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Reading Strategies Used by High School Japanese Language Learners

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Reading Strategies Used by Japanese Language Learners of High School

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Abstract

World Readiness Standards emphasize the importance of language learners' proficiency in literacy as well as life skills in contemporary society and future. Implementing authentic materials into language instruction is encouraged due to its benefits. Yet adaption of authentic materials for reading is usually delayed until higher-level classes in Japanese instruction at secondary levels. This is often due to the Japanese writing system, which is a combination of hiragana, katakana, and kanji and configures meaning of a sentence. The present study investigated to what extent Japanese as a foreign language (JFL) high school learners use reading strategies when they read authentic materials. The study also explored the differences and/or similarities in reading strategies between JFL high school students who are exposed to the topic vs. students who are not. Strategies JFL high school learners use to process the information from kanji was also reflected upon. The study examined 4 Japanese language learners of two suburban high schools in Central California. The results of the study indicate that use of students' background knowledge is crucial for reading comprehension of authentic material written in Japanese.

Keywords:,reading comprehension, foreign language, Japanese

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CHAPTER 1: INTRODUCTION

Background

In 1986, the American Council on the Teaching of Foreign Language (ACTFL) established the ACTFL Proficiency Guideline. This guideline measured how well a language learner can perform in real life situations based on the four language skills: listening, reading, writing, and speaking. The Guidelines indicated 5 levels of language proficiency: Distinguished, Superior, Advanced, Intermediate, and Novice. With the ACTFL Proficiency Guideline, any language learner could be assessed on their proficiency level no matter where, when, or how they learned the language (American Council on the Teaching of Foreign Languages Performance Descriptors for Language Learners, 2012).

In 1996, the task force consisted of 4 professional organizations that also published the Standards for Foreign Language Learning: Preparing for the 21st Century:

- ACTFL;

- American Association of Teachers of French;

- American Association of Teachers of German;

- American Association of Teachers of Spanish and Portuguese.

These standards indicated what language learners should know and be able to do with the language. The standards also played a role in which language educators of any level, region, or program could comply with, in terms of content, to teach. Within the standards, components were divided into 5 categories (5 Cs): (a) Communication, (b) Culture, (c) Connection, (d) Comparison, (e) Community.

The four skills addressed in the ACTFL Proficiency Guidelines were then formed into the Three Modes of Communication:

1. Interpersonal

2. Interpretive

3. Presentational mode of communication.

Interpersonal modes of communication, include speaking and writing, in order to exchange information and negotiate with another person in the language spontaneously. For interpretive modes, language learners demonstrate their listening and reading skills to comprehend new information in the target language. Presentational modes of communication can be defined as a way for language learners to express themselves through speaking or writing.

In 2015, the national standards were revised and published as the World-Readiness Standards for Learning Languages. In addition to the 5Cs, the new standards were aligned with the Common Core State Standards, College and Career Readiness, and the 21st Century skills to prepare the language learners for the world. The standards emphasized not only language competence and understanding of the target culture, but also becoming proficient in literacy and obtaining life skills for the future through learning another language (World-Readiness Standards for Learning Languages, 2015).

In accordance with these guidelines and standards, the implementation of authentic materials into the classroom has become widely recognized as critical in order for language learners to increase their literacy and communication skills in the target language. Authentic materials provide opportunities for learners to explore and analyze the language and cultural information through realia. ACTFL stated these materials are valuable insofar as they reflect real-world language as used by native speakers in target cultures (ACTFL, 2013).

Statement of the Problem

In spite of the development of these standards and need for authenticity in language learning, educators of the Japanese language have been hesitant to implement authentic materials into their classroom because it is one of the most difficult languages for native English speakers to acquire. This presents a problem for Japanese language learners, as the lack of authentic materials can significantly hinder one's ability to achieve proficiency in the target language. This dilemma brings forth many questions: How can Japanese instructors effectively implement authentic materials into instruction? What obstacles do Japanese language learners face when exposed to authentic materials? In order to address these issues, the purpose of the study and subsequent research questions were developed as follows.

Purpose of the Study

The purpose of this study was to investigate the reading strategies used by Japanese language learners at the secondary level when they read authentic materials. In addition, the effect of background knowledge on reading comprehension will be discussed. Furthermore, differences and similarities in reading strategies between students who have previous exposure to material and no exposure will be examined. The findings may be used for the development of future reading materials to enhance the learners' interpretive skills, as well as to develop methods to efficiently implement authentic materials into Japanese language instruction.

Summary

As the world has entered the 21st century, it is more common for people all over the world to communicate with each other. In foreign language classrooms, connecting the classroom with the target language and culture has become more frequent with the help of technological tools. In addition, the interpretive language skills, which are listening and reading

skills, help learners to explore and analyze authentic materials in the target language and cultural information. Due to the limitation of authentic materials used in Japanese instructions, the findings throughout this study could assist FL teachers of Japanese to employ more effective reading strategies as well as have JFLs be aware of various kinds of reading strategies in L2.

CHAPTER 2: REVIEW OF LITERATURE

The Three Reading Models

An individual's reading proficiency depends on a series of factors, including general language proficiency, world experience, and a reader's purpose of reading specific texts. According to Barnett (1989), language reading specialists developed various reading process models in order to understand the strategies and techniques used in comprehending texts. Hedgecock & Ferris (2009) explained that in second language reading, there are three distinct categories for reading processes and development: bottom-up, top-down and interactive. While bottom-up and top-down are considered opposite approaches, the interactive model utilizes a combination of strategies from both models. Many researchers advocate for the latter model, as an interactive approach is believed to be more beneficial for teachers and students as opposed to the polar approaches on their own.

Bottom-up Model. Hedgecock & Ferris (2009) described the bottom-up model as a process, which focuses on discrete vocabulary, world level, and gaining comprehension by translating informational texts piece-by-piece. The term "bottom-up" is derived from the idea that reading begins from the "bottom", starting with simple words and morphemes, then gradually works its way "up" with larger units such as sentences, paragraphs, and so forth. Barnett (1989) explained it is a linear process, where text (the "bottom") must be received first

before higher-level mental stages of understanding and decoding information can be used. Barnett went on to state that the process of bottom-up is mainly text-driven and progressive, as small portions of text are analyzed and gradually added on until they become meaningful and understood. Furthermore, Gough (1972) explained that readers who use the bottom-up model tend to read letter-by-letter. This theory suggested that a reader who uses bottom-up techniques starts decoding letters until they become a meaningful word, and that text becomes legible in approximately 100 milliseconds. Continuing this process, words become sentences; sentences become a paragraph, until the reader is able to comprehend the main points of the reading as a whole.

Graphics and symbols play an important role in the bottom-up model, as it relies heavily on the text itself. Research has found that correspondence of orthography and phonology, or writing and sounds, have a great influence on reading development (Besner & Smith, 1992; Ehri, 1979, 1998, 2005; Firth, 1985; Goswami, 2000; Marsh et al., 1981). DeFrancis (1989) identified three categories of writing systems: logographic which indicates meaningful units, *syllabic*, and *alphabetic*. Japanese, for example, consists of two orthographic systems, syllabic (hiragana and katakana), and logographic (kanji) (Matsumoto, 2013). In the case of reading in a second language (L2), using bottom-up strategies to decode may be difficult due to these variations of writing systems. Differences in a first language (L1) and L2 orthography can affect the accuracy of L2 word recognition as well as the strategies used to process those words (Chikamatsu, 1996; Koda, 1989, 1996). Tamaoka (1997) found that reading ability of kanji by American students was greatly diminished when the characters became more difficult. Thus, decoding at the word level could not be achieved.

In contrast, a study by Koda and Zehler (2008) found that L2 learners with an alphabetic system background often relied on visual recognition to compensate for their inability to pronounce the Japanese characters. Further studies have showed that ability to recognize words efficiently can result in successful L2 reading (Chikamatsu, 2006; Koda, 1992; Segalowitz & Hebert, 1990). This difference in success can be explained by the fact that kanji can have multiple readings for a single character (Kess & Miyamoto, 1999), and because kanji does not have a clear connection between orthography, phonology or sounds, and meaning (Matsumoto, 2013). As a result, even if one cannot pronounce a certain kanji, recognition of the character itself may enable a reader to decode the meaning of the text. Thus, identifying a kanji's meaning without knowing the reading may enable readers to continue with decoding and assist with reading comprehension.

Another notable aspect of the bottom-up model is the theory of automatic information processing, created by Laberge and Samuels (1974). In their theory, they stated that the human mind works like a computer, and has the ability to perform tasks one by one, giving attention to certain tasks as needed. The term *automaticity* was used to indicate that a reader has limited ability to shift their attention between processes of decoding and comprehending. Therefore, in order to achieve an automatized process of reading, a successful bottom-up reader begins by developing macro-level processing skills in a structured manner, and practices those skills until they become automatic over time (Anderson, 1995). Once this is achieved, the macro-level skills operate from working memory without conscious effort. Subsequently, all sub-skills and interdependencies become automatic as well (Carpenter, Miyake, & Just, 1994).

An individual's learning style can have an effect on the model of reading used. According to Cassidy (2004), bottom-up readers are considered *analytical learners*, insofar as

they are detail-oriented and move systematically through the learning process. Hedgecock & Ferris (2009) further described analytical learners as those who closely pay attention to detail, and thus can easily remember every significant detail (of a reading, movie, etc.) and even some minor details. They are contrasted to *global learners*, who have a more holistic, top-down approach of learning.

