments, this study has contributed to the debate by offering a detailed evaluation of the application of verbal protocols (see Chapter 3 Methodology). Through these detailed descriptions of data collection procedures, these methods are practicable and replicable by others who are interested in extending the knowledge of the use of online resources in EFL classrooms.

This study also highlighted the ways in which verbal protocols add real value to research investigation into online practices in a natural setting where students are researching information on the Internet. The use of the verbal protocol instruments has been shown to be essential in uncovering the implicit challenges that students faced when using online resources (Sawatdeenarunat, 2014). Different data sets assisted in building a picture of the challenges, including challenges that the students could not name. The use of think-aloud protocol also reflects a close interaction between readers and texts, which is not observable using other research methods (Scott, 2008). The use of verbal protocols reveals gaps, hesitations and misdirected attention, and highlights the

differences between effective and ineffective online practices. Because of the nature of verbal protocols and their ability to capture online practices in real-time, teachers can gain a better understanding of how students accomplish or struggle with their tasks using online resources. This is the key information needed to ensure that the instructional needs of students are met so that they are equipped with the skills needed to work effectively in online environments.

6.3 Limitations of the study

This study was conducted with a small sample in a fairly elite university in Thailand. On the one hand, the generalisability can be questioned, but a high level of attention paid to the data collection and analysis were used to make sure that the data were valid. The research findings provide insights, rather than proof, which is in line with the claims commonly made by qualitative researchers. However, I acknowledge that it is necessary to be cautious when making claims and drawing conclusions. While some practitioners might point to aspects of the context that were unique to this particular university, it is nevertheless true that the findings of this study will, at the very least, provide serious food for thought for anyone interested in students' use of the Internet as a research source.

6.4 Recommendations for future research

Because of the limitations of the small sample size discussed above, it would be valuable to conduct similar research with a larger number of participants. It would also be worthwhile to conduct studies with younger students or university students with lower proficiency in English to identify whether additional skills or knowledge might be needed to compensate for their language deficiencies. Further work also needs to be done to establish whether students need the same or different literacies when engaging in Web-based research tasks using their native language, Thai. So far, this study has only been able to compare and contrast the skills required to conduct research task in L1 from studies conducted with English native speakers using English Webpages. More

information on desirable online literacies in Thai would help to establish a greater degree of understanding of the additional skills Thai students employ when they are using Thai resources as opposed to English resources. Future studies may lead to a meaningful pedagogical approach which can lead to changes in the curriculum. Teachers of IT can work together with teachers of English to develop essential skills and knowledge in both L1 and L2.

Further investigation into how to best ‘teach’ these essential skills and support an understanding of the comprehensive knowledge needed to cope with the new working environment is strongly recommended. The best practices for teaching and developing skills that are specific to the EFL context would greatly benefit students in Thailand. It is more important than ever to address these issues explicitly as the use of technology is increasingly integrated into EFL classrooms, and to create opportunities for students to be exposed to real world English and increase independent learning.

Finally, the issue of compensatory strategies in ‘reading to navigate’ is an intriguing one which could be usefully explored in further research. The results of such a study could greatly assist students who are still developing their second and foreign language proficiency to search for information in an open online space without feeling overwhelmed. The participants in this study were found to resort to a range of strategies that were transferred from their knowledge of researching in a print-based context as a means to compensate for their inability to read fluently in English. However, because those strategies were context-specific, their use did not always lead to successful practices or assist the students to achieve their task goals. Even worse, some of the students were found to face new challenges when they employed print-based strategies because of the major differences in the characteristics of print and online resources. It is, then, important to find a way to systematically develop the strategies which are specific to the online environment.

6.5 Concluding statements

The skills and dispositions of students today are different to those that were familiar to teachers a decade ago. The kinds of literacies today's students need to enable those students to be considered 'literate' are no longer aligned with many traditional teaching pedagogies. This study has raised the awareness of these differences and problematised the issue of teaching reading to EFL students for the purpose of online research. It also calls for a pedagogical change to better prepare students for the kind of English they need in their future careers. The value of this study lies in the data concerning the students' online practices which were collected in a natural context while students were completing a task. Using a novel data collection method, the present study was able to identify practices and evaluate their effectiveness in relation to the students' goals. This has provided an understanding of the skills and knowledge that Thai students need to enable them to use the Internet as a source of information for their English language tasks. This understanding can greatly inform the pedagogical approach, as well as professional development, to better prepare students for their 21st century literacies. As access and usability continue to develop at a rapid pace, the proliferation of Web-based technologies will increase and take new forms. The world will become even more connected and students, particularly those in the developing countries of Asia, will need to be literate in languages additional to their mother tongue. New thinking and new pedagogies are required if today's students are to be fully supported in acquiring the necessary literacies. The essential skills and knowledge identified in this study can potentially prevent Thai EFL students from being ill-equipped to compete with others in the second decade of the 21st century.

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APPENDICES

Appendix 1 Consent forms

1. Consent form for observation and diaries (English version)
2. Consent form for observation and diaries (Thai version)
3. Consent form for think-aloud protocol and retrospective interview
(English version)
4. Consent form for think-aloud protocol and retrospective interview (Thai
version)

Consent form for observation and diaries (English version)

UNIVERSITY OF TECHNOLOGY, SYDNEY
CONSENT and PRIVACY AGREEMENT FORM

I _____ agree to participate in the research project **A Study of Online Reading Processes of Thai EFL Students** being conducted by Ms Sirinut Sawatdeenarunat, 806/161 Broadway, NSW Australia 2007 (tel 612 9514 9026) of the University of Technology, Sydney for the purpose of her PhD degree. This research is to be conducted under the supervision of Dr Liam Morgan (tel 612 9514 3871; email liam.morgan@uts.edu.au) in the Faculty of Arts and Social Sciences at the University of Technology, Sydney.

