READING STRATEGY USE BY EFL LEARNERS TO SEARCH INFORMATION ON THE WORLD WIDE WEB

MASAE KONISHI

1. Introduction

Based on the findings in Konishi (2003), Konishi (2014) investigated the strategy use by EFL learners for navigating through the network of hypertext. It dealt with the reading task to browse a web site about Otago Peninsula in New Zealand to gather information necessary for making a one-day excursion plan around the peninsula. The task focuses on the reading behaviours required for browsing and scanning (Urquhart and Weir, 1998; Grabe, 2009). This is a common type of task in our daily use of web sites, when we have chosen a specific site to search information about a fixed topic.

However, thinking about our reading behaviours when we use the Internet, we often utilize a search engine, having just a general topic in mind. Before browsing within a specific web site, we need to decide on which site to be used for the information gathering. In this paper, the process of choosing a web site to look into is focused on as another popular type of reading behaviours for hypertext navigation.

2. Research questions

Based on the findings in Konishi (2014), this paper is going to investigate the following questions:
(a) How is the reading strategy use that EFL learners apply when they browse and scan information within the network of hypertext adapted to the reading task of searching and skimming information on the Internet?
(b) How does hypertext as a medium effect on the strategy use that EFL
learners apply in utilizing the network of information on the World Wide Web?

As for question (a), another reading purpose different from the one in Konishi (2014) is set to check if a different reading purpose requires a completely different strategy use or not.

The question (b) itself is the same as Konishi (2014). Also, the same three sub-questions as in Konishi (2014) will be listed for the question (b).

(i) How do readers find the navigational flexibility in hypertext reading activity?

(ii) What are the bases for readers to choose or avoid the input material among the highly interconnected network of hypertext?

(iii) How do readers deal with the intertextual aspect of hypertext reading?

These sub-questions are originally drawn from the research findings of Konishi (2003) and reflect the characteristics of hypertext as being multi-linear and open-ended (Rouet et al., 1996; Snyder, 1996; Ebersole, 1997; Hunter, 1998; Kaplan, 1995; Landow, 1992; Plowman, 1996).

When readers need to browse among several sites, using the search results by a search engine, they may have to adjust the information they have met in multiple sites. I would like to focus on what behaviours readers take when they cope with the characteristic of intertextuality of hypertext more in detail in carrying out the reading task including searching (Hartman, 1995; Allen, 2000; Orr, 2003).

3. Participants

Four students were recruited for this study. Their participation in this study was voluntary, though they received a stipend for the time and effort for it. The participants were Ai, Kana, Hiro and Taka. All names are pseudonyms. They were students at a private university in Japan. They all belonged to Law Department. Half of them were in a special course called International Law and Culture Course whose curriculum focused on English skill training as well as learning law and administration subjects. Though three out of the four participants had an
Table 1: Background information about each participant

experience of joining a language study tour for 1 month in New Zealand, they had studied English mainly in Japan, so they were categorized as EFL learners. Their English proficiency was between 260 and 450 on TOEIC scores, so they were judged to be low intermediate or beginner level EFL learners.
The participants answered a questionnaire for gathering their background information before they carried out a reading task. The questionnaire is shown as Appendix A and the background information about each participant gathered by the questionnaire is listed in Table 1.

4. Task

The task for this study is to look through the Internet widely so as to see what web sites are created on the topic the participants have chosen for their own web site, presupposing that they are enrolled in a multimedia English class and are required to create their own web site on a topic they choose for the assignment. They are allowed to choose any topic they like for it. Starting from a search engine “Google”, they are allowed to visit any web site written in English they want to see. They are also allowed to use other search engines, if they have any specifically favorite ones. They are asked to report which web site seems more useful/less for creating their own web site after the session. This task is to focus on the behaviours readers take when they carry out searching and skimming. The task sheet used in this study is attached as Appendix B.

<table>
<thead>
<tr>
<th>Task</th>
<th>Content</th>
<th>Expected reading styles</th>
</tr>
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<tbody>
<tr>
<td>Konishi (2014)</td>
<td>make a one-day excursion plan by browsing a site of sightseeing activities at Otago Peninsula</td>
<td>browsing, scanning</td>
</tr>
<tr>
<td>This study</td>
<td>search useful/less sites to introduce in their own web site</td>
<td>searching, skimming</td>
</tr>
</tbody>
</table>

Table 2: Summary of the tasks

5. Procedures

The data collection procedure was all the same as in Konishi (2014). I met with each participant individually for a two hour session. The
session took place over a four-day period across about one month.

First, each participant was asked to answer a questionnaire about their background information such as their Internet experience, English proficiency and reading preferences. The questionnaire used in this study is attached as Appendix A. Then they were asked to sit in front of a personal computer which was connected to the Internet. One video recorder was set beside the computer to record the participants’ behaviours while they were involved in the reading task and when they answered an interview after the task session. After receiving an instruction how to think aloud and seeing a sample by the researcher, they had a chance to practice thinking aloud for about five minutes with a similar reading task.

