Understanding Vocabulary of L2 Learners of Japanese

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Abstract

The analysis of this study aims to investigate the effectiveness of reading skills manifested by L2 learners of Japanese. In order to analyze the reading process of L2 learners of Japanese, we analyzed the data of 24 non-kanji learners of Japanese that were obtained from the "Reading corpus of non-native speakers of Japanese." Using Yang's (2006) categorization, we analyzed learners' understanding of words in the text through two different situations, (1) when they lack the relevant language skills, and (2) when they encounter unknown words while reading a text. The results show that learners use various tools, depending on the purpose, to find appropriate meanings of individual words and to understand the meanings of whole sentences and texts. Also, the results suggest that appropriate language knowledge prevents incorrect assumptions in comprehension and supports successful comprehension of whole texts.

Keywords: reading comprehension, language knowledge, reading strategies, comprehension monitoring strategies, L2 learner of Japanese, vocaburaly meanings

Povzetek

Namen analize te študije je raziskati učinkovitost bralnih veščin, ki jih kažejo učenci japonščine kot tujega jezika. Za analizo procesa branja v tujem jeziku smo analizirali podatke 24 učencev japonščine kot tujega jezika, katerih izvorni jezik ne uporablja pismenk. Podatke smo pridobili iz »Bralnega korpusa nematernih govorcev japonščine« (Reading corpus of non-native speakers of Japanese). Z uporabo Yangove (2006) kategorizacije smo analizirali razumevanje besed v besedilu skozi dve različni situaciji, (1) ko učenci nimajo ustreznega jezikovnega znanja in (2) ko med branjem besedila učenci naletijo na neznane besede. Rezultati kažejo, da učenci uporabljajo različna orodja, odvisno od namena, za iskanje ustreznih pomenov posameznih besed in za razumevanje pomenov celih stavkov in besedil. Prav tako rezultati kažejo, da ustrezno jezikovno znanje preprečuje napačne predpostavke pri razumevanju in podpira uspešno razumevanje celotnih besedil.

Ključne besede: bralno razumevanje, znanje jezika, bralne strategije, strategije spremljanja razumevanja, učenec japonščine kot tujega jezika, besedni pomeni

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1 Introduction

Reading is an activity in which others can hardly observe what is happening inside the reader. As long as this activity is done silently, no one can see how the reader thinks, how they engage in the reading process, and how they understand the meaning of the text. Therefore, reading instruction in language classes usually focuses on content, i.e. whether learners understand what is written correctly and what the author refers to, but not on developing effective reading skills. In this paper, the actual reading protocol of L2 learners of Japanese is analyzed to clarify how good readers use the tools and decode texts to understand them correctly. In particular, the analysis focuses on L2 non-kanji learners of Japanese in Europe who are not familiar with kanji (Chinese characters) and kanji compounds, compared to learners in China.

The analysis aims to reveal the skills of effective reading of J2 learners of Japanese, which would be adapted to developing reading protocols in Japanese language teaching. Three research questions are addressed below:

- 1. How do L2 Japanese learners sufficiently find out the meaning of words they do not understand in the text?
- 2. What strategies in reading protocols are found in the reading process of L2 Japanese learners?
- 3. What is the relationship between the reading strategies, comprehension monitoring strategies, and language knowledge of L2 Japanese learners in finding word meanings?

2 Backgrounds and previous studies

Language learners encounter texts in their target language naturally and according to their interests and needs. Not only do they read textbooks in the classroom, but nowadays they also seek to read texts on the Internet. Noda et al. (2018) report that the genres L2 learners of Japanese are eager to read or need to read include "life, information, communication, hobbies and interests, and academic topics". They also report that learners often want to read materials in Japanese at a higher level even when they themselves are at the beginner level. Therefore, it has been suggested that teachers should use materials in language classes that "stimulate learners' interests and promote their motivation" (Noda et al., 2018, p. 255).

However, it is easy to assume that learners will encounter various difficulties in reading texts if the reading materials are not adapted to their language level. Previous studies such as those by Nakajima (2020) for the beginner level, by Mukai (2020) for the intermediate level, and by Moritoki (2020) for the advanced level have shown difficulties in reading comprehension at each language level. Moritoki (in press) analyzes difficulties at all levels, from beginner to advanced, and concludes that

advanced learners are able to overcome potential difficulties through conscious and cognitive reading. Moreover, Yamanaka (1999) and Kanno (2007), who address the difficulties in understanding the meaning of noun modifiers, Moritoki (2022) and Moritoki (in print) point out the difficulties in decoding the structure of noun modifying closes in their reading process. However, these studies focused on the difficulties at each level or in the particular structure, so the reading strategies of L2 non-Kanji Japanese learners have not yet been clearly described.

