

***HybridEdu Quiz Maker:  
A Tool for Creating Paper-Based and Online Quizzes in Hybrid Classes***

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**Abstract**

This paper presents HybridEdu Quiz Maker (HEQM), a tool for creating paper-based and online quizzes in hybrid classes. The primary goal of HEQM is to simplify the process of generating comprehension assessment tests, making it convenient and efficient. Hybrid classes, which blend in-person and online instruction, often require instructors to create paper-based quizzes (PBQuiz) for in-person sessions and online quizzes (GFQuiz) for virtual learning. This task can be arduous and time-consuming. HEQM offers a unique solution seamlessly integrating with MS Word and Google Sheets. It provides a set of six quiz templates, including fill-in-the-blank, multiple-choice, open-ended, true/false, matching, and ordering questions, in both MS Word and Google Sheets. HEQM's distinct feature is its Word-based import/export. Users can easily import GFQuiz data from Google Sheets to MS Word to create PBQuiz. Similarly, PBQuiz data can be exported and converted for GFQuiz, allowing direct import into Google Sheets for streamlined creation. Editing in MS Word also facilitates quick PBQuiz and GFQuiz generation. HEQM cuts quiz creation time and offers a user-friendly interface, similar to MS Word and Excel, for an effortless transition without new techniques. In conclusion, HEQM offers a practical solution for quiz creation in hybrid classes, demonstrating its potential to save time and simplify the process. Future developments may include database integration for enhanced data reuse.

Keywords: Quiz Maker, Hybrid Education, Hybrid/HyFlex Class, Paper Based Quiz, Online Quiz

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## **Introduction**

In this paper, we introduce a tool currently in development for creating quizzes in hybrid classes to assess students' comprehension. Our tool, named "HybridEdu Quiz Maker (HEQM)", enables educators to create paper-based quizzes (PBQuiz) for face-to-face sessions in Microsoft Word, and with just a few clicks, generate online quizzes (GFQuiz) using Google Forms (GForms). Additionally, the reverse is also possible: creating GFQuiz on Google Sheets (GSheets) allows for the easy generation of PBQuiz. Thus, HEQM enables the two-way creation of both PBQuiz and GFQuiz from a single set of quiz data.

Hybrid classes, which combine face-to-face and online instruction, often require teachers to create both PBQuiz for in-person sessions and GFQuiz for virtual learning. This task can be challenging and time-consuming. HEQM was designed to alleviate some of this burden for teachers. It focuses on enabling easy quiz creation in the familiar computing environments of educators, utilizing two of the most commonly used applications: Microsoft Word and GSheets. GSheets operates similarly to Excel, reducing the learning curve for educators and potentially shortening quiz creation time.

To summarize the features of HEQM, they include: 1) the ability to create quizzes for both face-to-face and online learners from a single set of quiz data, 2) the flexibility to create quiz data in either Word or GSheets, and 3) the use of familiar interfaces and operations, as it offers menus similar to Word and Excel.

HEQM is an improvement upon the quiz creation tools we have developed so far (Matsuo, 2022; Matsuo, 2023). In this paper, we will describe the background of HEQM development, then discuss the functionalities of HEQM, the current status of its development, followed by a discussion, and future directions.

## **Hybrid Classes After Pandemic and HEQM**

The onset of COVID-19 made it essential to adapt to hybrid classes, and in 2020, UNESCO recommended hybrid classes, leading to their global adoption (UNESCO, 2020). While many universities have returned to face-to-face learning, according to a BBC article, a third of U.S. institutions still adopt hybrid classes (Stanley, 2023). A Cengage survey indicates that 76% of students wish to continue hybrid learning (Digital Learning Pulse Survey, 2022). In Japan, following the pandemic, the Ministry of Education published a leaflet "Don't Stop Learning! Remote/Online Education for the Future" based on pilot studies (MEXT, 2021) and issued a notification in 2022 for "Guidance on Using ICT for Students Unable to Attend School Due to Illness or Disaster" (MEXT, 2022), encouraging diverse educational methods using ICT. Our college, while mainly offering face-to-face classes, is also equipped to accommodate students who cannot attend due to disasters or illness.

Thus, the trend towards hybridization in education methods seems likely to continue post-pandemic, increasing the workload for educators. In this context, HEQM can contribute to reducing the time required for creating quizzes, an effective method for assessing student comprehension.

