Use of internet and online language tools
for teaching reading comprehension to Italian learners of Japanese

A utilização de ferramentas linguísticas da Internet e *online* para o ensino da compreensão da leitura a aprendentes italianos da língua japonesa

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Abstract

Japanese is considered one of the most difficult foreign languages. A major factor is the complex Japanese orthography consisting of thousands of logographic *kanji* (adapted Chinese characters) and 105 phonetic *kana* (subdivided into *hiragana* and *katakana*). This situation leads to hardships in learning to read Japanese, discouraging students from tackling authentic texts full of unknown *kanji* symbols. Online language tools might assist and encourage learners to read authentic texts, reducing reading anxiety. To evaluate the potential of this learning support, an experimental study was conducted. Twelve Italian college students with elementary Japanese proficiency participated. They completed two homework reading tasks with the use of online language tools, taking a post-task survey. Three findings emerge from the data: 1) using online tools enables students to read authentic texts; 2) using more tools makes it easier and faster to comprehend texts; 3) students strongly feel that the use of online tools helps to read Japanese texts and reduces their psychological block, willing to continue to use them. Overall, the results show the positive effects of using the tools on both reading performance and psychology, suggesting the potential effectiveness of the use of online language resources for learning to read Japanese texts.

Keywords: language teaching, digital resources, computer-assisted learning, teaching Japanese as a foreign language, reading, L2 Japanese-L1 Italian

Resumo

A língua japonesa é considerada uma das línguas estrangeiras mais difíceis de aprender. A maior dificuldade encontra-se na complexidade da ortografia japonesa, que possui milhares de *kanji* logográficos (caracteres chineses adaptados) e 105 *kana* fonéticos (subdivididos em *hiragana e katakana*). Esta situação leva à dificuldade da aprendizagem da leitura em japonês, desencorajando os alunos a lidar com textos autênticos cheios de símbolos *kanji* desconhecidos. As ferramentas linguísticas *online* podem ajudar e incentivar os alunos a lerem textos autênticos, reduzindo a ansiedade na leitura. Para avaliar o potencial deste apoio à aprendizagem, foi realizado um estudo experimental com a participação de doze estudantes universitários italianos com proficiência japonesa elementar. Os participantes completaram duas tarefas de leitura, em casa, com recurso a ferramentas linguísticas *online*, realizando uma pesquisa pós-tarefa. Três resultados emergem dos dados: 1) o uso de ferramentas *online* permite que os alunos leiam textos autênticos; 2) o recurso a mais ferramentas facilita e torna mais rápida a compreensão dos textos; 3) os alunos acreditam firmemente que o uso das ferramentas *online* ajuda a ler textos em japonês e reduz o próprio bloqueio psicológico, ficando, assim, mais dispostos a continuar a usá-las. Em geral, os resultados mostram os efeitos positivos do uso das ferramentas no desempenho da leitura e na psicologia, sugerindo a potencial eficácia do uso de recursos linguísticos *online* para a aprendizagem da leitura de textos em japonês.

Palavras-chave: ensino de línguas, recursos digitais, aprendizagem assistida por computador, ensino do japonês como língua estrangeira, leitura, Japonês L2-Italiano L1.

1. Introduction

Japanese is considered one of the most difficult foreign languages. It is well known that one of major factors is the very complex Japanese orthography. In the digital era, online language tools might assist and encourage learners to read authentic texts, reducing reading anxiety. The main goal of this study is to evaluate the potential of this learning support.

1.1. Difficulties in learning Japanese

The world has been going through a growing process of interaction between people, which is leading to increasing demand in linguistic and cultural mediation among speakers of various languages. Under these circumstances, language education is more important than ever. Japanese is one of the most widely spoken and studied languages in the world. It is spoken by more than 120 million people: ranked ninth in the list of languages by total number of native speakers.[1] Learners of Japanese as foreign or second language are widely spread across the world, and their linguistic backgrounds vary greatly. Currently, Japanese is studied by approximately 3.4 million learners in 137 countries.[2]

For the majority of the learners spread all over the world, Japanese is hard. As a matter of fact, Japanese is considered one of most difficult languages to learn, as shown by the language difficulty ranking created by the Foreign Service Institute of the U.S. Department of State (2018). Based on their 70 years of experience in teaching languages to U.S. diplomats, they classified foreign languages into five categories, depending on the average length of time required for an English-speaking student[3] to reach "Professional Working Proficiency" or the level 3 of the ILR[4] scale for speaking and reading (approximately equivalent to the C1 level of the CEFR[5] standards). The language difficulty ranking with selected language examples is shown in Table 1.[6]

Table 1. Language difficulty ranking to achieve professional working proficiency for an English-speaking learner