I understand that the purpose of this study is to explore the ways in which Thai EFL undergraduate students read online and the impact of explicit instructions on these processes.

I understand that my participation in this research will occur over an eight-week period, and this research will involve eight class observations, and one online survey.

I am aware that I can contact Ms Sirinut Sawatdeenarunat or her supervisor Dr Liam Morgan or her local contact Dr Jutarat Vibulphol (tel 02-218-2621 Ext. 603) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without consequences, and without giving a reason.

I agree that Ms Sirinut Sawatdeenarunat has answered all my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in anyway.

_____/_____/_____
Signature (participant)

_____/_____/_____
Signature (researcher or delegate)

NOTE:

This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer (ph: 02 9514 9615, Research.Ethics@uts.edu.au) and quote the UTS HREC reference number. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Consent form for observation and diaries (Thai version)

มหาวิทยาลัยเทคโนโลยี ชิดนีย์

ใบขออนุญาต- งานวิจัยของนักเรียน

ข้าพเจ้า ยินยอมที่จะเข้าร่วมในงานวิจัยเรื่อง

“การศึกษากระบวนการอ่านออนไลน์ของนักศึกษาไทยผู้ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ” ซึ่งผู้วิจัยคือ

นางสาว สิริพันธ์ สวัสดิ์ตินฤนาท 806/161 Broadway, NSW Australia 2007 (โทร ๖๑๒ ๙๕๑๔

๙๐๒๖) แห่งมหาวิทยาลัยเทคโนโลยี ชิดนีย์ เพื่อจุดประสงค์ในการทำวิทยานิพนธ์ ระดับดุษฎีบัณฑิต

งานวิจัยนี้อยู่ภายใต้การดูแลของ ดร. เลียม มอร์แกน (โทร ๖๑๒ ๙๕๑๔ ๓๘๗๑ อีเมลล์

liam.morgan@uts.edu.au) คณะศิลปศาสตร์และสังคมศาสตร์ มหาวิทยาลัยเทคโนโลยี ชิดนีย์

ข้าพเจ้าทราบว่าจุดประสงค์ของการวิจัยนี้ เพื่อสำรวจกลวิธีการอ่านออนไลน์ของนักศึกษาไทย

ผู้ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศและผลกระทบจากการสอนทางตรงต่อกลวิธีนั้นๆ

ข้าพเจ้าเข้าใจดีว่า การเข้าร่วมในงานวิจัยนี้ จะใช้เวลา ๘ สัปดาห์ และจะรวมถึงการเผ้าสังเกต ๔ ครั้ง

และการทำแบบสอบถามออนไลน์

ข้าพเจ้าตระหนักดีว่า ข้าพเจ้าสามารถติดต่อกับนางสาวสิริพันธ์ สวัสดิ์ตินฤนาท หรือ ดร. เลียม มอร์แกน หรือ

อ.ดร. จุฑารัตน์ วิบูลผล (โทร 0๒ ๒๑๔ ๒๖๒๑ ต่อ ๖๐๓)

ได้ในกรณีที่ข้าพเจ้ามีความกังวลอันเกี่ยวกับงานวิจัยนี้ ทั้งยังทราบว่า

ข้าพเจ้าสามารถยกเลิกการมีส่วนร่วมงานวิจัยนี้ได้ตลอดเวลาโดยไม่จำเป็นต้องระบุเหตุผล

ข้าพเจ้ายืนยันว่า นางสาว สิริพันธ์ สวัสดิ์ตินฤนาท ได้ตอบคำถามของข้าพเจ้าครบทุกข้อ อย่างชัดเจน

ข้าพเจ้ายอมรับให้ทำการเผยแพร่ข้อมูลต่างๆที่ได้รวบรวมจากงานวิจัยนี้โดยไม่ระบุข้อมูลส่วนตัวของข้าพเจ้า

ลายมือชื่อ

ลายมือชื่อผู้วิจัย

หมายเหตุ:

งานวิจัยนี้ได้รับการอนุมัติจากคณะกรรมการการตรวจสอบจริยธรรมในการวิจัย (Human Research Ethics

Committee) แห่งมหาวิทยาลัยเทคโนโลยี ชิดนีย์ แล้ว ถ้าหากท่านมีข้อร้องเรียน หรือ

มีความสงสัยใดๆเกี่ยวกับการเข้าร่วมงานวิจัยดังกล่าว ซึ่งท่านไม่สามารถตัดสินใจร่วมกับผู้วิจัย

ท่านสามารถร้องเรียนต่อคณะกรรมการผ่านผู้ดูแลด้านจริยธรรม (โทร ๖๑๒ ๙๕๑๔ ๙๖๑๕,

Research.Ethics@uts.edu.au) คำร้องเรียนของท่านจะถูกปิดเป็นความลับ และจะได้รับการดำเนินการ

สอบสวนโดยละเอียด และจะแจ้งให้ท่านทราบเมื่อผลของการสอบสวนสิ้นสุดลง

Consent form for think-aloud protocol and retrospective interview
(English version)

UNIVERSITY OF TECHNOLOGY, SYDNEY
CONSENT and PRIVACY AGREEMENT FORM

I _____ agree to participate in the research project **A Study of Online Reading Processes of Thai EFL Students** being conducted by Ms Sirinut Sawatdeenarunat, 806/161 Broadway, NSW Australia 2007 (tel 612 9514 9026) of the University of Technology, Sydney for the purpose of her PhD degree. This research is to be conducted under the supervision of Dr Liam Morgan (tel 612 9514 3871; email liam.morgan@uts.edu.au) in the Faculty of Arts and Social Sciences at the University of Technology, Sydney.