## Tests for Assessing Students' Understanding

Davis stated, "Many teachers dislike preparing and grading exams, and most students dread taking them. Yet tests are powerful educational tools that serve at least four functions." (Davis, 1999). This is still recognized by most educators today, as evidenced by the numerous papers on exams, tests, and quizzes reported that have been reported specifically since the year 2020. Among these, papers on quiz creation methods include: 1) tools for creating online quizzes (for example, Shaik et al., 2020), 2) the effects of gamification for enjoyable learning (for example, Waluyo & Tran, 2023; Daulay & Adelita, 2023; Segaran & Hashim, 2022), and 3) cheating prevention measures for fairness (for example, Newton & Essex, 2023; Holden et al., 2021; Zulkifli & Khalid, 2023).

We also consider quizzes indispensable for assessing student understanding in hybrid classes. Initially, we experimented with distributing the same PBQuiz online but identified several issues. We then tried GFQuizzes, which also presented problems. Table 1 summarizes these challenges.

Table 1: Issues Arising from Using Either PBQuiz or Online Tests Exclusively

Test Method	Problems
Distributing the same PBQuiz file online for both face-to-face and online students	Students: Difficult to work on small smartphone screens during online classes. Teachers: Time-consuming to review each student's submitted file.
Creating online tests for both face-to-face and remote learners	Equipment limitations (*): Students use their devices for exams, leading to issues like forgetting devices, time-consuming login processes, and using other apps during tests. *Wi-Fi is available in classrooms, but school-provided devices require prior application by students, which is time-consuming. Also, PC rooms are not always available and are not suitable for regular note-taking classes.

We recognized the need to create both PBQuiz and online tests but found it too labor-intensive. This led to the development of HEQM. Notably, HEQM did not prioritize cheating prevention measures. While this is crucial for exams solely assessing students, HEQM focuses on unit-by-unit comprehension checks and fairness, aiming to administer simultaneous face-to-face and online quizzes.

## Reasons for Choosing WORD and Google Forms

In developing HEQM, we aimed to: 1) create a user-friendly tool with operations familiar to many, reducing apprehension in using HEQM, 2) ensure free usage without requiring specialized server operations, and 3) enable rapid development with minimal effort.

1) and 2) have always been our focus. "Development of an instructional material support tool that can be seamlessly used by those familiar with Word." We have previously developed a tool named "Microsoft Word Integrated Text Analysis Tools (MiWIT)" which includes: 1) a Text analysis tool for creating reading comprehension materials, analyzing text and word

difficulty, 2) a tool for collecting authentic materials from the web for teaching, and 3) a PBQuiz creation tool for assessing student understanding (reference). Initially for ESL/EFL material creation, the PBQuiz tool proved useful for other subjects, leading to its separation from MiWIT.

Given that 1) and 2) were already considered in the previously developed PBQuiz tool, we focused on 3) "rapid development" for creating online quizzes, considering the following:

- a) Ability to export Word PBQuiz directly as an online quiz.
- b) Compatibility with familiar Word and Excel for educators.
- c) Free usage.

Commonly used free online quiz tools include Moodle and Google Forms (reference). When developing the online quiz tool, we initially excluded Moodle (though it's possible to add Moodle's GIFT format test and quiz question creation functionality to our tool). Moodle is an excellent tool but requires a server setup, making it not universally accessible. We also considered MS Forms, but at the time of our research, we couldn't find a direct form creation method from external apps. In contrast, Google Forms, with many reports online about creating forms from Google Sheets using Google Application Script (GAS), seemed feasible for development, leading to its adoption.

## Overview of HEQM

The key feature of HEQM is its ability to create both PBQuiz and GFQuiz with just a few clicks, regardless of which one is initially made. Furthermore, both quizzes can be created by simply filling out templates.

Figure 1 shows the HEQM menus in Word(Word\_HEQM), Figure 2 the HEQM menus in GSheets(GSheets\_HEQM), and Figure 3 an overview of HEQM. As seen in Figure 3, HEQM can generate both PBQuiz and GFQuiz data from quizzes created in Word, and similarly from GSheets. Thus, Word and GSheets work together to create both PBQuiz and GFQuiz. This section discusses 1) Quiz formats offered by HEQM, 2) Quiz templates and menus provided by Word\_HEQM and 3) Quiz templates and menus provided by GSheets\_HEQM.