Category	Estimated length to achieve C1 (CEFR)	Languages
1	600-750 hours	Africans, Dutch, French, Italian, Portuguese, Swedish
2	900 hours	German
3	1100 hours	Bulgarian, Finnish, Greek, Hindi, Hungarian, Russian, Slovak
4	2200 hours	Arabic, Cantonese Chinese, Mandarin Chinese, Japanese, Korean

Japanese is not only classified in Category 4 (2200 class hours) as one of the five "super hard languages" for English-speaking learners. At the same time, Italian is classified as Category 1 (600-750 hours), among the least time-consuming languages, with a relatively small linguistic distance from English. Note that the linguistic distance between the native and target languages tends to strongly affect learning difficulties: the greater distance the harder to learn, and L1-L2 linguistic differences create major problems especially for adult learners (*e.g.*, Odlin, 1989). A linguistic distance between English and Japanese is greatest, according to the report of Chiswick and Miller (2005), who propose a quantitative measure of the distance between English and other languages based on multiple sources of empirical data. Given these considerations, it seems reasonable to assume that Japanese is equally difficult for Italian-speaking learners.

1.2. Complex writing system: a major cause of difficulties in learning to read Japanese

One major source of difficulty in learning Japanese is its complex writing system. In written Japanese, thousands of *kanji* (adapted logographic Chinese characters) and 105 *kana* (phonetic characters subdivided into *hiragana* and *katakana*) are interleaved, as shown in the following example (*kanji* and *katakana* are bold-face and underlined, respectively).

写真共有<u>アプリ</u>**大手**<u>インスタグラム</u>は、**親会社**の<u>フェイスブック</u>にとって**今**や**重要**な**収入源**だ。

しかし<u>インスタグラム</u>の**最高幹部**２**人**の**辞任**を**機**に<u>フェイスブック</u>が**両社**の**営**の**一体化**を**進**めれば、「**金**の**卵**を**産**む<u>ガチョウ</u>」をみすみす**殺**してしまうこになりかねない。(Reuter Japan, 2018)

In written Japanese, the different character types are distributed systematically, depending on lexical or morphological categories. *Hiragana* is allocated to grammatical elements (inflectional endings of verbs and adjectives, noun particles) and words that lack a *kanji,* while *katakana* to loanwords, country names and foreign proper names.[7] Both *hiragana* and *katakana* are phonetic characters, and each letter represents a mora, *i.e.*, a phonological unit smaller than a syllable and larger than an individual sound: *e.g.*, the English loandword *matto* マット 'mattress' is counted as three moras (*ma.t.to*) and transcribed in three *katakana* letters. *Kanji* is used for roots of adjectives and verbs and the majority of nouns. At least approximately 2,000 *kanji*[8] are necessary to read written Japanese fluently. What makes the situation more difficult is the complex nature of *kanji* learning. The challenge in *kanji* learning involves multiple factors such as the large number of characters, the visual complexity and similarity, the difficulty in retention, the semantic semitransparency of word components, the polysemous nature

of *kanji* words,[9] and the multiple readings of a single character (Mori, 2014). *Kanji* characters were introduced from China by way of Korea at the earliest in the third century CE. The majority of *kanji* characters carry multiple *on*-readings (based on the pronunciation in Chinese) and at least one *kun*-reading representing a Japanese morpheme (Luraghi and Bubenik, 2010). Different readings of one *kanji* are distributed across different lexical items. For example, 山, the *kanji* character for 'mountain,' has two *on*-readings, *san, sen,* and one *kun*-reading, *yama*: 富士山 *fujisan* 'Mt. Fuji', 中山道 *nakasendō* 'Nakasendō (route name),' 中山 *nakayama* 'Nakayama (last name).' It is very time-consuming to learn a new *kanji* symbol accompanied by the aforementioned rich linguistic information, and it is very difficult to look for unknown words containing unknown *kanji* symbols in a dictionary.

All the above lead to difficulties in learning to read in Japanese, discouraging students from reading authentic texts. Negative psychological effects of the Japanese writing system are reported in earlier research. For example, Thanyarat (2016) conducted an extensive study to investigate how foreign language reading anxiety affected their reading proficiency. 136 Thai learners of Japanese at different proficiency levels participated. The results showed a strong negative correlation between Japanese reading anxiety and reading proficiency. Furthermore, the data of beginning learners revealed that fear of *kanji* and *katakana* transcriptions was a major factor of their Japanese reading anxiety. It seems reasonable to assume that Thanyarat's findings are highly relevant to learners of Japanese with different L1s as well, such as Italian learners of Japanese.

1.3. Goal of the study

The use of digital resources could break through the aforementioned problem. Our students are growing in the digital technology era, and it seems reasonable to assume that *online language learning* (OLL) can be effective for assisting them in reading Japanese texts.