Next, each participant was asked to search useful web sites on the Internet independently for about 45 minutes. While the participants were carrying out the task, they were asked to think aloud whatever they thought of in their minds. Because the data collection was administered in Japan, all the participants thought aloud in Japanese. Their voice was audio-recorded to analyze the strategy use in carrying out the task.

A special software was incorporated into the personal computer to video record the computer screen participants operated with to gather data concerning what behaviours they took on the screen when they carried out the task. A tracking software was also made effective on the computer to trace their navigation such as how long they stayed in a specific page and how often they changed the web sites to see. Their behaviours including the facial expression, using a dictionary or taking notes during the activity were recorded by the video camera set beside the personal computer. Also, each participant was observed by the researcher while they were carrying out the task.

After the think aloud session, each participant was interviewed to reflect on the activity and on their habits and preferences with reading. Through this process, more information could be extracted about the results of the think aloud session and the circumstances for hypertext reading by the participants. The sample interview questions are attached as Appendix C.
- background information by a pre-activity questionnaire

- a think aloud practice

- a think-aloud session of a reading activity along with observation by the researcher and tracking (45 minutes)

- further comments on the task and the hypertext reading in general by a post-activity interview

Table 3: Summary of the data collection procedure

6. Data analysis

Upon completion of the sessions, I analyzed the data. Data consist of the transcribed think aloud protocols of the participants, the observed behaviours during the think aloud session, recorded screens of the computer each participant operated with during the think aloud session, the results of tracking and the responses to the background questionnaire and to the interview. Because the data were mainly qualitative, all the information for each participant was integrated into a thick description of the behaviours to extract analyses of hypertext reading from the point of view of their strategy use (Creswell, 2013; Creswell, 2014; Potter, 1996; Sato, 2008; Kinoshita, 2003; Kinoshita, 2007).

7. Findings

7.1. Five factors to divide the success of the task

The thick description of each participant’s online behaviours is too long to include in this paper. Summaries of them are shown in Appendix D.

Looking into the thick descriptions of the four participants thoroughly, five factors were extracted which seemed to decide whether they could succeed in carrying out the task or not. Each of the five factors will be explained below.
7.1.1. Narrowing down the topic

Taka had a specific topic as ‘eco car’ when he began the task and searched useful sites very actively by changing key words often. He used 16 key words in total, most of which were concrete such as ‘TOYOTA’, ‘FORD’, ‘clean car’ and ‘motor show’. On the other hand, Ai had not narrowed down her topic enough and she used key words which had broad meanings such as ‘issue’ or ‘problem’. Ai spent 37 minutes before reaching a specific topic as ‘American children suffering from the aftermath of September 11’.

Taka felt satisfied with his activity, while Ai regretted she had little time left when she found her specific topic to search more useful sites for it. She commented in the interview after the think aloud session that the information before she reached the article in the USA Today site about September 11 was almost useless for the purpose of her navigation.

Having a specific topic in mind on the earlier stage of the searching was the biggest factor for fruitful searching activities. A kind of a cognitive skill to narrow down the topic and to select effective key words played a decisive role for the success of the task.

7.1.2. Quick judgments for the usefulness on each site

Hiro and Taka visited significantly more sites than Ai and Kana: 30 and 46 versus 4 and 5. Hiro and Taka were very speedy in judging the usefulness of the sites they opened. They clearly recognized their own standard to select the useful sites for them. Both of them preferred sites to have impressive and comprehensible visual aids such as pictures, tables, graphs and illustrations. They did not want to read a long and complicated text explanation about their topics. They did not stay in one site long and put the priority on grasping the rough trend of information about their topic. They always kept in mind what was the main purpose of their searching activity.

On the other hand, Ai spent much time for reading aloud the text in a web site and also checking the meaning of the words in the text. Though she reminded herself of what she had to put priority on, she could not help using the careful reading style, which caused her to visit only 4 web sites. The comparison shows the rapid judgements and a good
monitoring skill of their own behaviour played an influential part in their success of carrying out the task.

7.1.3. **Negative aspects of careful reading style**

Ai and Kana belonged to a special course with many intensive English training classes in its curriculum, while Hiro and Taka did not. Ai and Kana had a high motivation to learn English in the law department. The English proficiencies of Ai and Kana were higher than those of Hiro and Taka. Ai and Kana were eager to learn English, but their learning habits may have worked negatively for them to carry out the task.

Ai spent much time on reading aloud the text carefully in the pages she opened and consulted a dictionary often to check the meaning of the words she could not understand clearly. As a result, she ran out of time to search more useful sites for her topic. Unfortunately, these learning behaviours which are very common in the English education at school in Japan did not contribute to the success of carrying out the task, rather hindered her from gathering enough information on her topic.

Taka had the lowest score on a TOEIC test among the four participants, but he was the most successful to carry out the task. He was not so good at reading English text, as his pronunciation of some words showed when he read aloud text in a web site. However, he was very active searching information about ‘eco cars’ by changing key words effectively. He seemed to enjoy the activity itself and never think of the learning strategies as Ai used. He seemed to use the skimming strategy very well as if he had been navigating through web sites written in his mother tongue.