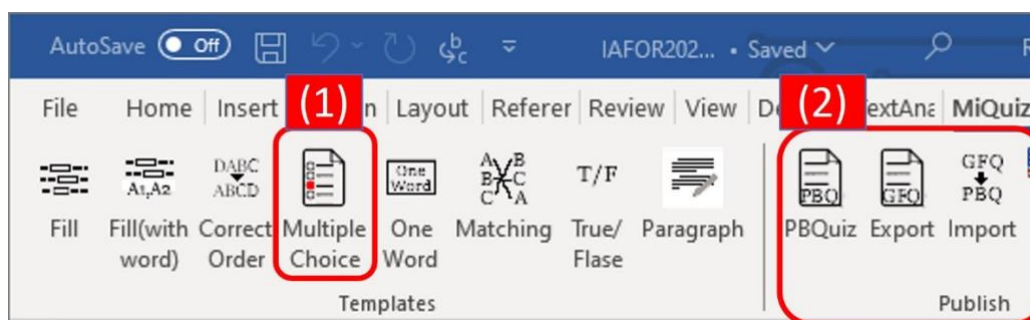


Figure 1: HEQM Menus in MS Word.

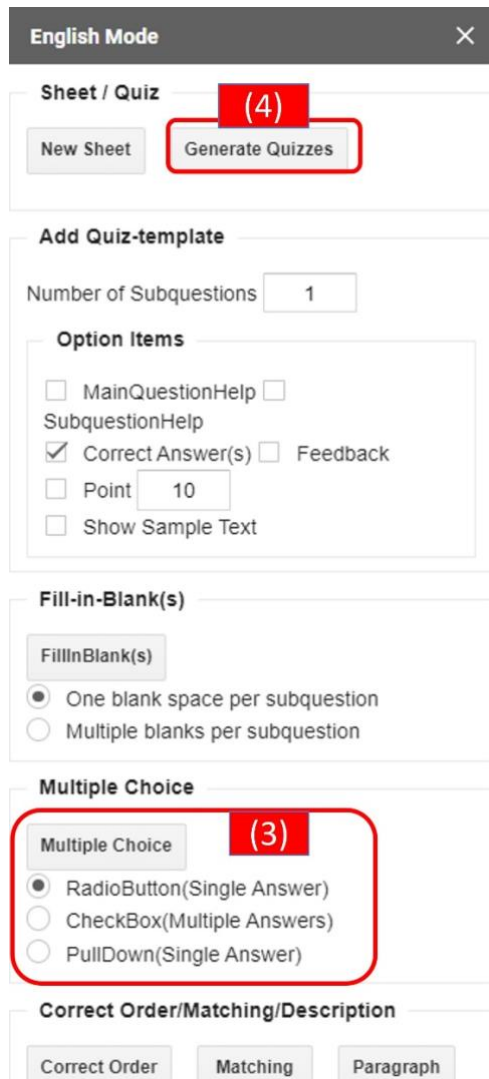


Figure 2: HEQM Menus in GSheets.

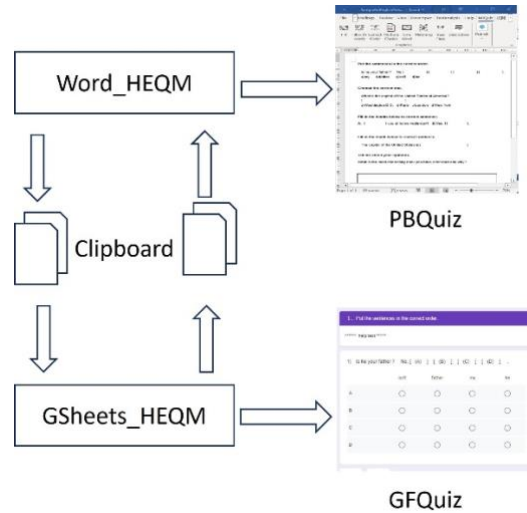


Figure 3: Overview Diagram of HEQM.