Since the CALCampus,[10] a private international online learning career based in North America, the very first online curriculum, offered the first online courses in 1994 (Campbell, 2014), online education has slowly but steadily grown in popularity to the point that in 2015 about 5.8 million students in the U.S. took at least one class online, according to the 13th annual survey of higher education by the Babson Survey Research Group.[11] This is assumed to be a worldwide trend. In the same year, in Japan, about 6.7 million of the population took online learning courses, and the majority took language courses, using a personal computer at home (Consumer Affairs Agency, 2017). In Italy, according to the survey report conducted in 2013,[12] the use of the Internet is widespread among students (92.3%), but the percentage of students dedicated to online learning is relatively low (6.8%). However, it is reported that online learning has been growing dynamically in university education: the number of registered students to telematics universities licensed by the Italian Ministry of Education was 39,792, and the estimated enrollment of 2017-18 was 75,000.[13]

Online language learning could be implemented in different formats such as Web-facilitated classes, a blended or hybrid course, or a fully virtual or online course (Blake, 2011). The most manageable and suitable way to implement online language learning in a traditional language course consists in using internet and online language tools to assist self-study at home, and, first of all, reading exercises.

To evaluate the potential of this way to practice Japanese reading comprehension, I conducted a pilot experimental study. Four research questions are asked specifically:

Are beginning Italian learners of Japanese able to comprehend authentic Japanese texts full of unknown *kanji* and lexical items, using online tools?

Is the use of more tools more effective to support their reading comprehension?

Does the use of online tools encourage students to read authentic texts, reducing their psychological block?

Are they willing to continue to use online tools to read authentic texts?

2. Method

To answer the aforementioned research questions, data of Italian learners of Japanese at the elementary level were collected running reading tasks with the use of three selected online tools and a post-task survey.

2.1. Participants

Student volunteers were recruited in the Japanese class of an Italian university instructed by the author. They were all native Italian speakers in the third year of studies towards an undergraduate degree in intercultural and linguistic mediation, studying languages with the goal of becoming professional language specialists. Japanese was their third language. In their undergrad curriculum, the same amount of time (200 hours of class time in total for 3 years) is allocated to other third languages, and the expected final proficiency is at CEFR level A2 (pre intermediate/elementary), which is not very high. Under these circumstances, the primary aim of the program is to provide students with a solid foundation of Japanese, as a starting point for students willing to continue their

studies later on. Although our students do not achieve high proficiency, they may need to read authentic Japanese texts for thesis projects, postgraduate studies (self-study, graduate programs, Japanese language school, etc.) or future jobs as language professionals (*e.g.*, translations, product localizations, subtitling jobs). Thus, the development of reading skills is particularly important for them.

Twenty students were recruited from the third-year class. Prior to data collection, they had studied Japanese for three semesters (120 hours of class time), with mastery of the 105 *kana* symbols and very limited knowledge of *kanji* (about 85 symbols in total). Their estimated proficiency at the time of the data collection is between the A1 and A2 CEFR levels.

2.2. Tested online tools

The availability of digital resources designed for Italian learners of Japanese is still very limited (for reviews, Rossi, 2013; Zotti, 2018). As a solution, online Japanese tools with English interface are used commonly: first of all, online dictionaries. After reviewing various options for the present study, three online tools were selected among the ones with English interface: *Jisho,*[14] *Rikaichan,*[15] and *Hiragana Megane.*[16] They are all free and publicly available.

The first two tools are online dictionaries, but they differ in user interface and features. *Jisho* is an online dictionary with words, *kanji* and example sentences, and it is very powerful and easy to use, especially when reading digital texts: just cut and paste an input in the search window. It features several useful functions. First, it can analyze the morpho-syntactic structure of an input phrase or sentence and divide an input into lexemes automatically, as seen in Figure 1. Here, the morpho-syntactic analysis result of the input sentence, 今日、友だちに会った is converted to four lexemes, 今日 *kyō* 'today,' 友だち *tomodachi* 'friend,' に *ni* (noun particle), 会った *atta* 'meet (past-indicative-plain),' highlighting the *kanji* symbols included. The user can view detailed information for each lexeme or *kanji* of the returned output by selecting it. Second, it is equipped with the function of *kanji* handwriting recognition, which makes it possible to easily look for an unknown *kanji* found in a non-digital text by just drawing a *kanji* in the input box with the mouse (for a desktop computer) or a finger/pen (for a smartphone or tablet computer).
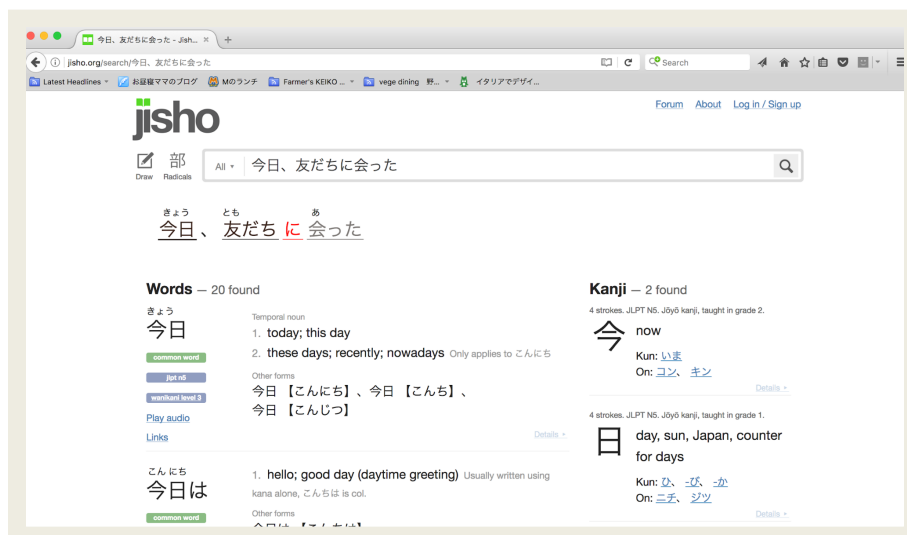

