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Reading-strategy use by English as a second language learners in online reading tasks

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ABSTRACT

This study investigates adult English language learners' reading-strategy use when they read online texts in hypermedia learning environments. The learners joined the online Independent English Study Group (IESG) and worked both individually and collaboratively. This qualitative case study aims (a) to assess college-level ESL learners' use of reading strategies for online second language (L2) texts and (b) to examine their use of hypertext and hypermedia resources while they read online L2 text. The seven strategies were (a) using hypermedia, (b) using computer applications and accessories, (c) dialoguing, (d) setting up reading purposes and planning, (e) previewing and determining what to read, (f) connecting prior knowledge and experiences with texts and tasks, and (g) inferring. The first two strategies were unique to online readings; the five remaining strategies apply to both online readings and paper-based text readings. The findings also revealed that "hybrid" online reading emphasized participants' various reaction patterns and preferences in their hypermedia learning environments.

1. Introduction

Reading as a meaning-making process is one of the most important literacy components to the success of English language learners (ELLs; Cummins, 1991). For second language (L2) and foreign language (FL)[1] learners, reading is crucial because they rely more heavily on their literacy input than on its oral counterpart (Eskey, 2005). When we consider that ELLs represent 11% of the U.S. school population (Lee & Buxton, 2010) and that they have more diverse cultural and linguistic backgrounds than their native-speaking peers, it is clear that we need more research studies in L2 reading areas.

As technologies permeate our lives, they change the very concept of reading text. It becomes necessary to understand and use these technologies to interact with the world and to transform it (Kellner, 2001). *Text* includes a variety of types of semiotic methods such as pictures, audio, video, and electronic text as well as the traditional paper-based text. Literate people need to be aware of the change of literacies and to be able to use the new kinds of text. They need to be able to evaluate the new text and learn from it (Anstey & Bull, 2006; Chatel, 2002). Although technology involvement influences the concept of literacy, other factors such as social, cultural, economic, and political components also play important roles in the process (Warschauer, 1999).

Within these new literacy contexts, readers use strategies to facilitate their meaning-making process for both their first language (L1) and L2. In other words, they employ strategies to make their reading more efficient and effective regardless of their language level (Oxford & Crookall, 1989). The strategic patterns differ, however, for each person and context. Skillful readers adopt reading strategies—such as thinking about the topic, moving back and forth in the text, monitoring their comprehension, and planning when they are reading—more frequently than do unskilled or novice readers (Block, 1992; Brown, 1980; Carrell, 1989; Carrell, Pharis, & Liberto, 1989; Paris & Jacobs, 1984; Wilhelm, 2001). Research into L2 readers' reading-strategy use in the new literacy context, however, is scarce. To create a holistic view of reading, we borrowed Bakhtin's (1986) dialogic perspective to gain an understanding of this online reading process.

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[1] A second language is a nonnative language learnt while immersed in the culture of that language, whereas a foreign language is a nonnative language learnt and used while immersed in the speech community of another language (Stern, 1983).

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2. Theoretical framework

2.1. Dialogism

Bakhtin (1981,1986) argues that interactions always occur in a dialogic relationship with others. He does not regard language as a system of grammatical categories, but rather as speech. He also considers language "a world view" (1981, p. 271). The individual speaker's speech consists of utterances. The utterance is a basis element of speech, and it belongs to each particular speaker. The utterance, as a unit of speech, always has a dialogic relationship with preceding utterances and with the voices of other speakers.

Throughout Bakhtin's approaches to dialogic interactions, we see L2 readers as active participants in reading activities, making meaning when they read online texts as well as other diverse contexts. In addition, they use dynamic reading strategies to understand a variety of texts in diverse reading contexts. This study will give extended perspectives on L2 learners' reading-strategy use in online reading environments.

3. Literature review

3.1. Electronic literacies

Electronic literacies, a new concept in the study of literacy, refer to new screen-based literacies. According to the concept, electronic literacy includes using computers, interacting through computer-mediated communication (CMC), understanding multimedia information, as well as locating and evaluating online resources. The growth of CMC and the World Wide Web, including multimedia, hypertext, and hypermedia resources, has clearly enhanced the development of electronic literacies (Warschauer, 1999).

Reading online and electronic texts, however, is not the same as reading on paper; such reading requires readers and writers to adapt to the purposes and visions of the literacy. In addition reading online and electronic texts has particular advantages and disadvantages for readers (De Ridder, 2000; McNabb, Hassel, & Steiner, 2002; McPherson, 2005; Park & Helsel, 2008; Warschauer, 1999). McNabb et al. (2002) and McPherson (2005) believe that Internet- or computer-based learning activities make reading more enjoyable. Such activities also motivate students to become active participants, encourage them to use critical reading skills, and improve students' reading fluency and understanding of content. McNabb et al. (2002) also pointed out that higher order literacy skills, such as organizing, comparing, contrasting, and synthesizing information, are crucial factors when students complete Internet-based activities. Through reading electronic and online texts, readers can not only learn traditional reading skills, but also access new technological tools and resources. In addition, online resources provide networks for readers to collaborate with one another in online social environments (McNabb et al., 2002).

Readers sometimes waste time; however, navigating to websites irrelevant to their interest areas or topics can often distract their attention further. Furthermore, poor web page design may disturb their online reading process, and some content and linked web sites can pose difficulties for readers at certain levels (Heller, 1990; McPherson, 2005). To understand the online text clearly, it is necessary to know more about the characteristics of the text. In the following section, we will review the two prominent components of electronic literacies: hypertext and hypermedia.