### *Quiz Formats Offered by HEQM*

HEMQ currently offers the following commonly used quiz formats:

- a) Fill-in-the-blanks questions (multiple blanks per sub-question)
- b) Fill-in-the-blanks questions with word options (multiple blanks per sub-question)
- c) Ordering questions
- d) Multiple-choice questions
- e) Single-word questions (one blank per sub-question)
- f) Matching questions
- g) True/False questions
- h) Descriptive questions

## Quiz Templates and Menus Provided by Word\_HEQM

Multiple choice       AnsType: Word

Choose the correct answer

1. What is the capital of Australia?

Canberra/Sydney/Melbourne/Adelaide

2. Who wrote the novel "Pride and Prejudice"?

Jane Austen/Charlotte Bronte/Emily Bronte/George Eliot

(a) Example of data entered into a multiple-choice quiz template.

Choose the correct answer

1. What is the capital of Australia?

[.....**Canberra**.....]

a) Adelaide   b) Sydney   c) Melbourne   d) Canberra

2. Who wrote the novel "Pride and Prejudice"?

[.....**Jane Austen**.....]

a) George Eliot   b) Jane Austen   c) Emily Bronte   d) Charlotte Bronte

(b) Generated teacher's quiz with answers.

Choose the correct answer

1. What is the capital of Australia?

[.....]

a) Adelaide   b) Sydney   c) Melbourne   d) Canberra

2. Who wrote the novel "Pride and Prejudice"?

[.....]

a) George Eliot   b) Jane Austen   c) Emily Bronte   d) Charlotte Bronte

(c) Generated student's quiz.

Figure 4: Example of Quiz Creation Using the Multiple-Choice Template in MS Word.

As previously mentioned, Figure 1 shows quiz templates provided by HEMQ in MS Word. Here, the Multiple-Choice format is used as an example for explanation. For other formats, please refer to the appendix. Clicking the "Multiple Choice" menu in Figure 1(1) inserts a "Multiple Choice" template at the current cursor position in the document. An example of quiz data created using this template is shown in Figure 4(a). After creating data with the correct answer at the beginning of each option, clicking the "PBQuiz" menu in Figure 1(2) "publish" group generates both a teacher's version of the quiz with answers (b) and a student version (c).

## Quiz Templates Provided by GSheets\_HEQM

Similar to WORD\_HEQM, we explain using the "Multiple Choice" template as an example. Clicking the "Multiple Choice" button in Figure 2(3) (Figure 5(a)) inserts the template shown within the red frame in Figure 5(b). After editing this template, clicking "Create Quiz" in Figure 2 generates the GFQuiz shown in Figure 5(c). GFQuiz offers radio buttons, checkboxes, and dropdowns for answering multiple-choice questions.

**Multiple Choice**

Multiple Choice

- RadioButton(Single Answer)
- CheckBox(Multiple Answers)
- PullDown(Single Answer)

(a) Multiple Choice menu

	A	B	C
1	Sheet for Quiz Form		
2	Form Url	<a href="https://docs.google.com/forms/d/1-yaC2aJizbxnhC">https://docs.google.com/forms/d/1-yaC2aJizbxnhC</a>	
3	Working Information		
4	-----	-----	
5	Title	MiQuiz	
6	HelpText		
7	--- Write your quizzes down here ---		
8	QuizType	MultipleChoice-Radiobutton	
9	PartQuestion	Choose the correct one.	
10	PartQuestionHelp		
11	Question	What is the capital of Australia?	
12	QuestionHelp		
13	Choice(s)	Camberra/Sydney/Melbourne/Adelaide	
14	CorrectAnswer(s)	Camberra	
15	Point		10
16	Feedback		
17	-qend-	To add another question, copy from the "question t	
18	-end-of-part-		

(b) Example of data entered into a multiple-choice quiz template

2 セクション中 2 個目のセクション

Choose the correct one.

説明 (省略可)

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What is the capital of Australia?

- Sydney
- Melbourne
- Camberra
- Adelaide

(c) Generated quiz

Figure 5: Example of Quiz Creation Using the Multiple-Choice Template in Google Sheets.

### *Exporting Quiz Data From WORD to GSheets*

Figure 6 reiterates the overview of HEQM. As shown in Figure 6, to export quiz data created in WORD to GSheets, click the "GFQ" menu button in the Publish group of Figure 1. This action converts the data into GFQuiz format and copies it to the clipboard. Switch to GSheets, click the cell where the data should be inserted, and paste. After pasting, clicking the "Create Quiz" menu generates the GFQuiz, just like when using a template.