I understand that the purpose of this study is to explore the ways in which Thai EFL undergraduate students read online and the impact of explicit instructions on these processes.

I understand that my participation in this research will occur over an eight-week period, and this research will involve students' diaries, three think-aloud protocols (one hour each) and one retrospective interview (half an hour).

I am aware that I can contact Ms Sirinut Sawatdeenarunat or her supervisor Dr Liam Morgan or her local contact Dr Jutarat Vibulphol (tel 02-218-2621 Ext. 603) if I have any concerns about the research. I also understand that I am free to withdraw my participation from this research project at any time I wish, without consequences, and without giving a reason.

I agree that Ms Sirinut Sawatdeenarunat has answered all my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in anyway.

Signature (participant)

____/____/____

Signature (researcher or delegate)

____/____/____

NOTE:

This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer (ph: 02 9514 9615, Research.Ethics@uts.edu.au) and quote the UTS HREC reference number. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Consent form for think-aloud protocol and retrospective interview (Thai version)

มหาวิทยาลัยเทคโนโลยี ชิดนีย์

ใบขออนุญาต- งานวิจัยของนักเรียน

ข้าพเจ้า ยินยอมที่จะเข้าร่วมในงานวิจัยเรื่อง

“การศึกษากระบวนการอ่านออนไลน์ของนักศึกษาไทยผู้ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ” ซึ่งผู้วิจัยคือ นางสาว สิริพันธ์ สวัสดิ์สินธุนาท 806/161 Broadway, NSW Australia 2007 (โทร ๖๑๒ ๙๕๑๔ ๙๐๒๖) แห่งมหาวิทยาลัยเทคโนโลยี ชิดนีย์ เพื่อจุดประสงค์ในการทำวิทยานิพนธ์ ระดับดุษฎีบัณฑิต งานวิจัยนี้อยู่ภายใต้การดูแลของ ดร. เลียม มอร์แกน (โทร ๖๑๒ ๙๕๑๔ ๓๘๗๑ อีเมลล์ liam.morgan@uts.edu.au) คณะศิลปศาสตร์และสังคมศาสตร์ มหาวิทยาลัยเทคโนโลยี ชิดนีย์

ข้าพเจ้าทราบว่าจุดประสงค์ของการวิจัยนี้ เพื่อสำรวจกลวิธีการอ่านออนไลน์ของนักศึกษาไทย

ผู้ใช้ภาษาอังกฤษเป็นภาษาต่างประเทศและผลกระทบจากการสอนทางตรงต่อกลวิธีนั้นๆ

ข้าพเจ้าเข้าใจดีว่า การเข้าร่วมในงานวิจัยนี้ จะใช้เวลา ๘ สัปดาห์ และจะรวมถึงการจดบันทึกบทสนทนา

ของนักศึกษา การถ่ายทอดความคิดขณะอ่านออนไลน์ ๓ ครั้ง ครั้งละ ๑ ชั่วโมง และการสัมภาษณ์อีก ๑ ครั้ง เป็นเวลาครึ่งชั่วโมง

ข้าพเจ้าตระหนักดีว่า ข้าพเจ้าสามารถติดต่อกับนางสาวสิริพันธ์ สวัสดิ์สินธุนาท หรือ ดร. เลียม มอร์แกน หรือ

อ.ดร. จุฑารัตน์ วิบูลผล (โทร 0๒ ๒๑๔ ๒๖๒๑ ต่อ ๖๐๓) ได้ ในกรณีที่ข้าพเจ้ามีความกังวล

อันเกี่ยวกับงานวิจัยนี้ ทั้งยังทราบว่า ข้าพเจ้าสามารถยกเลิกการมีส่วนร่วมงานวิจัยนี้ได้ตลอดเวลา

โดยไม่จำเป็นต้องระบุเหตุผล

ข้าพเจ้ายืนยันว่า นางสาว สิริพันธ์ สวัสดิ์สินธุนาท ได้ตอบคำถามของข้าพเจ้าครบทุกข้อ อย่างชัดเจน

ข้าพเจ้ายอมรับให้ทำการเผยแพร่ข้อมูลต่างๆที่ได้รวบรวมจากงานวิจัยนี้โดยไม่ระบุข้อมูลส่วนตัวของข้าพเจ้า

_____/_____/____

ลายมือชื่อ

_____/_____/____

ลายมือชื่อผู้วิจัย

หมายเหตุ:

งานวิจัยนี้ได้รับการอนุมัติจากคณะกรรมการการตรวจสอบจริยธรรมในการวิจัย (Human Research Ethics Committee)

แห่งมหาวิทยาลัยเทคโนโลยี ชิดนีย์ แล้ว ถ้าหากท่านมีข้อร้องเรียน หรือ มีความสงสัยใดๆเกี่ยวกับการเข้าร่วมงานวิจัยดังกล่าว

ซึ่งท่านไม่สามารถติดต่อผู้วิจัย ท่านสามารถร้องเรียนต่อคณะกรรมการฯผ่านผู้ดูแลด้านจริยธรรม (โทร ๖๑๒ ๙๕๑๔ ๙๖๑๕,

Research.Ethics@uts.edu.au) คำร้องเรียนของท่านจะถูกปิดเป็นความลับ และจะได้รับการดำเนินการ สอบสวนโดยละเอียด

และจะแจ้งให้ท่านทราบเมื่อผลของการสอบสวนสิ้นสุดลง

Appendix 2 Internet Usage Survey

1. Internet Usage Survey (English version)
2. Internet Usage Survey (Thai version)

Internet Usage Survey (English version)

Please fill out the following information:

