Japanese Language Learners' Revision Behavior in Online Collaborative Writing

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This study investigates collaborative writing using wikis (a web-based collaboration tool) by learners of Japanese as a foreign language. The teacher-researcher study aimed to afford learners opportunities for writing with others and to understand how they revise their texts. A total of 12 learners at a tertiary institution in New Zealand completed various group writing tasks where learners use wikis to co-construct and edit shared content over two years. Data were collected from archived wiki pages, analyzed for form- and meaning-related changes, along with comment pages and interviews with 11 learners to provide a richer understanding of how learners perceive revisions in collaborative writing. The findings show that learners focused on meaning over form, and revised their own writing more than their peers' writing. An analysis of each learner revealed that such results were likely associated with low proficiency and a strong sense of ownership over their own writing. Additionally, factors such as text co-ownership, task type, and task familiarity influenced learners' engagement in making revisions.

　本研究は、外国語としての日本語学習者を対象にウィキ（ウェブベースのコラボレーションツール）を利用した協働ライティングについて調査したものである。教師が研究者として行った本研究の目的は、他者と共にライティングを行う機会を学習者に提供し、学習者がどのように文章を修正するのかを理解することである。ニュージーランドにあるポリテクニックの学習者合計12人が2年にわたり、ウィキを使用して共有コンテンツを協働作成、編集する様々なグループ・ライティング課題に取り組んだ。ウィキのアーカイブ・ページからデータを収集し、言語形式と意味に関する修正を分析した。また、コメントページの分析や11人とのインタビューも実施し、協働ライティングにおける修正をどのように受け止めているかをより深く理解できるようにした。全体的に学習者は意味、および自分の書いた文章に重点を置いた修正を行った。個々の学習者を分析すると、この結果は彼らの日本語能力と自分の書いたものに対する強い所有意識と関係があった。さらに、文章の共同所有権、課題の性質、課題への慣れといった要因が、学習者の修正への取り組みに影響を与えた。

This study was conceived as a result of my reflection on the teaching of Japanese as a foreign language (JFL), from an autonomous learning perspective (Tukua et al., 2020), at a polytechnic institute in New Zealand. I recognized the need to develop the students' capacity as autonomous users of the target language (Little, 2020) and the lack of such opportunities that I had provided for them, particularly to write text focusing on meaning, such as writing essays or creative writing, rather than merely practicing grammar through sentence writing. In addition, the students had seldom written text with others even though collaborative writing had become a common practice in many L2 classrooms during recent decades (Li, 2018). Collaborative writing refers to an activity in which two or more learners interact, negotiate meaning and make joint decisions throughout the writing process to produce a single text (Storch, 2013). The development of Web 2.0 tools such as wiki, "a web-based collaboration tool which can be easily created, viewed and modified using any web browser" (Aydin & Yildiz, 2014, p. 162), made it possible to implement collaborative writing outside the L2 classroom. The content consists of the collective contributions of all users. All posts are retained, and users can communicate with each other using the comment function. Research on collaborative writing using wikis in L2 contexts has reported a range of benefits, including fostering autonomous learning (Kessler, 2009; Kessler & Bikowski, 2010) and improving the writing process and writing strategies (Bikowski & Vithanage, 2016; Elola & Oskoz, 2010). However, there appear to be no studies with JFL learners in the literature, so I decided to incorporate collaborative writing using wikis into my teaching to improve my lessons and to address this gap in the research.

Literature Review

Many studies on wikis in L2 contexts investigated learners' contributions and engagement by analyzing whether L2 learners focused on meaning or form during revisions. The findings indicated that content additions were the main type of meaning-related changes (e.g., Aydin & Yildiz, 2014; Kessler & Bikowski, 2010; Lee, 2010). In one

study, Kessler (2009) found that 40 EFL learners focused more on meaning than on form when they engaged in a sixteen-week unstructured wiki activity. The participants also invested greater effort into modifying fonts and adding links than editing grammatical errors. Although they were capable of correcting grammatical errors, they perceived no need to address them when the errors did not interfere with meaning. Arnold et al. (2009) examined the revision behavior of 54 learners of intermediate German and found that they made more meaning-related changes than formal changes (i.e., grammatical and lexical changes). In contrast, Kost (2011) determined that learners of intermediate German (*n* = 8) made more formal changes than meaning-preserving changes, such as adding, deleting, or substituting words in a sentence to improve readability without altering the fundamental meaning. This greater attention to form may have been due to the exclusion of content additions from the analysis, as that study focused on specific linguistic revisions.