Even though Ai had a high English proficiency and a high motivation to learn English, the intensive English training at school may have worked negatively for her to succeed in carrying out the task in this study. The strategies Ai used were all local strategies, which are more effective for intensive reading style. Too much emphasis on the intensive reading style in her English training may have prevented her from coping with the task which required the extensive reading style.
7.1.4. Previous experiences using the Internet

Kana had only a little experience using the Internet before the session, while Taka was accustomed to computers and the Internet from his junior high school days and he answered in the questionnaire that he used the Internet 15 hours a week. Kana was at a loss when she started the task and went into several troubles such as getting no search result with the searching tool because she did not enter any key word in the main column of the tool, being unable to return to the original search engine after proceeding into a site so deeply, and not noticing the camera icon to see the images of the sweets she read about. She could speak little in the think aloud process partly because these troubles overwhelmed her mind. On the other hand, Taka moved through the searching process very smoothly. His technical knowledge about the Internet use may have helped much with the highly speedy judgments on his behaviours during the session.

7.1.5. Utilization of visual aids

Hiro and Taka scanned many pictures, while Ai and Kana spent most of the time reading text carefully. Hiro and Taka commented often in their think aloud that in order to introduce useful sites in their own web site, visual aids such as pictures, tables, graphs and illustrations would play an important role. They thought that future readers of their own web site would be helped much to understand the content with impressive pictures and illustrations. They understood well that utilization of visual aids was essential for an effective web site creation.

8. Discussion on the research questions in this study

8.1. Influences of different reading purposes

The four kinds of reading strategies identified in Konishi (2003) were all used by the participants in this study: cognitive (local / global), meta-cognitive and navigational strategies. The first research question of this study is to check if there is any difference in the reading strategy use depending on a different focus of the reading tasks.
8.1.1. Local Strategies

As for local strategies, Ai carried out careful reading often and consulted a dictionary many times. However, those behaviours did not contribute to the success of her reading task so much. Ai spent too much time on reading text aloud carefully, so she did not have enough time left to gather information from wider sources on the Internet when she found an interesting topic about which she would like to create her own website.

Previous research shows that those who have low English proficiency tend to depend much on local strategies (Carrell, 1989). However, Ai had higher English proficiency than Hiro and Taka who succeeded in carrying out the task. Ai belonged to a special course whose curriculum had many intensive English training classes even though she was a law student. It could be said that she focused on learning English too much, which may have forced her to feel that she had to read English carefully, consulting a dictionary when she came across words whose meanings she was not sure with. However, it seemed to have worked negatively for carrying out the task successfully. This is the same result as Aki in Konishi (2014). Aki also belonged to the International Law and Culture Course and she spent much time on using a dictionary.

This shows that without skimming through the whole text first, directly starting to read every sentence in the text carefully is not a good strategy choice. As Ai could not succeed in her task, careful reading style is not a good choice for information search on the World Wide Web. Readers should put priority on using the extensive reading style at the first stage when they cope with hypertext reading tasks.

8.1.2. Global strategies

It is a generally accepted opinion in the field of reading strategy research that background knowledge about the content plays a positive role in reading activities (Brown, 1998; Carrell & Wise, 1998; Hammadou, 1991) and of course Hiro and Taka took advantage of the background knowledge they had had when they searched sites on their topics, ‘confectionery’ and ‘eco car’. Especially, the knowledge about ‘eco cars’ Taka showed in his think aloud protocol was quite objective as
well as rich and varied. It contributed much to his rapid judgements on the usefulness of each site. Different from the result in Konishi (2014), the task in this study did not cause any conflict with the use of global strategies. Background knowledge helps readers much when they search information through the World Wide Web.

8.1.3. Meta-cognitive strategies

Meta-cognitive strategies such as monitoring their own reading behaviours, keeping the main goal of their reading in mind clearly and revising their strategy use when necessary were extremely important as previous reading research with print text shows (Carrell, 1998; Anderson, 1991). This was also true in the process of hypertext navigation in Konishi (2014).

This study also shows the critical role of meta-cognitive strategies, as is already mentioned in 7.1.2. Hiro and Taka monitored their behaviours very well not to fall into sideways too deeply and to keep their activities focused on their main purpose of the task. Hiro visited 30 sites and Taka did 46. Their judgment of the usefulness on each site was very quick. The average time for the decision was only one or two minutes. They were always aware of their purpose to find useful sites to introduce in their own web site. They deliberately avoided staying in one site for a long time and aimed at meeting as many useful sites as possible. They commented so in their interviews after the session.

On the other hand, Ai took time reading aloud each sentence in the text in a web site she opened and could not get away from the careful reading style, checking in a dictionary all the meanings of the words she felt unsure about. It is a pity that though she knew the careful reading style was not effective in the situation, as she thought aloud in her protocol, she could not give up the reading style she was accustomed to.