3.2. Hypertext and hypermedia

Hypertext and hypermedia are electronic glosses, with "glosses" referring to the "many kinds of attempts to supply what is perceived to be deficient in a reader's procedural or declarative knowledge" (Roby, 1999, p. 96). Glosses often lie in the side or bottom margins of the main content, and to author will provide "a short definition or note in order to facilitate reading and comprehension processes for L2 learners" (Lomicka, 1998, p.41), how does the gloss cause problem for L2 learners' reading. With recent technological developments, authors have begun to evolve their techniques, using electronic glosses with pictures, audio, and video for online and electronic texts (Yoshii, 2006).

The word *hyper* indicates that there are extra elements, thus hypertext refers to text with links. These links can be between sections of a nonlinear text, to another page in the website, and to other documents (Kommers, Grabinger, & Dunlap, 1996; McKnight, Dillon, & Richardson, 1996; Warschauer, 1999). The links lead users to other online or electronic resources, so that hypertext provides dynamic ways to present and to access large amounts of information in the new literacy period (Warschauer, 1999). Hypermedia, as a more developed version of hypertext, differs from hypertext in that it uses a multimedia format to provide information (Kommers et al., 1996; McKnight et al., 1996). Researchers (Kommers et al., 1996; Moore, Burton, & Myers, 2004; Mayer, 2001) define multimedia in diverse ways, depending on their point of view. Multimedia, as the presentation of materials using both words and pictures, refers to the use and the combination of several media devices, so it is "computer-driven interactivity with learners' ability to determine and control the sequence and content selection" (Moore et al., 2004, p. 994). As the concept of text changes to encompass audio, visual, and spatial components as well as traditional prints (Hamston, 2006; New London Group, 1996, 2000), we include multimedia into the concept of extended text in this study.

Both students and teachers use online or electronic texts as important educational resources. Many previous studies regarding hypertext and hypermedia learning environments, however, focused on L1 learners (Lawless & Brown, 1997; Mayer, 1997; Patterson, 2000; Su & Klein, 2006; Yang, 2000); few researchers have investigated L2 or FL populations in those environments (Ariew & Ercetin, 2004; Chun & Plass, 1997; Lomicka, 1998; Mayer, 1997; Sakar & Ercetin, 2005). More research studies targeting L2 and FL learners, therefore, are needed. Just as readers use multiple strategies when they read paper-based texts, they do the same with online texts. The following section will explore the strategies used in the online reading contexts.

3.3. Online reading strategy

Learning strategies are learners' techniques, behaviours, and actions in a variety of learning contexts. Even though scholars approach this issue in different ways, many of them agree that strategy use enhances learning in efficient and effective ways (O'Malley & Chamot, 1990;

Oxford, 1990; Oxford & Crookall, 1989). Language learners are active participants in the learning process, and they adopt various strategies without regard to their level. Frequently, however, in many cases, they do not recognize that they use strategies in the process and do not take advantage of all available strategies (Oxford & Crookall, 1989).

Although both reading and strategy use in online contexts have become important, few researchers have investigated L2 readers' online reading strategies (Anderson, 2003; Huang, Chern, & Lin, 2009). Coiro (2003) suggests three types of electronic texts: nonlinear hypertext, multimedia text, and interactive texts. She argues that these types of text introduce both new support and new challenges for readers. Some researchers report that readers transfer paper-based text reading strategies to computer-based text reading (Elshair, 2002; Hsieh & Dwyer, 2009). Furthermore, Anderson (2003), Elshair (2002), and Foltz (1993) detail language learners' new reading strategies in online learning environments. Elshair suggests strategies relevant to readers' modifying text features, navigating web resources, reacting to problems, personalizing their behaviours, and evaluating web resources. Reading in hypertext learning environments is not just a reading process, but also a problem-solving process; for example, readers often need to deal with unfamiliar text formats. To facilitate this process, they use maps, which provide a representation of the text structure, and other signals, such as titles and nodes (Foltz, 1993).

Among the relatively few studies about L2 reading strategies in online reading contexts reviewed above, studies reported through sociocultural perspectives are scarce. A possible reason is that sociocultural approaches to education are a comparatively recent topic. The current study will fill this gap.

3.4. Research questions

For a better understanding of L2 learners' use of reading strategies throughout their online reading activities in an informal setting, we addressed the following two overarching research questions:

1. What reading strategies do college-level ESL learners use for online L2 text?
2. How do college-level ESL learners use hypertext and hypermedia while reading online L2 texts and completing reading tasks?

4. Research design

To identify college-level ESL learners' use of reading strategies and their reactions in detail when they read online texts, we conducted a qualitative case study (Merriam, 1998). Each case in this study refers to an ESL learner and a reading task. In addition, as "the primary instrument for gathering and analyzing opportunities for collecting and producing meaningful information" (Merriam, 1998, p. 20), we played in roles of participant observers and employed multiple and overlapping data collection strategies (Patton, 2002).

4.1. Settings

4.1.1. Independent English study group

In the summer of 2008, we co-researchers created an online English study group named Independent English Study Group (IESG) for ESL students at an urban research university in the southeastern part of the United States. Over the course of the study, ten ESL students had online and face-to-face meetings with us and other students on a bi-weekly regular basis. The purpose of IESG was to provide ESL students with opportunities to practice both oral and written English in collaborative learning environments. We had meetings with group members, recording what they thought aloud as they read computer-based resources, solved problems, and evaluated web resources.