L2 non-Kanji learners are not as familiar with kanji as learners who use Chinese characters in their native language. In addition, learners with insufficient proficiency often encounter words, Kanji-compound words, and phrases whose meanings they do not understand from the character information in the text. Hmeljak Sangawa (2020) reports on the dynamic use of dictionaries in learners' reading process. The study concludes that learners have three difficulties: (a) they cannot cut out a word properly to find it in the dictionary; (b) they search for a target word with an incorrect Kanji character; (c) they cannot select a suitable meaning in the text from the dictionary description. However, looking at the reading protocol, we find that learners encounter such difficulties even at a high language proficiency. The difference with poor readers is that good learners have the means to overcome such difficulties. Therefore, this study will investigate how they overcome difficulties in reading. The results are expected to indicate a way to guide L2 Japanese learners to read autonomously.

Studies on reading strategies of L2 learners in English have proposed a variety of categorizations due to the different definitions, such as Baker and Brown (1984), Block (1986, 1992), Janson and Stoller (1988), or Casanave (1988). Based on these previous studies, Yang (2006) analyzes the studies on the reading process, which are summarized in Table 1. Yang's study concludes that accumulating sufficient language knowledge helps learners to read a text successfully, learning appropriate strategies helps readers to understand the meaning of a text, and that comprehension monitoring knowledge helps learners to identify reading problems, which is the first step to overcoming the difficulties. As mentioned in the study,

Reading strategies are those that help readers solve the problems in figuring out meanings of printed words while comprehension monitoring strategies are those that help readers solve the problems beyond the printed words. (Yang, 2006).

incorrect notions and corrects them.

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Reading strategies (RS)	Comprehension monitoring strategies (CMS)
1. REREADING (Block, 1986; Janzen & Stoller, 1998) The reader rereads a part of the reading passage silently or aloud.	1. IGNORING AND READING ON (Collins & Smith, 1980) The reader ignores unknown words and phrases and continues reading because they think that unknown words or phrases are unimportant information, which do not hinder their comprehension.
2. SUSPENDING PROBLEMS (Yang, 2000) The reader suspends responses to words or sentences that they do not understand and expect to figure out the meanings in the context.	2. SUSPENDING JUDGMENT (Collins & Smith, 1980) The reader skips their judgment toward unknown words, phrases or senten-ces, and after they understand later sentences or paragraphs, they go back and comprehend previous unknown parts.
3. QUESTIONING (Block, 1986; Janzen & Stoller, 1998) The reader poses the questions in the reading process.	3. FORMING A TENTATIVE HYPOTHESIS (Collins & Smith, 1980) The reader forms a tentative hypothesis toward unknown words, phrases, or sentences, and as reading continues, they examine the correctness of the hypothesis.
4. GUESSING MEANING (Yang, 2000; Sheorey & Mokhtari, 2001) The reader uses the process of guessing to infer the meaning of unfamiliar words or sentences in the text.	4. REREADING CURRENT SENTENCES OR LOOKING FOR A TENTATIVE HYPOTHESIS (Collins & Smith, 1980) The reader rereads current sentences for better comprehension of the texts and sometimes finds some clues within the sentences.
5. CONNECTING THE TEXT TO PRIOR KNOWLEDGE (Janzen & Stoller, 1998) The reader connects their background knowledge with the new information.	5. REREADING THE PREVIOUS CONTEXT (Collins & Smith, 1980) The reader rereads the previous context, or sometimes the following context, and uses context clues to comprehend the text.
6. USING CONTEXT CLUES (Janzen & Stoller, 1998; Sheorey & Mokhtari, 2001) The reader gets clues from what they had read to find out the main points or meanings of words, sentences, or paragraphs in the reading process.	6. MONITORING ONESELF (Palincsar & Brown, 1989) The reader takes actions to evaluate their own performance to verify whether the comprehension is correct or not.
7. SELF-CORRECTING (Block, 1986) The reader changes their previously-	

Table 1: List of two types of reading strategies (according to Yang, 2006)