Meta-cognitive strategies such as monitoring their own behaviour, keeping their goals clearly in mind and revising their strategy use can be said critical especially in carrying out the reading tasks with other purposes than comprehending the content of a given text linearly through careful reading. Information searching on the World Wide Web also requires readers to be much more self-monitored than reading print text,
as well as hypertext navigation (Kim & Kamil, 2003; Konishi, 2014).

8.1.4. Navigational strategies

Navigational strategies were identified as a new category of reading strategies for hypertext navigation in Konishi (2003). The participants in Konishi (2014) also utilized them often to operate the browser software. The participants in this study were the same, as is already mentioned in 7.1.4. Kana got into troubles with the software operation often, because she had had only a little experience using the Internet, while Taka showed his excellent knowledge and techniques to navigate through the Internet throughout his session time.

8.2. Effects of hypertext as a medium on utilizing the World Wide Web

Hypertext has three characteristics: (i) open-endedness, multilinearity and embeddedness; (ii) hybridity and (iii) intertextuality (Rouet et al., 1996; Snyder, 1996; Ebersole, 1997; Hunter, 1998; Kaplan, 1995; Landow, 1992; Plowman, 1996). The second research question of this study focuses on these three characteristics. How the participants in this study coped with each of these characteristics in the process of searching information through the World Wide Web will be discussed below.

8.2.1. Navigational flexibility

Kana could not return to the original search engine after proceeding into the third site so deeply. She browsed around the site clicking many links, so it became impossible for her to go back to the original search engine even by clicking the backward button on the browser many times. She got strayed because she went into the interconnected network of pages within a site too far. The nested structure of information was the cause of this trouble.

Ai had a trouble opening a site full of math questions, even though she wanted to see sites about children’s issues. As she used a key word ‘problem’, the search results included such a site. She got at a loss of seeing mathematical symbols on a page, but she judged calmly to change a key word into ‘issue’ to avoid visiting such an unexpected site.
This was because she had a chance to choose input materials due to the navigationally flexible characteristic of hypertext.

The other participants coped with the navigational flexibility well. Hiro and Taka moved smoothly between the search results pages and the sites on their topics. Because their judgment on useful sites was really prompt, they moved between the search results pages and the topic-content sites so many times.

Whether participants could cope with navigational flexibility or not depended on the amount of ability to utilize not only navigational strategies but also meta-cognitive strategies. Those who had a lot of previous experiences navigating through the Internet had enough knowledge how to operate the browser software. Moreover, what seemed more influential was that they afforded to monitor their locations among the interconnected pages and to decide smoothly which pathway to choose next.

8.2.2. Standards to choose input materials from hypertext

Three participants, Hiro, Taka and Kana, explicitly stated their opinion about their favorite sites. They evaluated the hybrid characteristic of hypertext highly. They made more of other media, such as pictures and illustrations than texts as their sources of information. As for text information, they commented that they would prefer a large font size with small amount in one page. They had a good sense of choosing materials from a huge network of hypertext as the World Wide Web.

Hiro and Taka commented several times clearly in their protocol that they would prefer pages with pictures and larger fonts. They knew that as they were searching sites to introduce in their own site, those sites with pictures would draw more attentions from readers. Both Hiro and Taka said in their think aloud protocol that they did not feel like reading a page with full of text explanation, especially in small fonts. Hiro said also in his interview after the session that he was not good at reading English, so if the font was small, he would make more mistakes understanding confusing spellings or take longer time to distinguish words with similar spellings.

Kana became excited when she met the fourth site with pages each
of which had a large picture and only a few lines of text in a large font. She could not see a picture of the sweets she read the explanation about in the previous site because she did not know that the icons of a camera mark would show the picture. She felt down to be unable to talk aloud and even became sleepy because she could not enjoy searching the sites. However, when she came across the fourth site, she commented that she liked the site and started to talk much as a think aloud protocol.

8.2.3. Intertextuality

Because hypertext has a wide range of information network interconnected through links, participants took benefits from this intertextual characteristic. Taka chose to click a hyperlink in a text of the second site into a site of Toyota. He gave up reading the site of Toyota at the beginning of the session, because the site did not appear from a link of the search results by the key word ‘eco car’. He could see the site on his second try by approaching it from a different route. Hypertext has many links, so once it is impossible to access a site, we can take a different route as Taka experienced.

Ai could narrow down her topic, as she followed a few links to a page with related contents. She used a broad key word as ‘American children issue’ at first and was disappointed that the sites she chose to see were all out of her interests. However, along her search trials, she came across an article about Rosalynn Carter. In the article, she got a hint to search with a concrete key phrase ‘September 11’. She could finally meet a site which raised her intellectual curiosity highly.

9. General discussion

9.1. Choosing an appropriate reading style

The task in this study required participants a theme searching. It was to locate a bigger piece of information than Task B in Konishi (2003). They were expected to use skimming as a reading style, but actually two of them read the text explanations carefully and what the other two performed mainly was to scan pictures. Skimming did not function well
Interestingly, the two participants who read the text carefully had higher English proficiencies than the other two. The former two participants belonged to a special course with many intensive English training classes in the curriculum in Law Department. Therefore, the high motivation to learn English seemed to drive them to persist on reading texts carefully. It may partly be because they did not know how to deal with bigger pieces of information than they usually dealt with in their English training at school. In other words, it may be because careful reading style was the only way they had been trained to read English so far. They needed to have more chances to be accustomed to reading English with other reading purposes than “reading to learn” (Grabe, 2009, p.8).