To set up a collaborative online learning environment, we created an account on Ning (an online social network site). Site users can freely create social networks, and people can join them. Site creators can customize the website and manage it according to their purposes. Site users or members can post written messages, photos, audio streams, and videos and participate in asynchronous online discussion. The IESG site for this study contained several menus, *Main, Invite, My Page, Members, Photos, Videos, Study Room, Blogs*, and *Manage*. Fig. 1 shows a screenshot of the IESG online social network site.

Co-researchers developed the site carefully to provide a user-friendly screen and menu bars.

4.1.2. Participants

Overall, ten English language learners (ELLs) from low-intermediate to high-intermediate levels who were enrolled in the English Language Institute joined IESG between the summer of 2008 and the fall of 2009. Three of the ten students actively participated in reading activities. This case study focused on three participants from November 2008 to April 2009. The participants were Lin-Fang, Daniela, and Yoon-Su: their names are all pseudonyms.

Lin-Fang was a twenty six-year-old woman from Taiwan who had been in the United States for two months when she agreed to participate in this study. She was confident in reading both paper-based and computer-based text in her first language (L1), Cantonese, but not very confident in reading either paper-based or computer-based texts in English. Lin-Fang considered comprehension and vocabulary words her greatest difficulties in reading English. She spent from two to 3 h a day using the Internet, and she described her computer skills as medium. Lin-Fang had graduated from a teachers' university in Taiwan and had taught English at an elementary and high school for about a month before she came to the United States.

Daniela was an eighteen-year-old young woman from Peru, who had been in the United States for eleven months when she joined IESG. She was very confident in reading both paper-based and computer-based text in her L1, Spanish, and L2, English. She considered herself a good L2 reader except for vocabulary problems. She spent from five to 6 h per day using the Internet. She came to the United States after graduating from a high school in Peru.

Yoon-Su was a twenty-five year-old man from South Korea; he had been in the United States for six months when he joined this study. For both Korean and English, Yoon-Su considered himself a poor reader for both paper-based and computer-based text. Like Lin-Fang, Yoon-Su saw comprehension and vocabulary words as his greatest difficulties in reading English. He stated, "Sometimes, even though I can

Fig. 1. Screenshot of IESG online social network site.

understand each sentence, I can't understand a paragraph meaning." He usually spent 2 h a day using the Internet to check e-mail and search for information. He had left his university and come to the United States to study English.

4.2. Data collection

Lin-Fang, Daniela, and Yoon-Su each completed two training and three online reading sessions in the six months between 2008 and 2009. Each participant individually made an appointment with us through online discussion sessions on Ning and visited the office once or twice each month.

4.2.1. Training sessions

Before participants worked on the three main reading sessions, they completed two online surveys, providing their demographic information, prior knowledge, and experiences in reading paper-based and computer-based text. We provided all the resources for training through an electronic medium, and participants answered each question and submitted their answers directly to the co-researchers through an online survey tool. Through these sessions, participants became familiar with the online activity formats and practiced thinking aloud. We adopted the think-aloud protocol as a frame of data collection and modified it to identify ESL students' online-reading strategy use for online reading tasks. We recorded participants' think-alouds with digital voice and video recorders, then transferred the recorded data to a notebook computer. We observed participants throughout each session and took notes to achieve a better understanding of their strategy use and reactions. Semistructured interviews were used to obtain participants' inner perspectives on their reactions and experiences.

4.2.2. Online reading materials and tasks

The primary online reading tasks consisted of three reading, problem-solving, and evaluating sessions. We designed the tasks based on participants' needs to find and read appropriate websites. We posted the directions for the activities on Ning and provided explanations prior to each session. Participants submitted their answers through the online survey tool after they completed each task. Scores of their problem-solving have not been addressed in this study due their lack of relevancy to the purpose of the study. Our purpose was to explore participants' use of reading strategies and their reading processes. Fig. 2 is a screenshot of a reading resource and the students' view of the online survey tool.

To explore our research questions, we developed specific online reading tasks. The three online reading tasks included two to seven questions to be answered or problems to be solved. Participants accessed Internet websites, collected data, and compared and evaluated the resources in order to answer the questions. Task #1 had two cases, and participants were required to (a) to look for a staff member who could provide professional suggestions and information based on his or her career, experiences, and position in order to help their friends and (b) to search for a good website for English study and introduce it to the participants' friends. For Task #2, we provided the five existing websites relevant to studying English; the participants were asked to evaluate the websites and to explain their evaluation process. For the last task, students were required to access the *National Geographic* website and to select one topic to use for responding to six questions and to evaluate the web pages. The five topics to choose from were animals, environments, history, science and space, and travel and cultures; each link contained a great deal of information, such as text, pictures, audios, and videos. Table 1 presents each reading task, reading resource, and goal for the tasks.