Figure 1. Example of the automatic morphological analysis feature of *Jisho*

Figure 2. Example of the pop-up window of *Rikaichan*

Figure 3. Example of automatic phonetic annotations by *Hiragana Megane*

The second tool, *Rikaichan*, is instead a pop-up dictionary, an add-on for the Mozilla Firefox web browser.[17] A pop-up dictionary refers to an online dictionary that shows an explanation of a selected word in the pop-up window. Mikuni and others (2011) found the use of online pop-up dictionaries to be one of the most popular online learning activities among learners of Japanese. Not limited to *Rikaichan,* a pop-up dictionary is very easy and fast to use. When the cursor is placed on a word included in a web page, it displays immediately a blue window with explanations for the word and the *kanji* it contains (Figure 2). It has some drawbacks: first, it cannot be used to check a word in non-digital texts while *Jisho* can be used for both digital and non-digital texts; second, it does not show examples of the queried word while *Jisho* does.

The last tool, *Hiragana Megana,* is used for creating automatically *furigana, i.e.*, small annotation glosses in *hiragana* (phonetic characters) added to *kanji* symbols, in order to show their pronunciation. *Furigana* is a type of *ruby* characters, and it is commonly used in Japanese children books. *Hiragana Megana* automatically displays *furigana* above all *kanji* symbols included in a selected web page (see Figure 3 for an output example). This tool is also simple and easy to use: the user can simply cut and paste the target URL in the input window.[18]

2.3. Data collection procedure

The participants were assigned the same reading task as a homework two times. A one-week interval was put between the two homework assignments. In each homework session, they read the introductory part of an entry from Japanese Wikipedia, using the specified tools (see below for a detailed description of the data collection design). The first homework was assigned right after they learned how to use the three tested tools in the class. At the end of each session, they reported the length of time to complete the task and answered five T/F questions about text contents. At the end of the second session, they also filled in a post-task survey about the experience of reading authentic texts with the help of online tools.

2.3.1. Reading materials

Two entries of Japanese Wikipedia[19] were selected: カレー[20] *karē* 'curry' and おにぎり[21] *onigiri* 'rice ball. The two texts were checked to make sure that they were comparable for their subject type (food), linguistic complexity (upper intermediate) and number of words (about 350). To check the number of words and linguistic complexity, the *Japanese Text Readability Measurement System*[22] (Lee & Hasebe, 2013) was used.

2.3.2. Data collection design

As mentioned earlier, the reading task data were collected two times with one-week interval. Two conditions were compared with respect to the number of tested online tools in order to answer the second research question:

Is the use of more tools more effective to support their reading comprehension?

The independent variable of the experiment took the following values: 1) using all three tools (*Jisho, Rikaichan* and *Hiragana Megane)*; 2) only online dictionary, *Jisho.* Unfortunately, we excluded a no-tool condition, although it would be ideal to include it in

order to see effects of the use of tools. The students tried reading a similar text without *furigana* (phonetic guides), using printed dictionaries, but it was basically impossible for them to carry out the task for their limited proficiency. In order to cancel out ordering effects for the two conditions, a counterbalanced design was used. The twelve students were divided into two groups. In the first session, Group A used all the three tools while Group B used only Jisho; vice versa, in the second session.

We considered two dependent variables: 1) *task completion time*; 2) *correct answer rate*. The second variable is to estimate comprehension accuracy, as measured by the percentage of correct answers to five T/F questions in Italian that were created to check the basic comprehension of text contents.