On the contrary, the latter two participants were not involved in reading texts carefully so much. They enjoyed scanning multimedia aids such as pictures and illustrations. It may partly be because due to their low English proficiencies, they may have given up reading the English texts intensively. However, the more constructive interpretation of this fact may be that their meta-cognitive strategies functioned strongly. They were always aware what was their main purpose of the activities and able to control their behaviours along the aim.

9.2. Coping with the three features of hypertext

Three features of hypertext, open-endedness, hybridity and intertextuality, should be coped with in the combination of multiple strategies. As for open-ended, multi-linear and embedded feature of hypertext, navigational strategies such as using links, window switching and forward and backward buttons play important roles. At the same time, readers must be strong at using meta-cognitive strategies. They should be highly aware of the goal of their reading activity and monitor their behaviours especially with navigational operations, when they decide where to start or end their reading activity, which pathway to take and how deeply to follow a nested structure of information. In deciding when to click a link, switch windows or scroll up and down along a long page, readers should always evaluate their previous judgments and repair
them if necessary.

Because hypertext consists of hybrid sources of information, readers need to judge when and how much to use those multimedia aids along with text information. To deal with such hybridity, a global strategy to cope with visual information plays the main role. However, in some cases they need knowledge about plug-in software to deal with sounds, videos and even just pictures. They also need to know the meaning of icons as Kana suffered from a camera icon. Of course, they must be good at meta-cognitive strategies for effective judgments to make use of or ignore those aids. In many occasions, those multimedia aids contribute much to a good understanding of text information. Therefore, the ability to deal with hybrid sources of information becomes greatly significant with hypertext reading.

Hypertext is intertextual in its nature because it is connected with each other through links. To deal with this feature, it is a matter of course that readers should be good at utilizing links as one of the navigational strategies. At the same time, under the strategies about discourse structure in the category of global strategies, readers must pay much attention to consistency and coherence among multiple texts scattered at various places in the network of information. They need to compare multiple pieces of information by following links, sometimes by opening and switching multiple windows and by scrolling and clicking buttons to move among several places in the network.

10. Conclusion

From the analysis of the strategy use by the participants in this study as well as in Konishi (2014), the structure of hypertext reading strategy use by EFL learners could be illustrated as in Figure 1. Table 4 is also shown to give examples of every strategy category in Figure 1.
First of all, reading purpose is situated at the outer edge to surround all the strategies to be used in hypertext reading. Strictly speaking, it is not a type of strategy as it is but a prerequisite condition to start a reading activity. Also, it can be paraphrased as goal-setting, one of the meta-cognitive strategies. It defines all the strategy use readers adopt.

When focusing on hypertext reading, navigational strategy comes as the next comprehending category. Different from print text, hypertext functions within the frame of a browser software on a computer. Readers must know how to operate the software in order to get in touch with hypertext. The strategies how to utilize the software are premises to read hypertext.

From the next level, the same categories of strategies as print text are identified: meta-cognitive and cognitive. They are also termed as indirect and direct strategies. Cognitive strategies deal with input information directly, while meta-cognitive strategies play indirect roles by controlling reader’s cognitive processes.

Meta-cognitive strategies are thought to include cognitive strategies.
Meta-cognition is defined as the knowledge and control that we have over our cognitive processes. Meta-cognitive strategies require an explicit awareness of reading itself and most strongly support the goals of reading (Grabe, 2009). They consist of planning, monitoring, evaluating and repairing the use of strategies. The target strategies to be controlled by meta-cognitive strategies are not only cognitive strategies but also navigational ones. Because strategies function in combination especially to cope with the features of hypertext, the coordination among multiple strategies is critical for hypertext reading. As the results of this study as

<table>
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<tr>
<th>Cognitive</th>
<th>Local</th>
<th>Global</th>
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<tr>
<td></td>
<td>vocabulary</td>
<td>background knowledge</td>
</tr>
<tr>
<td></td>
<td>sentence structure</td>
<td>discourse structure</td>
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<td></td>
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<td>visual information</td>
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<tr>
<th>Meta-cognitive</th>
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<td>evaluation</td>
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<td>repairing</td>
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<td></td>
<td>icon, button</td>
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<td></td>
<td>link</td>
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<td></td>
<td>window (switch)</td>
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<td></td>
<td>plug-in operation</td>
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Table 4: Taxonomy of hypertext reading strategies
well as the ones in Konishi (2014) clearly show, those participants who could be conscious about their reading purpose, monitor their behaviour and repair their strategy use if necessary succeeded in carrying out the task. In other words, those who were successful were strong at using meta-cognitive strategies.