Top-down Model. Hedgecock & Ferris (2009) explained that the top-down approach is a holistic method that does not rely on small details, but rather on making assumptions of reading based on context. Thus, top-down readers are considered global learners, and often get the gist of a reading without paying much attention to specifics. This concept of "getting the gist" is the essential focus of the top-down method. Barnett (1989) described top-down as a linear process like bottom-up, yet it proceeds in the opposite fashion, starting from the top with higher-level mental stages, and moving down to the text itself. It is reader-driven, and progresses by the reader making intelligent guesses about what will happen in the text. Goodman (1968) referred to the top-down process as a "psycholinguistic guessing game". He explained that constructing meaning from text includes four interdependent procedures: predicting content, sampling material, confirming predictions, and correcting inaccurate predictions. This means a reader makes guesses based off textual cues, then confirms or rejects their assumptions as reading progresses. Goodman's guessing game theory indicated that readers do not need to perceive and understand all parts of the text in order to be an efficient reader. In fact, it is believed that efficient readers are able to make accurate guesses with minimal cues (Nuttall, 2005).

In order to make guesses and predictions about a text, a reader must first have a certain background knowledge that would allow them to construe meaning. In reading, this background knowledge is referred to as *schema*, and is a very important aspect of the top-down process. This

term was first introduced by Barlett (1932), who described schema as "an active organization of past reactions, or past experience" (p. 201). Thus, the *schema theory* states that readers use background knowledge from their prior experiences to comprehend text (Rumelhart, 1980). These schemata are further broken down into different types, including *linguistic schemata*, *formal schemata*, and *content schemata*.

Linguistic schema focuses on prior knowledge of the language itself, and is the foundation for reading of a text. Hedgcock & Ferris (2009) explained that without linguistic schema, an individual is unable to read in a language they do not know, even if they are an expert on the content. This means that in order to even begin reading a text, a reader needs a certain amount of literacy in that language, and background knowledge of symbols, morphemes, words, etc. They further explained that readers who have been exposed to the oral language for years have developed their vocabulary and linguistic knowledge to an extent that would assist them with learning to read in that language. Therefore, linguistic schema is essential for reading, and it was found that the lack of this schemata can lead to comprehension gaps for L2 readers.

Formal schema focuses on background knowledge of the formal and organizational structures of different texts (Carrel & Eisterhold, 1983). This means that different types of text (e.g. stories, poems, essays) will take different forms or be structured differently according to their genre. These different types can be distinguished by the way they organize information within the text to form a unit (An, 2013). Readers become familiar of these genres through repeated exposure and gaining life experience. According to Smith (1988, 2004), constant exposure to unfamiliar types of text will build a reader's formal textual schemata to help them understand, for example, how recipes, newspaper columns, academic essays, research papers, and lab reports are structured. Hedgecock & Ferris (2009) stated that this type of schema and

knowledge of text macrostructure can be very useful to readers, whereas gaps in formal schema can cause difficulty for readers, especially for L2 reading. Reasons for these gaps include limited experience of reading in general, and less exposure to genres. For L2 reading in particular, readers may have little to no experience reading in their L2, or formal schemata of their L1 may not transfer cross-linguistically. Because of this, many L2 readers need to become familiar with formal schema of their L2 in order discern and comprehend many texts.

Lastly, content schema involves a reader's background knowledge of the ideas presented in a certain text. Hedgcock & Ferris (2009) described it as an individual's prior knowledge and own opinions about the concepts that are introduced in a text. Therefore, content schema is often referred to as *cultural schema*, as a person's culture greatly influences the way they perceive an idea or concept. Culture is defined by Fleck (1939) as a "community of persons mutually exchanging ideas or maintaining intellectual interaction" (p. 39). Furthermore, Rivers and Temperly (1978) stated that cultural knowledge has socio-cultural meaning, which "springs from shared experiences, values, and attitudes". Because of these shared attitudes, the way text and content is interpreted can vary due to the cultural background of the reader.

Lack of content schemata can cause comprehension gaps specifically for L2 readers of different backgrounds when they encounter unfamiliar cultural information in texts. Hedgcock & Ferris (2009) used an example of Western texts such as Milton's *Paradise Lost* that use biblical references, and stated that they may be confusing and difficult to understand for students with different religious and cultural traditions. In the same way, texts translated across languages can be perceived differently depending on the culture. For instance, the phrase "to open a door" can be interpreted differently by a reader of English and a reader of Japanese. The former would

imagine the action as turning a doorknob and pushing forward to open the door. However, the latter may interpret the action as sliding *shouji* (traditional paper sliding door) open to the side.

Because of these discrepancies among cultures, L2 readers may struggle when reading texts that originate from different cultural backgrounds. Theorists suggested that individuals who read a story written through the perspective of a different culture will comprehend it not only differently, but probably less efficiently than a native reader would (Barlett, 1932; Huey, 1912). Pritchard (1990) explained that texts with culturally familiar topics are easier to comprehend than culturally unfamiliar ones, as the reader can "activate and utilize the relevant schemata to facilitate comprehension" (p. 4). It is important to keep this concept of cultural schema in mind when studying reading processes and determining how to accommodate to L2 readers.

Interactive Model. The third and final model of reading is the interactive model. This model combines techniques from both the bottom-up and top-down models, thus incorporating surface-reading as well as deeper cognitive strategies for reading comprehension. Barnett (1989) stated that unlike the first two, the interactive model is not linear, but a cyclical process where "textual information and the reader's mental activities have a simultaneous and equally important impact on comprehension" (p. 28). This concept of working simultaneously is a key point of the interactive model. It suggests that the text sampling techniques of bottom-up and the higher-level decoding of top-down interact continuously together.

An example of interactive reading commonly noted is the *Interactive Compensatory Model*. The compensatory model, introduced by Stanovich (1980), stated that strength in one processing stage can compensate for weakness in another. Bernhardt (2005) further explained that "knowledge sources assist or take over for other knowledge sources that are inadequate or nonexistent" (p. 140). In other words, readers can compensate for gaps in reading comprehension

with knowledge from other areas. Therefore, a reader with deficits in bottom-up strategies would rely on greater knowledge of top-down strategies, and vice versa. Hedgecock & Ferris (2009) gave the example that readers who encounter a word they are not familiar may compensate by using context to make inferences about the meaning of the word.

　　With reading processes, it is not believed that only one polar model or the other should be used strictly for learning. Rather, it was found that a pairing of the two may prove to be best for teachers and students (Dahl, 2000). With the interactive model, readers are able to extract methods from both the bottom-up and top-down approaches. According to Hedgecok & Ferris (2009), this enables us to pull from the strengths of both models, while also being aware of the many practices and processes involved in literary education. Thus, the interactive approach has been favored amongst many contemporary researchers of language reading, who believe that utilizing this method may better assist readers in achieving a higher level of reading comprehension.

Japanese Writing System

　　It is believed that learning Japanese language is one of the most challenging tasks due to the complicated writing systems. A majority of JFLs say 「かんじ、むずかしい」 *kanji, muzukashii* or, "kanji is difficult". As mentioned previously, world language writing systems are categorized into three groups: logographic, syllabic, or alphabetic systems (Hedgcock & Ferris, 2009; Matsumoto, 2013). While alphabetic systems focus on phonemes (such as English and Italian), Japanese, which consists of three writing systems in itself, is considered to be logographic and syllabic (Matsumoto, 2013). The three systems of Japanese writing are *kanji*, *hiragana*, and *katakana*.

Kanji is logographic insofar as the symbols are used to represent meaning as opposed to sound. For example, the character 山 expresses "mountain." This kanji was originally made to depict a picture of a mountain, thus giving it its meaning. Native speakers of Japanese who recognize kanji can often guess the meaning of the symbol despite being unable to pronounce correctly (Mori, 2013). Japanese elementary students study Kanji for each grade year. Over 1000 kanjis are studied throughout 6 years of elementary school. Each year the number of kanji study ranges from 80 to 200: 80 characters in the first year, 160 in the second year, 200 in the third year, 200 in the fourth year, then decreasing to 185 in the fifth year, and 181 in the sixth year. These are called the *kyōiku kanji* (教育漢字) or *gakushū kanji* (学習漢字). *Monbusho*, the Board of Education in Japan, provides *gakunenbetsu kanji haitōhyō* "List of kanji," distributed by year so that schools can follow the list (Bullock, n.d.).

In addition to kanji, Japanese writing includes the *kana* system, which is broken down into *hiragana* and *katakana*. The Japanese kana system is syllabic, as these systems represent spoken syllables (Matsumoto, 2013), thus giving each character a defined sound. Both hiragana and katakana have 46 characters respectively based on each sound. For example, Japanese vowels are a, i, u, e, o and are written あ、い、う、え、お in hiragana, and ア、イ、ウ、エ、オ in katakana. Japanese elementary school students study both hiragana and katakana when they are in 1st grade. More detailed explanations for hiragana, katakana, and kanji are as follows.

Hiragana. Hiragana consists of 46 letters, with each letter representing one sound: vowel-only, vowel and consonant combination, or consonant-only. The 5 vowels are *a, i, u, e, o* and the single consonant-only is *n*. The rest of them are combined with one vowel and one or two consonants. For instance, the consonant "k" and the vowel "a" makes "ka" sound, which

appears as 「か」 in hiragana. There are "k, s, t, n, h, m, y, r, w" lines of consonants in the hiragana chart.