Regarding monitoring in L2 Japanese learning, Tateoka (2001) is one of the few studies on monitoring comprehension found for L2 Japanese learners. The observation in her study suggests that efficient readers are able to use the strategy of global self-inquiry and integrate inquiries, text information, and their prior knowledge. However, the questions on how global self-inquiry relates to language knowledge, and whether it is part of language knowledge or occurs as a cognitive activity remain unanswered. Considering L2 learning of Japanese, language knowledge is a skill, which can be acquired through the teacher's instruction learners and support in the classroom, while cognitive activities tend to be left to learners, although teachers can introduce various strategies. Therefore, this study aims to analyze learners' reading process in terms of language knowledge and comprehension monitoring in order to find a way to teach efficient reading skills to L2 learners of Japanese.

3 Method and data

To analyze the process of reading in L2 learners of Japanese, this study uses the "Reading corpus of non-native speakers of Japanese". The data of this corpus with the think-aloud method show the learners' utterances about how they read the text, how they searched for a word, what they understood, what they guessed, what they did not understand, and what they skipped or ignored in the reading protocol. Data from 24 non-kanji learners in Europe were analyzed for the study. The native language of these learners is neither Chinese, which uses a similar character system to Japanese, nor any other Asian language influenced by Chinese (Appendix 1). In the corpus, L2 readers of Japanese express what they think and what they do in their most familiar language, usually their native language. An investigator asked the learners to clearly describe their intensions during the reading process.

In this survey, learners read Japanese texts according to their interests. Therefore, the level of the texts does not always match the learner's level. Learners' levels are indicated by the JLPT levels in Appendix 1 and show their approximate proficiency levels. However, This does not necessarily mean that the higher the JLPT level, the better the reader of Japanese texts.

For the analysis, we observe the learners' utterances in the corpus and the ways to overcome the difficulties. By revealing what Reading strategies and Comprehension monitoring strategies have already been set in the previous literature, we will determine what learners do to supplement insufficient language knowledge. This analysis will focus on vocabulary comprehension.

4 Strategies for supplementing language knowledge

4.1 Effective dictionary searches

The focus of our first observation is on how L2 readers behave when they encounter an expression in a text that they do not understand. To determine the characteristics of the features of the sufficient readers, the utterances of the insufficient readers are also analyzed.

Higher-level learners have such language knowledge that if they know the meaning of a kanji word, they can assume what the word means in context even if they do not know how to pronounce it. Lower-level learners, however, do not have the language knowledge to guess the meanings. But they overcome these difficulties by using a dictionary effectively. In Example (1), a native French speaker confused the character 文 with 郊 in the word 郊外 (*kōgai*, suburbs) because of the similarity of their forms. By using a dictionary, the learner noticed their mistake.

(1)	2014 年に	郊外の		モントル	イユ市で	でき	た	「ペッ	シュ」が、
	2014-nen ni	kōgai n	0	montorui	yu shi de	dekit	а	'pesshu	ı' ga,
	In 2014	of the s	uberb	in the city	/ Montreuil	was r	nade	pêche	
	パリ東部		数区	でも	使われる		こと	に	なった。
	Pari tōbu		sū-ku	demo	tsukawarei	ru	kotor	ni	natta
	Eastern part	of Paris	in sev	eral ward	is used		to the	e thing	become
	'Created in 2	014 in th	ne subu	urb of Mon	treuil, 'pêch	ne' is n	ow us	ed in se	veral eastern
	Paris districts	5.' (R-FR	0004, N	14)					

Initially, the learner read 郊外 ($k\bar{o}gai$, suburbs) as 文外 (bungai), but when they looked up the word in the dictionary, they realized their mistake in seeing only the left side of the Kanji. This is a case where the learner discovers the error while looking up the character. In other cases, learners failed to find the correct style of the kanji because they misrecognized the character or used an incorrect stroke when looking it up in the dictionary.

The development of dictionary applications on smartphones has made significant progress in recent years, and dictionary applications have become a popular tool for learning Japanese due to their low cost, handiness, and ease of use. The learner of Example (1) has noticed the errors in recognizing the kanji, while some learners were not conscious whether they were reading correctly or not when they used the scanner function of the applications or the Ad-On in the browser that displays the meaning of a word in the pull-down window. In such cases, learners reached the meaning of the

text without reading the character and thus tended to search for the same word multiple times.

4.2 Effective use of the Internet resorces

In addition to dictionaries, language learners also use various Internet resources. In the following example, a native Spanish speaker did not understand the word 銅板 (*dōban*, copper sheet). He first searched for the word in an online dictionary, and found the meaning in English, but did not understand what a copper sheet was.