Cognitive strategies have two sub-categories in them: local and global. Local strategies deal with a sentence level processing, while global strategies are related to a macro-level. Participants who were influenced much by the English education methodology in Japan tended to rely too much on local strategies, which lead them unfavourable results with their reading tasks. Reading carefully with excessive use of local strategies consumed too much time for participants to spare for negotiation among various sources of information in this research. Japanese learners of English should have more chances to know other reading styles than careful reading and to train themselves to be conscious about their reading purpose. They should become able to choose the most suitable reading style for their reading task.

Though the global strategies also function with print text reading, they play much more important role in hypertext reading. It is because of the features of hypertext and to cope with the features, global strategies must be used in combination with other categories of strategies such as navigational and meta-cognitive strategies. They should be used with a different point of view from those used in print text. Strategies to activate background knowledge may have negative influence as Aki and Yu in Konishi (2014). Hypertext almost always includes multimedia aids, so strategies to deal with visual information become much more deciding on the success of hypertext reading tasks. In hypertext reading, readers are required to negotiate meanings among multiple sources of information scattered at various places in the wide range of information network. Strategies about discourse structure to confirm consistency and coherence among multiple texts should be activated more often than with reading a single text on a sheet of paper.

In summary, navigational and meta-cognitive strategies are two major categories to play key roles for the successful hypertext reading. The traditional reading instructions in Japan have focused on training
with cognitive strategy use and forced learners to regard careful reading style as the only way to approach English texts. However, in the age of communication with information technology, English teaching has to extend its perspective to include hypertext reading in its realm. In order to train students to be a good reader of hypertext, teachers should encourage learners to be skillful in using meta-cognitive strategies along with offering basic technical knowledge about navigating through the Internet effectively and efficiently. Actual experiences are indispensable for valid use of strategies for successful hypertext reading.

References


<Appendix A>

Name

1. Have you ever used the Internet before participating in this project?  
   Yes  No
2. If Yes to Question No.1, how long have you been using the Internet?
3. If Yes to Question No.1, how much time on average do you use the Internet each week?
4. If Yes to Question No.1, what do you use the Internet for?
5. If Yes to Question No. 1, what language do you mostly use, when you use the Internet?  
   English  Japanese  other languages (please specify)
6. Do you like reading Web pages?  
   Yes  No
7. Please explain the reason for the answer to Question No. 6.
8. What was your score on one of the following English proficiency tests?  
   TOEFL  TOEIC  others
9. How long and where have you been studying English?
10. How much time have you spent in English speaking countries?
11. Are you good at reading books and articles written in English?  
    Yes  No
12. Please explain the reason for the answer to Question No. 11.
13. Do you often read footnotes in books and articles?  
    Yes  No
14. Please explain the reason for the answer to Question No. 13.
15. Do you like reading books and articles containing pictures, tables or graphs?
   Yes   No
16. Please explain the reason for the answer to Question No. 15.

17. Do you often use other information such as a dictionary or a reference book while reading books and articles?
   Yes   No
18. Please explain the reason for the answer to Question No. 17.

19. Which do you prefer, reading print text or reading hypertext on the Internet?
   print text   hypertext
20. Please explain the reason for the answer to Question No. 19.

<Appendix B>
Task: web site creation

I’d like to ask you to describe aloud whatever you think while you are navigating through the web sites. You are required to keep talking about whatever comes to your mind. If you keep silent for more than 30 seconds, I will ask you a question, “What are you doing?” in order to encourage you to describe aloud whatever you think.

Imagine that you are enrolled in a multimedia English class this semester and you are required to create your own web site on a topic you choose for the class as part of the assessment. You are allowed to choose any topic you like for it. The task I will ask you today is to browse the Internet widely so as to see what web sites are created on the topic you have chosen for your own web site. Starting from a search engine “Google”, you are allowed to visit any web site you want to see. You are also allowed to use other search engines, if you have any specifically
favorite ones. The time for browsing and checking the web sites is about 45 minutes. I will ask you to report which web site seems more useful/less for creating your own web site after the session. You are allowed to take notes for reporting the more useful/less web site, if you want.

Goggle: http://www.google.com/

<Appendix C>

general questions

1. What did you think of navigating through the web sites? Did you enjoy it?

2. How difficult or easy is it to describe aloud whatever you think while you are navigating through the web sites?

3. Which web site on the Internet did you find most useful for creating your own web site with the same topic? Why did you think so?

4. Do you have any other comments on the task?

5. How often do you use a search engine on the Internet? Do you have any favorite search engine?

specific questions

1. Why did (didn’t) you choose to read this web site carefully?

2. You looked a little confused when you read this site, didn’t you? Why?
Summary of the online behaviours each participant carried out

1. Ai

Ai spent most of the time for careful reading. A large part of her think aloud protocol was literally reading aloud what was written in the pages, sometimes consulting a dictionary. She did not use skimming strategy which was expected for this task by the researcher. She told in the interview that she had a conflict in her mind which she should focus on between searching and careful reading. She was aware of her task, but she could not get out of her usual reading style. She belonged to a special course with many intensive English training classes at her university. The training habit prevented her from choosing other reading styles than careful reading any time she read English. Though she sometimes made comments in the think aloud protocol to monitor her behaviour such as “This article is quite long. I want to check various pages, so I will come back to the search results page,” “I have to search on the topic of children issues,” she seemed unable to give up the careful reading style.