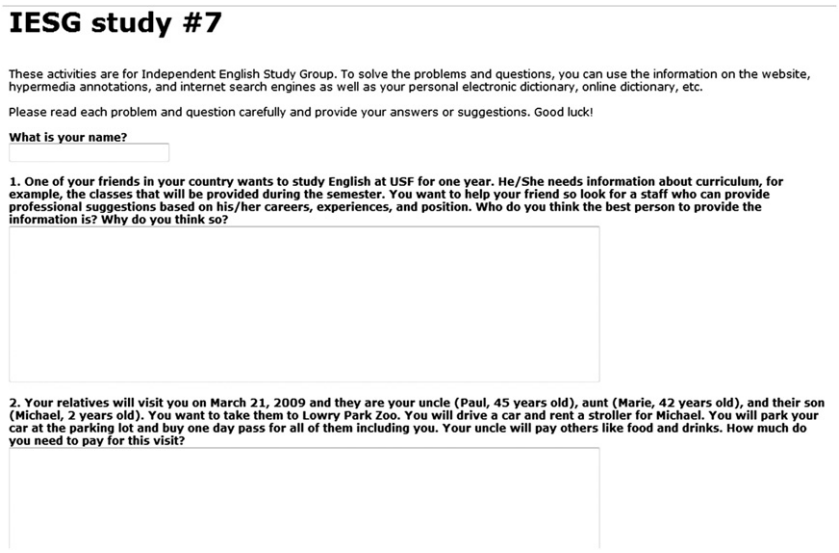

Fig. 2. Screenshot of an online text.

We adopted an electronic medium to provide all the directions and questions; participants answered each question and directly submitted their answers through the online survey tool. We observed the participants' reactions during each activity, interviewed them, and recorded their thinking aloud (Ericsson & Simon, 1993) with digital voice and video recorders.

4.3. Data analysis

Using qualitative research methods, we analyzed qualitative research data and think-aloud reports. To analyze the data systematically, we combined and modified Hatch's (2002) two analytic models: inductive analysis and interpretive analysis. Our analytical process began with preparing and organizing the data; we arranged and transcribed each data set for the holistic and descriptive analyses. After the data sets were ready, we read them, identified frames of analysis and created domains based on semantic relationships. We identified and refined salient domains and interpretations and assigned them each a code. We coded each segment and combined them into broader categories or themes in each case. As part of this coding process, we also searched data that fitted with or ran counter to the relationships in the domains and interpretations. After these steps, we searched for the meanings within and across domains. For every step, we compared the analyses with one another and discussed the various opinions.

Given the nature of qualitative case study methods, the number of participants is generally relatively small, three cases in this particular study, so researchers must provide sufficient information about the setting of the inquiry so that anyone interested in the cases has a base of information appropriate to judge transferability. Providing "proper" thick description and participants' "emic voices" will ensure that the results of the study can be transferred to other contexts (Lincoln & Guba, 1985).

Table 1
Online Reading Tasks.

	Online reading resources	Goals
Task #1	Reading online texts and search for information depending on the problems that investigators provided	Solving three problems 1. One of your friends in your country wants to study English at Apple University [participant's institution] for one year. He/she needs information about curriculum, for example, the classes that will be provided during the semester. You want to help your friend so look for a staff who can provide professional suggestions based on his/her careers, experiences, and position. Who do you think the best person to provide the information is? Why do you think so? 2. One of your classmates requests you to recommend a good website for English study. Search for a good website for English study and introduce it to your classmate. Why do you think it is a good website? What are strengths and weaknesses?
Task #2	Visiting and comparing five ESL related websites	Answering seven questions 1. What are advantages and disadvantages of the first website? 2. What are advantages and disadvantages of the second website? 3. What are advantages and disadvantages of the third website? 4. What are advantages and disadvantages of the fourth website? 5. What are advantages and disadvantages of the fifth website? 6. What do you see when you evaluate Internet websites? Please list from the most important one to the least important one. 7. Based on your opinions above, which website would you use for your future English study and why?
Task #3	Visiting and navigating the National Geography website	Answering six questions 1. Why did you choose the topic? 2. What is the main idea of the resources that you see on the website? 3. Which information among text, audio, and video is the most helpful? 4. If you clicked on some links, why did you do that? 5. What are the advantages and disadvantages of each of resource, such as text, audio, and video? 6. Based on your navigation, what is your evaluation of this website or the resources?

To enhance the trustworthiness, we used various methods to approach the data and study. We explicitly provided our assumptions and theoretical framework throughout the study and continuously interacted with theories and world views as well as previous literature (Creswell, 2007; Merriam, 1998). In addition, we adopted data and investigator triangulation (Denzin, 1978), in which we used diverse data resources and made our understanding of the contexts in hypermedia learning environments clear and reasonable. We also offered participants' emic voices as well as thick descriptions of each participant, case, and context, and checked our interpretations with participants through informal interviews. The following section will show the findings, and, again, all participants' names are pseudonyms. We will italicize their text reading.

5. Results

Our main foci for this study are college-level ESL learners' strategy and hypermedia- resource use in dealing with online reading tasks. Throughout the combined data analysis process, seven main themes emerged and revealed the participants' online-reading-strategy use. We present subcategories of the themes when applicable and offer participants' emic voices from their comments, interviews, and writings. We do not correct participants' grammatical errors unless they would cause a misunderstanding of the data. Participants' behavioural and affective reactions, such as "laughing" and "clicking on hyperlinks," are included between square brackets, and their content reading is italicized. The seven themes are (a) using hypermedia, (b) using computer applications and accessories, (c) dialoguing, (d) setting up reading purposes and planning, (e) previewing and determining what to read, (f) connecting prior knowledge and experiences with texts and tasks, and (g) inferring. The first two strategies are unique to online readings; the remaining five strategies are applicable to both online readings and paper-based text readings.