In addition to basic vowels and consonants, 濁音 or *dakuon*, meaning "voiced sound" adds extra 4 consonants, "g, j, d, b," and 半濁音 or *handakuon*, meaning "semi-voiced sound" includes "p" as another consonant. Hiragana also incorporates 拗音 *yoon* or "contracted sound", which appears しゃ as an example, consisting of two hiragana letters. The consonants that can form *yoon* are "k, s, c, n, h, m, r," and followed by either ya, yu, or yo. しゃ is pronounced *sha* or *sya*. Notice the second letter "や" needs to be written smaller than regular letters. The other characteristics of writing hiragana is 促音 *sokuon*, "assimilated sound", and 長音 *chouon*, "long sound". Sokuon is written as a smaller "つ" or "tsu" in between two kana letters. (i.e., らっぷ or *rappu* in hiragana). Sokuon is created by stopping the breath in between the kanas or making choked sound. Chouon, on the other hand, is the sound of a vowel is lengthened. When two vowel sounds are next to each other, chouon occurs. So, せんせい (*sensei* or "teacher") is pronounced as *sensee*. Sokuon and chouon seem to be an obstacle for JFLs due to interference of their L1s' sounds. An example is 切って (pronounced *kitte*, asking someone to cut something) and 来て (pronounced *kite*, asking to someone to come to somewhere) are commonly mistaken by JFLs. Many non-native Japanese speakers fail to hear the geminate sound, resulting in misunderstanding the meaning ("Pronunciation of Kanamoji," n.d.). Katakana Similarly to hiragana, katakana shares the same structure of vowels and consonants. Therefore, there are 46 letters in katakana as well. The example above "ka" in Katakana is written as 「カ」. Katakana is used to transcribe the foreign language or gairaigo. Any loan words from foreign countries are

written in katakana. For example, one of my student's name, Jose, is written in katakana as "ホ
セ." (Kim, 2016).

Japanese language borrows a large number of words from the other foreign languages,
(Daulton, 2008). Language transferring is helpful for Japanese people to learn another language.
When Japanese people borrow a word from English, the original English word is transcribed into
a more complex cognitive word in katakana, (Daulton, 2008). For example, McDonald's will be
written as マクドナルド in katakana and pronounced *makudonarudo*. By doing this, Japanese
people familiarized themselves with a new vocabulary word in English. In return however, it is
difficult for native English speakers to realize the cognate. Moreover, Daulton stated that when
Japanese novice English earners study the language, they tend to focus on the form rather than
the meaning. As a result, English cognate words have a different meaning other than the original
meaning. The word *smart*, for example, means "quick in action" and "intelligent" at
Dictionary.com. However, in Weblio Japanese-English Dictionary, *smart* has the connotations
"slim" and "stylish" which indicates one's physical appearance. This can be another burden that
native English speakers might face when learning Japanese.
(http://repo.lib.ryukoku.ac.jp/jspui/bitstream/10519/270/1/r-ky_030_01_002.pdf).

Kanji. Kanji, which originated in China, came to Japan around the 5th century. A list of
1,946 basic Japanese kanji, Joyo kanji, or "common use kanji", was adopted by the Japanese
government in 1981 for the indication of understanding media (i.e. newspapers, magazines
posters etc.). Native Japanese speakers usually acquire these kanji during the first 9 years of
schooling (Tamaoka, 2002).   Kanji study begins at the age of 6 or 7 in Japan. Elementary
school students are required to practice reading and writing on a daily basis. Kanji tests and
quizzes are frequently given. Some memorization of detail (i.e. hane="jumping",

tome="stopping", harai="sweeping") is also required to learn each Kanji. It is very challenging

to remember some details even for native Japanese speakers.

Kanji are composed of *radicals*. Each radical shows the meaning of the character and the

reflection of a partial meaning of the character. For instance, body parts include 「月」as a

radical. There are 「肺」(*hai*=lung), 「背」(*se*=height), 「腸」(*cho*=colon), 「筋」

(*kin*=muscle), and so forth. There are 7 main categories depending on the position of the kanji

character (see Table 1).

Table 1

 Common Kanji Radicals and Corresponding Position

Radicals	Position of radical
へん (hen)	Radicals on the left side of the kanji
つくり (tsukuri)	Radicals on the right
かんむり (kanmuri)	Radicals on the top
あし (ashi)	Radicals on the bottom
かまえ (kamae)	Radicals which enclose the kanji
たれ (tare)	Radicals which "hang down"
にょう (nyou)	Radicals which wrap around the bottom of a character

The complexity of combining radicals and the amount of characters in kanji makes

Japanese particularly difficult for learners who do not come from a logographic background. On

top of this, learners also face memorizing stroke order of each kanji. Kanji has a certain order to

write its strokes, from top to bottom and from left to right. It is important for JFLs to follow and

learn the order especially when they want to write quickly or in cursive so that the kanji is readable.

Reading and pronouncing kanji becomes increasingly complex for JFLs, as almost all kanji have two or more sounds. It was found that approximately 60% of basic kanji have two pronunciations (Tamaoka et al., 2002). These pronunciations are called *on* and *kun*. *On*-readings are based on Chinese pronunciations whereas *kun*-readings are invented by native Japanese speakers. For example, 紙 means "paper". *On*-reading is pronounced *shi*, and *kun*-reading is pronounced *kami.* This differentiation in reading can have an influence on a JFL's reading comprehension.

Using the kanji example above, two sentences can be created: 紙を出す *kami wo dasu* meaning "to take out a paper", and 新聞紙を出す *shinbunshi wo dasu* meaning "to take out a newspaper". When 紙 is combined with other characters, the reading changes from *kami* to *shi*, in this case becoming *shinbunshi* to create the word "newspaper", thus changing the meaning of the sentence. JFLs may or may not be able to pronounce 新聞紙 depending on their knowledge of the other characters and their readings. Thus, it is very common for JFLs to struggle pronouncing words made from combined characters because of the multiple readings. However, because kanji is a logographic system, meaning can be interpreted without knowing the pronunciation. JFLs who utilize successful reading strategies will be able to recognize 紙 and guess that the sentence is mentioning some sort of paper. Kanji reading strategies of JFLs will be further explored in the following section.

Reading strategies

Reading, a part of interpretive skills of 5 Cs (a) Communication, (b) Culture, (c) Connection, (d) Comparison, (e) Community, is one of the complex skills for language learning. This section explores:

1. reading strategies for L2 learners,

2. the effect of background knowledge on strategies used by learners,

3. the difference of reading strategies between successful and unsuccessful learners, and L2 reading strategies and kanji reading strategies that are used by JFLs.

Reading strategies for L2. There were several major categories of reading strategies. Oxford (2003) argued that there are 6 categories of language learning strategies, including (a) cognitive, (b) metacognitive, (c) memory-related, (d) compensatory, (e) affective, and (f) social strategies. One significant study conducted by Chamot and O'Malley (1990) reduced the number down to three major categories, (a) metacognitive, (b) cognitive, and (c) social-affective strategies. Despite that these strategies were defined broadly as L2 learning strategies, certain categories play significant roles for L2 reading.

Cognitive strategies. Oxford identified cognitive strategies as a tool for the learners to personalize the reading materials by analyzing, taking notes, summarizing, and organizing information the way that makes sense to them. Chamot and O'Malley (1994) described them as strategies that allow readers to conduct cognitive tasks while reading, such as making inferences and word analysis. The two conducted research (1987) on learning strategies and stated that cognitive strategies enable learners to manipulate materials mentally (through mental images) or physically (such as taking notes or making categories).

According to Chamot and O'Malley (1996), cognitive strategies are used by students to complete language as well as content tasks, and include processes such as summarizing, making inferences, auditory representation, and resourcing or using reference materials. They highlighted elaboration of prior knowledge as one of the strongest cognitive strategies, which helped ESL learners to make connections between new knowledge and their prior knowledge. Their previous study (Chamot & O'Malley, 1987) found that grouping was also a cognitive strategy, which accumulates new information about a topic and makes the knowledge accessible for the future reference for the learner.

Metacognitive strategies. Related to cognitive strategies, metacognitive strategies were used to orchestrate cognitive strategies and facilitate problem solving of reading tasks during the process of obtaining new information (Oxford, 2003). Chamot and O'Malley (1996) referred to them as processes in which students identify and evaluate their own abilities and achievements in learning. Furthermore, they stated that metacognitive strategies are an executive function of language learning strategies. A language learner would coordinate strategies to solve reading problems in L2 because metacognitive strategies were applicable for any type of learning. According to Purpura (1999), these strategies have a significant positive effect on cognitive strategy use, proving that metacognitive strategy use "has an executive function over cognitive strategy use in task completion" (p. 61). Furthermore, a study done on EFL learners found that metacognitive strategies are often indicators of L2 proficiency (Oxford, Judd, & Giesen, 1998).

Chamot and O'Malley (1996) discussed the metacognitive strategies planning, monitoring, and evaluating being the three major categories of metacognitive strategies. In this way, readers set goals to be accomplished, check their performance during a task, and assess their performance after the task is completed. Many examples of the three were given. Examples

of the planning process included skimming texts to get the gist of the reading, organizational planning such as writing outlines, and selective attention through attending to key words and ideas. Monitoring was broken down into monitoring comprehension and production. The former checks for comprehension while listening and reading, whereas the latter checks one's speaking and writing. Lastly, evaluating is done by self-assessment, which can be done through reflection or by keeping a log.

  Social-affective strategies. Oxford (2003) claimed that using affective and social strategies while reading in L2 was useful. Affective strategies were described as stages when learners were aware of other factors during reading such as one's mood or anxiety level, as well as methods such as using deep breathing or positive self-talk. In the joint study done by Oxford and Dreyer (1996), it was found that affective strategies can be useful for early language learning, and were significantly related to L2 proficiency. If learner's L1 is far different from his or her L2 such as a native English speaker learning Japanese as a second language, maintaining the balance of learner's feelings would be important to read in L2.