1. Personal information

Name _____ Nickname _____
Major _____ E-mail _____ Phone _____

2. Information regarding your Internet experience

2.1 How often do you go online?

_____ every day _____ 2-3 times a week _____ one a week
_____ 2-3 times a month _____ once a month _____ Others (please specify) _____

2.2 How much time do you spend online per day?

_____ less than one hour _____ 1-2 hours _____ 3-4 hours
_____ more than 4 hours _____ Others (please specify) _____

2.3 How do you access the Internet?

_____ from home _____ with mobile phone _____ at computer lab/ library
_____ Internet café _____ Others (please specify) _____

2.4 How often do you use each of these applications?

Application	Several times a day	Once a day	Several times a week	Once a week	Never use it
E-mail					
Chat (e.g. MSN, GoogleTalk, Facebook)					
Social network (e.g. Facebook, Hi5)					
Websites : for school work					
: for pleasure					
Download (e.g. music, movies, programs)					
Entertainment (e.g. Youtube, onlineTV)					
Online Games					

Shopping					
Others: please specify					

Internet Usage Survey (Thai version)

แบบสอบถามเกี่ยวกับพฤติกรรมการใช้อินเทอร์เน็ต

1. ข้อมูลส่วนตัว

ชื่อ _____ ชื่อเล่น _____

วิชาเอก _____ อีเมลล์ _____ โทรศัพท์ _____

2. ข้อมูลการใช้อินเทอร์เน็ต (/ ในช่องที่เหมาะสมที่สุด)

2.1 โดยทั่วไปคุณใช้อินเทอร์เน็ตบ่อยแค่ไหน

_____ ทุกวัน _____ 2-3 ครั้งต่อสัปดาห์ _____ สัปดาห์ละครั้ง
 _____ 2-3 ครั้งต่อเดือน _____ เดือนละครั้ง _____ อื่นๆ ระบุ _____

2.2 คุณมักจะใช้เวลาเท่าไรต่อการใช้อินเทอร์เน็ตหนึ่งครั้ง

_____ น้อยกว่า 1 ชั่วโมง _____ 1-2 ชั่วโมง _____ 3-4 ชั่วโมง
 _____ มากกว่า 4 ชั่วโมง _____ อื่นๆ ระบุ _____

2.3 คุณมักจะใช้งานอินเทอร์เน็ตจากที่ไหน

_____ บ้าน _____ โทรศัพท์มือถือ _____ ห้องคอมพิวเตอร์ / ห้องสมุด
 _____ อินเทอร์เน็ตคาเฟ่ _____ อื่นๆ ระบุ _____

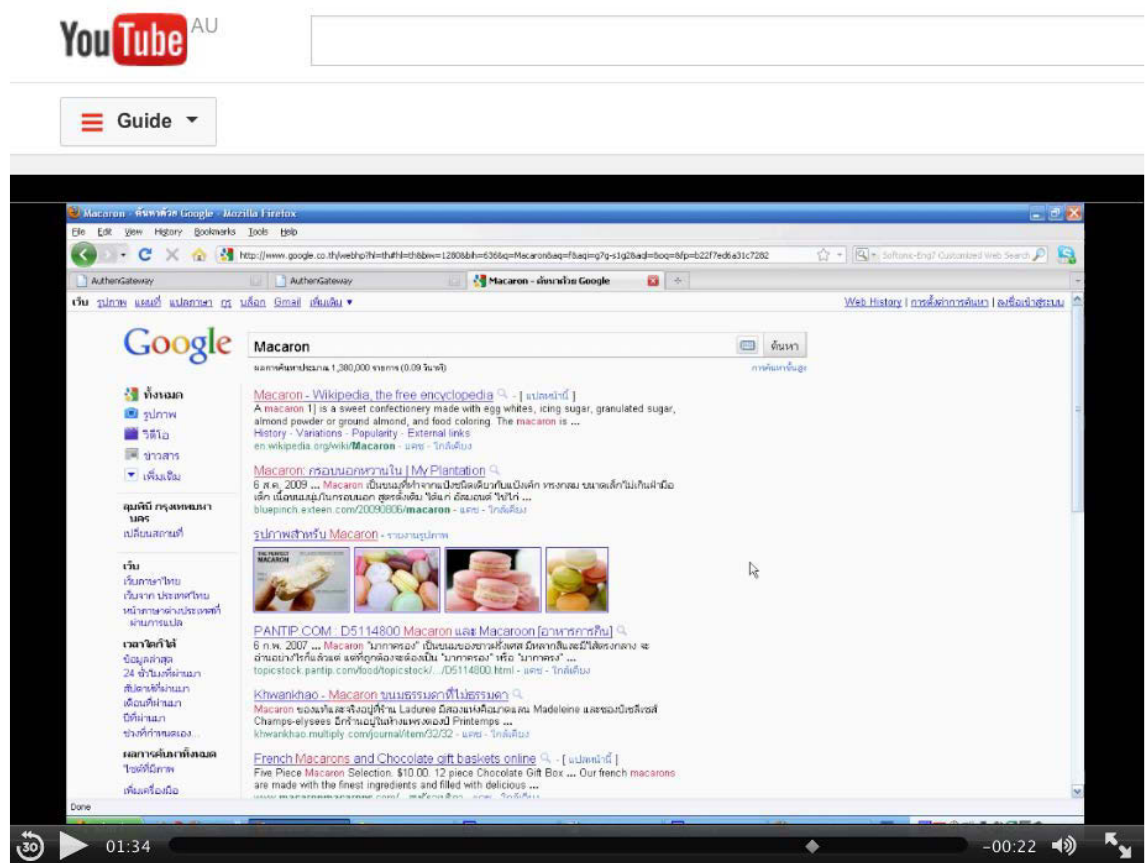
2.4 คุณใช้ application ต่อไปนี้บ่อยแค่ไหน (/ ในช่องที่เหมาะสมที่สุด)