L2 learners are generally reluctant to change their peers' writing, but this reluctance can diminish as they become more familiar with collaborative tools like wikis. While studies on self- and peer revisions (e.g., Arnold et al., 2012; Kessler, 2009; Lee, 2010) showed mixed attitudes toward making formal changes to others' writing, research suggests that student revision behaviors evolve over time. For instance, Mak and Coniam (2008) observed that ESL students in Hong Kong shifted from simply adding new content to more actively reorganizing and elaborating on their peers' writing. Storch (2013) attributed this change to the concept of text co-ownership, where learners feel more comfortable and willing to revise others' writing as they become more engaged in the collaborative development of the text.

The writing task type is an important factor that influences the learners' willingness to contribute and engage in revising their peers' writing. Mak and Coniam (2008) mentioned above was a research-based project that had a real-world purpose and required a team effort to complete successfully, which encouraged more participation. Tasks with open-ended topics enabled learners to be creative and write longer texts and vice versa (Coniam & Lee, 2008; Lee, 2010). Aydin and Yildiz (2014) investigated how argumentative, decision-making, and informative tasks influenced the number of self- and peer edits among 34 intermediate EFL learners in Turkey. They found that learners made more self-edits than peer edits in the informative task, while they made more peer edits in the argumentative and decision-making tasks. The difference was attributed to the nature of the tasks; learners collaborated more on the cognitively and linguistically demanding tasks to form an opinion or find a solution as groups, whereas the informative task involved presenting straightforward facts that were also divisible into

separate sections, requiring less collaboration. From a text co-ownership perspective, this finding demonstrates that learners developed a stronger sense of text co-ownership in the more demanding tasks as those tasks required team effort such as negotiation of meaning and collaborative scaffolding for successful completion (Aydin & Yildiz, 2014; Lee, 2010).

Research on wikis in L2 contexts has been conducted with mostly EFL/ESL learners or learners of European languages. While some studies have investigated peer feedback in the JFL classroom to improve individual writing (e.g., Oshima & Ishizuka, 2022), no research has yet explored revision behavior among JFL learners when co-constructing texts online. I became interested in how the students revised their texts with minimal interference from the teacher during group writing tasks. This study investigates how JFL learners revise texts in a collaborative online environment with minimal teacher involvement and what influences their revision behavior.

Research Questions

This study is guided by the following research questions:

RQ1. Do JFL learners make more revisions focusing on formal changes or meaning-preserving changes when revising their texts?

RQ2. Do JFL learners revise their own writing and others' writing equally?

RQ3. How do task types affect the level of engagement in revision, as measured by the number of revisions JFL learners make?

Methodology

Research Context

This study was conducted at a polytechnic institute in New Zealand where a three-year degree program in Japanese is offered. A total of 12 learners participated in this study when they enrolled in the first year or second year of the program. The core Japanese course had a total of eight hours of classes per week which my colleague and I co-taught. The level of the first-year core Japanese course was high-beginner and that of the second-year core Japanese course was low-intermediate. Wiki tasks (writing tasks where learners use wikis to co-construct and edit shared content) replaced the composition section of the written examination. Twenty percent of the course mark was awarded for wiki tasks. I obtained permission from the institution's ethics committee and followed the designated ethical procedures to ensure that participants' rights were protected. All the

participants gave informed consent. It was made clear at the time of recruitment and throughout the project that the project had no influence on their course marks.