5.1. Using hypermedia

One of the prominent differences between regular text and online text is hypermedia, which creates nonlinear reading patterns (Kommers et al., 1996; McKnight et al., 1996; Park & Helsel, 2008). Participants had a variety of online resources to access, and they gathered diverse information from those resources. For example, participants clicked on hyperlinks guiding them to other websites, pictures, audios, and videos. Each participant preferred different resources and identified different strengths and weaknesses of each resource. In this category, we found two subcategories: (a) videos and pictures and (b) text and audios.

5.1.1. Videos and pictures

Participants considered videos and pictures important resources in online reading environments, and they regarded the resources as helpful for reading English text and studying English. Lin-Fang and Yoon-Su liked videos best and emphasized that videos were the most useful and helpful resources:

> Lin-Fang: I prefer video the most. The video includes contents, which, if … showed in text, will be hard to understand to me. Beside, the video is like a short film. The real people discuss the topic and do in action. More, if I don't understand the word, I may take a guess by video.
> Yoon-Su: The video was most helpful. I couldn't read English fast, so listening lecture is more comfortable. Of course if the video was too complicating, I couldn't understand. However, it was easy to understand.

Daniela also acknowledged that pictures and videos were good additional resources, although she preferred textual resources. Pictures helped her to imagine how specific items in the text looked.

In support of Sakar and Ercetin's (2005) findings, participants reported that videos and pictures were their favourite and most helpful online resources. The videos and pictures assisted participants in understanding the text by offering visual cues, which were clearer than audio resources. Participants did not use videos and pictures in an isolated way, however; rather, they used those resources with text, which might enhance their reading activities (Mayer, 1997).

5.1.2. Text and audios

Even though the concept of text extends to pictures, audios, and videos (Hamston, 2006; New London Group, 1996, 2000), the textual resources are still the major materials for many readers. Daniela was one such reader; she relied more heavily on textual information than on other multimedia. With regard to text resources, Daniela said, "I can find more specific information about the topic with some examples or some details." Text was not always the ESL readers' favourite resource, however; although Lin-Fang and Yoon-Su accessed the text for its concrete and abundant information, they did not like textual resources:

> Yoon-Su: For English I couldn't read fast, so sometimes I didn't try [to read text].

Participants showed the least interest in audio resources. The main reason they gave was that the audio resources did not provide any visual cues, which would be an important resource for learners struggling with the language. Daniela did not use audio at all, because it was hard to find good audio resources on the Internet:

> Investigator: Then, what do you think about the audio?
> Daniela: Audio? My experience, I never used the audio, I don't really.
> Investigator: Is there any reason why you don't use audio?
> Daniela: Because when I try to find more information about the topic, I, I find in video and text, but especially in audio, no, didn't find.

In addition, audio is not a favourite resource because it is hard to review. Yoon-Su said, "The reason why audio is harder than reading and watching video is if I miss something, I cannot come back, and it can be hard to catch again." Yoon-Su's struggles with reading caused him to rely more on the visual resources, such as videos and pictures, than text and audios. These patterns were varied, however, depending on participants' individual differences, such as their experiences, language proficiency level, and learning styles (Ariew & Ercetin, 2004; Chun, 2001).

5.2. Using computer accessories and other functions

Throughout the observations, we found other reactions in the participants' online reading. While participants read online resources and completed tasks, they adjusted their behavioural reactions in order to use computer accessories and functions, such as a computer mouse, a spell checker, and a grammar checker. They used a mouse to move a cursor and pointed to text that they were reading on the computer screen. In addition, they dragged the mouse and highlighted some sentences to focus on them. These behaviours were similar to the readers' pointing their fingers or highlighting important lines and passages in books.

Based on their reading purposes and the importance of the text, participants also adjusted the speed of moving the scroll bar. When they previewed titles, subtitles, and menus, they scrolled up and down quickly, but they moved the screen slowly as they read important parts and focused on particular content. Some of the participants used the spell checker and grammar checker of word processors. Mostly, they used these functions when they wrote or revised what they had already written. The red line indicating spelling or grammar errors helped them recognize their errors by themselves. Depending on the task, participants used various software applications such as the calculator.

5.3. Dialoguing

According to sociocultural perspectives, interaction is an important factor in language learning processes and has dialogic formats (Bakhtin, 1981; Johnson, 2004; Lantolf & Thorne, 2006; Vygotsky, 1978, 1986). Throughout the online reading tasks, participants used dialogue to understand the text and the tasks and to confirm their understanding. They dialogued with themselves, with others, and with online resources both directly and indirectly. The dialogues mostly began with questions, but each participant showed different interactive patterns.

5.3.1. Dialogues with oneself

Participants interacted with themselves while they read online text and made meaning out of it. Most formats of the dialogues were self-questioning and self-statement, so the participants talked to or asked questions of themselves. Daniela frequently dialogued with herself when she read online texts:

> Daniela: Ok. Ah, ok. In the lowest section of the tablet are two more defeated enemies. [Italics refer to participants' text reading] I think that he want to kill this animal next, after kill them first? [laughing] Mm, ok. Palette kills one enemy and maybe after that, after that he want to kill the next? He want to kill that?

Lin-Fang and Daniela often tried to dialogue with themselves, and they did not expect responses from others. The two participants asked questions, predicted what would happen, and retold the story or their plan during the dialogues. They regarded themselves as resource persons and interacted with their personal experiences and knowledge of the world. Yoon-Su, however, did not often explicitly report dialogue with himself.