4. Results

The data collected with the procedure described in the previous section were analyzed for each dependent variable. Results of the analysis are discussed below for each of the two dependent variables, task completion time and correct answer rate (Section 4.1 and 4.2, respectively). The Responses of the post-task survey were also analyzed to see how the use of the online tools was perceived by the students (Section 4.3).

4.1. Task completion time

The average length of task completion time in minutes is plotted with standard deviation across the twelve participants for each condition in Figure 4. The blue column shows the mean of the all-tools condition, the yellow column that of the only-Jisho condition. The average length of the all-tools condition is is smaller (M = 24, SD = 16.42) than the one of the only-Jisho condition (M= 27, SD = 13.64) for the only-Jisho condition. The data of both conditions were not normally distributed, and a Wilcoxon signed-rank test, a non-parametric statistical hypothesis test, was conducted. Results show that the two conditions do not elicit a statistically significant change in task completion time (W = 170.5, 0.33, p = 0.4291). This is likely to be due to the large standard deviations in both conditions, which implies large performance differences across the twenty participants.
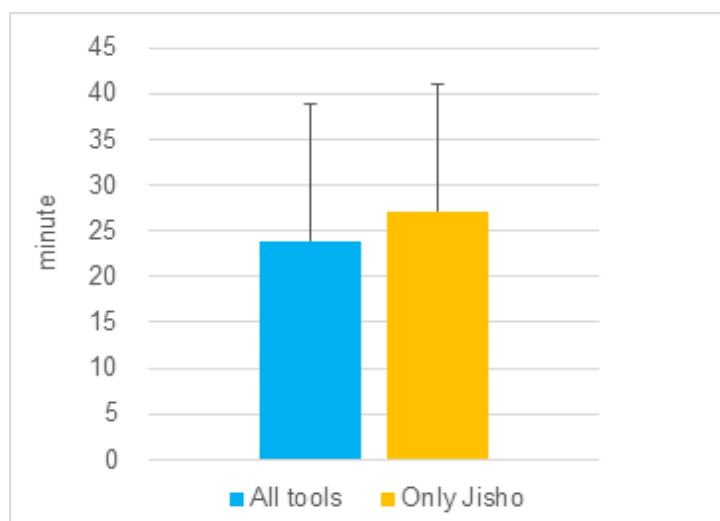

Figure 4. Average task completion time in the two conditions (number of used tools)

4.2. Correct answer rate

As for the results of T/F questions about text contents, first, the correct answer rate was calculated for each participant; then, the same procedure used for task completion time was used to compute the mean and standard deviation in each condition by collapsing the values of all participants. Results are plotted in Figure 5. The mean correct answer rate is the same for both tested conditions (M = 84). The results suggest that, using only *Jisho,* the learners could comprehend general contents of a text full of unknown characters and words as well as when they used all three tools.
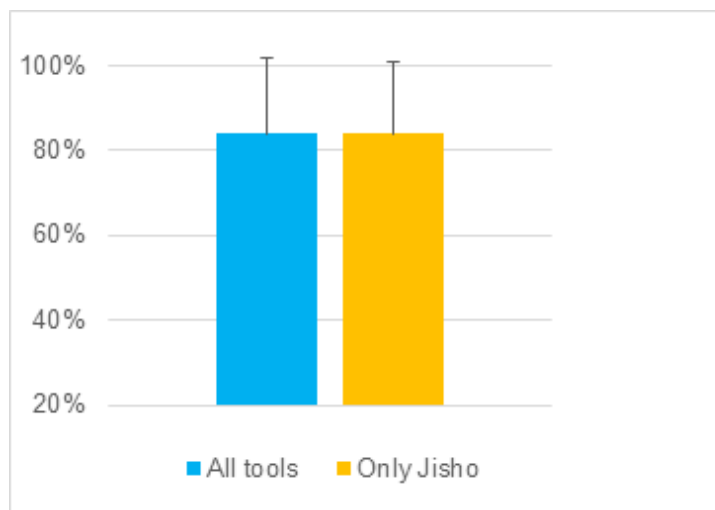
Figure 5. Average correct answer rate in the two conditions (number of the used tools)

4.3. Post-task survey

In order to find how the participants felt about the experience and the usefulness of the online language tools, a post-task survey was conducted. Participants were asked to select one of five choices (strongly agree, agree, neutral, disagree, strongly disagree). In the survey, four questions were asked. The responses to each question are summarized and plotted.