Tasks

Over the course of two years, the students completed three group wiki tasks in the first year and two in the second year (see Appendix A). I designed each task with different purposes and audiences related to the course content. The first-year tasks included creating a travel magazine, a job guide, and an essay on Japanese gift culture. In the second year, the tasks involved writing an essay on employment in Japan and conducting a survey on a social issue. For the tasks on gift culture and employment, the students searched for information online and presented their findings. These tasks resembled essays and were graded mainly for language-learning purposes, allowing learners to also gain knowledge about the topics. In contrast, the other three tasks had broader purposes and targeted real-world audiences beyond the language-learning classroom. For example, the travel magazine and job guide tasks were intended to offer practical information to people interested in travelling and working in Japan or New Zealand. Additionally, the survey task allowed learners to engage with the public by collecting data directly from people rather than from online sources. Students designed survey questions on social issues such as CO_2 emissions, whaling, censorship and then reported the findings using wikis. I also varied the grouping method, alternating between self-selected and teacher-assigned groups, so the students could experience working with different peers.

Data Collection and Analysis

Learners practiced using wikis at the beginning of the first year in two training sessions. They were provided with guidelines explaining how to contribute to wikis and the grading rubric, which was adapted from Ducate et al. (2011) and Lee (2010). Learners worked in groups with minimal involvement of the teachers to see whether learners would engage in revision of their own and others' writing without the teacher's intervention (Kessler, 2009). There were four groups in each wiki task, except for the survey task, which had three groups, resulting in a total of 19 wiki pages collected for analysis (see Appendix A).

Archived versions of the 19 wiki pages were analyzed using the taxonomy adapted from Arnold et al. (2009) (see Appendix B for all types and examples). The taxonomy consists of (a) formal changes that include spelling, punctuation, verb/adjective forms, particles, and lexis and (b) meaning-preserving changes, which are modifications to a

sentence to improve readability by adding, deleting, or substituting a word or words without altering the meaning, thereby facilitating a clear and effective communication of the writer's intended message. For example, one student added to his own writing the phrase の合計 (*no goukei*) which means "the combined percentage of" to the original sentence to clarify that 52.7% represented the combined percentage of respondents who either disagreed or strongly disagreed.

> しかし、反対か強く反対する方は全体の52.7%です。
>
> However, those who either disagree or strongly disagree are 52.7% of all respondents.
>
> しかし、反対か強く反対する方**の合計**は全体の52.7%です。
>
> However, **the combined percentage of** respondents who either disagree or strongly disagree is 52.7% of all respondents.

For this study, although Arnold et al. (2009) included another category called meaning changes, which involves the addition and deletion of content, I focused exclusively on formal changes and meaning-preserving changes because I was interested in "the specific linguistic revisions … and not on the amount of content that was added" (Kost, 2011, p. 609).

The teacher and I independently coded the revisions (formal changes or meaning-preserving changes), and I calculated the extent of agreement between our coding of the revisions. Inter-rater reliability was measured to be 90%, and we discussed any differences in our analysis until we reached a consensus. We also checked whether each change was made to a learner's own or to their peer's writing by backtracking between the previous versions.

In addition, I analyzed comment pages where learners communicated and conducted interviews to gain a richer understanding of the behavior observed in the archived versions. For the comment pages, I examined types and frequencies of learners' comments. All students, except two who missed the first interview, were interviewed in English at the end of Year 1 ($n = 8$) and at the end of Year 2 ($n = 10$). The semi-structured interviews, which lasted between five and twenty minutes, covered topics such as learning experiences, perceived advantages and disadvantages of collaborative writing, task processes, and revision processes (see Appendix C). These interviews were audio recorded, transcribed, and analyzed to identify themes relevant to the findings from the archived versions and the research questions.

Results

First, the specific types of revisions the students made are presented (see Appendix D). Across the five tasks, the students made 170 formal revisions (46%) and 199 meaning-preserving revisions (54%). Among the formal revisions, lexical revisions were the most common (37%), followed by particles (24%), and punctuation (14%). Revisions of adjective forms (2%) and word order (4%) were minimal. In terms of the meaning-preserving revisions, additions were the most (36%) followed by deletions (32%), substitutions (19%) and last reordering (13%).