(2)	たこ焼き機に	_	ガスな	Ę	つけ、	銅版が	ある程度	暖まった
	Takoyaki-ki ni		gasu o)	tsuke,	dōban ga	aruteido	atatamatta
	Takoyaki mac	hine	gas		turn on	sheet copper	some extent	become warm
	時点で	ガフ	くを	切]ります	0		
	jiten de	gası	JO	ki	rimasu.			
	at the time	gas		tι	urn off			
	Turn on the g	ac in	tha ta	1.0	waki maa	china and turn	it off when t	ha cannar nlata h

'Turn on the gas in the takoyaki machine and turn it off when the copper plate has heated up to a certain degree.' (R-SP0007, N4)

So the learner looked up the word 銅板 (dōban, copper sheet) in Japanese with the image search function. He saw that the results displayed in the browser had nothing to do with Takoyaki or Takoyaki machine, but a brown metal sheet. Therefore, he searched for the word たこ焼き機 (takoyaki-ki, takoyaki machine) in Japanese with the image. Learners take advantage of a picture search to understand what a thing is, especially a thing in a foreign culture.

The other difficulties often lie in the learner's inability to correctly cut out a meaningful word or group of words from a sequence of words. However, the function of dictionaries enables learners to understand the corresponding meaning even without language. The learner above first cut out a sequence of three kanji characters from two words [ある]程度 暖[まった] (*aru teido / atatamatta*) and looked it up in the Internet dictionary. The dictionary displayed 程度 (*teido*) and 暖[まった] (*atatamatta*) separately, so the learner realized that the item was a succession of two words. This is an example of a successful use of learning tools to supplement learners' language knowledge.

4.3 Systematically serching for a word

While it has been proven that learners' language knowledge contributes to effective reading and even to the development of learners' language skills, Hmeljak Sangawa (2020) pointed out that some learners often tend to achieve inadequate comprehension because they are convinced that the dictionary meaning given at the beginning must be the correct one in the context and do not pay attention to other meanings that follow. In contrast to this tendency, the sufficient learner in Example (3) searched the following part of the meaning or idioms in the dictionary for an appropriate expression and was able to successfully find the correct word using his language knowledge.

(3)	しかし、	経営視点で	の	体系的	な
	Shikashi	keiei shiten	de no	taikei-te	ki-na
	However	on the persp	pective of management	systema	tic
	採用研究	は	発展途上に		ある。
	saiyō kenk	xyū wa	hattentojō ni		aru
	recruitme	nt research	in the process of develo	opment	be
	(11				

'However, systematic studies of recruitment from a management perspective are still under development.' (R-FR0009, N1)

When the learner came across the word 体系的な (taikei-teki-na, systematic), he was not sure if he had understood its meaning correctly in context. He knew a word 体 系 (taikei, system) and 体系化 (taikei-ka, systematization), but he later said that he could not connect the meaning of 体系的な (*taikei-teki-na,* systematic) with the meaning of 体系化 (taikei-ka, systematization), so he searched the word in the portable dictionary (without an Internet connection) and was able to find the word 体 系的な (*taikei-teki-na*, systematic), which is at the bottom of the descriptions. This learner had the ability to approach the language analytically, and successfully noticed that 体系 (taikei, system) is a noun and that -化 (-ka) is a suffix meaning '-zation'. Being able to recognize what he did not know, he did not stop searching the word in the dictionary for the appropriate meaning until he has not convinced that the problem was solved. This learner was evaluated having a high level of language proficiency (who has JLPT N1) and was able to analyze a word in the text. No particular reading strategies were found in the protocol. The learner carefully looked for each word with the suffixes and its translation in French. It was an example of the learner looking up the meaning in a dictionary to understand the whole meaning of the sentence. He could find the 体 系的な (*taikei-teki-na,* systematic) in the dictionary because he expected it to be described in the dictionary with his knowledge of the language.

The following example shows a poor reader who, due to lack of language knowledge, did not notice the collocating expression in the sentence and could not find the correct meaning in the dictionary. A reader could not find the correct meaning of the word 果たして (*hatashite*, really/ever: with interrogative expression) in the dictionary.