Application	วันละ หลายครั้ง	วันละครั้ง	2-3 ครั้ง ต่อสัปดาห์	สัปดาห์ ละครั้ง	ไม่เคยใช้
E-mail					
Chat (e.g. MSN, GoogleTalk, Facebook)					
Social network (e.g. Facebook, Hi5)					
Websites : for school work					
: for pleasure					
Download (e.g. music, movies, programs)					

Entertainment (e.g. Youtube, onlineTV)					
Online Games					
Shopping					
Others: please specify					

Appendix 3

Demonstration video of think-aloud protocol

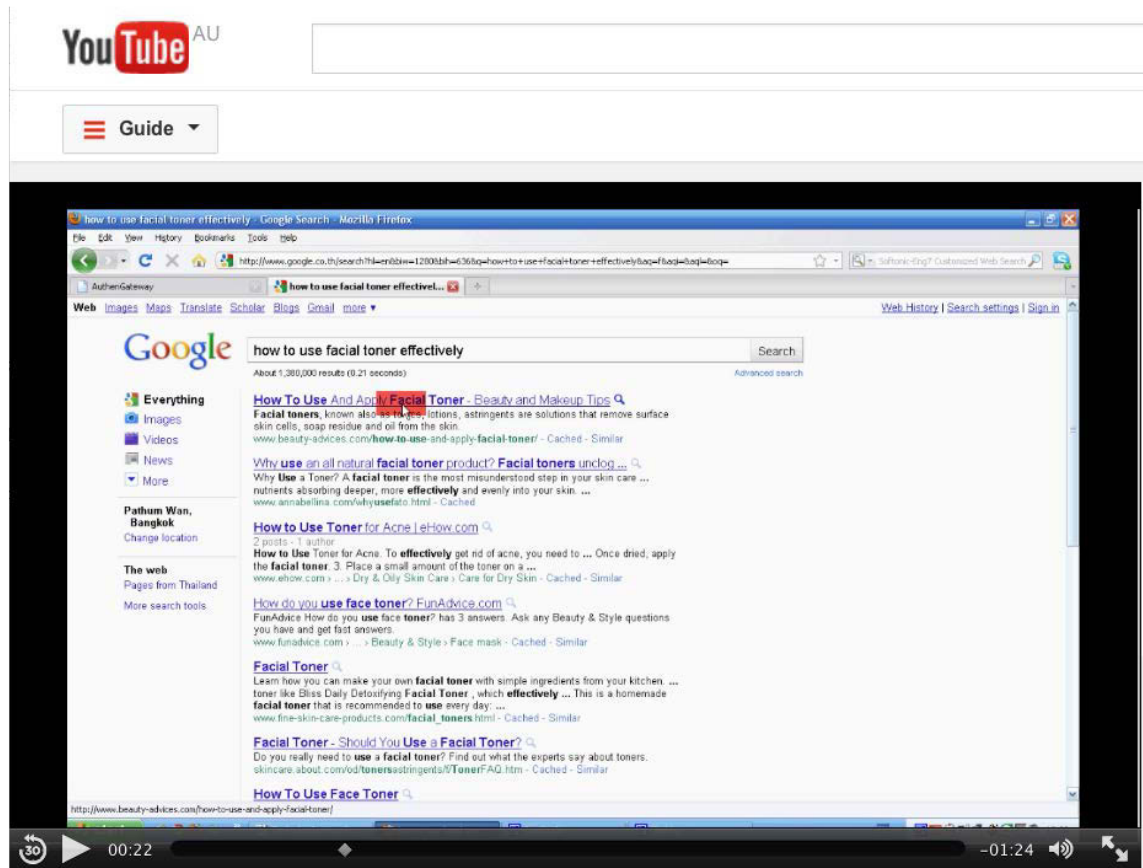


See sample video:

<http://www.youtube.com/watch?v=zUJP1hgcVaY>

Appendix 4

Sample video of think-aloud protocol



See sample video:

<http://www.youtube.com/watch?v=K63P3pR5gGA>

Appendix 5 Verbal protocol data (AM Task 2)

Setting initial search goal using key question

Turn	Think-aloud protocol data (TAP)	Stimulated recall data (SR)
Task 2		
1	Read Task question	<i>I read task instruction and try to figure out the main questions. Then I extract keywords out of the text.</i> (อ่านคำถาม ว่าถามอะไร แล้วดึง keywords ออกมา)
3	Copy "each person consume at least ten pounds of chocolate every year" Paste and make a bullet point under the question (Bullet point 1) I extract this part out because I think it is important (เอาอันนี้ออกมาก่อนเพราะว่า น่าจะสำคัญ)	<i>I put them in bullet points making it more noticeable when he need to come back to it at a later time.</i> (คิดเป็น bullet point ดึงออกมาว่าถามอะไรบ้าง จะได้เห็นชัดๆ)
7	Continue reading the question: Why do you think people choose to give chocolate as a gift on Valentine's Day. Type: reason (Bullet point 3)	
9	Type search terms: reason + chocolate	
11	Modify search terms : reason give chocolate+valentine	

Appendix 6 Verbal protocol data (MW Task 2)