She commented in the interview after the session that the information before she reached the article in the USA Today site about September 11 was almost useless for the purpose of her navigation. She also admitted in the interview that the key words she typed in were too broad. That may be because she could not narrow down into any specific problem with American children she wanted to make a research on before getting a hint from the article about Rosalynn Carter by the phrase ‘September 11’. She used seven key phrases and spent 27 minutes before noticing to use a newspaper site, all of which included abstract nouns such as ‘issue’ or ‘problem’.

What was unique to her behaviour was the utilization of a search tool within a newspaper site. She told in the interview that she often used the tool in her daily use of the Internet. She said that a search tool within the Yahoo! news site was useful for writing term papers.

She seemed not to use visual aids often, though she commented in the interview about the USA Today site that pictures were a great aid to
understand the content of an article.

It seemed that she did not notice that five windows were open when she stopped her session. When she opened to see sites from the list of search results, a small window popped up automatically a few times. She did not close it but just moved back to the original window to continue the task.

2. Kana

Kana used only one key word ‘cooking’ to search with the Google search engine. She seemed to have her topic of the search activity vaguely in mind, as she commented in the interview that she wanted to see cakes of various countries to explain how to make cakes in her own site. However, she did not narrow down the key word from the general word ‘cooking’ into a more specific word as ‘cake’, even after coming back to the Google search engine second time after 40 minutes had passed. She used the key word ‘cake’ when she used search tools within the site in the third site, but she did not adopt the word ‘cake’ when she came back to the Google search engine second time. She commented that she wanted to see information about cakes after reading about cinnamon toast and a rock cake cookie in the fourth site. This shows that her choice of a key word did not fit appropriately with her intention and it brought an unsatisfactory achievement.

She went into only four sites and stayed in the third site for about 23 minutes, utilizing two kinds of search tools within the site. In spite that she commented in the interview that she was thinking of making her own site easy to read by linking her favorite sites to her own site, she could not visit many sites to choose her favorite sites enough. She told in the interview that she had few experiences using the Internet. She had little knowledge about using software to see information in web sites nor experiences searching information through the Internet. The fact may be the cause for the inefficiency with her judgment on changing sites to see.

She kept almost silent for 40 minutes before entering into the fourth site which seemed interesting for her. She even commented that she came to be sleepy after she spent about 23 minutes. It may be because she lacked experiences to use the Internet as well as being unaccustomed
to talking to oneself, as her answers to the questionnaire shows and as she said in the interview after the session. Though the researcher encouraged her to talk more several times, it was not effective. She started to talk actively when she reached the fourth site. Therefore, it was not her English proficiency that caused her silence.

She commented when she was reading the third site that she did not know the meanings of the words ‘ingredients’, ‘instruction’ and ‘frosting’. These are basic vocabulary for cooking and cakes. Her general English proficiency was not low, because she seemed to understand the content of the explanation in the fourth site. The shortage of domain specific vocabulary may have played a negative role for her to think aloud actively.

In spite of the lack of basic vocabulary on her topic, she did not use a dictionary at all. Though she belonged to a special course focusing on English training at her university, she did not rely on a dictionary. She seemed not to infer the meanings of the words she did not know. She just skipped the words she did not know. This is different from the other participant, Ai, who belonged to the International Law and Culture Course.

Kana’s lack of navigational knowledge caused some inconveniences. After staying for about 35 minutes in the third site, she could not come back to the original search engine Google. She needed help from the researcher after all. She could not utilize the search tool within the third site well. She did not insert any key word in the main column of the search tool, so she could not get any result from it. She did not know that clicking a camera icon would show the picture. She gave up viewing a video because she could not hear its sound. That was because she did not know how to operate the real player software. Her answer to the questionnaire showed that she had only a little experience using the Internet before the session.

3. Hiro

Hiro decided to search on the topic of how to make sweets. He chose a key word ‘confectionery’. From the early stage of searching, Hiro made many comments on his opinion about the impression of the sites and what type of sites he liked or disliked. He said that he did not
like to read a page full of texts nor with small fonts. He commented that those sites were difficult to read and less useful with many letters and few pictures and without concrete explanation of the products. He also came to have his own standards to evaluate good sites. The points were a big font size, a bright background and full of pictures. He commented in the interview after the session that pictures would give him clues to understand the content and motivate him to read the text explanation further. He preferred even print texts with pictures.

When he entered a site, he did not start reading the text carefully, but he commented his judgment about it from his first impression. He judged each site very quickly with the first impression of the site. He took note of the sites he liked or disliked on the task sheet and kept searching other sites instead of staying in a site long to read the text carefully. He did not go into the content deeply. He commented in the protocol and in the interview after the session that he presumed that he would return to the sites he liked afterwards by just taking notes of his evaluation on each site during the session.