Overall, learners revised their own writing more (66%) than others' writing (34%). As shown in Figure 1, the difference was greater for formal changes (77% self-edit compared to 23% peer edits) than meaning-preserving changes (57% vs. 43%). Learners were seemingly more reluctant to make formal changes to others' writing than meaning-preserving changes, except for punctuation (see Appendix D).

Figure 1
Self-editing vs. Peer Editing
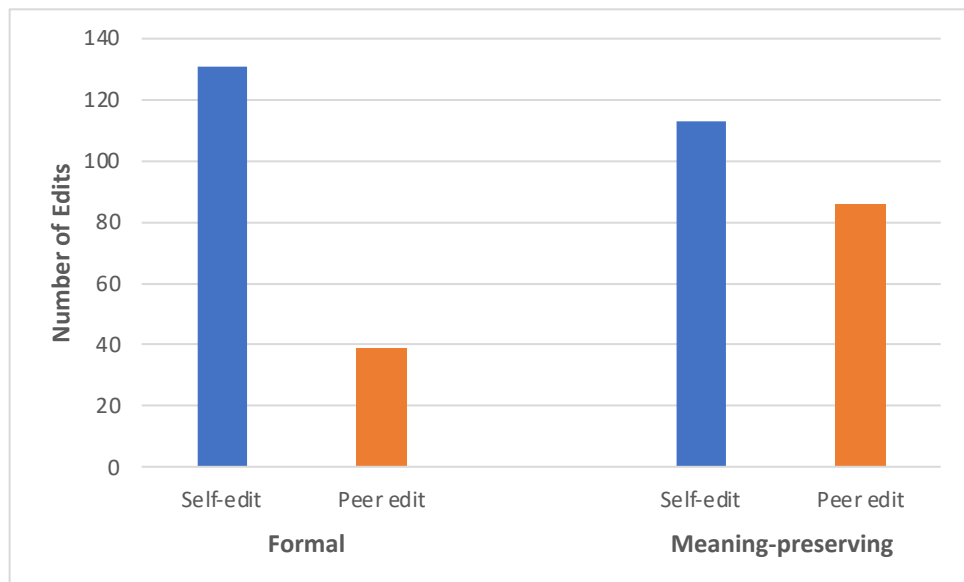
Individual variations were also observed. Table 1 shows the number of self- and peer edits each learner made. In total, five out of 12 learners made no peer edits. Of the six who made both self- and peer edits, four made more self-edits than peer edits.

Table 1
Summary of Self- and Peer Edits by Individuals and Tasks

Learner	Travel magazine	Job guide	Gift essay	Employment essay	Survey	Total	Average of edits per task
Daniel	S4	S12, P10	S12, P11	S5	P1	S33, P22	11.00
Chris	S8, P39	S4, P12	S2, P4	0	S1	S15, P55	14.00
Stephanie	S31	S4, P4	S13, P5	S9	S2, P11	S59, P20	15.80
Alisha	S3	S12	0	S4	S2	S21	4.20
Gillian	S5	S19	S1	S1	S11, P1	S37, P1	7.60
Cassandra	0	0	S1	S7	S1	S9	1.80
Liam	0	S13	S6	0	0	S19	3.80
Matthew	0	S8	0	NA	NA	S8	2.67
Simon	0	S7	S1	NA	NA	S8	2.67
Allen	NA	NA	S7	S5	S8, P10	S20, P10	10.00
Wilber	NA	NA	NA	S4	S10, P14	S14, P14	14.00
Sebastian	NA	NA	NA	P2	P1	P3	1.50
Total	S51, P39	S79, P26	S43, P20	S35, P2	S35, P38	S243, P125	

Note. All names are pseudonyms. NA=Not Applicable (a learner was not enrolled in the course at the time of the task)

The data revealed that the most revisions were made in the job guide, and the fewest revisions were in the employment essay (see Table 2). Because the length of the text the students produced for each task varied, I calculated the number of total revisions per 100 characters to make the comparison across tasks. The survey task had the most frequent revisions per 100 characters, followed by the travel magazine and job guide tasks.