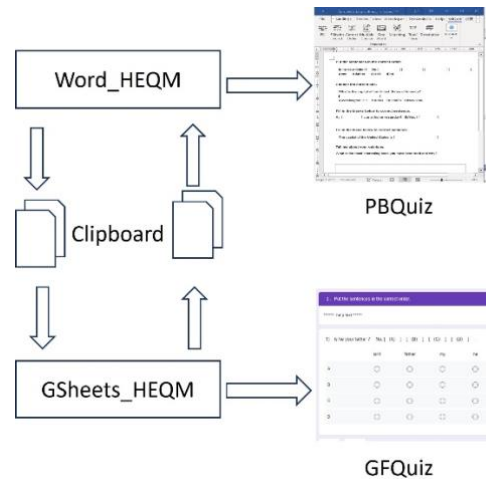


Figure 6: Overview Diagram of HEQM (Reproduced).

### ***Importing Quiz Data From GSheets to WORD***

To import quiz data from GSheets to WORD, select the necessary quiz data in GSheets, copy it to the clipboard, switch to WORD, and click the "Import" button (Figure 1[2]). This allows the creation of PBQuiz.

### **Conclusion**

Hybrid Education, previously limited to some educational institutions, has become widespread globally post-COVID-19. Although the pandemic seems to be subsiding, more than 80% of higher education institutions worldwide are reportedly adding online options to most of their courses permanently (reference), indicating the continuation of diverse teaching methods. Tests, whether face-to-face, online, or in hybrid classes, remain an effective method for assessing student understanding.

Most test creation and implementation currently rely on online quizzes like Canvas Quiz and Kahoot, with Moodle also widely used in universities. Recently, most papers on quizzes focus on online quizzes rather than face-to-face ones. We might also exclusively adopt online tests in the future if network conditions permit conducting comprehension tests under the same conditions both in and out of the classroom, significantly reducing the grading workload for educators. However, for the foreseeable future, we believe HEQM will be a convenient tool in reducing the workload for educators. Our project is ongoing, but at our level of familiarity with the tool, it's sufficiently developed for use. By using this tool, we have nearly eliminated the time required to create GFQuiz (and vice versa) from PBQuiz creation. However, our evaluation might be biased, and broad public release with user feedback is necessary. We are currently preparing for public release, having completed the main development phase and focusing on harmonizing terms across Word and GSheets menus and improving the user interface. Once these tasks are complete, we plan to release it. Moreover, with the emergence of generative AI, as exemplified by ChatGPT, educational methods are expected to evolve, and we have started considering incorporating generative AI into HEQM improvements.



## **Acknowledgment**

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## Appendix : Paper-Based Quiz and Google Forms Quiz Created using HEQM

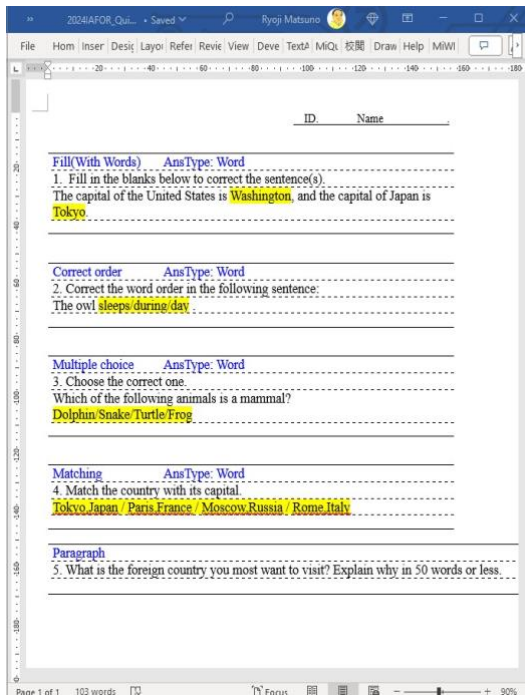


Figure A-1: Creating Quiz Data

Figure A-1: Creating Quiz Data

Figure A-2: Generated Paper Based Quiz with Answers (For Teachers)

Figure A-3: Generated Paper Based Quiz (For Students)

Figure A-4: Google Forms Quiz Data Generated from MS Word Documents

Figure A-5: Google Forms Quiz Generated from Google Sheets Data

\* In Figure A-1, the parts highlighted in yellow are converted to blanks or shuffled according to the quiz type. Instead of highlighting in yellow, you can also enclose it with '@[' and '@]'. For example, in a fill-in-the-blank problem, if you write '@[Washington@]', the part of 'Washington' will be replaced with a blank.