(4)	Facebook イ	ò	将棋の)	試合などでも	話題に	なっている	AIは
	Feisubukku	ya	shōgi r	0	shiai nado demo	wadai ni	natte iru	Alwa
	Facebook a	nd	of shog	gi	maches	a hot topic	become	AI
	果たして	文章	章を	11 11	書けるのでしょう	か。		
	hatashite	bur	nshō o	ka	akeru no deshou	ka		
	really, ever	sen	tences	Ca	an write	(interrogativ	ve particle)	
	'Can AI, whi				a hot topic on Face 2, N2)	book and in	shogi machines	s, really

This learner first read 果たして as *KAtashite* instead of *HAtashite*. She copied and pasted the word into the search window of the Internet dictionary. She found the meaning 'as was expected/just as thought', as shown at the beginning of the entry, and did not notice the next description 'really; actually; ever used in interrogative and hypothetical sentences' below it. Unlike the learner in Example (3), this learner does not value precision in comprehension but is content to understand the approximate meaning of the text. Her Japanese proficiency is at an upper intermediate level, but she did not notice the interrogative final particle か (ka). Had she noticed the particle, she might have found the second description in the dictionary or at least thought that it did not fit the sentence when the word has the meaning 'as was expected'. Her linguistically careless reading led her to distort the meaning of the sentences that the author asked whether AI could write sentences as we expected. This example shows that a lack of language knowledge or carelessness about language structure can prevent an appropriate meaning from being found in the dictionary. We can also assume that the examining description in the dictionary offered enough stimulation to remind a learner of their language knowledge.

4.4 Supplimentary cognitive activities

4.4.1 Assumptions from the written information

In this section, we will observe several examples where learners successfully understood the meaning of the texts through their guesses. The first example is text comprehension using assumptions based on the written text. A learner succeeded in inferring the meaning of the word 高度化 (*kōdo-ka*, sophisticated) from the context.

(5)	世界的に、	ビシ	ジネスの	高度	化や		高齢化により、	人材の	
	Sekai-teki n	i bijir	nesu no	kōdo [.]	-ka ya		kōrei-ka ni yori,	jinzai no	
	Globally	of b	usiness	sopho	osticated	and	by aging	human resou	rces
	確保が	難し	くなり、		とりわい	ナ	ハイスキルな	人材で	
	kakuho ga	muzı	ıkashiku ı	nari	toriwake	2	hai sukiruna	jinzai de	
	secure	beco	mes diffio	cult	particura	aly	high-skilled	human resourc	es
	その傾向が	Ň	顕著だと	2		予測	刂されている	からだ。	
	sono keikō g	ga	kenchod	a to		yoso	oku sarete iru	karada	
	the trend		is prono	unced		is pi	redicted	as	
		_							

'Globally, it is predicted that securing human resources will become more difficult due to the sophisticated of business and the aging of society, and that this trend will be particularly pronounced for highly skilled personnel.' (R-FR0009 N1)

The learner found that the word 高度化 (*kōdo-ka*) consisted of two parts 高度 (*kōdo*) and a suffix -化 (-*ka*). He knew that 高度 (*kōdo*) has two meanings: *high* and *somewhat developed*. He chose the second meaning because, most likely, he saw the word 世界的に (*sekai-teki ni*, globally) as something about development. In this example, the learner had a basic knowledge of the word meaning and understood the sentence enough to remember the meaning of the uncertain word and made a connection to think of it. Although the learner was unsure of the accurate meaning of the word, they were able to correctly select the meaning in context using his knowledge of the language. Following Yang (2006), this protocol includes RS 1: Rereading and RS 6: Using context clues. The reader remembered the word **世**界的に (*sekai-teki ni*) and was able to correctly determine the meaning of the word 高度化 (*kōdo-ka*).

The following example shows how a learner used the reading strategy RS 6 in vain, which was due to his lack of the cultural information about Japan. The learner knew the meaning of the word $-\Lambda$ (*hitori*, alone), although they could not understand it in the sentence. The following example is a part of the novel in which an elderly salesperson warns the main character at a kiosk atthe train station.