  Social strategies were supplemental strategies for pre- and post-reading activities or discussion of the reading with peers to deepen knowledge about the target language and culture. Social strategies were found to be greatly connected to L2 proficiency in many studies such as Dreyer and Oxford's (1996) study on South African EFL students, and Oxford and Ehrman's (1995) study on foreign language learners whose native language is English. Many of the strategies used included interactions with others, such as asking questions, asking for help, and speaking with native-speakers of the target language.

  Although Oxford divided affective and social strategies into two groups, Chamot and O'Malley (1996) categorized them into one group called social-affective strategies. As their third

major category of strategies, it included all the aforementioned strategies such as inquiring for

clarification and managing their anxiety levels during activities. They claimed that these

strategies could improve students' attitude toward language learning when they struggled in

language tasks such as reading. Furthermore, these strategies are significant as they allowed

students to learn the value of teamwork in socially mediated learning.

In the above, the ideas of Oxford, Chamot and O'Malley concerning L2 learning

strategies led to connections between reading strategies in L2 and what strategies Japanese

language learners at high school levels use when they read authentic materials in Japanese.

Those reading strategies may affect JFLs reading in Japanese, especially, reading authentic text

that includes unknown Kanji, new vocabulary and structures, and current cultural information

and so forth. Unfamiliarity of sound, writing systems, and cultural background information in

Japanese may hinder JFLs to comprehend the context, decrease motivation, and raise anxiety of

reading.

Effect of background knowledge. As mentioned previously in the top-down model,

background knowledge plays an important role on a learner's reading comprehension. According

to the schema theory, gaps in background knowledge can greatly affect reading. Longgen (1988)

explained that the teaching of reading usually focuses more on the linguistics of the material

rather than readers' background knowledge, which results in the restriction of students' reading

abilities. Background knowledge allows readers to make inferences, which can be drawn from

many sources. Brown (1990) claimed that these sources include previous life experiences, and

even similar texts, films, or television programs that have been previously viewed. As viewing

familiar images such as these can trigger schema, many researchers have advocated that the use

of visuals can better facilitate reading comprehension.

Pan (2009) described "visuals" as graphics that portrays some or all of an accompanying text, such as photos, maps, diagrams, animations, and cartoons. Research has found that visuals are often used in EFL classes because of the positive effect they have on students' reading comprehension (Carney & Levin, 2002; Manoli and Papadopoulou, 2012). It was found that visual aids enhance students' reading because they help readers to connect texts with their previous knowledge, and fill in gaps between different parts of the text (Gambrell & Jawitz, 1993; Liu, 2004). Many researchers (Bernhardt, 1991; Gyselinck & Tardieu, 1987; Hibbing & Rankin-Erickson, 2003) stated that visuals provide readers with two sources of information from which they can draw upon when reading. According to these researchers, when readers are unsure of the meaning of a text, shifting their attention to the visuals may help them to comprehend through matching and mapping among factors like word recognition and background knowledge. Thus, it is believed that visuals can enhance the use of background knowledge or schema. Schema, or lack thereof, can influence reading comprehension, as well as determine what reading strategies a learner will use. How can readers use strategies to become successful in learning?

Strategies of Successful and Unsuccessful Learners. Successful readers in a foreign language used different strategies compared to non-successful readers. Kayaoğlu (2013) studied 146 Turkish university students in an ESL program regarding the relationship between the beliefs that students had toward language learning and their language learning strategies. To divide the students into whether successful or unsuccessful, the 42 professors in the program categorized the students based on classroom observation, participation, performance, and progress of students' learning. In order to research the difference of language learning strategies between successful and unsuccessful readers, Oxford's Strategy Inventory for Language

Learning (SILL) was implemented but modified in Turkish regarding the 6 language learning

categories. Table 2 provides a summary of the differences of the most commonly used reading

strategies between successful and unsuccessful students.

Table 2
Strategies used by successful and unsuccessful learners

Language Learning Strategies	Successful Learners	Unsuccessful Learners
Memory	● More often utilized association and imagery to remember	● Little use of memory strategies used
Cognitive	● Created new sentences more often using learned sentence structures and patterns	● Word translation ● Thought in Turkish and translated into English ● Preferred lecture style instruction in Turkish
Metacognitive	● Selective and directive paying attention ● Setting goals ● Self-monitoring	● Little use of metacognitive strategies used
Affective and Social	● Giving self positive statements ● Monitoring one's feeling	● Little use of affective and social strategies used

Reading strategies for JFLs. Reading strategies in Japanese language revealed that the

interactive model was significant in the process of reading Japanese. The interactive model,

using both bottom-up and top-down processing, would help the language learners understand the

reading in Japanese. Based on the information of Horibe (1990) and Toriyama (1993), strategies

in the interactive model employed both bottom-up and top-down aspects. For example, grouping

strategy functioned in a duel way by analyzing at word level (bottom-up model), while

connecting what the learner knew to understand the concepts of the reading (top-down model).

Students in Horibe's study indicated that they activated schema to become familiar with the reading and utilized conceptual information to fill in the unknown words and sentence structures. During this action, students were self-monitoring their reading process linguistically such as examining words as well as conceptually. As a result, the students were able to use decoding strategy to analyze the unknown words. Thus, students utilized the reading strategies that were categorized as interactive model to comprehend the reading in Japanese.

Students had patterns of metacognitive and cognitive strategies use (Toriyama, 1993). Toriyama confirmed that ESL reading strategies could be transferable into learning Japanese as L2. The study revealed the gap of reading strategy use, with cognitive strategies accounting for 80% and metacognitive for the remainder. The most used cognitive strategy was making inferences while the most used metacognitive strategy was self-management.

Kanji Reading Strategies. High School JFLs need time to acquire kanji due to the formation and sound differences. This time-consuming process may affect L2 reading strategies. Matsumoto (2013) investigated kanji recognition strategies used by 42 university students whose L1 were alphabetic and logographic. The students were divided into three groups. Group 1 was novice level with alphabetic language background, Group 2 was also novice level but with logographic background, and Group 3 was intermediate-level students with alphabetic language background. The three groups were asked to recognize sets of kanji to evaluate their strategies that helped process kanji reading. The study found that students with alphabetic language background utilized visual recognition. This resulted from the reading materials, which were word identity focused rather than authentic materials. Similarly, Chikamatsu (2006) investigated 34 native English speakers who were learning Japanese as a second language at college level. The 18 students were novice level, and 16 students were intermediate level. The study found that

JFLs rely more on visuals for word recognition as their proficiency level increases, and as they gain L2 word processing experience, effects of L1 decreases resulting in a more efficient word recognition strategy.

Gamage (2003) investigated kanji learning strategies used by non-native Japanese speakers at the higher education level. Gamage modified the questionnaire, the Strategy Inventory for Learning Kanji or SILK developed by Bourke (1996), and set three categories of kanji learning strategies; the "shape", "meaning", and "pronunciation" (Gamage). The shape portion of questionnaire identified students' tendency for visual strategies such as associations between the new kanji and pictures, kanji already learned, writing it repeatedly, and so forth. Secondly, making connections with the meaning of the kanji was another group of strategies. Students used this type of strategy by grouping kanji into similar meanings, making a story, etc. The third group of strategies was related to pronunciation of the kanji. Students with phonological strategies indicated that they often associated with the sounds of kanji, reading out loud, and so forth. Gamage (2003) concluded that the most used learning strategy among the learners was repeated writing, and there were differences of kanji recognition between alphabetic background students and character-based language students. The study found that the college students whose first language was alphabetic relied highly on visual kanji recognition. Because the most used kanji learning strategy among non-native Japanese speakers with alphabetic language background was repetition through writing and recalling, it was natural for them to use visual recognition.

Recall Protocol

To evaluate reading comprehension of foreign language learners, traditional methods such as multiple-choice and true/false questions were often used in foreign language classrooms.

However, many studies pointed out that those methods were unreliable because students who had not read the reading materials were able to answer with similar scores of those who had read it (Pyrczak, 1975). Bernhardt (1983) claimed that recall protocol was an effective reading comprehension method. Recall protocol would focus on the interaction between the text and its reader without any support from outside resources and assess students' understanding of reading in a foreign language.

The procedure of a recall protocol had students read a written text in a foreign language silently as long as they liked. After reading it, the text would be taken away, and they were instructed to write down all information they remembered in their L1 from the reading materials in L2. The notes show their thinking process rather than production. In order for students to demonstrate their comprehension fully and to express their thoughts smoothly, writing in L1 is necessary for the recall portion.

Scoring recall protocol required criteria in order to evaluate the students' reading comprehension. Meyer's (1985) scoring system had been often used for the similar studies. Meyer's scoring system divided the reading passage into components called "idea units," and the researcher would measure the connection between idea units. The downside of the scoring system was that it was time-consuming. Block (1986) promoted an alternate method to score recall protocol. Based on the idea units of Meyer's, Block's scoring system divided idea units into two groups, "main ideas" and "supporting details." Using Block's scoring system, Rahman (2005) confirmed that recall protocol was an instrument for reading comprehension by examining 33 secondary school students. In the rubric, there were seven main ideas and one supporting detail of the reading materials. The awarded scores depended on whether the main ideas were presented or absent and also on the accuracy of recall protocol, giving partial points

for grasping the main ideas of the passage. Therefore, Block's scoring system was more time-efficient because the rubric was clearer for the evaluators to pinpoint.

Another benefit of using recall protocol was to measure merely students' reading comprehension in another language. Students would be exposed to only the L2 context. Therefore, unnecessary information from multiple choices, for example, would not affect their testing results and comprehension.