\*Please enlarge the figure if it is too small to see.

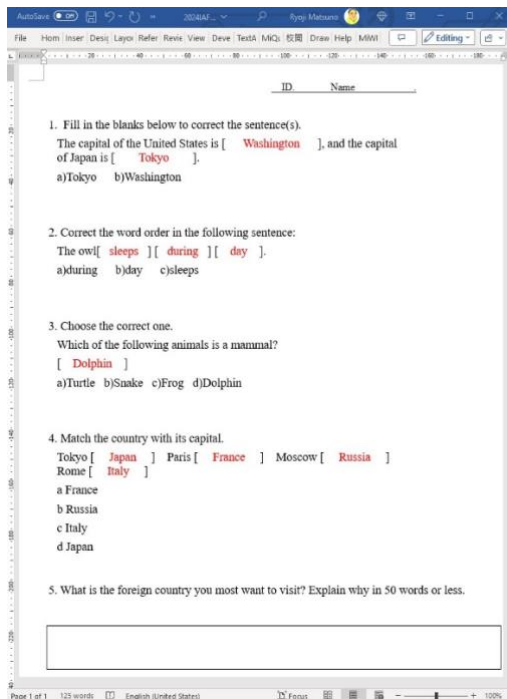


Figure A-2: Generated Paper Based Quiz with Answers (For Teachers)

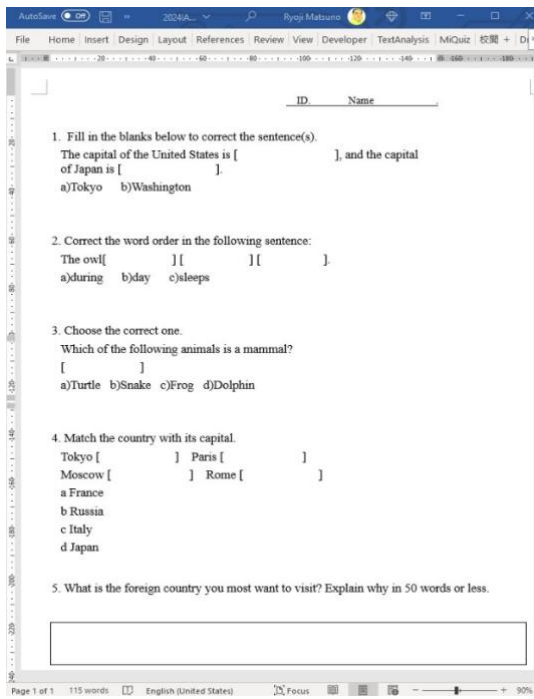


Figure A-3: Generated Paper Based Quiz (For Students)