Table 2
Wiki Page Revisions by Tasks

	Travel magazine (n=11)	Job guide (n=11)	Gift essay (n=11)	Employment essay (n=10)	Survey (n=10)
Total characters	13,193	22,153	22,434	13,709	5,283
Total number of revisions	90	105	64	37	73
Number of revisions per 100 characters	0.68	0.47	0.29	0.24	1.38

As shown in Table 1, the averages in the number of edits suggest varying levels of engagement among learners. For instance, Stephanie had the highest level of engagement among all learners. In the interviews, Stephanie expressed favorable views on the wiki tasks, such as freedom to choose the content and express opinions and showed little reluctance to change others' writing. In contrast, learners with low averages in the number of edits appear to have completed the wiki tasks solely to fulfil the course requirement.

Discussion

The first research question addressed the kinds of revisions the students made to their wiki texts. They made more meaning-preserving changes than formal changes, which accords with previous studies on wikis that had L2 learners engage in meaning-focused writing tasks (Arnold et al., 2009, 2012; Aydin & Yildiz, 2014; Kessler, 2009). However, it is in stark contrast to a similar study by Kost (2011) that focused on specific linguistic revisions. In that study, learners of intermediate German made eight times more formal changes, including many verb and adjective endings, than meaning-preserving changes, whereas the JFL students made significantly fewer revisions to verb and adjective forms. A possible explanation for this is the students' low proficiency in Japanese. Correcting grammatical errors such as verb forms is harder for L2 learners than correcting spelling and punctuation especially if they have low proficiency (Kessler et al., 2012). Exacerbating the difficulty, the students used unfamiliar language as they supported their use of Japanese with aids such as translators and dictionaries. Therefore, it might have been unrealistic to expect that they could identify all the grammatical errors when text,

especially text written by others, contained unfamiliar linguistic items (Shehadeh, 2011). Interestingly, however, the learners revised particles, which are known to be challenging for JFL learners, more than punctuation. This could be influenced by the instructional focus on particles when teaching Japanese as a foreign language. Lastly, the result that most meaning-preserving changes were additions and deletions aligns with previous studies (Aydin & Yildiz, 2014; Kessler & Bikowski, 2010) in that learners tended not to engage in revisions that require critical thinking. For instance, reordering, which had the lowest number of revisions among meaning-preserving revisions, requires learners to consider the coherence of the text, compared to simply deleting *kana* (phonetic systems) added to Chinese characters.

The second research question examined whether the students revised their own writing and others' writing equally. They engaged in self-editing nearly twice as often as peer editing, and nearly half performed no peer editing. This finding supports previous studies reporting learners' reluctance to change others' writing (Arnold et al., 2012; Lee, 2010; Lund 2008). It was more noticeable in the formal changes, unlike EFL learners, whose form-related changes were peer-focused (Kessler, 2009). This could be related to the students' low Japanese proficiency, in addition to the increased difficulty of text containing unfamiliar language as mentioned above. Moreover, the interview and comment page data revealed that the learners respected each other's writing because they assumed that their peers had a reason to write it their own way, so they gave them feedback in person rather than directly changing what the peer wrote on the wiki. This reluctance might be attributed to the deep-seated notions that writing is a solitary act and one which is owned by individuals, reinforced by educational practices that encourage and reward individual efforts (Lund, 2008).

However, some learners engaged in peer editing more actively. For example, Chris made the most peer edits in the travel magazine. In that task, his group member (Daniel) provided *kana* beside the corresponding words written in Chinese characters 28 times. Daniel asked Chris to revise his writing via the comment page. Chris deleted the *kana* noting in the comment page that he had done this "to make it look good and consistent" (see Appendix B for an example). In the job guide task, Chris and Daniel explicitly asked each other to revise their writing, and they made almost equal number of peer edits. Conversely, when Chris worked with Alisha and Gillian in the gift essay task, he asked them to check his writing and offered to check their writing, but neither of them even acknowledged his comment and made no changes to Chris's writing.