The first question inquired on whether the participants thought that the use of the online tools was helpful: "I find that in general the use of internet and online tools makes it easier and faster to read authentic Japanese texts full of new *kanji* and lexical items." Results (Figure 6) show that 100% of the participants agree with the statement. Note that 85% agree strongly.
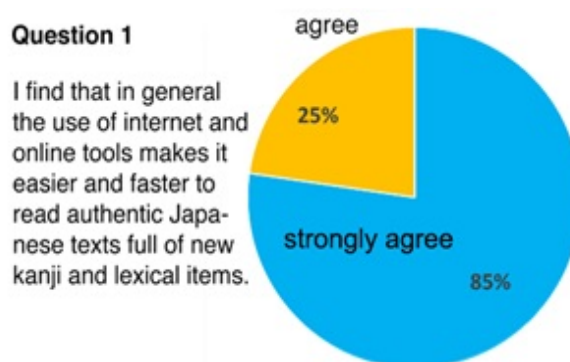

Figure 6. Summary of responses to the first survey question

The second question, instead, sheds light on the psychological effects of the use of the online tools: "I find that the use of online tools reduces psychological block to read authentic Japanese texts full of new *kanji* and lexical items." Results show (Figure 7) show that 95% participants in total agree or strongly agree with the statement, which suggests that the use of the online language tools help to reduce Japanese reading anxiety.
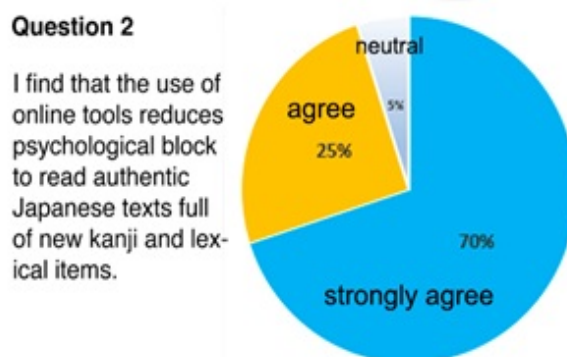

Figure 7. Summary of responses to the second survey question

The third question asks for opinions about how useful each tool was to complete the reading task. Results are summarized in a bar plot (Figure 8). All participants find Jisho useful, except one student expressing disagreement. Instead, all the participants agree with respect to the usefulness of Rikaichan, pop-up dictionary, and Hiragana Megane, the phonetic annotator. Moreover, about 85%

agree strongly with the usefulness of Rikaichan, while 50% agree strongly for Jisho. The greater preference for Rikaichan suggests that students prefer a pop-up dictionary at least for the purpose of reading online texts. This may be because it is easier and faster to use although it displays less linguistic information than a standard online dictionary.

Question 3

The use of [tool name] was helpful to complete the reading task.
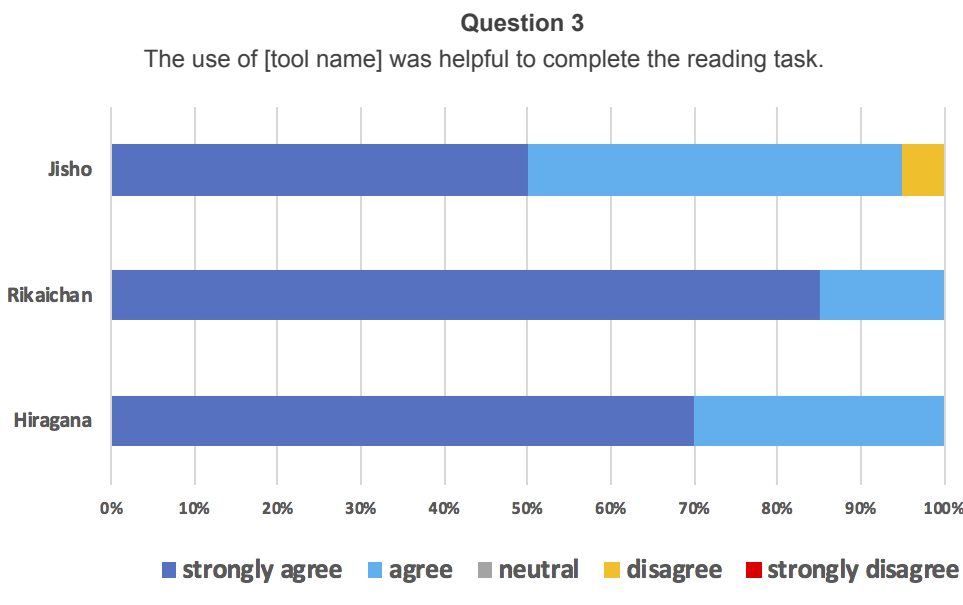

Figure 8. Summary of responses to the third survey question

Finally, the last section of the survey was aimed to find out how willing the participants are to continue to use the tools in the future. The responses are shown in Figure 9. More than 60% of participants intend to continue to use the tools. Jisho is the most supported among the three tools: 100% express their willingness to use it in the future. The results show their overall willingness to continue to use the tested online tools.