		A	B	C	D
<b>Fill(With Words)</b> <b>AnsType: Word</b>					
1. Fill in the blanks below to correct the sentence(s).		9	PartQuestion	1. Fill in the blanks below to correct the sentence(s).	
The capital of the United States is <b>Washington</b> , and the capital of Japan is <b>Tokyo</b> .		10	PartQuestionHelp		
		11	Question	The capital of the United States is [ (a) ], and the capital of Japan is [ (b) ].	
		12	QuestionHelp		
		13	CorrectAnswer(s)	Washington/Tokyo	
		14	Point	0	
		15	Feedback		
		16	-gend-		
		17	-end-of-part-		
<b>Correct order</b> <b>AnsType: Word</b>		18	QuizType	CorrectOrder	
2. Correct the word order in the following sentence:		19	PartQuestion	2. Correct the word order in the following sentence:	
The owl <b>sleeps during day</b> .		20	PartQuestionHelp		
		21	Question	The owl [ (A) ] [ (B) ] [ (C) ] .	
		22	QuestionHelp		
		23	Rows	A/B/C	
		24	Columns	sleeps/during/day	
		25	CorrectAnswer(s)	sleeps/during/day	
		26	Point	0	
		27	Feedback		
		28	-gend-		
		29	-end-of-part-		
<b>Multiple choice</b> <b>AnsType: Word</b>		30	QuizType	MultipleChoice-Radiobutton	
3. Choose the correct one.		31	PartQuestion	3. Choose the correct one.	
Which of the following animals is a mammal?		32	PartQuestionHelp		
<b>Dolphin Snake Turtle Frog</b>		33	Question	Which of the following animals is a mammal? [   ]	
		34	QuestionHelp		
		35	Choice(s)	A)Frog/B)Turtle/C)Snake/D)Dolphin	
		36	CorrectAnswer(s)	Dolphin	
		37	Point	0	
		38	Feedback		
		39	-gend-		
		40	-end-of-part-		
<b>Matching</b> <b>AnsType: Word</b>		41	QuizType	Matching	
4. Match the country with its capital.		42	PartQuestion	4. Match the country with its capital.	
<b>Tokyo Japan / Paris France / Moscow Russia / Rome Italy</b>		43	PartQuestionHelp		
		44	Question		
		45	QuestionHelp		
		46	Rows	Tokyo/Paris/Moscow/Rome	
		47	Columns	Italy/Russia/Japan/France	
		48	CorrectAnswer(s)	Japan/France/Russia/Italy	
		49	Point	0	
		50	Feedback		
		51	-gend-		
		52	-end-of-part-		
<b>Paragraph</b>		53	QuizType	Paragraph	
5. What is the foreign country you most want to visit? Explain why in 50 words.		54	PartQuestion	5. What is the foreign country you most want to visit? Explain why in 50 words.	
		55	PartQuestionHelp		
		56	Question		
		57	QuestionHelp		
		58	CorrectAnswer(s)		
		59	Point	0	
		60	Feedback		
		61	-gend-		
		62	-end-of-part-		

Figure A-4: Google Forms Quiz Data Generated from MS Word Documents

	A	B	C	D
9	PartQuestion	1. Fill in the blanks below to correct the sentence(s).		1. Fill in the blanks below to correct the sentence(s).
10	PartQuestionHelp			The capital of the United States is [ (a) ], and the capital of Japan is [ (b) ] .
11	Question	The capital of the United States is [ (a) ] , and the ca		
12	QuestionHelp			(A)
13	CorrectAnswer(s)	Washington/Tokyo		Your answer
14	Point		0	
15	Feedback			
16	-qend-			
17	-end-of-part-			
18	QuizType	CorrectOrder		
19	PartQuestion	2. Correct the word order in the following sentence:		2. Correct the word order in the following sentence:
20	PartQuestionHelp			The owl [ (A) ] [ (B) ] [ (C) ] .
21	Question	The owl [ (A) ] [ (B) ] [ (C) ] .		
22	QuestionHelp			day sleeps during
23	Rows	A/B/C		
24	Columns	sleeps/during/day		A <input type="radio"/> <input type="radio"/> <input type="radio"/>
25	CorrectAnswer(s)	sleeps/during/day		B <input type="radio"/> <input type="radio"/> <input type="radio"/>
26	Point		0	C <input type="radio"/> <input type="radio"/> <input type="radio"/>
27	Feedback			
28	-qend-			
29	-end-of-part-			
30	QuizType	MultipleChoice-Radiobutton		
31	PartQuestion	3. Choose the correct one.		3. Choose the correct one.
32	PartQuestionHelp			Which of the following animals is a mamma? [ ]
33	Question	Which of the following animals is a mammal? [ ]		<input type="radio"/> A)Frog
34	QuestionHelp			<input type="radio"/> B)Turtle
35	Choice(s)	A)Frog/B)Turtle/C)Snake/D)Dolphin		<input type="radio"/> C)Snake
36	CorrectAnswer(s)	Dolphin		<input type="radio"/> D)Dolphin
37	Point		0	
38	Feedback			
39	-qend-			
40	-end-of-part-			
41	QuizType	Matching		
42	PartQuestion	4. Match the country with its capital.		4. Match the country with its capital.
43	PartQuestionHelp			France Japan Italy Russia
44	Question			Tokyo <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
45	QuestionHelp			Paris <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
46	Rows	Tokyo/Paris/Moscow/Rome		Moscow <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
47	Columns	Italy/Russia/Japan/France		Rome <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
48	CorrectAnswer(s)	Japan/France/Russia/Italy		
49	Point		0	
50	Feedback			
51	-qend-			
52	-end-of-part-			
53	QuizType	Paragraph		
54	PartQuestion	5. What is the foreign country you most want to visit? Explain why in 50 words or less.		5. What is the foreign country you most want to visit? Explain why in 50 words or less.
55	PartQuestionHelp			Your answer
56	Question			
57	QuestionHelp			
58	CorrectAnswer(s)			
59	Point		0	
60	Feedback			
61	-qend-			
62	-end-of-part-			