Survey of Reading Strategies. Different research was conducted to see the correlation between successful readers' strategies and unsuccessful readers' strategies. Survey of Reading Strategies or SORS was designed based on Metacognitive Awareness of Reading Strategies Inventory by Mokhtari and Reichard (2002) and was modified by Mokhtari and Sheorey (2002) to have three categories: global, problem solving and support strategies. Global strategies help students be aware of the purpose for reading by generalizing the reading. Problem solving strategies would play a role as navigation by making a plan of reading strategies when the readers faced difficult reading tasks. Using outside resources such as dictionaries and reference to support reading comprehension was categorized as supporting strategies. These three different types of reading strategies interacted with each other and supported readers' comprehension.

The purpose of the survey was to find out how often a reader used reading strategies, what kind of reading strategies they used, and whether they were aware of their usage of reading strategies. SORS focused on reading strategies by L2 learners when they read academic reading. After scaling the 30 questions on the survey, students discovered their tendency of reading strategies used according to the three categories. In addition, self-reports revealed that students who had identified themselves as good readers used global and problem solving strategies more

often compared to those of bad readers. On the other hand, there was no gap found regarding use of supporting strategies between successful and unsuccessful readers (Mokhtari, 2002).

Summary

This chapter introduced the three reading models and reading strategies for second language learning. In addition, reading strategies for reading in Japanese were also mentioned as well as its writing system and kanji reading strategies. Leading into the next chapter, recall protocol and survey of reading strategies were mentioned pertaining to the research design.

Research Questions

To what extent do Japanese as a foreign language (JFL) high school learners use reading strategies when they read authentic materials?

    a. What are the differences and/or similarities in reading strategies between JFL high school students who are exposed to the topic vs. students who are not?

    b. What strategies do JFL high school learners use to process the information of kanji?

CHAPTER 3: RESEARCH METHODS

Introduction

The research was conducted to find out what strategies high school learners of Japanese language used to comprehend authentic texts written in Japanese, and whether exposure to the topic of the reading beforehand would affect students' use of strategies or reading comprehension. This study was designed to answer the following research questions:

To what extent do Japanese as a foreign language (JFL) high school learners use reading strategies when they read authentic materials?

a. What are the differences and/or similarities in reading strategies between JFL

high school students who are exposed to the topic vs. students who are not?

b. What strategies do JFL high school learners use to process the information of

kanji?

In order to respond to the above research questions, three phases of data collection were

designed for this study. The first phase was "Reading Comprehension Task with Think Aloud

Recall Protocol;" the second phase was "Follow-up Interview," which was conducted

immediately after the Reading Comprehension Task; and the third phase was "Survey of

Reading Strategies (SORS)." The triangulation of these three methods may reveal Japanese

language learners' reading strategies when they read authentic text in Japanese, which contains

unknown vocabulary, kanji, grammar, and cultural information.

Setting

Research for this study took place in a mid-size city in Central California. The

community is well known for its agricultural business. The community struggles with issues of

poverty, resulting in economically challenged households and high dropout rates of its students.

The school district consists of four public high schools, each of which offers a Japanese program.

Each high school offers levels 1, 2, 3, and Advanced Placement (AP) Japanese courses. Among

the four schools, level 3 students from two schools were chosen to participate in this study.

Participants

The participants of the study were drawn from two schools in the same school district,

which share the same instructional approach, which is standards-based and proficiency-based

instruction. They also share the similar themes of units. For instance, School X covered the

following units: (a) Hometown, (b) Everyday Life, (c) Cooking, (d) Hobbies, (e) Future Plan,

and (f) Apartment Hunting. Likewise, School Y also covered (a) Hometown, (b) Everyday Life,

(c) Cooking, and (d) Hobbies and Leisure, but did not cover (e) and (f).

The instructor who taught at School X covered a topic of Recycle, but the instructor at

School Y did not cover the topic; therefore, two students from each school, a total of four

students, who received a final grade of 'A' were randomly selected. Table 3 below summarizes

each student's basic demographic information.

Table 3
Students' background information

Participant	School	Grade Level	Ethnicity	Languages	Semester Grade	Exposure to Topic
Mary	School X	11th	Filipino	English	A	Yes
Kim	School X	11th	Filipino	English	A	Yes
Joe	School Y	11th	Mexican	English, Spanish, Purepecha	A	No
Vicky	School Y	11th	Mexican-American	English, Spanish	A	No

This research was conducted in March 2016. Each participant met one on one with the researcher

in a separate classroom after school. The research protocol took approximately thirty minutes to

one hour per participant.

Phase One. In the JFL classroom, where the research took place, there were two video

cameras set to capture the participant. One camera was set in front of the participant to record his

or her think aloud process while the other camera was set to record the students' highlighting

passages, taking notes, and any other physical interaction with the authentic text in order to

clarify for the follow up interview.

After the participants finished reading the text, the researcher took the reading and gave a

piece of paper to the participant. He or she recalled out loud what they read and wrote down

what they understood from the reading text in English. The researcher encouraged the participant to write as much as possible. In this phase of the study, the researcher measured the total reading time, scored reading comprehension, and transcribed the think aloud protocol for further data analysis.

This protocol was chosen because the think aloud method demonstrates the student's cognitive process and in doing this, verbalizes their thinking process in comprehending a written, non-alphabetic language. With the audio recording, students were asked to think aloud in English during the study so that the teacher, as an observer, could be aware of their reading strategies. During this process, videotape was used to record students' actions in order to clarify their strategies such as highlighting, underlining, marking in the text during the reading. With the combination of the audio and visual information, the researcher could gain insight into the participant's cognitive processes.

Phase Two. Immediately following Phase One, Phase Two was implemented. Phase Two consisted of a 9-question interview. The interview gave the participants an opportunity to elaborate on their strategies and thinking process in their own words, leading the researcher to gain further insights from the subjective perspective (see Appendix B). In addition, the researcher asked extra questions from his notes about the participant's think aloud. During the interview, only one video camera was set in front of the participant to record the interview. The time was not limited.

Phase Three. Survey of Reading Strategy (SORS) created by Mokhtari & Sheorey (2002) was implemented to find out what reading strategies students used while they were reading a text in Japanese (See Appendix C). SORS was designed to measure L2 learners' metacognitive awareness of reading strategies. It was targeting an "under-researched language

(Arabic)." Both Arabic and Japanese are non-alphabetic languages so SORS would be an effective tool to evaluate how aware native non-native speakers of Japanese are of their reading strategy use when they read authentic texts in Japanese.

The SORS consists of 30 statements, and the students rated themselves on a scale of one to five, five being the most applicable to their reading strategies. The statements are designed to make students conscious of and reflect on their reading strategies. (e.g. "#6 I think about whether the content of the text fits my reading purpose.") After responding to these statements, students calculated their scores. Based on the scores, students found out which of three groups of reading strategies they used: Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies. This score helped the researcher discover whether there were differences or similarities between exposed and non-exposed students' use of reading strategies.

Authentic Reading Text

 The reading text was found on a Japanese website, which was meant for Japanese native speakers in the secondary level in Japan. The reading material included components of the definition of recycling in Japan and descriptions of certain items, which are recyclable and turned into different materials (e.g., newspaper turned into cardboard or different types of paper after recycling).

The following is a list of kanji used in the authentic material.

List of kanji found in the reading text
1. 情報提供
2. 外部
3. 捨てれば
4. 再利用
5. 資源
6. 学ぼう

7. 使い
8. 終えたら
9. 工夫
10. 戻す
11. 例えば
12. 新聞紙
13. 取り
14. 紙
15. 原料
16. 植物
17. 段ボール
18. 新しい
19. 紙製品
20. 可能
21. アルミ缶
22. 容器
23.鉄
24. 呼ぶ
25. 進める
26. 分けて
27. 種類
28. 集める
29. 必要

The following list indicates kanji found in the reading text and also taught at each school.

Kanji taught at School X
2 外部
5 資源,
6 学ぼう,
7 使い,
8 終えたら
11 例えば
12 新聞紙,
13 取り,
14 紙,
15 料理
17 段ボール,
18 新しい,
21 アルミ缶,
26 進める

Kanji taught at School Y
1. 情報提供
2. 外部
6. 学ぼう
7. 使い
8. 終えたら
11. 例えば
12. 新聞紙
13. 取り
16. 植物
18. 新しい
24. 呼ぶ
26. 分けて
27. 種類
28. 集める
29. 必要

Reading Comprehension Score

 In order to measure how well students understood the meanings from the authentic text,

Rahman's rubric was used. In the text there were five main ideas (M1, M2, M3, M4, M5) and

three supporting details (S1, S2, S3) (See Table 1). The five main ideas consisted of one main

idea which was worth 1 point, and the other four main points were worth 2 points each. The

difference in points was based on whether higher reading comprehension was required. The three

supporting details were divided into three portions. The first supporting detail was the most

complicated sentences in the reading, which required the student to understand the process of

recycling newspaper with recycling terminology. The sentence was broken down into two parts.

The first one described that newspaper was turned into pulp, and the second part explained that

pulp is used to make new cardboard; both parts were worth 1 point each. The second supporting

detail indicated a list of specific recyclable items. The sentence included 5 different items (aluminum cans, plastics, glass, steel, and concrete) and each item was worth 1 point. The third supporting detail was worth a total of 3 points. If a student managed to comprehend the layout of the reading such as title, source, and subtitle, then they were given a point for each. In total, there was a possibility of 19 points. The students' reading comprehension results were examined carefully, consisting of two stages of evaluation. First, the content of reading comprehension was highlighted by reading comprehension and reading comprehension attempts. This procedure eliminated the non-related items such as comments, reflection, and incorrect inferences. The selected reading comprehension content was sorted into main ideas and supporting details. If students made conclusions with somewhat correct interpretations, they received partial points. The relationship between the reading comprehension score and the reading time duration was compiled into a chart (See Table 3 in Appendix) and analyzed regarding exposed and non-exposed performing students.