Modifying search goals using information on the Web

Turn	TAP data	SR data
14	Read 1 st sentence of the 2 nd paragraph “Since the days of the Aztecs chocolate has been used as gift today. <i>Huhhh???</i>	
15	Go back to the 1 st paragraph and read the rest of the paragraph	<i>This sentence doesn't really fit with the rest of the paragraph so I am going back to read the 1st paragraph again. I want to for Aztecs and how it actually relates to chocolate and Valentine's Day?</i> (เหมือนประโยคมันไม่ค่อยเกี่ยวกับ กลับไปดูอันแรกใหม่ ไปหาตรง Aztecs เนี่ย)
19	<i>Ahh I found it!</i> (อ้อ เจอแล้วคะ) Read : Why does chocolate evoke so many feelings and emotions for us? Chocolate has long been associated with passion, romance and love. This association may go all the way back to the Aztecs .	
21	Continue to read : The Aztecs did not know chocolate as we do today; they consumed the cocoa as a drink.	
36	Return to the webpage Copy ' Aztecs ' and paste to Google search bar	<i>In the last webpage, it reads “since the Aztecs”, so when I see it again I think it is probably important. This can also be a keyword too.</i> (มีพูดในเว็บที่แล้วว่า since the Aztecs แล้วพอเจออีก ก็คิดว่าน่าจะสำคัญ แล้วก็คงเป็น keyword ด้วย)

Appendix 7 Verbal protocol data (TY Task 2)

Unable to find relevant information with existing terms

Turn	TAP data	SR data
6	Type search terms : valentine history	<i>I want to know what's the relationship between valentine's day and chocolate</i> (คือต้องการจะ search ว่า valentine กับ chocolate มันเกี่ยวข้องกันอย่างไร)
7	Select link "History of Valentine's Day"	
10	Scroll down the whole page very quickly "Hmmm so much information" (hmm มันเยอะเนอะ)	<i>This text is so long. I just want to find the word 'chocolate'.</i> (พยายามจะหาคำว่า chocolate คำเดียวเลย)
11	Close page	<i>Either there's no chocolate on this page or I can't find it.</i> (ไม่มีคำว่า chocolate หรือค้นหาไม่เจอ)
13	Modify search terms : valentine's chocolate history	<i>I changed it to valentine plus chocolate because I couldn't find chocolate in the previous page</i> (เปลี่ยนเป็น valentine บวก chocolate เพราะว่าตอนแรกค้นหาไม่เจอ)

Appendix 8 Verbal protocol data (MY Task 2)

Unable to find relevant information because of the relationship between search terms

Turn	TAP data	SR data
4	<i>I'm looking for 'chocolate', 'valentine' and 'gift'</i> (ก็หาคำว่า chocolate valentine แล้วก็ gift)	<i>When I typed chocolate, valentine, the word 'gift' popped up so I try choosing it</i> (ตอนพิมพ์ chocolate, valentine แล้วมันขึ้น gift ก็เลยลองเลือกดู)
5	Select 1 st link : Chocolate Gifts ideas for Valentine's Day <i>Oh no, it is selling kind of website. It's all advertisements</i> (อ้อ ไม่ใช่ นี่เป็นเว็บขายไม่มีอะไรเลย เป็นโฆษณาขายของ)	
6	<i>"Hmm can't really find any information"</i> (ดูไม่ค่อยมีอะ)	<i>When I selected this link, I only found photos of chocolate gifts with their prices</i> (พอเลือกเข้าไป ก็เจอแต่ขาย chocolate ทั้งนั้นเลย)
7	Browse Google result page Select 2 nd page and browse	<i>I kept looking on Google but judging by the headings, they are all advertisements.</i> (ดูเฉพาะหัวข้อ บางอันก็อ่านผ่านๆ แต่ส่วนใหญ่เห็นเป็นราคา ก็คิดว่ามันขายช็อคโกแลตแล้ว)
8	Return to task and read instruction again <i>"Which word should I use?"</i> (ใช้ว่าไรดีอะ)	<i>I decided to change my search terms</i> (ก็เลยจะเปลี่ยนคำใหม่)
9	Modify search terms : chocolate valentine	<i>Here I found the exact webpage that I want 'why chocolate for valentine's day'</i> (เจอ why chocolate for valentine's day พอดี)

Appendix 9 Data from classroom observation

Observation date 27 January 2011 on SQ3R speed-reading strategies

Themes	Teacher	Students
Survey	What if the time is almost up and you need to read 600 words, what are you going to do? (เวลาหมดแล้ว ต้องอ่าน 600 คำ จะทำยังไง)	
		Survey (Survey)
	What is the first thing you should do when surveying a text? (ขั้นตอนที่ 1 ของการ survey จะต้องดูอะไร)	
		Read the title (อ่านชื่อเรื่อง)
	After reading the title, what else do you have to do? (การที่จะ survey ได้ จะต้องอ่าน title แล้วอ่านอะไรต่อ)	
		Look for main idea (หา main idea)
	But the time is almost up and you have not found the main idea yet, what should you do? (แต่ถ้าเวลาหมดแล้ว ยังหา main idea ไม่เจอ)	
		Read only the first and last sentence (อ่านประโยคแรก กับประโยคสุดท้าย)
	In the situation where you do not have enough time, all you need to do	

	is reading the first sentence (เวลาหมดแล้ว อ่านแต่ประโยคแรกพอ)	
		Yes, read the first sentences of each paragraph (อ่านประโยคแรกของแต่ละ paragraph)
Question	Close your book (ปิดหนังสือ)	
	After surveying the text, the second step is to ask question (หลังจากที่เรา survey เรียบร้อยแล้ว กระบวนการที่ 2 เราจะตั้งคำถาม)	
	We are going to ask questions about the text, not just reading it (เราจะไม่แปลเฉยๆ แต่ตั้งคำถามไปพร้อมๆกัน)	
Read	After surveying the title, the first sentence of each paragraph and ask questions, now we need to read to find the answers to the questions that we previously asked	หลังจากที่เรา survey ชื่อเรื่อง ประโยคแรกของแต่ละ paragraph แล้ว ตั้งคำถามแล้ว เราต้อง read แล้วเราจะเอาคำตอบมาจากไหน?
Review	Now let's have a look at the questions you asked, can you find the answer for those questions from the paragraph that you read? (ไหนดูซิ คำถามที่เราตั้งไว้ ตอบได้มัย จากการอ่านใน paragraph นั้นๆ)	
	Now let's listen to the audio and read together (คราวนี้อ่านพร้อมกัน เปิดเทป)	
	What question did you ask for this paragraph? (Paragraph1 ตั้งคำถามอะไร?)	
		Question: What is the problem of this couple?
		Answer: They have limited time & financial resource