Daniel contributed the most in the gift essay task, which had the second lowest number of total revisions. The comment page indicates that his partner (Cassandra)

struggled with ideas about the content. Not only did Daniel suggest what to write, but he also "did a bit of re-shuffling about" of Cassandra's writing to make it more coherent. In this task, the pair asked each other for feedback about what they had written, and Daniel made almost the same number of revisions as in the job guide, in which he and Chris agreed to proofread each other's writing.

Allen and Wilber performed self-editing in all tasks, but they performed peer editing only in the survey task and were the two most active learners. They were in the same group of three with Cassandra being the third member. In the interview, Allen said that the group agreed to revise each other's writing. Cassandra asked Allen and Wilber "if theres [sic] any glaring errors let me know" in an email message, and they made revisions directly to her writing on the wiki. This mutual agreement about changing each other's writing likely enhanced their sense of text co-ownership, positively influencing the number of peer-edits. Thus, this study supports the argument that text co-ownership plays an important role in collaborative writing (Arnold et al., 2018; Kessler, 2019; Storch, 2013).

The third research question explored influences of tasks on the students' engagement in revision. Tasks with a real-world purpose and audience appear to have promoted more revisions than the essay type writing with primarily language-learning purposes. The job guide and travel magazine needed to be presented attractively in an appropriate style for a target audience, and the survey task required the students to produce a research report, which my colleague emphasized would be a valuable practice for the research project they would undertake for their undergraduate thesis the following year. This finding supports previous studies (e.g., Lee, 2010; Lund, 2008; Mak & Coniam, 2008) that have underscored the importance of task types for the level of engagement in the wiki environment. Relevant and meaningful tasks that have a clear purpose and outcome and tasks that require team effort for successful completion are more likely to encourage engagement in group wiki writing (Storch, 2013). These three tasks meet Storch's criteria more than the essay tasks, which lacked a clear real-world outcome and relevance.

The highest number of total revisions per 100 characters in the survey task leads me to include unfamiliarity as another influencing factor. In that task, the largest proportion of the students (60%) performed peer edits, compared to 0% to 33% in the other tasks. In those tasks, the students first discussed the content and its structure, and then divided responsibilities between group members. Then they focused on gathering information from online sources and writing their own parts until the revision phase. On the other hand, the survey required the students to design survey questions, collect and analyze data before they could write their report. The interview data indicated that the students had more face-to-face meetings and developed their surveys synchronously using online chat applications and Google Docs. In addition, the students were forced to compose original texts because the source of information was responses to survey questions (yes or no, multiple choice) rather than online sources which learners could base their writing on. Thus, more frequent revisions occurred in the survey task partly because it was a less familiar task: (a) they had nothing to base their writing on, and (b) they were pushed to make more effort as a team to complete the task.

Conclusion

This study adds new insights into collaborative writing by investigating JFL learners, who have not been the subject of collaborative writing research to date. It explored high beginner - low intermediate JFL learners' revision behavior when they completed group wiki tasks in an autonomous environment. Overall, the learners focused on meaning over form and revised their own writing more than others' writing. The data suggests that learners made more peer edits when their reluctance was mitigated by an enhanced sense of text co-ownership through explicit mutual agreement to revise one another's writing. Furthermore, these JFL learners engaged in more revision when a task had a real-world outcome, and it was unfamiliar.

There were limitations to this study. First, the students' revision behavior was not fully captured because (a) wikis do not save revisions that learners made to their own writing before saving the wiki text (Arnold et al., 2018), and (b) peer feedback that learners reported giving to their peers in the interviews may have been missed. The students found the comment page inconvenient as they received no notifications, which hindered timely communication. They used more efficient tools such as Snapchat and Discord to discuss their work. Consequently, the students used the comment pages mostly to report their past actions and plans. As Storch (2013, p. 160) points out, this is the weakness of wikis: "languaging is no longer externalised and hence no longer available for further inspection" possibly due to "the lack of social presence and immediacy inherent in wikis." Another limitation is that I did not analyze whether the revisions the students made were successful. It would have been more meaningful for teachers to examine the impact on language learning as well. However, I was interested in the students' revision behavior in group writing situations.