Question 4

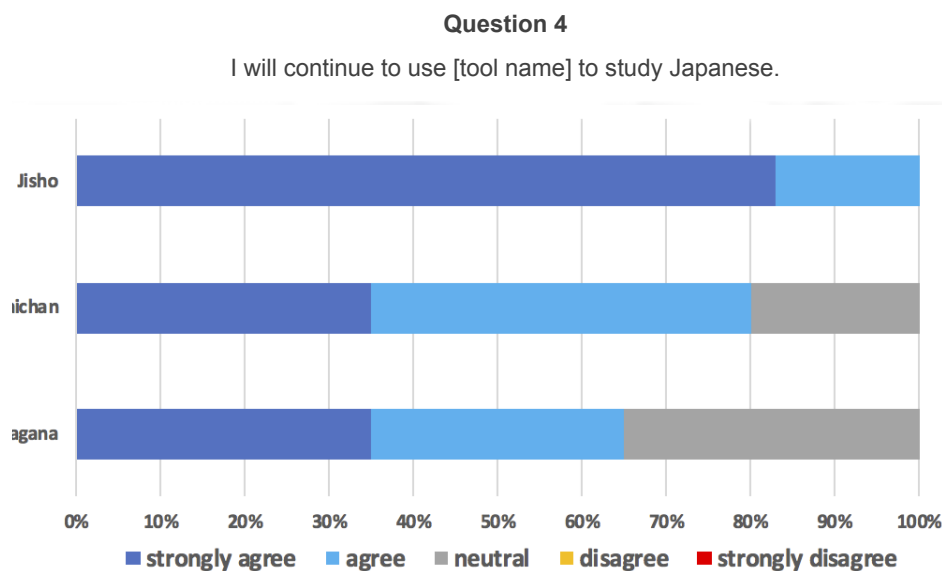I will continue to use [tool name] to study Japanese.

Figure 9. Summary of responses to the fourth survey question

5. Discussion and conclusion

Some general findings emerge from the results of the analysis of the reading task results. First, the use of online tools enables learners of Japanese with very limited linguistic knowledge to read authentic Japanese texts and understand their contents at least to a certain extent. Second, the use of more tools makes it easier and faster to comprehend texts. Third, although all the three tested online tools were evaluated positively in general, Italian learners of Japanese found the pop-up dictionary, Rikaichan, to be the most useful. Furthermore, the survey results show that learners strongly feel that the use of online language tools helps to read Japanese texts and reduces their psychological block, willing to continue to use them, especially, Jisho, the online dictionary. Another point that emerged in the survey results is that less participants intend to use the pop-up dictionary, Rikaichan, in the future than the online dictionary, Jisho, although the pop-up dictionary is perceived more helpful to complete the reading task than the online dictionary. There is no explanation of this, and further investigation is needed.

Overall, the results of the present study show a positive effect of using the tools on both reading performance and psychology. This suggests the potential effectiveness of the use of online for L2 Japanese reading. It is however important to keep several points in mind in order to use online tools in an actual course, as pointed out by Tabata-Sandom. In her study in 2016, she investigated how learners of Japanese read authentic Japanese texts when using online pop-up dictionaries, finding that reading performance with pop-up dictionaries varies greatly between learners of Japanese at different proficiency levels[23]. Based on this finding, Tabata-Sandom says that learners of Japanese need to reach a certain proficiency level before they can the use online reading tools. She also suggests that the texts to read need to be controlled for difficulty. If online authentic texts are too challenging lexically and syntactically, online tools may not be effective to facilitate L2 Japanese reading. In order to avoid this type of situation, one should select texts through a tool measuring the linguistic difficulties of texts, such as the *Japanese Text Readability Measurement System* (Lee & Hasebe, 2013). Third, the text that is too difficult may need to be modified in order to ease the learners' cognitive burden, as originally argued by Yoshii (2006). Another potential problem emerged in this study is that the availability of online tools is not guaranteed since they are not necessarily updated as web browsers evolve.

The use of online tools can facilitate L2 Japanese reading and open a door to reading authentic texts even for students at a relatively elementary level. The importance of reading authentic texts with online tools in the early stage of L2 Japanese learning was also stressed by Tabata-Sandom (2017), based on results from her experimental study, in which she investigated learners' responses to translation, speed reading and self-paced reading for pleasure ('pleasure reading'). Results of her experiment suggested that a key to successful fluency development would be an early start of reading activities. Although digital technology is widespread across the world, the use of such technology in the language classroom is still at the dawn phase. The first important step is for teachers to be aware of this gap and to encourage students to tackle Japanese texts with less fear and more fun with the help of online tools, by providing guidance to facilitate their challenge.