		Question: How many child in their family?
		Answer : One
	Teacher repeated the same process until every group get to answer	
	Ask for facts/ details from each paragraph	
		Answer
	What strategy are you using? What do you do after you read? (คุณกำลังใช้วิธีอะไรอยู่ อ่านแล้วทำอะไร?)	
		Review
Recite	Recite, test your memory to see how much you remember after completing reading comprehension questions. Exercise A on page 130 (recite ดูความจำ ว่าอ่านแล้วจำได้แค่ไหนโดยการทำ reading comprehension หน้า 130 Exercise A)	
		Complete exercise A
	Now let's see how much you can remember, complete exercise B, it's true/false. (คราวนี้ดูว่าจำได้แค่ไหน ทำ Exercise B, True /False)	
		Complete exercise B

Appendix 10 Sample of students' diary entries

Guided questions

1. What do you learn from yesterday's lesson?
2. What about online reading? Do you think you can make use of what you learned? How?

Strategy	Data from diary	Students
Read the first sentence	Reading technique, read only the first sentence (of a paragraph) เทคนิคการอ่านแบบอ่านประโยคแรกประโยคเดียว)	AM
	I think the lesson on reading only the first sentence of a paragraph is effective (ใช้วิธีอาจารย์เขา ที่จำเฉพาะประโยคแรก หนูว่าเวิร์คดีค่ะ)	KW
	(เมื่อวานก็ได้รู้เพิ่มเติมเกี่ยวกับวิธีอ่านเอาเมนไอดีของแต่ละย่อหน้าว่าย่อหน้านั้นพูดถึงอะไร)	MY
	The teacher taught how to survey the passage before reading it in detail. First we read the heading and the first sentence of each paragraph. (อาจารย์บอกให้สำรวจเรื่องที่จะอ่านก่อน อ่านหัวข้อประโยคแรกของทุกย่อหน้า)	MW
Read heading	I can use it when searching for information. I only read the headings and the first sentence of a paragraph, I don't read every details This way I would know whether info that I want is in this text or not. It helps me choose texts for academic use. (สำหรับการอ่านออนไลน์ คิดว่าสิ่งที่ได้เรียนไป อาจจะนำไปประยุกต์ใช้ได้ในการหาข้อมูลคือ จะอ่านแต่หัวข้อและอ่านประโยคแรกจะไม่เจาะลึกลงในเนื้อหาทั้งหมด เพราะเราจะรู้ได้ว่าสิ่งที่เราต้องการนั้น อยู่ในสิ่งที่เรากำลังจะอ่านหรือไม่ เพื่อจะได้เลือกบทความนั้นมาตอบ	AM

	หรือนำไปทำรายงานต่อไป)	
Scanning	When I try to find the synopsis or summary of a story, I have to read quickly because there's a lot of information. I scan texts first and keep the potential ones. I sometimes use the technique when reading things that I cannot find in Thai. (หาเรื่องย่ออ่านๆ จากหลายเว็บ เราก็ต้องรีบอ่าน เพราะเยอะ วิธีสแกนๆก่อน เอามาเก็บไว้ อ่านๆ ตัดๆ เรียงเป็นคำตนเอง) หรือไม่ก็น่าจะได้ใช้ตอนหาข้อมูลที่ยากรู้อ่านนะค่ะ เพราะบางทีเรื่องบางเรื่อง ชาวบางข่าว ภาษาไทยไม่มี ^^	KW
	For online reading, I especially need to scan text quickly. This is because the computer screen is not suitable for us to stare at it for a long time. I can use these speed reading techniques to try to understand texts online quicker and more accurate. (การอ่านออนไลน์นั้น ยิ่งจำเป็นเลยที่จะต้องอ่านสแกนก่อน ด้วยความรวดเร็ว เพราะจริงๆแล้วหน้าจอคอมพิวเตอร์ ก็ไม่ได้มีความเหมาะสมสำหรับการเพ่งเป็นระยะเวลานานๆ อีกทั้งในการที่จะหาข้อมูลและปริ้นออกมา หากเราไม่สแกน ดูก่อนว่าข้อมูลที่ได้มานั้นเกี่ยวข้องกับเรื่องที่กำลังทำอยู่หรือไม่ เราก็อาจจะปริ้นออกมาทั้งหมด ซึ่งจริงๆถ้าเราใช้หลักการอ่านที่เรียนมานี้มาทำความเข้าใจกับบทความบนจอคอมได้ ก็จะช่วยเราให้หาข้อมูล ได้รวดเร็วและแม่นยำขึ้นค่ะ)	NT
	(I only read online in Thai, only read in English when I need it for schoolwork. I use many reading strategies.) สำหรับการอ่านออนไลน์ ใช้อ่านข่าวนะค่ะ ที่หอไม่มีทีวี แต่ก็อ่านเป็นภาษาไทย จะมีอ่านเป็นอังกฤษก็ตอนทำงาน เข้าเวปดู Movie Review, Music Review Book Review ก็มีนะค่ะ นานๆครั้งเข้าไปดูแหล่งท่องเที่ยวค่ะ	MW