5.3.2. Dialogues with others

Throughout the study, we, as investigators, played roles as participant observers, but the participants identified us as resource persons. They frequently shared their experiences and asked us a variety of questions regarding vocabulary words, tasks, and background knowledge. Participants used questions to request "clarification" about what they did not understand and "verification" to confirm that their understanding was correct (Oxford, 1990, p. 145). When they read and wrote English text for the online reading task, they asked for clarification and verification regarding vocabulary words: the meaning, the spelling, and the use of the words.

> Yoon-Su: [typing a sentence] How can I spell organize?
> Investigator: Organize, o, r, g, a, n, i, z, e.
> Lin-Fang: Ok, if these rules had been written down, they might have looked like the list below. [rereading the previous paragraph] Is the "flat" means that this is flat? [touching the desk] The desk is flat.

Participants also asked questions relevant to the tasks. Lin-Fang and Daniela usually asked these questions before they started reading or rereading online text. When Lin-Fang worked on Task #3, she asked,

> Lin-Fang: [accessing the *National Geographic* website; clicking on several hyperlinks] So just evaluate this website?
> Investigator: Yes, collect some data because your job will be planning to do some project or presentation.
> Lin-Fang: [scrolling up and down] So how much time do I have for?

Participants tried to make sure that they understood the tasks and adjusted their reactions based on the correct understanding. Although the most frequently asked questions were about vocabulary words and tasks, the participants also asked questions about background knowledge, which could help them understand the text. In most cases, Lin-Fang and Daniela asked questions to verify that their schema uses and inferences were correct.

5.3.3. Dialogues with online resources

Another unique dialogical interaction in the online contexts was dialoguing with the online resources, including texts, pictures, audios and videos. When the participants dialogued with the resources, they accepted or rejected the views about the world included in and relevant to those resources. Furthermore, they read these resources either for information or for fun. While she read online resources of Task #3, Daniela identified video producers and appreciated the video resource:

> Daniela: In the videos, the people who make the videos, attention how the people in the past living, where their habit, how they handle animal. I think it is a good way to know more about the people in the past. We can see, we can see how they are living, they were living in the past, I think so.

Participants continuously interacted with the online texts and chose whether they would read the texts to obtain information as an efferent stance or for fun as an aesthetic stance (Rosenblatt, 1978). In general, Yoon-Su regarded pictures as resources for fun rather than for information:

Yoon-Su: Picture, pictures, for pictures, it can't be alone … Picture. That's just … artistic things.

Through dialoguing, especially questioning, readers drew closer to the meanings of the text, achieved a better understanding of it, and created the world of the work. In addition, the readers responded to cues, adopted stances of reading for information and reading for fun, and accepted and rejected others' views about the world (Rosenblatt, 1978). The dialogues enhanced their interest and involvement as Oxford (1990) argued. ESL students were actively involved in the dialogic interaction processes with others during the reading task, so they gained more resources, input, and feedback.

5.4. Setting up reading purposes and planning

Throughout the online reading tasks, all three participants set up their reading purposes and planned how they would approach a particular task. They made explicit statements about the purposes and their plans or asked others questions to ensure that they were performing the reading activities correctly. For Task #1, Daniela understood the task, decided what she needed to do to complete the task, and asked questions:

Daniela: Who do you think the best person to provide the information is? Why do you think so? [Participant's reading of content is italicized] Ok, so I need to go to the [ESL program website]. Oh. What is the [website] address of the [program]?
Yoon-Su initially read the text without planning, but he could not understand the text. He decided, therefore, to reread the text in order to answer the questions:
Yoon-Su: [after reading all the text for the task] I think I couldn't get the main idea. Let's solve the problem with reading [the text] again.

Just as Coiro and Dobler (2007) found in their study, all the participants of our study set up the reading purposes and planned how they would complete their tasks. Setting up reading purposes and planning was a starting point for successful comprehension and provided ideas about how to become selective in the reading and how to focus on critical content (McNamara, Ozuru, Best, & O'Reilly, 2007; Pressley, 2000). The participants thought about which resources to read and what to do after reading to complete the tasks.

Participants followed different patterns, however, in their use of this strategy; they set up their purposes at different times. Lin-Fang and Daniela spent considerable time in making sure they understood the tasks before reading the main text, so they asked many questions, both of themselves and of us. In this way, they could save time by not navigating unnecessary online resources. Yoon-Su, however, began reading the texts for the tasks without thinking much about what was required of him, so he moved back to the planning stage during the activities. Yoon-Su's patterns of setting up purposes and planning caused him to waste time while he navigated the online resources.

5.5. Previewing and determining what to read

When participants set up the purposes and planned how to complete the online tasks, they previewed each web page before they read the full text. One of the most well-known prereading strategies, previewing involves reading over key parts of a text, such as the title, subheadings, figures and tables, and the introduction and conclusion (McNamara et al., 2007). Through this previewing step, each participant tried to get a grasp on what kind of information the website provided, where they could find it, and what online resources they would read. Lin-Fang read through the title, subtitles, and menus, and even wrote down the list to facilitate her online reading process:

Lin-Fang: … Uh, um. [reading aloud the title and the menu] Lowry Park Zoo, Rent a car, Parking tickets, Direction, Admission, Information, One day pass, so I think I need a pencil.

Although each website had a different design, all had titles, subtitles, and menu options. The last component especially is unique in electronic and online text. The menu, the most basic element of graphical user interface design, is a pull-down list of available functions or contents of software applications and electronic resources (Dillon & Leonard, 1998). In this study, the menu presented the overall content organization of the sites and helped the participants find necessary resources; all participants recognized and used the menu to facilitate their online reading. Based on the information from the preview, participants identified the outlines and general ideas of the online text and determined what they would read to complete each task. For this process, participants needed critical thinking skills to become better readers and problem solvers.