This study taught me the importance of choosing a task in which it is difficult to divide responsibilities to push learners to jointly construct text. On reflection, the inclusion of tasks such as argumentative writing and problem solving in which learners must form

one opinion or solution may have encouraged further collaboration. More importantly, I learned that learners need to engage in co-constructing text and peer revision regularly in the classroom before they embark on online group writing to get accustomed to the process, improve their self-confidence and foster a sense of text co-ownership. In spite of these limitations and reflections, overall, I am confident that this study benefited the students and was a worthwhile experience for the students and teachers involved.

Bio Data

Ryoko de Burgh-Hirabe holds a PhD in Applied Linguistics from the University of Otago and is currently an Associate Professor at Otaru University of Commerce. Prior to this position, she taught Japanese as a foreign language at tertiary institutions in New Zealand. Her primary research interests include L2 motivation, learner autonomy, second language learning and teaching, and study abroad. <deburgh-hirabe@res.otaru-uc.ac.jp>

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Appendix A

Task Topics and Contents

Topic	Task	Required length	Group
Travel magazine	Create a travel magazine with a focus on Japan or New Zealand using a wiki. Research several aspects (geography, climate, history, food, accommodation, transportation, manners & etiquette, medical advice, etc.).	1,600 characters (pair) 2,400 characters (trio)	Self-selected 3 x trios 1 x pair
Job guide	Create a job guide with a focus on Japan or New Zealand using a wiki. Research and present how to find a job and other helpful information.		
Gift essay	Research gifts Japanese people give each other, customs around what sort of gift is appropriate for a certain occasion and present the findings using a wiki.		Teacher-assigned 3 x trios 1 x pair

Topic	Task	Required length	Group
Employment essay	Research how Japanese people obtain employment these days and their working conditions and present the findings using a wiki.	2,000 characters (pair) 3,000 characters (trio)	Teacher-assigned 2 x trios 2 x pair
Survey	Develop and administer a small-scale survey for family, friends, or neighbors about an issue which is important to the community and report the results using a wiki.	900 to 1,000 characters for all groups	Self-selected 2 x trios 1 x quartet

Appendix B

Taxonomy of Revision Types (Adapted from Arnold et al., 2009)

Formal changes	
Spelling	ドクス ➔ ドックス (Added a consonant addressing a pronunciation adjustment) ここでの食事わ５００〜２０００円で安い選択になります。➔ ここでの食事は５００〜２０００円で安い選択になります。 (Both わ and は are pronounced as *wa*, but は should be used when functioning as a particle.)
Punctuation	ホステル、バックパッカー、ドミトリー。➔ ホステル、バックパッカー、ドミトリー: 履歴書写真には日本では ➔ 日本では、履歴書写真には
Verb forms	贈る ➔ 贈ている (Changed from the dictionary form to the progressive form, though the change was unsuccessful due to incorrect usage) 支払われり ➔ 支払われ (Corrected from an incorrect passive form to the correct passive form)
Adjective forms	多き ➔ 多く (Corrected from an incorrect form to the correct form) 大きい ➔ 大きいな (Changed from the correct form to an incorrect form; the change was unsuccessful due to incorrect usage)