CHAPTER 4: RESULTS

Findings are presented chronologically; qualitative and quantitative data are also shared.

Results of Phase One: **Reading Comprehension with Think Aloud Protocol.**

Analysis of think aloud protocol indicated that every student utilized cognitive strategies such as context clues to gain clearer ideas about the reading. Those students who took advantage of grouping strategies such as classifying words that they recognized demonstrated better reading comprehension of details about the reading. In addition, every student used his or her background knowledge including contextual, grammatical, and linguistic information to comprehend the text. On the other hand, in Vicky's case, her use of background knowledge

sometimes led to the misinterpretation of the reading. The most commonly used metacognitive strategy was monitoring of their thinking process.

For cognitive strategies, grouping, using background knowledge, summarizing, detection, using context clues, and guessing from context were used by both groups of students. Monitoring one's comprehension with metacognitive strategies, such as thinking aloud, was also used by both students with and without exposure to the topic. The patterns of reading strategies used were the following. At the beginning of reading, students skimmed the reading materials, analyzing the title, the recycling sign, and subtitle to get the gist of the main point of the reading. While students were reading the text, every student was aware of context clues such as the recycle sign, keywords including *recycle, garbage, plastic, glass, aluminum*, and *concrete*. These context clues required the students to connect with their background knowledge for better understanding of the reading. Students' background knowledge ranged from the concept of recycling, grammatical structures learned in class, kanji, and linguistic markers. Grouping strategies were also observed when students identified items in katakana and realized these items indicated a list of recyclable items. During the reading, all students used the think aloud while reading strategy to monitor their comprehension of the reading. This was understood by the vocalized comments made by students such as "I think this is a type of trash", and "I think this means we need to recycle". At the end of the reading, students summarized the reading and went over the main points of the text.

Although there were similar patterns of reading strategies used by students with exposure and students without exposure, several differences in reading strategies were observed. Table 4 illustrates reading strategies used by the students who had had exposure to the topic and the ones who had had no exposure to the topic before the present study (See Table 4). Among the four

voluntary participants, three students, Mary, Kim, and Joe showed similar patterns of reading

strategies while Vicky demonstrated different approaches for comprehending the reading

materials. Analyzing Table 4, the column on the left side lists reading strategies used by students

without exposure, and the right column shows the reading strategies used by students with

exposure. The middle column indicates the reading strategies used by both groups of students.

Table 4

 Difference and similarity of reading strategies

Reading strategies used by students without exposure	Shared reading strategies	Reading strategies used by students with exposure
Metacognitive Strategies • Skimming • Grasping the gist • Scanning • Finding specific information • Check back	Cognitive Strategies • Grouping • Use background knowledge • Summarizing • Detection • Use context clues • Guess from context • Prediction Metacognitive Strategies • Monitoring • Comprehension	N/A

There were no reading strategies used only by the students with exposure, Mary and Kim. On the

other hand, on the opposite side of the table, various strategies were used by students without

exposure, especially Vicky. Mary and Kim who had been exposed to the topic and Joe who had

not had exposure to the topic presented similar patterns of reading strategies to comprehend the

reading text while Vicky utilized more metacognitive strategies such as grasping the gist, reading

selectively, scanning, and finding specific ideas.

There were differences between Vicky and the other three students Mary, Kim, and Joe,

as illustrated in Tables 5 and 6. Overall, there was not much difference concerning patterns of

reading strategies used among the three students Mary, Kim, and Joe. They utilized more

cognitive strategies compared to metacognitive strategies. Mary, Kim, and Joe utilized the

grouping strategy to comprehend the details of specific recyclable items, resulting in higher

scores of recall protocol. Observation captured that they used context clues to get a better

understanding of the reading text. Kim, however, did not successfully project her thinking aloud

process resulting in the researcher not being able to detect whether or not she used inference

strategy or metacognitive strategies. The other three students did not show their metacognitive

strategies other than skimming and monitoring comprehension strategies, while by comparison,

Vicky tried the most metacognitive strategies by far.

Table 5
Cognitive reading strategies used between exposure and non-exposure

	Exposure to the topic		No exposure to the topic	
Cognitive Strategy	Mary	Kim	Joe	Vicky
Grouping - classify	✓	✓	✓	
Elaboration of prior knowledge - use what you know - use background knowledge	✓	✓	✓	✓ ✓
Summarizing - Say the main idea	✓		✓	✓
Detection/induction - use a rule	✓	✓	✓	✓
Making inferences - use context clues - guess from context - predict	✓ ✓ ✓		✓ ✓ ✓	✓ ✓ ✓

Table 6
Metacognitive reading strategies between exposure and non-exposure

	Exposure to the topic	No exposure to the topic

Metacognitive Strategy	Mary	Kim	Joe	Vicky
Advance organization - Skim - gist	✓		✓	✓
Selective attention - scan -find specific information				✓ ✓
Monitoring comprehension - think while reading	✓		✓	✓
Self-assessment -check back				✓

Reading comprehension. Analyzing the students' recall protocol suggested that there were some pattern differences between Vicky and the other three students. Even though all the students managed to figure out the main idea of the reading text, which was recycling, Mary, Kim, and Joe could understand more details about what items could be recycled while Vicky's answers were unclear. The rubric of M1 (See Appendix D) set one of the main ideas of the reading: *the main point is about recycle*. For sample answers, Joe, who scored the highest, said, "*the main point of the text was about recycle*," and the Vicky, who scored the lowest, wrote, "*This paragraph was all about recycling*." Therefore, all students gained the full point of 1 for M1 (See the scoreboard in Appendix). Another finding was that Vicky applied her background knowledge to understand the reading text, and her background knowledge led to misinterpretation of the reading.

The gap of score between Vicky and the other three students was due primarily to the accuracy of S2 (See Appendix D). The correct answer for S2 was *other recyclable items are*

plastics, glass, steel, and concrete. The three students indicated their understanding of these particular details. Mary wrote "it seemed that it is giving examples of specific items to recycle. For example, it mentioned plastics and glass." Kim said, "The text mentioned the different types of recycle, like glass, concrete, and *samazama* trash." Samazama (さまざま) actually means "various" in Japanese so her answer suggested that she interpreted it as a type of recyclable item though it was still clear that she comprehended the details of what kind of item could be recycled. Joe's answer was "you can recycle plastic, paper, and ink as well." Paper was mentioned as a recyclable item in the previous sentences, but ink was mentioned as a waste, which comes from the process of recycling newspaper, and not a recyclable item itself as he stated. However, it was clear that he managed to list plastic as a recyclable item so he received one point under S2.

In contrast, Vicky did not seem to clearly comprehend the details of what items could be recycled. For instance, Vicky inferred that items could be recyclable but could not determine the main point of the sentence:

> *Some things that it mentioned were bottles and ink. The bottles I believe were plastic since plastic bottles can be recycled and the ink could have been talking about ink cartridges that go from the printer. Another thing I saw was what I believe was the word concrete which could be a reference to the floor, and since it was in a list I believe it was saying that if items are on the floor they should be picked up and put in their proper place.*

It seemed she understood the sentence was listing recyclable items, but her response implied that she was still not certain enough of the sentence since she repeatedly used "I believe." Thus she used her background knowledge, trying to get the reading to make sense to her. Furthermore, her

deduction of recycling items found on the floor was not related to the supporting details, resulting in a misinterpretation of the text.

Reading comprehension showed that schemata led students to misinterpretation of the reading text. Context clues, such as a recycle symbol and the layout of the reading text, stimulated students' background knowledge about what they knew about recycling. Their background knowledge, however, was based on their own experiences in the United States, or other countries. As a result, students made inaccurate guesses based on what they knew, misunderstanding the reading text. For instance, Mary, who was a high performing student, made a prediction as a result of a phonological analysis. She found the word アルミ (pronounced *arumi*, aluminum) and sounded it out to and associated with army because those two words could be pronounced very similarly. She wrote "the text also mentioned アルミ which sounds like army. Maybe the text is saying that recycled items end up being reused again, especially in the army." Mary managed to comprehend that recycled items could be reused in general but did not mention about army any further.

Another example was Vicky. She developed ideas from context clues and continued to expand these ideas in order to try to comprehend the reading text. However, it seemed that making inferences misguided her reading comprehension. It seemed she could pick up on that the reading text was talking about concrete. In her recall protocol, she referenced concrete as "floor," concluding "if items are on the floor they should be picked up and put in their proper place." Her inference went in an incorrect direction. In the reading text, concrete was a recyclable item. Considering the above, Mary, Kim, and Joe guessed based on what they had known, but their guessing did not interfere with their reading comprehension. On the other hand,

Vicky utilized her background knowledge and inference strategies, but those had a great impact on her reading comprehension, resulting in miscomprehension.