5.6. Connecting prior knowledge and experiences with texts and tasks

Throughout the online reading tasks, the participants connected their prior knowledge and experiences with the text and tasks. Yoon-Su was excited when he encountered terms or information that he already knew; he made explicit statements, such as "I know, I know this website. My, one of my teachers offered this website." In addition, when Yoon-Su worked on Task #3 to select one subtopic of the *National Geographic* website and to evaluate it, he chose *History* for his evaluation. His experiences and thoughts when he had arrived in the United States influenced his choice:

Yoon-Su: Actually I chose history … Before I came to America, I was not so interested in history. I didn't know anything about the [American] history, I knew some little facts, just for Korean history. After I came here, I realized [that] when I am familiar with some culture, history is important to understand culture more. I try to, uh, search American history.

Participants carried their prior knowledge and experiences as schemata to their reading tasks, and their knowledge was about the situations, events, actions, and sequences of each activity and action (Rumelhart, 1980). The range of readers' knowledge of the world even

included the people they knew; they sometimes substituted their acquaintances for unfamiliar invented characters while completing Task #1. Although the numeric scores for the reading tasks were not the focus of this study, readers' world knowledge was relevant to their reading comprehension processes and attitudes towards tasks (Ariew & Ercetin, 2004; Carrell & Eisterhold, 1983).

5.7. Inferring

Richards and Anderson (2003) defined inference as "the strategic process of generating assumptions, making predictions, and coming to conclusions based upon given information in text and in illustrations" (p. 290). Inference-making skills are relevant to readers' comprehension (Oakhill & Cain, 2007). ESL participants in this study frequently guessed at and predicted what would happen next in their readings:

> Daniela: I think that he want to kill this animal next, after kill them first? [laughing] Mm, ok. Palette kills on enemy and maybe after that, after that he want to kill the next? He want to kill that? Oh, I think that maybe after that he want to kill them.

Participants used both *text-connecting inferences* and *gap-filling inferences* throughout the activities (Oakhill & Cain, 2007). According to Oakhill and Cain (2007), readers use information from different parts of the text to establish local coherence, which are text-connecting inferences. They also use their general knowledge from outside the text to fill in gaps in details in the text; these are gap-filling inferences. When the participants completed the tasks, they frequently consulted pictures and videos to gain a better understanding of the textual resources. They also used their prior experiences of visiting and using websites in their countries and in the United States.

6. Discussion

ESL students adopt the paper-based text reading strategies, adjust the strategies for computer-based text reading, and use new strategies for computer-based text reading. Discussions have focused on their use of reading strategies and their nonlinear dialogues as indicating "hybrid" online reading. "Hybrid" online reading refers to readings formed or composed of heterogeneous elements, such as incorporating paper-based reading strategies and online reading activities. Some strategies were transferred from the readings of paper-based texts, and some were modified for online texts, some were specifically created for innovative online reading. Dialoguing enhanced "hybrid" online reading.

6.1. "Hybrid" online reading strategies

ESL students use their own schema and dialogic utterances to make meaning of the text, and they set up their goals and determine which resources to access when they read the computer-based text. These strategies are the same ones that language learners also use for paper-based text reading and learning (Elshair, 2002; Hsieh & Dwyer, 2009; Jiménez, García, & Pearson, 1996; O'Malley & Chamot, 1990; Oxford, 1990; Oxford & Crookall, 1989). These reading strategies were borrowed from paper-based ones and modified, with new, innovative strategies being developed depending on the text and the task. "Hybrid" is often used to describe teaching that combines face-to-face methods and online teaching (King, 2002). In a dictionary, it is defined as "anything derived from heterogeneous sources, or composed of elements of different or incongruous kinds" (Online Dictionary, 2010). Thus, ESL learners comprehend online text and employ tasks such as incorporating paper-based reading strategies, adopting them, and modifying them. They also invent new reading strategies through ongoing dialogues.

Five reading strategies derived from regarding paper-based texts were (a) dialoguing, (b) setting up reading purposes and planning, (c) previewing and determining what to read, (d) connecting prior knowledge and experiences with texts and tasks, and (e) inferring. These strategies were also used for paper-based text reading and learning (Jiménez et al., 1996; O'Malley & Chamot, 1990; Oxford, 1990; Oxford & Crookall, 1989). "Hybrid" online reading took place: these strategies are already internalized the learners' former paper-based reading experiences, and the learners transfer them to a new reading context. ESL students do not merely transfer the strategies from paper-based reading to computer-based readings; they also take into consideration the presentation format, terms used for each text, and linearity of reading text (Park & Helsel, 2008). In this context, ESL students use their own schema and dialogic utterances to make meaning of the text, and they set up their goals and determine which resources to access when they read the computer-based text.

For instance, in "hybrid" online reading, ESL students adjust paper-based text reading strategies in order to read the computer-based texts and to develop new strategies. Two new reading strategies are used for online reading: hypermedia and the use of computer accessories and other functions. For example, when they cannot use certain traditional reading strategies, such as underlining an important part of the text, ESL students use some computer applications, such as a mouse or a keyboard, and to use a mouse pointer as a substitute for pen and pencil. Furthermore, they use some computer options and content that paper-based texts do not offer. These resources include menu and navigation options, multimedia resources, such as videos and audios, which are not included in paper-based text. Students use these resources as different types of texts to facilitate their meaning-making process.