What he did during the session was mainly scanning the pictures not so many words or phrases. However, the movements of the mouse cursor in the screen data showed that he scanned the menu titles very well. Though he did not utter in the protocol, he chose, for example, “public” instead of “members” menu at the home page of a site and chose “flash version” instead of “html version”.

He did not use a dictionary at all. He told in the interview after the session that he wanted to consult a dictionary about the words whose meaning he was not sure with and to read the explanations carefully. However, he was always aware of his purpose in the session, so he dared not to read the texts in the page carefully. He put the priority on his aim to choose sites to introduce in his own web site.

He checked 30 sites in total in 50 minutes. The average staying time in each site was about only one minute. The only exception was the 11th site he visited “Long Grove Confectionery Co.” He stayed in the site for eight minutes, enjoying all the pictures of chocolates listed as its products in the site.

He used only one key word ‘confectionery’. The key word
‘confectionery’ seemed broad, but along the searching process his topic was narrowed down on the introduction of local chocolates. At the beginning of the session, he started saying, “Let’s search on the topic of how to make sweets.” However, he gradually narrowed down his topic and searched mainly the sites with unique chocolates shown with their pictures. He commented clearly in the think aloud protocol that he was not interested in gums or candies. He did not change the key word into more specific one such as ‘chocolate’, but his focus became more limited in his mind. He commented in his protocol that the information how to make chocolates was not related to his search purpose. Therefore, his aim changed from how to make sweets into introducing unique local chocolates with pictures in the course of the session.

4. Taka

Taka used 16 key phrases, two of which he returned to sometime later during the session. All of the key phrases had concrete meanings such as ‘eco car’, ‘clean car’, ‘motor show’, ‘system’, ‘photo’ and automobile company names. He had a specific topic in mind when he started the searching and gradually increased the information about eco cars, starting from TOYOTA and reaching out to foreign automobile makers as well as other Japanese companies. He wanted to know how eco cars would move and to look for comprehensible illustrations to explain it.

He opened 46 sites in total. The only site he stayed a bit longer, 2.5 minutes was the 33rd site, “TOYOTA Hybrid System”. It was in a PDF file format and consisted of Power Point images. He got excited at the illustrations, tables and graphs to explain about PRIUS, the company’s product. The average time to stay in each site except the 33rd one was less than one minute. He went through so many sites just to grasp the general trend of his topic as the first step of his searching activity.

He went into the search results deeply for about 10 pages for each key phrase. No other participants went into the search results so deeply as Taka. His judgment about which link to click was really quick.

He was also very quick to judge whether the site he saw was useful or less useful. All of the sites except the 33rd one were unsatisfactory for
him. He told in the interview after the session that the point to judge the usefulness of each site was whether the home page of the site he clicked to open had a figure or an illustration. Even though the page had any image, too much text explanation became a negative factor for being judged as a useful site.

However, he took no notes on the task sheet about useful or less useful sites. He told in the interview that he was confident enough to be able to come back to the sites he thought useful because he remembered the key words he used in coming across the sites. This may be because he had a lot of previous experiences using the Internet and much knowledge about utilizing the World Wide Web. He thought the site of Toyota New Zealand useful which had many illustrations and graphs to show the mechanisms and features of a hybrid car Prius. On the other hand, he judged those sites less useful with only texts full of technical terms.

He told in the interview that he focused on overviewing the topic area. He kept clearly in his mind the main purpose of the task to search information for his own site. In order to plan his own site, it is a good idea to grasp the rough trend in his topic area. He also commented in the interview that based on the information he grasped during this session, in the next step he wanted to narrow down the topic and investigate the mechanism of Toyota Prius deeply. He told that he would like to use the key words ‘hybrid’ and ‘electric car’ in the next step if he would have a chance. This showed that he understood the step by step searching strategy very well.

He seemed to have much background knowledge about using the Internet. He was the only participant who made some comments about the technology to make up a web page such as using Flash for the moving images. He told in the interview that he was accustomed to using personal computers from junior high school days and he was interested in how computers would work. He was the only participant who answered in the questionnaire to prefer hypertext to print text.

It was also unique to his behaviour that he used a different search engine Yahoo!. Although he used it only 1.5 minutes, he seemed to know the characteristics of each search engine, Google and Yahoo!. When he tried to search with Yahoo! in the middle of the session, he commented,
“Google showed much more search results.” On the other hand, he commented in the think aloud protocol at the final stage of the session, “I want to use a news article which deals with eco cars, but I cannot find a good one from the search results using Google search engine.” He told in the interview that he sometimes used Yahoo! to search news articles for the purpose of reading opinions from different viewpoints.

He sometimes read aloud the text in the pages he opened, though what he read was only a small amount each time. However, he did not persist on understanding the content fully but just skimmed its main idea using the words he could understand. His English proficiency was rather low, as he answered in the questionnaire and the pronunciation of the words he read aloud showed. However, he seemed successful in carrying out the task. He could compensate the low English proficiency with other strategies such as monitoring his behaviour, utilizing his technical background knowledge with the topic area in his native language and many previous experiences with information search on the web.