SUGISAKA MASANORI

Journal of Robotics, Networking and Artificial Life
Vol. 10(3); December (2023), pp. 266–269
ISSN (Online): 2352-6386; ISSN (Print): 2405-9021
https://alife-robotics.org/jrnal.html

Research Article

Generating Language Learning Content from YouTube Videos Based on Learners' Interests

Hiroki Fxyma
Kobe University, 1-2 Tsurukabuto, Nada-ku, Kobe, Japan

ARTICLE INFO

Article History
Received 14 December 2022
Accepted 22 May 2024

Keywords
Japanese language education
YouTube-based learning
Less-than-learners
Language learning

ABSTRACT
This study delves into Japanese for Specific Purposes (JSP) in Japanese language education, adapting to the evolving landscape of language learners' preferences. I propose a self-learning system that leverages YouTube videos, catering to individual interests. Unlike traditional approaches, our system enables autonomous learning by allowing learners to select preferred Japanese YouTube videos, emphasizing necessary vocabulary and grammar. Using cooking-related videos as a case study, I analyze vocabulary usage through corpus-based methods. The analysis revealed that while a general vocabulary presentation showing a bilingual translation is sufficient for high-frequency words that commonly appear in multiple videos, it is required to present the characteristic words of each video along with meta-knowledge such as collocations of words, clichés, and technical terms. This study underscores the potential of digital resources for personalized language education, aiming to democratize access to language learning.

1. Introduction

In recent years, there has been growing research interest in Japanese for Specific Purposes (JSP) in Japanese language education, influenced by the diversification of Japanese learners and the impact of English for Specific Purposes (ESP) in English education. JSP targets Japanese language education tailored to various fields and purposes such as business, medicine, and tourism. It enables instructors to teach vocabulary and phrases according to learners' interests and needs. The goal of JSP is oriented towards clear objectives and skills, primarily targeting learners who are in a (physical or virtual) classroom setting.

Nowadays, language learners are not limited to those enrolled in universities or private schools. With the increasing exposure to multilingual information through social media, the motivations for language learning are diversifying. Some individuals engage in language learning on social networking sites (SNS) rather than in traditional classroom settings. Additionally, many learners memorize phrases by watching their favorite YouTube videos. According to the Agency for Cultural Affairs, the number of Japanese language learners was reported to be 210,000 in 2022. However, this figure represents only those enrolled in educational institutions, and there are likely many more potential learners. Potential learners may include those who learn using textbooks without being enrolled in educational institutions, but instead of systematic learning methods like textbooks, some may empirically learn by enjoying content of personal interest such as social media, YouTube, anime, and manga.

In this study, I propose a system that enables potential learners attempting language learning based on personal interest to watch videos of their interest while focusing on necessary vocabulary. While several studies have proposed incorporating YouTube into language education (e.g. [1], [2], [3]), many of them focus on content for instructional purposes by teachers, and there are few proposals for autonomous learning systems. The objective of this study is to create a system that allows potential learners to watch their preferred Japanese YouTube videos and learn the vocabulary and grammar used in those videos.

Corresponding author E-mail: saka2000@cc.miyazaki-u.ac.jp

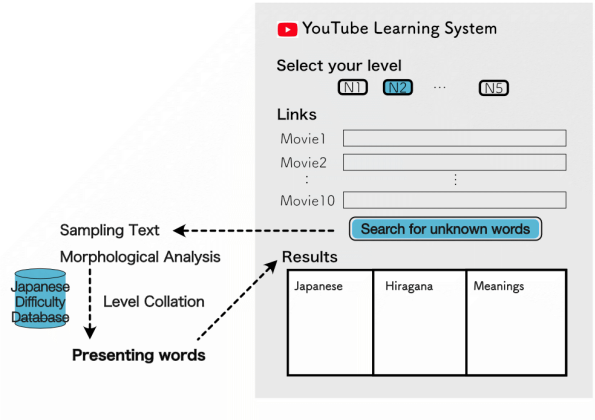

Fig. 1 The outline of the self-learning system with YouTube (web application).

2. Method

2.1. *Self-learning system with YouTube*

In this project, I propose a system that learners (including less-than-learners) to watch their favorite Japanese-language YouTube videos and learn the vocabulary and grammar used in those videos. The configuration of the system is shown in Fig. 1.

Outlines of the system

This system is planned as a web application. Learners will select their Japanese level and input links of videos they want to watch. In order to obtain a sufficient word size for the co-occurrence analysis, it is desirable that the links be entered for approximately 10 videos of 10 minutes in length. If the video length is for several hours, such as a video of a live game, a single video link would be sufficient in size.