(6) 一人だと こんなに のんびり できない からね
 hitori da to kon'nani nonbiri dekinai kara ne
 if I am alone like this be relax cannot do (discourse particle)

今のうちに	ちゃんと	仕事	覚えてね、	と	口やかましく
imanouchini	chanto	shigoto	oboete ne	to	kuchi yakamashiku
now	properly	job	learn	that	nagging

日に 二回は 言われる。 hini ni-kai wa iwareru. a day at least twice to be said

'She nags me at least twice a day about how I can not relax as much when I am alone (in the kiosk), and that I should learn to do my job properly while she is still on the job.' (R-SP0003, N2)

Although the learner understood the word $-\Lambda$ (*hitori*, alone) lexically, they recalled in the previous section that the main character lives with her grandmother. The learner assumed that she does not live alone in the novel, but still might feel alone because it is the grandmother who lives with her. In this sentence, she starts working in a kiosk at the train station and is told by a woman to take over the job. The sentence means that very soon the main character would be $-\Lambda$ (*hitori*, alone) in the kiosk. The reader could not remember or did not know that there is usually only one person in a kiosk, and they could not connect the word $-\Lambda$ (*hitori*, alone) to the coming situation that she would soon be alone when the woman quits the job. In this example, the learner understood the meaning of the vocabulary but could not connect it to the context because they did not have appropriate cultural knowledge nor could they find a context clue that only one person works in a kiosk. These errors are common among L2 readers of Japanese in Europe because they do not have sufficient knowledge of the Japanese background.

4.4.2 Assumptions about the learner's knowledge

On the contrary, the following example shows that the learner knows and is convinced about the subject, and it also seems that he has fully understood the content, but he has not read the text as printed. The learner had the experience of living in Fukushima prefecture for some time and grasped the content of the text about the region. The RS 5: Connecting the text to prior knowledge and CMS 1: Ignore and read on were found in the protocol.

(7) 県内は 南北方向に 延びる 山脈・ Ken'nai wa nanboku hook ni nobiru sanmyaku the prefecture in a north-south direction to extend mountain range

山地	によって、	地形・	気候・	交通・
sanchi	ni yotte,	chikei	kikō	kōtsū
the mountain region	is due to	topograph	y climate	transport
歴史などの	面に	違いが	顕れてお	らり、
rekishi nado no	men ni	chigai ga	arawaret	e ori
history and so forth	on the phase	differences	to be app	arent

3 ^{地域に}分けられている。 san chiiki ni wakerarete iru

into three reasions to be devided

'The prefecture is divided into three regions, with differences in topography, climate, traffic, history and other phases, due to the mountain ranges and mountainous regions that extend in a north-south direction.' (R-GR0005, N2)

The learner knew from his experience that Fukushima Prefecture is divided into three areas by mountainous regions, and he could understand the approximate meaning of the sentence. However, the learner did not try to understand the phrase as it was written, e.g. 南北方向に延びる山脈・山地によって (*nanboku hookoo ni* nobiru sanmyaku sanchi ni yotte, due to the mountain ranges and mountainous regions extending in a north-south direction). The learner occasionally mentioned in the protocol that he had lived in Fukushima and that he was aware of the mountains and other geographical features in Fukushima. The learner fully utilized his prior knowledge (RS 5) about Fukushima. The other reason that the learner did not understand the text accurately is that the text contained many kanji-compound pronouns for the names of areas, mountains, and cities and the learner did not want to read such names from a series of unfamiliar kanji characters. He mentioned several times that the exact content was not important to him and therefore skipped them (CMS 1). He may have deliberately chosen not to read some parts of the text, but by doing so he also got little of the meaning of the whole sentence. He was able to somehow reconcile the content of the text with his prior knowledge, but he did not read and understand the text itself.

5 Findings and discussion

In Section 4, we looked at several examples to explore two ways to supplement the lack of learners' language knowledge in a reader's comprehension process: the effective use of various tools and learners' cognitive activities.

As for the tools for text comprehension of the text, learners have various tools: a portable dictionary, an online dictionary, a picture search for searching kanji words and unfamiliar things, etc., and choose the right tool for the purpose of the search. In the corpus, searching with tools enables learners to 1) recognize the lexical meaning, and also 2) recognize the word compound, as learners could not analyze two or more compound kanji words correctly, and 3) acquire the cultural background in Japan.

It can be observed that L2 learners used reading strategies when they encountered unfamiliar words and could not complete their comprehension with the tools. Although the cognitive activities were then found in the reading protocol, the sufficient reader did not apply excessive strategies. Interestingly, the higher the proficiency level of a learner, the fewer reading strategies have been found. The observation concerning example (7) points out that lack of language proficiency may not lead the learner to adequate comprehension, but cause the overuse of reading strategies that bring no results.