These findings show that ESL students, as "hybrid" online readers, are by no means passive readers in the online reading contexts. They actively and creatively make meanings and develop their reading strategies, depending on the contexts, regardless of their language proficiency. Furthermore, as Mayer (1997) argues, they use diverse multimedia resources as well as textual ones in integrative and synthetic ways. Their active reading in the online contexts is clearly shown in "nonlinear and multiple dialogic patterns."

6.2. Nonlinear dialogues

Online reading offers the specific context for "hybrid" online reading. ESL students' ongoing dialogues supported the process of "hybrid" online reading. Among the various intimately connected strategies, ESL students choose to use dialogue, which is highly relevant to Bakhtin's dialogism (1986). Due to the unique features of online text, such as hypertext and hypermedia, the readers' dialoguing patterns are potentially nonlinear and multiple. In other words, when ESL students begin to read online text through "hybrid" online reading, they also begin to dialogue with themselves as they set up their reading goals and plans. In this process, they draw upon their prior knowledge and

preceding utterances as well. As much as each utterance or speech belongs to a particular speaker (Bakhtin, 1981), online materials also belong to particular authors and developers; ESL readers' dialoguing, therefore, is always ongoing and "hybrid." While reading the online text, ESL readers do not dialogue linearly. Instead, they dialogue with textual materials and click hypertext and hypermedia to refer to other resources. At this moment of clicking, they begin to dialogue with other individuals or text, but the preceding dialogue(s) did not end, and the ESL readers may return to the dialogue(s) again.

ESL readers dialogue with multiple resources and texts simultaneously. For example, while ESL students read online textual resources, they can also click on a link to a video and see a couple of images on the screen. They try to comprehend textual resources, but see the images and videos simultaneously. This process is not predetermined; ESL students create their own ways to dialogue with the online text by accessing the resources both randomly and deliberately. In addition, they critically evaluate the resources on their quality and appropriateness.

While dialoguing with themselves, others, and the main text when they read online texts; however, ESL readers choose to access other texts, pictures, audios, and videos during the reading and to dialogue with them in nonlinear ways by clicking on the hypertext and hypermedia. "Hybrid" online reading take place when ESL readers make these dialogical attempts to construct meanings throughout the online reading tasks and to fill the gaps between what they can do individually and what they can do by means of those dialogues (Bakhtin, 1981, 1986; Vygotsky, 1978).

All these processes, including ESL students' transferring, adjusting, and creating strategies in the online reading contexts, do not occur in vacuum. Educators can no longer simply shift the responsibilities for learning online reading strategies onto students and their parents. Just as ESL students need to learn how to use effective reading strategies to achieve their purposes in paper-based reading in a classroom, educators also need to learn how to transfer, adjust, and create online reading strategies at school (Janzen, 2002). This learning should not have to take place independently. The question of online strategy should occur in integrative ways with regular classes. For example, when students learn the text-to-text connection strategy of reading, teachers can include the online reading contexts and apply the strategy to the reading contexts. Students can connect existing texts with what they have already read, listened to, and watched online. In addition, students learn which computer applications can be used to replace paper-based reading strategies in online reading contexts. For instance, teachers can show students how the computer mouse and the keyboard can be used to highlight online text. For new and creative strategies in the online reading contexts, students need to learn how to search for appropriate information from the Internet, and how to use it for their projects: skills Warschauer (2002) calls information literacy.

Individual ESL students' reading patterns and strategies differ, according to each student's background knowledge, reading and technological experiences, language proficiency level, and learning style (Ariew & Ercetin,, 2004; Chun, 2001). Although students may adopt identical reading strategies, their specific use of the strategies differ based on those factors. For example, ESL students equally consult multimedia resources during their reading activities, but each student accesses different resources at different times, and they prefer different technological resources and applications.

7. Conclusions

The purpose of this qualitative inquiry was to examine college-level ESL learners' use of reading strategies and hypermedia resources in diverse online reading activities. Participants applied traditional reading strategies to their online reading so that they could connect prior knowledge and experiences with the activities to set up their purposes and plan before reading online texts. They also accessed hypertext and hypermedia resources and used computer applications for previewing, determining which resources they needed to complete the activities, and then completing the reading activities.

Throughout the processes, the participants dialogued with themselves, others, and online resources, including texts, pictures, audios, and videos. The readers' dialogic interactions demonstrate their roles as active participants of the reading process, and in this perspective, the online reading occurs in diverse sociocultural and technological contexts. The participants also accessed hypertext and hypermedia resources to gain a better understanding of the online text. Although the concept of the text has been extended to encompass multimedia resources as well as traditional textual resources, the ESL readers in this study preferred videos and pictures to audio. The various preferences and patterns of using hypermedia resources derived from the participants' individual differences and experiences. In online reading activities, therefore, ESL learners clearly played roles as active participants and readers.

ESL students have various purposes for studying English, and they bring their own cultural, linguistic, and personal knowledge and experiences to each context, and their learning contexts are not limited to a classroom. Investigating ESL learners' use of reading strategies in diverse online learning environments is important. This well-motivated online study group shows which reading strategies college-level ESL students use and how they employ online resources, such as hypertext and hypermedia, when they read online texts. The findings provide the insight necessary for educators in nurturing ESL students' literacy development.

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