For future research, it would be important and interesting to investigate to what extent online tools could contribute not only to reading comprehension skills but also to L2 vocabulary learning thorough reading. The issue has been investigated primarily in the context of reading English as a second or foreign language (ESL/EFL), comparing effects of paper dictionaries and electronic dictionaries. Results of recent experimental studies report that electronic dictionaries have a stronger overall effect on vocabulary learning (*e.g.*, Alharbi, 2016; Chen, 2012; Rezaei & Davoudi, 2016). Furthermore, Alharbi (2016), who compared three dictionary types (paper, pop-up and type-in) with no dictionary aid as a control, has found that the use of pop-up dictionary is the most effective among all, showing the shortest vocabulary search time, more "look-ups," higher reading comprehension and vocabulary learning and a much more positive attitude toward its use. Adapting this line of research for Japanese is not only scientifically interesting, but also useful for the improvement of students' reading and vocabulary skills in Japanese in the digital era.

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[1] According to the 18th edition of *Ethnologue* (https://www.ethnologue.com/)

[2] *Survey Report on Japanese-Language Education Abroad* (Japan Foundation, 2015)

[3] It is assumed that the student has no prior knowledge of the language to be learned (U.S. Department of State, 2018).

[4] ILR stands for the Interagency Language Roundtable (2011), an unfunded organization that encompasses various agencies of the United States Federal Government with aim of sharing information on foreign language activities at the federal level. The ILR level 3 is the one to rate professional working proficiency. It is commonly used to measure how many people in the world know a given language. For more information see the ILR homepage (http://www.govtilr.org)

[5] CEFR is the abbreviation of Common European Framework of Reference for Languages. It is an international standard for describing language ability designed by the Council of Europe to provide "a common basis for the elaboration of language syllabuses, curriculum guidelines, examinations, textbooks, etc. across Europe" (Council of Europe, 2001, p. 1). It describes language ability on a six-point scale, from A1 for beginners, up to C2 for those who have mastered a language with native-like proficiency (Cambridge University ESOL Examinations, 2011). Currently the CEFR is available in 40 languages (Council of Europe, 2018), and its framework is used not only in Europe but also in other continents.

[6] The table lists only example languages for each category. For the complete version, see https://www.state.gov/key-topics-foreign-service-institute/foreign-language-training/.

[7] Not only Chinese-origin words but also some Portuguese words borrowed during the 16th century are transcribed in *kanji*: *e.g.*, 金平糖 *konpeitō* "comfit" (*confeito* in Portuguese).

[8] This is the number of *jōyō kanji* ("regular-use Chinese characters originally established by the Japanese Ministry of Education in 1923. The list has been revised several times. The current version has 2,136 *kanji*, consisting of 1,006 *kanji* taught in primary school (the *kyoiku kanji*) and additional 1,130 *kanji* taught in secondary school.

[9] The terms *polysemy* and *polysemous* are defined as the existence of multiple meanings for a single linguistic item such as a word, phrase and symbol. For example, the English word *light* is polysemous, having two major meanings, "brightness (noun)" and "not heavy (adjective)". In the case of *kanji*, either a single *kanji* or a word containing *kanji* or consisting of multiple *kanji*: *e.g.*, 車 *kuruma* "automobile" or "wheel"; 一面 *ichimen* "one side," "the whole surface," "an aspect," "the front page (of newspaper)."

[10] http://www.calcampus.com/

[11] https://onlinelearningconsortium.org/news_item/report-one-four-students-enrolled-online-courses/

[12] *Anno 2013 Cittadini e Nuove Tecnologie* (Istat, 2013)

[13] http://unitelematiche.it/universita-telematiche-settore-forte-crescita

[14] https://jisho.org/

[15] https://addons.mozilla.org/en-US/firefox/addon/rikaichan/

[16] http://www.hiragana.jp/en/. *Hiragana Megana* is not updated any more, and it does not work with any modern web browser. Fortunately, several extensions with the same features are available such as *IPA Furigana* (for Chrome)*, Yomichan* (for Chrome and Firefox).

[17] Unfortunately, *Rikaichan* is no longer supported for updates of Firefox. However, similar extensions are available: e.g., *Rikaikun* (for Chrome), *Rikaichamp* (for Chrome and Firefox).

[18] Newer tools with the same function are easier to use (*IPA Hiragana, Yomichan,* etc.). Similar to *Rikaichan,* pop-up online dictionary, they are all extensions of web browsers.

[19] The authenticity of texts of Japanese Wikipedia may be questioned for the availability of entries of the same topics in Italian Wikipedia. However, this cannot be a problem since the contents of the two selected topics in Japanese, Italian and English versions of Wikipedia are very different.

[20] https://ja.wikipedia.org/wiki/ カレー

[21] https://ja.wikipedia.org/wiki/おにぎり

[22] http://jreadability.net/

[23] This finding matches with the large variances in reading task completion time observed in the experimental data of the present study.