L2 learners of Japanese used several strategies when they encounted difficulties in reading, such as Reading (RS 1), Using context clues (RS 6) and Ignore and continuing to read (CMS 1). However, these strategies only worked properly when supported by adequate and analytical language knowledge. Lack of language knowledge prevented accurate cognitive reading and causes learners to misunderstand the text. Our observation supports Yang's (2006) conclusion that "reading strategies help a reader's comprehension when they does not have sufficient language knowledge to understand a text."

6 Conclusion

This study examined the vocabulary search protocol of L2 Japanese learners in their reading process and investigated which reading strategies, from the aspect of the relationship to language knowledge, were used. The analysis revealed that learners with sufficient language knowledge used various tools to achieve the appropriate meaning of the text and analytical consideration of language knowledge, and did not overuse reading strategies.

From these results, we can conclude that language teachers need to teach both, adequate language knowledge and efficient reading strategies to achieve proper comprehension of the text. But what is proper comprehension for a learner when reading a text anyway? If a learner does not know the information about the kiosk in Japan, how can a learner judge whether they had understood the text correctly or incorrectly? What can a language teacher do to help a learner read autonomously?

This study focused on word comprehension in a text to investigate what tools and strategies learners have and use. We know that the clues to comprehension of a text

are spread in the text as well as in the real world. Research on reading protocols of phrases and sentences, of both sufficient and insufficient L2 readers, is still pending, however, we should obtain some further conslusions about effective instruction on reading strategies in the near future.

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Abbreviations

- JLPT Japanese Language Proficiency Test
- RS Reading strategies
- CMS Comprehension monitoring strategies

Reading corpus

Noda, H. et al. (2017-) Reading corpus of non-native speakers of Japanese. Retrieved from http://www.nodahisashi.org/jsl-rikai/dokkai/

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Appendix

The list of L2 Japanese learners and their reading materials

Data ID	Media	Genre	Author and title	Learner's L1	evel (JLPT ¹)
R-EN0009	academic paper	Information studies	植田康孝,木村真澄(2017)「「人工知能」 と「人間」が共存する社会〜SFマンガで描 かれる「自律知」としての「汎用人工知 能」〜 [A society where "artificial intelligence" and "humans" coexist – "general-purpose artificial intelligence" as "autonomous knowledge" depicted in SF manga-]」『江戸川 大学紀要』27 Ueda Yasutaka and Kimura Masumi (2017) " 'Jinkō chinō' to 'ningen' ga kyōzon suru shakai	English	N1
			~ SF manga de egaka reru 'jiritsu chi' to shite no		
R-FR0009	academic paper	Commerce studies	'han'yō jinkō chinō'~' Edogawadaigaku kiyō, 27 中村天江(2016)「人材採用システムの研究: 採用の進化に向けて [Research on recruitment systems: towards the evolution of recruitment]」[一橋大学学位取得論文] Nakamura Amae (2016) "Jinzai saiyō shisutemu no kenkyū: Saiyō no shinka ni mukete", Hitotsubashi University, Doctoral thesis	French	N1
R-EN0002	website	Literature	加能作次郎『少年と海』青空文庫 Kanō Sakujirō, "Shōnen to umi [The boy and the sea]" Aozorabunko	English	N2
R-EN0004	website	Literature	竹久夢二『博多人形 [Hakata doll]』青空文 庫 Takehisa Yumeji, "Hakata Ningyō", Aozorabunko	English	N2
R-GR0005	website	General	「福島県」の「概要」『フリー百科事典ウ ィキペディア日本語版』 'Fukushimaken' no 'gaiyō ['Overview' of 'Fukushima Prefecture']', "Furī hakkajiten uikipedia nihongohan"	German	N2
R-SL0002	website	General	「AIは日本語で文章を書けるのか? ライタ 一業の行く末について」こぶたの鉛筆 "AI wa nihongo de bunshō o kakeru no ka? Raitā- gyō no yukusue ni tsuite [Can AI write texts in Japanese? On the future of the writing profession]" Ko buta no enpitsu	Slovene	N2
R-SP0003	book	Literature	青山七重『ひとり日和』P.48 Aoyama Nanae "Hitori biyori [Alone day]" p. 48	Spanish	N2
R-SP0009	website	General	外務省ホームページ「アルバイトの見つけ 方」Gaimushō hōmupēji "Arubaito no mitsuke- kata" (Ministry of Foreign Affairs website "How to find a part-time job")	Spanish	N2

¹ JLPT = Japanese Language Proficiency Test. It has five levels from N1 (approximately CEFR C1 level) to N5 (CEFR A2 level).