How to use the self-study system

1) Visit the system website
2) Select your Japanese language level
3) Enter 5-10 links to the videos you want to watch
4) Press the [Search] button
5) Learn the displayed list of words and grammar list
6) Watch the video you want to watch

2.2. *Video Materials*

In this study, cooking-related YouTube videos will be used as the material for this study, with a view toward educational practice in the food and beverage department where the author belongs. Cooking-related YouTube videos include various genres such as recipe, cooking, mysterious dishes, eating huge volumes, and videos in which the eating sound is played. Of these, this study will use the “Kimagure-Cook” channel, which has the largest number of subscribers among Japanese YouTube channels, as its material. Kimagure-Cook consists mainly of videos showing one man dismantling and cooking fish and other marine products. In the fish cooking process, terms that are not used in general conversation, such as parts of the fish, cooking utensils, and verbs for cooking, appear. These words are not included in general language instructional materials, or they are considered advanced content. The 10 videos used in this study are listed in the reference.

As language materials, 10 videos were compiled into a corpus, detailed as Table 1. Note that the corpus is analyzed unformatted, assuming that learners use arbitrary videos. (i.e., errors in speech analysis, unknown words, etc., were not removed or corrected).

Table 1

Tokens	18,502
Types	2,800
Sentences	1,952
Paragraphs	1,845
H1 (Movies)	10

Table 2

	Words	Trans.	Freq.				
1	はい	(int.)	94	34	買う	buy	15
2	入る	enter	78	35	半分	half	15
3	思う	think	70	36	味	taste	15
4	食べる	eat	66	37	じゃあ	then	14
5	感じ	feel	63	38	出る	come out	14
6	今日	today	55	39	水	water	14
7	入れる	enter	52	40	来る	come	14
8	ええ	Yes (int.)	43	41	ありがとう	Thank you	13
9	言う	say	38	42	状態	condition	13
10	持つ	have	33	43	イセエビ	spiny lobster	13
11	皮	skin	31	44	剥く	peel	13
12	美味しい	delicious	29	45	本当に	really	13
13	ああ	ah (int.)	27	46	本日	today	13
14	見る	see	27	47	綺麗	clean	13
15	作る	make	27	48	きれい	clean	12
16	包丁	knife	27	49	めちゃくちゃ	crazy	12
17	えっ	(int.)	26	50	タスマニア	Tasmania	12
18	大きい	Big	26	51	火	fire	12
19	頭	head	25	52	結構	pretty	12
20	今	now	23	53	処理	processing	12
21	次	next	23	54	人	person	12
22	イカ	squid	21	55	切る	cut	12
23	取る	take	21	56	足	foot	12
24	動画	video	21	57	あっ	Ah! (int.)	11
25	落とす	drop	21	58	ほら	Here (int.)	11
26	魚	fish	19	59	下	down	11
27	行く	go	19	60	取れる	(can) get it	11
28	骨	Bone	19	61	醤油	soy sauce	11
29	うん	(int.)	17	62	爪	claw	11
30	使う	use	17	63	普通	normal	11
31	身	meat	17	64	目玉	eyeballs	11
32	フグ	blowfish	15	65	たくさん	a lot	10
33	捌く	dress a fish	15	66	よいしょ	Yum! (int.)	10
				67	わぁ	Wow! (int.)	10

68	ゲソ	geso	10
69	トラフグ	tiger puffer	10
70	一緒	together	10
71	簡単	easy	10
72	撮れる	you can take	10
73	食材	food	10
74	猫	cat	10
75	1本	(num.)	9
76	カニ	crab	9
77	ノーカット	no-cut	9
78	違う	No	9
79	皆さん	everyone	9
80	肝臓	liver	9
81	帰る	go home	9
82	巨大	huge	9
83	終わる	fisnish	9
84	洗う	wash	9
85	太い	thick	9
86	ねぇ	Hey (int.)	8
87	はぁ	huh? (int.)	8
88	タコ	octopus	8
89	音	sound	8
90	加える	add	8
91	岩	rock	8
92	強い	strong	8
93	好き	like	8
94	子	child	8
95	手	hand	8
96	上げる	raise	8
97	生きる	live	8
98	多い	many	8
99	待つ	wait	8
100	大さじ	tablespoon	8

(int.): interjection, (num.): numeral

3. Analysis and brief results

The output of this system is the presentation of learning vocabulary according to the learner's level. For this goal,

the system analyzes the words necessary to understand the video in Japanese (the original language).

There are two main types of analysis. One is the frequency analysis of words to extract high-frequency words, and the other is the characteristic words in each of the 10 videos based on co-occurrence relations.