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Particles	シェフが鉄板でお客さまの前で肉**と**魚介類と野菜を調理します。**→**シェフが鉄板でお客さまの前で肉**や**魚介類と野菜を調理します。(Changed "and" to "and so on" to indicate a non-exhaustive list.) たいてい7月ごろ**を**贈られるはずです。**→** たいてい7月ごろ**に**贈ています。(Corrected particle *wo* to *ni* to indicate time.)
Word Order	**天ぷら料理**と**揚げカツ**の専門店で **→ 揚げカツ、天ぷら料理**の専門店で (Reversed the order of *tempura* and *agekatsu*) **履歴書写真には日本では → 日本では、履歴書写真には** (Switched "in Japan" and "for a CV photo")
Lexical Revisions	**宿泊 → 収容** (Changed "accommodation" to "capacity" to match the context) **共有の→普通の** (Changed "shared" to "common" to match the context)
Translation	**unforeseen → 意外と少ない** 答えた人は**mostly new zealanders →** 答えた人**はほとんどニュージーランド人です** **There were Four periods of economic history in Japan, leading up to them as an economic superpower. →** これらの４つの期間は、日本を経済大国の一つにしました。
Meaning-preserving changes	
Additions	しかし、反対か強く反対する方は全体の52.7% です。**→** しかし、反対か強く反対する方**の合計**は全体の52.7%です。(Added "the combined percentage of" to the original sentence for clarity)
Deletions	履歴書写真には日本では一般的です。**そして、**雇用主は それを期待します。**→** 履歴書写真には日本では一般的です。雇用主は それを期待します。(Removed the conjunction "And" as it is redundant.) 職種（しょくしゅ）があります。**→** 職種があります。(Removed *kana* for stylistic reasons.)

Substitutions	たいてい7月ごろを**贈られるはずです。→** たいてい7月ごろに**贈ています。**(Replaced "[gifts] are supposed to be send" with "[people] send [gifts]" though the change was unsuccessful due to incorrect verb form) 検閲の存在がもっと強くなる**はずでしょう。→** 検閲の存在がもっと強くなる**のも当然ではないでしょうか。**(Replaced "[the existence of surveillance] is expected to [get stronger]" to "Isn't it inevitable that [the existence of surveillance gets stronger]?")
Reordering	A word or phrase moved from one part of the text to another. A sentence or sentences moved from one part of the text to another, but not an entire paragraph or section.

Appendix C

Questions that Guided Interviews

End of Year 1 Interview

- What have you learned from doing the group wiki tasks?
- Do you feel that your language skills have improved?
- Looking at the topics for the wiki tasks, which topic did you like the most?
- What were the most valuable and interesting aspects of the wiki tasks, and why?
- Did you encounter any problems with your group?
- What are the advantages and disadvantages of doing wiki writing with your classmates?

End of Year 2 Interview

- What do you think of collaborative writing using wikis?
- What did you think of your group interactions during the wiki-base collaborative writing task?
- Based on your experience, what are the advantages and disadvantages of writing collaboratively on the wiki compared to traditional individual writing?
- How did you and your group approach the wiki writing tasks? Can you walk me through what that might look like?
- Did your group have face-to-face team discussions, or did you use other platforms?
- Did you use machine translation sites such as Google Translate?
- Did you revise and edit your own work and your team members' writing?

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Appendix D

Wiki Revisions in Detail

	Travel magazine	Job guide	Gift essay	Employment essay	Survey	Total	Combined total
Formal changes							
Spelling (S)	2	4	2	2	4	14	
Spelling (P)		1			3	4	18
Punctuation (S)		10				10	
Punctuation (P)		10			3	13	23
Verbs (S)		4	1	1	2	8	
Verbs (P)		1			2	3	11
Adjectives (S)			1			1	
Adjectives (P)		1			1	2	3
Particles (S)	18	6	4	4	2	34	
Particles (P)		2			4	6	40
Word order (S)	2					2	
Word order (P)		2				2	4
Lexical revisions (S)	14	12	15	11	3	55	
Lexical revisions (P)		1		1	6	8	63
Translation (S)	1	1	1	1	3	7	
Translation (P)					1	1	8
Total changes	37	55	24	20	34	170	170

	Travel magazine	Job guide	Gift essay	Employment essay	Survey	Total	Combined total
Meaning-preserving changes							
Additions (S)	6	15	9	6	15	51	
Additions (P)	8	5	1		6	20	71
Deletions (S)	5	15	2	2	1	25	
Deletions (P)	29	2	1		6	38	63
Substitutions (S)	2	10	7	6	4	29	
Substitutions (P)		1	2	1	5	9	38
Reordering (S)	1	2	2	2	1	8	
Reordering (P)	2		16		1	19	27
Total changes	53	50	40	17	39	199	199

Note. S=Self-edit and P=Peer edit