Result of Phase Two: Follow-up Interview

Interviewing the students helped the researcher gain more insight into students' process of reading the authentic materials in Japanese and kanji recognition because the follow-up interview was designed to reflect reading and kanji strategies used from students' point of view. In fact, follow-up interviews revealed reading strategies and kanji processing, which were not observed during the think aloud process. Table 7 illustrates the similarities and differences of reading strategies used between students with and without topic exposure. As observed in Phase 1, using context clues and background knowledge were the common reading strategies used by every student. During the interview, students recognized the recycling sign and keywords written in katakana to activate their background knowledge to get a better understanding of the reading. The follow-up interview provided insights into the difference of reading strategies used between students with and without exposure. These reading strategies were not observed by the researcher during Phase One. Kim, who had had exposure to the topic utilized metacognitive strategies such as skimming and selective reading, said, "I somewhat skimmed through the sentences, identify kanji that are similar in parts of the paragraph because I know there is some kanji that came up multiple times, like this one with the top, this one right here, I know ゴミ means trash. This is the same one as over here." After the researcher clarified that she had used skimming, Kim continued, "Skimming and finding the things that I know like the hiragana and katakana." Her dialogue about reading strategies made it clear that Kim had utilized skimming and selective reading strategies such as scanning and finding specific information during the reading, which observation failed to capture.

Table 7
Self-reported difference and similarity of reading strategies

Reading strategies used by students without exposure	Shared reading strategies	Reading strategies used by students with exposure
Making pictures Highlighting Rereading	Context clues Background knowledge	Skimming Selective reading

Focusing on the reading strategies used by Joe and Vicky, their answers showed different approaches. It seemed that those two students tried to personalize the reading materials by using the following reading strategies. For example, Joe mentioned a unique strategy, making pictures in his mind to associate with the reading;

Joe: Well I looked at what comes after whatever I did not understand to see like to kind of get a picture of what it is talking about and also repeat thing to see if I actually know them or if I just forgot them and writing down things I already know and see how they connect.

Teacher: Ok, good so you kind of associate with what you know. And you said picture, did you mean picture like as in an idea or like an actual visual?

Joe: like an actual visual. Does it make sense in the real world, what they are saying?

Teacher: It's not clear to me. The picture do you mean like kanji or like the whole thing?

Joe: The whole thing.

The dialogue indicated that Joe used cognitive strategies picturing information gained from the reading to make sense of it. Additionally, Vicky attempted to interact with the reading materials by highlighting and rereading. Highlighting helped her access the information she obtained. By doing so, she could connect a piece of information with another to understand the reading. Rereading was also Vicky's reading strategy. "The first time you just skim it and see if anything

latches on the second time you start thinking about it, the third time you make the connections."

This pattern helped her digest with focus and process step by step.

As in the literature review regarding kanji strategies of non-native Japanese speakers whose first language was alphabetic revealed that visual recognition strategies were used the most often among them, the present study found a similar tendency in kanji recognition strategies. Mary and Kim who had had exposure to the topic and Joe who had not had exposure stated that they used visual recognition strategies. Mary stated that she had tried to connect unknown kanji with what she had learned before. She also indicated using context clues to figure out unknown kanji but she would need to know how the kanji was used in a context. During the interview, Mary shared that she had knowledge about how some kanji were created based on pictures or objects so that would also be another piece of evidence that she utilized visual recognition strategies. Kim mentioned that she was a visual learner and she utilized visual recognition strategies. It seemed that it was natural for her to associate kanji with pictures. Joe also used visual recognition strategy for processing kanji. In the interview, Joe described how he had encountered an unknown kanji and a familiar kanji he could recognize along with the katakana. Based on his background knowledge, context, and visual recognition, he guessed the meaning of unknown kanji.

Unlike the other three students, Vicky mentioned that she attempted to figure out the meaning of unknown kanji from context clues, which was a pattern of meaning strategies. Vicky said she had used context clues to discover the meaning of unknown kanji. In her case, it seemed that she had paused processing the unknown kanji, and proceeded with the entire reading. She was counting how many times unknown kanji appeared throughout the reading, and kept in mind how the unknown kanji was mentioned in the sentences. After she gained more information

about the reading as whole and more context clues, then she analyzed the meaning of unknown

kanji.

Table 8
Kanji Strategies from follow-up interview

Mary	Visual Recognition: *I still look at it like maybe I'll figure it out. But it's kind of hard to figure it out without context. Like when I learn kanji it is different because I'm learning what it is and I see it. Like kanji is supposed to be pictures, right?*
Kim	Visual Recognition: *I kind of look for pictures in the word. Like* 歯 *looks like a tooth.*
Joe	Visual Recognition: *I recognized one of them it meant out,* 外、 *and the kanji afterwards I've seen it before*
Vicky	Meaning Strategy: *I kind of just skip over them and kept reading on and when I saw the kanji again and what followed after I tried to use context clues to find the meaning and if I found it in this one then I could use it in the previous instances.*

Result of Phase Three: Survey of Reading Strategies

SORS survey result. Analyzing the results of SORS revealed the difference between

reading strategies used by Vicky and those used by the other three students. Table 11 provides an

overview of SORS of the four students, every student scored high in three categories of reading

strategies. However, Vicky scored lower in the SUP category, which indicated outside resources

such as dictionaries or references. The question Vicky scored lowest on in the category was "I

use reference materials (e.g. a dictionary) to help me understand what I read." This result

indicates that it could have been possible that Vicky did not have a strategy to retain new

vocabulary words. As a result, she knew few words from the authentic material like the one used

in this study, leaving no choice but to rely on her background knowledge to make sense of the

reading.

Table 11

Average score of Reading SORS Survey by participants

Category	Mary	Kim	Joe	Vicky
Global Reading Strategies (GLOB) (Max Average)	3.5	4.46	4.5	3.5
Problem Reading Strategies (PROB)	4.25	4.75	4.1	3.9
Support Reading Strategies (SUP)	3.8	4.67	4.3	2.7
Overall Reading Strategies (GLOB+PROB+SUP)	3.8	4.6	4.4	3.4

CHAPTER 5: DISCUSSION

Summary of findings of the study

The present study was designed to better understand how Japanese language educators at secondary levels can implement authentic materials into their instruction and how well students with exposure to the topic as well as students with no previous exposure to the topic demonstrate their understanding of reading authentic materials, based on data obtained from three study phases.

Implications of the Study

Context clues. The findings of the present study indicated several patterns of reading strategies used by Japanese language learners at the secondary level. One of the significant findings was that both groups of students utilized context clues to understand the reading materials. Readers utilized their background knowledge using the clues they could find in the authentic text such as graphics and the layouts of the article, and they were able to grasp the main idea of the text even though they were not able to get detailed information due to lack of

vocabulary and grammatical knowledge. Students also identified cognate words such as ink, concrete, bottles, recycle and connected them to their background knowledge to figure out the main message of the text. Knowledge of kanji, which are content words in Japanese texts, is critical, but students tried to figure out portions of kanji so they could attempt to understand and guess the meaning. It is overwhelming for students to read texts with so many unknown kanji, but they need to build strategies and confidence that they can get main ideas of the text without knowing every kanji, word, and sentence structure. This is evidence that it is important for students to not be afraid of reading authentic texts with unknown kanji and words, by practicing in class and learning various reading strategies to deal with unknown kanji and words. It is also very important for teachers to choose age and cognitively appropriate authentic texts. The authentic texts include cultural clues and should not be edited; the teacher should design tasks that students can do with the texts as they are.

Background knowledge. Learners of language have little prior knowledge about Japanese culture, thus they tend to use their own cultural background knowledge to fill in the gaps. The difference in the participant use of background knowledge was the significant finding during the present study. Since Mary and Kim had had background knowledge about recycling through a previously studied unit in the classroom, and Joe had had more exposure to various topics of Japanese culture outside of classroom time, the combination of their inferences from context and background knowledge helped them remain on the target during reading comprehension. As a result, when it comes to guessing from context, students apply their own background knowledge, which leads to inaccurate comprehension. Yet, Vicky's use of background knowledge was different from the other three students. Vicky's misinterpretation influenced by her background knowledge: Every student used the guessing-from-context strategy

to associate with his or her background knowledge in order to understand the text better. However, students' background knowledge based on their own experiences and lack of background knowledge in the target culture often misled them to inaccurate comprehension of the reading. In Vicky's case, this type of misinterpretation occurred often. The patterns which were observed during Vicky's think aloud process were that she identified some keywords such as *ink, recycle, concrete*, and connected with her own background knowledge. Because Vicky knew only a few words from the reading, she created stories based on the context clues and her background knowledge to make sense of the reading. An example was how Vicky connected the word ink with what she knew. However in the context, ink was described as a waste product resulting from the process of recycling newspaper. Instead, she misunderstood ink as a recyclable item and connected it with ink cartridges based on her background knowledge. She mentioned, *"it says ink and then it might be talking about recycling ink cartridges since most people think ink might go in the trash but I believe they can be recycled,"* trying to connect her background knowledge with her knowledge of the vocabulary words.

Here is another example of Vicky's background knowledge leading to misinterpretation in reading comprehension. She analyzed the sentence with a list by mentioning "*Kono hokanimo, arumi ya purasuchikku… garasu...konkuriito nado,* and right here there is lots of commas so I'm thinking that it's putting something in sequence and right here it say *konkuriito* which I think is concrete." Vicky must have thought of concrete as on the ground, and the other items mentioned before concrete as trash items which could be found on the ground. Thus, she concluded "I think it's talking about finding things on concrete… to see if it's recyclable or not and to pick them up or put them in the recycling bin or throwing them in the trash." While she was summarizing the reading text, her misinterpretation concerning concrete continued, "It is definitely a passage

about recycling… telling you of trash, plastic bottles, and things of what I think [are] things that might be found on the concrete."