3.1. *High Frequency Words*

Of the words that appeared in the 10 videos, the high-frequency words (set as frequency 8 or higher) were as shown in Table 2. Note that following analysis focuses on verbs and nouns.

3.2. *Common words and characteristic words*

These high-frequency words can be categorized into common words that appear in all videos and characteristic words that are unique to each video. To identify the tendency of the words-appearance, the nouns and verbs in the corpus are plotted by correspondence analysis with each video, as shown in Fig. 2.

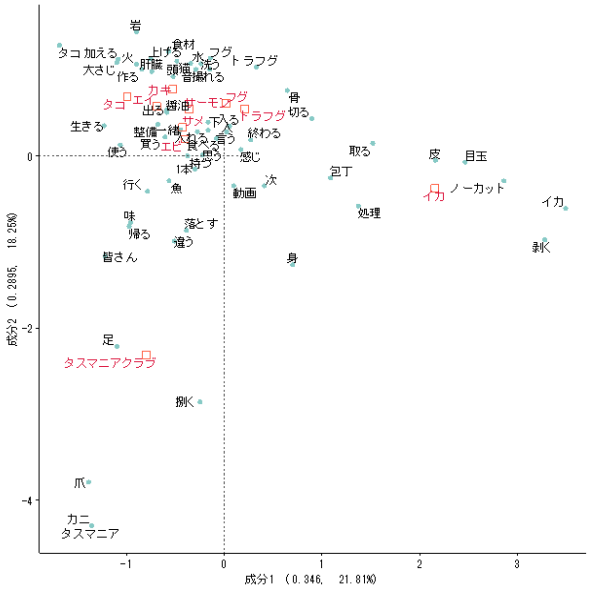

Fig. 2. Correspondence analysis of nouns and verbs (frequency over 8) appeared in 10 videos.

Fig. 2 shows that the Tasmanian crab and squid videos contain several characteristic words. In the Tasmanian crab video, words such as Tasmania, crab, claw, and legs seem characteristic words. In the squid videos, words such as squid, uncut, eyeball, skin, and processing are characteristic words. The feature terms, based on co-occurrence relationships (by *Jaccard index*) within each video are shown in Table 3.

3.3 *Collocation*

Although presenting only frequent or feature words may have a certain educational effect, presenting collocations may improve the qualitative aspect of word knowledge.
In this section, I propose a method of presenting feature words together with collocations, using the vocabulary of the Tasmanian crab and squid videos, a unique set of 10 videos, as an example.
In this section, collocations of characteristic words in squid-video and Tasmanian club video are analyzed by listing words with two or more co-occurrences as major collocations.

Table 3. Characteristic words of each video

エビ		エイ		フグ		イカ	
整備	.069	思う	.034	水	.060	イカ	.054
今日	.054	照り焼き	.028	フグ	.054	皮	.053
思う	.046	大さじ	.027	皮	.042	剥く	.034
入る	.035	肝臓	.027	食べる	.040	取る	.028
大きい	.034	今日	.026	思う	.039	包丁	.027
頭	.028	行く	.025	入る	.038	半分	.025
持つ	.027	作る	.024	悪い	.035	ノーカッ	.020
言う	.026	見る	.024	言う	.028	目玉	.020
固まる	.025	簡単	.020	毒	.028	耳	.017
お願い	.025	猫	.020	多い	.027	身	.017
カキ		サーモン		サメ		タコ	
言う	.033	入れる	.048	魚	.046	タコ	.050
岩	.032	感じ	.047	フライ	.042	入れる	.050
今日	.030	思う	.037	今日	.042	作る	.044
バーベキ	.028	入る	.033	フカヒレ	.034	強い	.042
きれい	.022	今	.027	ソース	.033	使う	.033
野菜	.018	サーモン	.024	持つ	.027	食べる	.031
焼く	.018	上げる	.024	思う	.027	刻む	.029
洗う	.018	動画	.022	マヨネー	.025	頭	.025
買う	.018	作る	.022	買う	.023	美味しい	.024
今	.017	加える	.019	作る	.021	元気	.021
タスマニアクラブ		トラフグ					
タスマニ	.054	入る	.064				
爪	.053	骨	.054				
捌く	.052	感じ	.053				
カニ	.043	食べる	.048				
思う	.041	トラフグ	.045				
足	.037	頭	.042				
落とす	.035	入れる	.041				
美味しい	.034	腎臓	.034				
食べる	.033	思う	.034				
感じ	.029	撮れる	.033				

Collocation in Tasmanian club video

Take a look at the collocation of feature words in the Tasmanian club video. The first characteristic word, “Tasmania,” is a proper noun and does not need to be analyzed by collocation.