	อยากไปเที่ยวอังกฤษ อธิ ก็เข้าไปดูรูป อ่านประวัติ ความสำคัญต่างๆReading Strategy ถูกใช้เยอะในชีวิตเหมือนกันนะ	

Appendix 11 Texts from the third paragraph of 'Why Chocolate for Valentine's Day' Webpage

Web address <http://EzineArticles.com/131033>)

The screenshot shows a web browser window with the address bar displaying <http://ezinearticles.com/?Why-Chocolate-for-Valentines-Day?&id=131033>. The page has a sidebar on the left with navigation links: 'For Everyone' (Blog, About Us, Contact Us, Article Writing Shop, Advertising, Affiliates, Privacy Policy, Site Map), 'Search EzineArticles' (with a search box and 'Search' button), 'Ads By Google' (Chocolate, 70 Dark Chocolate, All Chocolate Gifts, Chocolate Boxes UK, Dove Hot Chocolate), and 'New Article Alerts' (with a form for email and name). The main content area features the article title 'Why Chocolate for Valentine's Day' and the text: 'Valentine's Day is many things to different people- a chance to start new relationships, rekindle old ones, or remind that special someone how wonderful they really are. Others feel it is just another "Hallmark" holiday where they are expected to do something for unknown reasons. Regardless of your hopes, expectations, or reservations about Valentine's Day, chocolate has long been a favorite gift for lovers. Since the days of the Aztecs chocolate has been used as a gift. Today a box of luxurious quality chocolate says a thousand "thank you's", "good luck", or "I love you". Chocolate can be given as a way of saying "congratulations", "I am sorry" or "get well soon". On Valentine's Day chocolate clearly says "I LOVE YOU!" Chocolate is more than food, it not only fills your belly but also makes you feel soooo good. Elaine Sherman wrote "Chocolate is heavenly, mellow, sensual, deep, dark, sumptuous, gratifying, potent, dense, creamy, seductive, suggestive, rich, excessive, silky, smooth, luxurious, celestial. Chocolate is downfall, happiness, pleasure, love, ecstasy, fantasy ... chocolate makes us wicked, guilty, sinful, healthy, chic, happy." What more could you want to say to your lover on Valentines Day? Even the scientific name for the tree from which chocolate is derived, Theobroma cacao, translated from Greek, means "food of the gods". Why does chocolate evoke so many feelings and emotions for us? Chocolate has long been associated with passion, romance and love. This association may go all the way back to the Aztecs. They believed chocolate was a source of spiritual wisdom, incredible energy and elevated sexual power. Chocolate was widely used as a nuptial aid and was widely served at wedding ceremonies. The Aztecs did not know chocolate as we do today; they consumed the cocoa as a drink. Reports indicate that the Emperor Montezuma consumed large quantities of the drink every day and always fortified himself with a cup before entertaining his harem. The explorer Cortes reported to Carlos I of Spain that chocolate is "... the divine drink which builds up resistance and fights fatigue. A cup of this precious drink enables a man to walk for a whole day without food." From the earliest times, chocolate was considered a substance of power and a source of vitality. Chocolate has been a subject of study since the first shipment from Veracruz arrived in Spain in 1585. But modern science has made some interesting findings that may help explain our lust for quality chocolate. Chocolate contains organic substances known as alkaloids. The most important of these substances is theobromine, which works as a stimulant to the kidneys. Stimulants in chocolate also affect the central nervous system. A chocolate bar may contain as much as 100 mg of theobromine, which is found naturally in the human body. When endorphins are released into the bloodstream, the mood is lifted and feelings of positive energy are reached. The sensation known as "runners high" is caused by

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Appendix 12 Texts from the fifth paragraph of 'Why Chocolate for Valentine's Day' Webpage

Web address <http://EzineArticles.com/131033>)

Chocolate has been a subject of study since the first shipment from Veracruz arrived in Spain in 1585. But modern science has made some interesting findings that may help explain our lust for quality chocolate. Chocolate contains organic substances known as alkaloids. The most important of these substances is theobromine, which works as a stimulant to the kidneys. Stimulants in chocolate also affect the central nervous system, with effects similar to caffeine, which is also present in chocolate. A chocolate bar may contain as much as 200 mg of theobromine but only about 25 mg of caffeine. Another important substance found in chocolate is phenylethylamine, which is part of a group of chemicals known as endorphins. Endorphins have an effect similar to amphetamine and are found naturally in the human body. When endorphins are released into the bloodstream, the mood is lifted and feelings of positive energy are reached. The sensation known as "runners high" is caused by endorphins released during exercise. Phenylethylamine levels in the brain have also been linked to "falling in love". One more chemical found in chocolate is serotonin. Serotonin is known for its calming properties. The presence of these chemicals may explain the multitude of feelings chocolate evokes.

Appendix 13 NT's written response to Task 1

Dear Maria

(1) Facial Toner is a lotion used for removing surface skin cells and soaping residue and oil from your face. (2) It might be useful for oily or acne-prone skin. If you want to know how necessary facial toner is, I have to say that if you cleanse your face regularly twice a day with the appropriate skincare products; (3) it's no need to use a toner. (4) However, if you have problem with oily or acne-prone skin, you can use facial toner to make sure that your face is completely clean. How to apply facial toner properly, (5) the first step is that you have to wash your face with cleanser and make sure your hands are clean. Then, (6) apply a toner. Always remember that a toner should be applied to a cleansed face. You should apply with a cotton pad. Apply it to the whole face and neck area and do not rub your skin. (7) After applying facial toner, your face may feel tight so it is recommended that you should apply a facial moisturizer. This is my recommendation hope you can find out what is best for you.