This study also highlighted the value of teaching strategies of kanji recognition. The data from the present study indicated that students utilized visual kanji recognition more often than other strategies. Since Japanese language is far different from students' first languages, English or Spanish, students depend on the visual information of kanji and associating with pictures due to the lack of background of kanji. The data collection supported Matsumoto (2013) and Gamage's (2003) literature reviews. On the other hand, one student used the meaning strategy. Vicky tried to figure out the meaning of unknown kanji from the context. It would have been different if it had been a teacher-modified reading material, which would have focused only on the reading task, because Vicky would not have been able to use the context clues and skimming strategy to analyze the text. This implied how powerful and important it is to implement authentic materials into instruction because authentic materials maximized students' ability to solve problem critically.

Limitations of the Study

In this study, the sample size is limited to four students due to the students' availability and readiness. In addition, sample student's background information (nationality and language) might not be varied enough to make conclusions based on the results of this study.

The third limitation was regarding the think aloud procedure. Although think aloud is a valid and effective way to understand readers' process, the students were not familiar with the method, and they would have benefited from more practice prior to the study. Their voices were fading away when they were engaged in comprehending the text. The researcher had to keep

reminding them to project their voices. Every time the researcher intercepted and encouraged them to speak louder, students were temporarily disengaged from the reading.

Conclusion

The present study demonstrated the importance of using authentic materials in language instruction. Integrating authentic materials into instruction at lower levels of Japanese language is crucial. By exploring different types of authentic materials from earlier levels, students will become more familiar with realia in the target language and accumulate cultural schemata in Japanese culture.

In addition to building students' schemata, it is also important to establish accurate background knowledge because students' background knowledge varies. The authentic materials provide rich cultural information, which is completely different from the reader's own culture, and he or she becomes aware and appreciates learning about a different culture. This helps students to develop global competence that is a critical skill for the 21st century. In order to enhance that, the instruction should be communication based wherein students would compare and contrast the Japanese culture with their own culture.

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Appendix A: Authentic Reading Material: Recycle

(http://kids.yahoo.co.jp/study/detail/env007.html)

Translation of Authentic Reading Material

What's recycling (3R)	Source: Ecology Online (outside resource)
If you throw away something it becomes garbage, but if you reuse it, it becomes recyclable items. Let's learn about recycling!	
Reuse recyclable items after you finish using it.	
Recycle is converting waste into reusable materials. For example, newspaper can be reversed back into pulp (plant fiber consisting of paper) by melting and taking out ink from it. Using this pulp, it is possible to make new items made out of paper such as cardboard. In addition, aluminum cans, plastic containers, glass, steel, concrete, and many more waste can be recycled. These items should rather be called "recyclable resources" than trash. In order to proceed recycling, it is necessary to separate garbage properly and collect it by categories.	

Appendix B

Interview Questions

- How was the experience?

- How would you rate the difficulty from 1 to 5? 5 being the most difficult.

- What was challenging?

- What was easy?

- Do you know what this reading text is about?

- How did you know?

- What strategy did you use to understand this reading text?

- When you encountered unknown kanji what did you do?

- How do you study for kanji usually?

Appendix C

Modified Survey of Reading Strategies

SURVEY OF READING STRATEGIES
Kouider Mokhtari and Ravi Sheorey, 2002

The purpose of this survey is to collect information about the various strategies you use when you read **school-related academic materials in** Japanese (e.g., reading textbooks for homework or examinations; reading journal articles, etc.). Each statement is followed by five numbers, 1, 2, 3, 4, and 5, and each number means the following:

'1' means that 'I **never or almost never** do this'.
'2' means that 'I do this **only occasionally**'.
'3' means that 'I **sometimes** do this'. (About **50**% of the time.)
'4' means that 'I **usually** do this'.
'5' means that 'I **always or almost always** do this'.

After reading each statement, *circle the number* (1, 2, 3, 4, or 5) which applies to you**.** Note that there are **no right or wrong responses** to any of the items on this survey.

Statement	Never		Always		
1. I have a purpose in mind when I read.	1	2	3	4	5
2. I take notes while reading to help me understand what I read.	1	2	3	4	5
3. I think about what I know to help me understand what I read.	1	2	3	4	5
4. I take an overall view of the text to see what it is about before reading it.	1	2	3	4	5
5. When text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5
6. I think about whether the content of the text fits my reading purpose.	1	2	3	4	5
7. I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5
8. I review the text first by noting its characteristics like length and organization.	1	2	3	4	5
9. I try to get back on track when I lose concentration.	1	2	3	4	5
10. I underline or circle information in the text to help me remember it.	1	2	3	4	5
11. I adjust my reading speed according to what I am reading.	1	2	3	4	5
12. When reading, I decide what to read closely and what to ignore.	1	2	3	4	5
13. I use reference materials (e.g. a dictionary) to help me understand what I read.	1	2	3	4	5
14. When text becomes difficult, I pay closer attention to what I am reading.	1	2	3	4	5
15. I use tables, figures, and pictures in text to increase my understanding.	1	2	3	4	5
16. I stop from time to time and think about what I am reading.	1	2	3	4	5
17. I use context clues to help me better understand what I am reading.	1	2	3	4	5
18. I paraphrase (restate ideas in my own words) to better understand what I read.	1	2	3	4	5
19. I try to picture or visualize information to help remember what I read.	1	2	3	4	5
20. I use typographical features like bold face and italics to identify key information.	1	2	3	4	5
21. I critically analyze and evaluate the information presented in the text.	1	2	3	4	5
22. I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5
23. I check my understanding when I come across new information.	1	2	3	4	5
24. I try to guess what the content of the text is about when I read.	1	2	3	4	5
25. When text becomes difficult, I re-read it to increase my understanding.	1	2	3	4	5
26. I ask myself questions I like to have answered in the text.	1	2	3	4	5
27. I check to see if my guesses about the text are right or wrong.	1	2	3	4	5
28. When I read, I guess the meaning of unknown words or phrases.	1	2	3	4	5
29. When reading, I translate from Japanese into my native language.	1	2	3	4	5
30. When reading, I think about information in both English and my mother tongue.	1	2	3	4	5

Appendix C

Continued Modified Survey of Reading Strategies

SCORING GUIDELINES FOR THE *SURVEY OF READING STRATEGIES*

Student Name: _____ Date: _____

1. Write the number you circled for each statement (i.e., 1, 2, 3, 4, or 5) in the appropriate blanks below.
2. Add up the scores under each column and place the result on the line under each column.
3. Divide the subscale score by the number of statements in each column to get the average for each subscale.
4. Calculate the average for the whole inventory by adding up the subscale scores and dividing by 30.
5. Use the interpretation guidelines below to understand your averages.

Global Reading Strategies (GLOB Subscale)	Problem Solving Strategies (PROB Subscale)	Support Reading Strategies (SUP Subscale)	**Overall Reading Strategies (ORS)**
1. _____	7. _____	2. _____	**GLOB** _____
3. _____	9. _____	5. _____	**PROB** _____
4. _____	11. _____	10. _____	
6. _____	14. _____	13. _____	**SUP** _____
8. _____	16. _____	18. _____	
12. _____	19. _____	22. _____	
15. _____	25. _____	26. _____	
17. _____	28. _____	29. _____	
20. _____		30. _____	
21. _____			
23. _____			
24. _____			
27. _____			

_____ GLOB Score   _____ PROB Score   _____ SUP Score   _____ **Overall Score**

   / 13   **/ 8**   **/ 9**   **/ 30**

_____ GLOB Average   _____ PROB Average   _____ SUP Average   _____ **Overall average**

KEY TO AVERAGES: 3.5 or higher = High 2.5 – 3.4   = Medium   2.4 or lower = Low

INTERPRETING YOUR SCORES: The overall average indicates how often you use reading strategies when reading academic materials. The average for each subscale shows which group of strategies (i.e., Global, Problem Solving, or support strategies) you use most often when reading. It is important to note, however, that the best possible use of these strategies depends on your reading ability in English, the type of material read, and your reading purpose. A low score on any of the subscales or parts of the inventory indicates that there may be some strategies in these parts that you might want to learn about and consider using when reading (adapted from Oxford 1990, pp. 297-300).

Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students reading strategies. *Journal of Developmental Education*, 25 (3), pp. 2-10.

Appendix D

Main Ideas translated in English
M1) The article is about recycle. (1pt)
M2) Recycling is converting waste into reusable materials. (2pt)
M3) Many kinds of (various) garbage can be recycled. (2pt)
M4) Garbage can be called recyclable resources. (2pt)
M5) It's necessary to separate garbage properly. (2pt)

9 points

Supporting Details translated in English
S1) For example, newspaper can be recycled. Newspaper can be turned into pulps (1pt), which can be made into new items like cardboard(1pt) S2) Other recyclable items are aluminum cans (1pt) Plastics (1pt) Glass (1pt) Steel (1pt) Concrete (1pt) S3) Understanding of text layout Title (1pt) Source(1pt) Subtitle (1pt)

10 points

READING STRATEGIES FOR JAPANESE LANGUAGE LEARNERS

Table A1
Survey of Reading Strategies Score by Categories

Category	Mary	Kim	Joe	Vicky
GLOBAL	3.5	4.46	4.5	3.5
PROBLEM-SOLVING	4.25	4.75	4.1	3.9
SUPPORT	3.8	4.67	4.3	2.7
Overall average	3.8	4.6	4.4	3.4

Table A2
Overall Recall Protocol Score and Reading Time

Students	Exposure to the topic		No exposure to the topic	
	Mary (School X)	Kim (School X)	Joe (School Y)	Vicky (School Y)
Score	Main 3 Sub 2.5 Total 5.5	Main 3 Sub 3 Total 6	Main 4 Sub 3.5 Total 7.5	Main 2 Sub 0 Total 2
Time (m.s)	7.10	9.20	9.30	16.37