The main collocations of “爪 claw” in the second place were ‘足 legs’ and ‘落とす drop’. The ‘足 leg’ was used in the literal sense of “crab legs”. ‘Drop(ping)’ was used as a transitive verb in the sense of *cutting off crab legs, claws, or fish fins*. In understanding the word "claw," one may be required to have the meta-knowledge that in Japanese, both crab claws and human fingernails are represented by the same word, 爪 /*tsume*/. In derivation, the knowledge that both foot and leg can be

applied to the Japanese word '足 *ashi*' may also be required.

The main collocations for '捌く /sabaku/ *dress* or *process (a fish)*' were '思う think' and '魚 fish'. The usage of '思う think' was "捌けると思う I think I can dress it" or "捌いていきたいと思う I would like to process it," thus no particularity as a collocation was observed. The co-occurrence with '魚' is the expression '魚を捌く *dress a fish*.' In Japanese, '捌く' is used to describe the chopping up of fish or chicken.

"落とす *drop*" is the transitive form of '落ちる *drop*.' It co-occurs with '頭 *head*,' '関節 *joint*,' '足 *leg*,' and '爪 *claw*' as objects. When processing crabs, '落とす *drop*' is used to describe the cutting off of the legs and other parts of the crab.

Collocation in Squid video

The collocations for "皮 peel [noun]" are '剥く /muku/ peel [verb]', '状態 state', '柚子 yuzu', '引く pull', '感じ feel', '止める stop', '入れる insert', and '剥ける remove'. The regular expression to *remove the skin* is the phrase "皮を剥ぐ /*kawa o hagu*/ *peel off*" or "皮を剥く /kawa o muku/ *peel off*". A similar but less common expression, "皮を引く /*kawa o hiku*/ *peel off the skin*," is used when *removing the thin skin of yellowtail, squid, and other fish*. Derivatively, there is also the usage of "湯引き /*yubiki*/ *hot water-peeling,*" for tomatoes, peaches, and so on.

In Japanese, not only human skin, but also the skin of fish, the peel of fruits such as yuzu, and the bark of trees are described as '皮 /*kawa*/ *skin*'. Animal skin is also '皮,' and tanned skins are also pronounced '/*kawa*/ (spelled as 革)'. Such metaknowledge is essential to understand the use of the word 'skin' as well as '*nails* / *craws* for 爪' in the Tasmanian Club.

The two highest co-occurring words (with at least two co-occurrences) for "剥く /*muku*/ peel" were '皮' and '風'. Of these, '風' was used in all cases to be pronounced /fu/ (means *way*, not as /kaze/ for *wind*), which means "こんな風に剥いていきます. *I will peel in this way*."

Thus, the examination demonstrated that while a basic vocabulary display with bilingual translations suffices for commonly occurring high-frequency words across multiple videos, it's essential to provide the distinctive terms specific to each video, alongside supplementary information like word collocations, idioms, and specialized terminology.

4. Summary & Discussion

This study developed a self-learning system focused on YouTube videos, tailored to the interests of potential learners of Japanese. By utilizing abundant online resources, I aimed to create a flexible and attractive language learning environment different from traditional classroom learning. In this system, learners can select videos of personal interest, providing opportunities for empirical vocabulary and grammar learning. By selecting about 10 target videos, frequently used words and characteristic terms included in the videos are presented, and learners can acquire language skills related to the selected content. In this study, in addition to creating a corpus from the videos and presenting frequent words as a method of presenting learning vocabulary, I proposed a strategy to present information conscious of collocations. The usage of words in YouTube videos has a unique frequency structure depending on the genre of the video. Future research tasks are the presentation of vocabulary according to the learner's level, systematization of meta-knowledge for presenting collocations, and system implementation. The development of innovative and adaptive language learning platforms as proposed here has great potential to democratize access to language education and enable learners to autonomously and effectively achieve language goals.

References

1. Albantani, Azkia Muharom, and Ahmad Madkur. 2017. "Musyahadat al Fidyu: YouTube-Based Teaching and Learning of Arabic as Foreign Language (AFL)." *Dinamika Ilmu*, 291–308.
2. Aprianto, Dedi. 2020. "To What Extent Does YouTube Contents-Based Language Learning Promote an English Proficiency?" *Journal of English Language Teaching and Literature (JELTL)* 3 (2): 108–26.
3. Riswandi, Diki. 2016. "Use of YouTube-Based Videos to Improve Students' Speaking Skill." In *Proceeding of the International Conference on Teacher Training and Education*, 2:298–306.

Authors Introduction

Dr. Hiroki Fxyma

He received Doctoral degree from Keio University, Japan in 2018. His research domain includes application of Cognitive Science to Japanese Language Education.