Data ID	Media	Genre	Author and title	Learner's L1	evel (JLPT ¹)
R-SP0014	website	General	「神宮の神話」『天岩戸神話』『天孫降 臨』 'Jingū no shinwa [Jingū mith]' "Amanoiwato shinwa [Amanoto mith]" "Tenson kōrin [Tenson kōrin]"	Spanish	N2
R-SP0015	academic paper	Intercultural communicative studies	若尾拓哉(2010)「視聴覚翻訳におけるユー モアの訳し方結束性の観点から」Wakao Takuya (2010) 'Shichōkaku hon'yaku ni okeru yūmoa no yakushi-kata kessoku-sei no kanten kara [How to translate humor in audiovisual translation: From the perspective of cohesion]	Spanish	N2
R-GR0002	book	Literature	宮部みゆき『理由』 pp.320-323 Miyabe Miyuki "Riyū [Reason]" p. 320 - 323	German	Former 2/ap- prox. N2
R-FR0007	free paper	General	Ovni「週末はペニッシュで,フィニッシュ。 [Finish the weekend with the Peniche]」 No.785 Ovni 'Shūmatsu wa penisshu de, finisshu.' No. 785	French	N3
R-FR0008	website	General	「図書館」(関西大学ホームページ>図書 館・博物館>図書館) 'Toshokan [Library]' (Kansaidaigaku hōmupēji > toshokan hakubutsukan > toshokan)	French	N3
R-FR0010	Pamphlets	General	INAXガレリアセラミカでの田中知美展 INAX gareriaseramika de no Tanaka Tomomi-ten [Tomomi Tanaka exhibition at INAX Galleria Ceramica]	French	N3
R-GR0007	book	General	『ガリバー旅行記』青空文庫 "Garibā ryokō- ki [Gulliver's Travels]" Aozorabunko	German	N3
R-SLOO05	academic paper	Sociology	中川裕美(2011)「少女マンガの「戦う少 女」にみるジェンダー規範『リボンの騎 士』から『美少女戦士セーラームーン』ま で」『愛知淑徳大学現代社会研究科研究報 告』(6), 127-142, 愛知淑徳大学大学院現代社 会研究科 Nakagawa Hiromi (2011) 'Shōjo manga no 'tatakau shōjo' ni miru jendā kihan "Ribon no kishi" kara "Bishōjo senshi sērāmūn" made' "Aichi shukutoku daigaku gendai shakai kenkyū-ka kenkyū hōkoku" (6), p.127 - 142, Aichi shukutoku daigaku daigakuin gendai shakai kenkyū-ka	Slovene	N3
R-SP0004	book	General	青山七重『ひとり日和』P.49 Aoyama nanae "Hitori biyori [Alone day]" p. 49	Spanish	N3
R-FR0004	free paper	General	Ovni「パリも地域通貨〈ペッシュ〉導入!」No.853 Ovni "Pari mo chiiki tsūka 〈pesshu〉 dōnyū!" [Paris has also introduced a local currency, the 'pêche'!] No. 853	French	N4

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Data ID	Media	Genre	Author and title	Learner's L1	evel (JLPT ¹)
R-SP0007	website	General	自動たこやき機でのたこやきの作り方 Jidō takoyaki-ki de no takoyaki no tsukurikata [How to make takoyaki with an automatic takoyaki machine]	Spanish	N4
R-SP0006	website	General	本格おウチで簡単!焼き方レシピ Honkaku o uchi de kantan! Yaki-kata reshipi [Authentic at home, easy! Recipe for baking]	Spanish	N5
R-SP0012	website	General	パスタとラーメンは原材料がこんなに違う!オリーブオイルをひとまわし。Pasuta to rāmen wa genzairyō ga kon'nani chigau! Orībuoiru o hito mawashi. [Pasta and ramen noodles have such different ingredients! A dab of olive oil.]	Spanish	N5
R-SP0013	public relations magazine	General	慶長使節400年記念誌「航」「慶長遣欧使 節と伊達政宗の夢」Vol.2 Keichō shisetsu 400 nenkinen-shi `kō´`keichōken'ōshisetsu to date masamune no yume' Vol. 2 [The 400th Anniversary of the Keicho Envoys to Europe Commemorative Magazin "Ko", 'The Keicho envoys to Europe and the dream of Date Masamune' Vol. 2	Spanish	N5