Figure A-5: Google Forms Quiz Generated from Google Sheets Data

## References

- Daulay S.H. & Adeli D. (2023). Using Scrabble as a Gamification to Enhance Students' Motivation and Vocabulary Acquisition: Teachers' Perspective. *METATHESIS: JOURNAL OF ENGLISH LANGUAGE LITERATURE AND TEACHING*, 7(1), 1-16. <https://doi.org/10.31002/metathesis.v7i1.15>
- Davis, B.G. (1999). QUIZZES, TESTS, AND EXAMS. <https://louisville.edu/graduate/gta/DesigningEffectiveQuizzesTestsExamsDavis.pdf>
- Holden Olivia L., Norris Meghan E., Kuhlmeier Valerie A. (2021). Academic Integrity in Online Assessment: A Research Review, *Frontiers in Education*, 6 <https://doi.org/10.3389/educ.2021.639814>
- Matsuo, K. & Matsuno, R (2023). Quiz maker with MSWord and Google Sheets for HyFlex classes. *Proceedings of the CIEC Spring Conference2023*, 8-13.
- Matsuo, K. & Tsutsumi, Y & Matsuno, R(2022). Development of quiz creation tool on MS Word, *Proceedings of Spring,2022*, pp.17-18(2021)
- Newton P.M. & Essex .I.(2023). How Common is Cheating in Online Exams and did it Increase During the COVID-19 Pandemic? *A Systematic Review Journal of Academic Ethics*, <https://doi.org/10.1007/s10805-023-09485-5>
- Segaran, V. C., & Hashim, H. (2022). 'More Online Quizzes, Please!' The Effectiveness of Online Quiz Tools in Enhancing the Learning of Grammar among ESL Learners. *International Journal of Academic Research in Business and Social Sciences*, 12(1), 1756-1770.
- Shaik.A.F et al. (2023). An Interactive Design Tool for Assessing Student understanding in Digital Environments. *SHS Web Conf.*, 156 (2023) 09004 <https://doi.org/10.1051/shsconf/202315609004>
- Waluyo B. & Tran H.M. (2023). IMPLEMENTING GAMIFIED VOCABULARY LEARNING IN ASYNCHRONOUS MODE. *TEFLIN Journal*, 34(1), 136-156. <https://doi.org/10.15639/teflinjournal.v34i1/136-156>
- Zulkifli .Z.S.I, Khalid, S. K. . (2023). Quiz Maker with Audit Log System for SK. *Pintas Puding. Applied Information Technology And Computer Science*, 4(2), 302-315. <https://publisher.uthm.edu.my/periodicals/index.php/aitcs/article/view/12309>

## Resources

- “About Learning Instruction Using ICT for Students Who Are Unable to Attend School Due to Unavoidable Circumstances” by MEXT (2022): [https://www.mext.go.jp/content/20220112-mxt\\_jogai02-000017631\\_000001.pdf](https://www.mext.go.jp/content/20220112-mxt_jogai02-000017631_000001.pdf)
- “COVID-19 response - hybrid learning, v2.” by UNESCO (2020): <https://unesdoc.unesco.org/ark:/48223/pf0000373767>

“Nearly a third of university courses still have hybrid teaching”. by Stanley (2023).  
<https://www.bbc.com/news/education-64130367>

“Never Stop Learning! The Future of Remote and Online Education” by MEXT (2021):  
[https://www.mext.go.jp/content/20210226-mxt\\_jogai02-000010043\\_003.pdf](https://www.mext.go.jp/content/20210226-mxt_jogai02-000010043_003.pdf)

“Student, Faculty, and Administrator Perspectives on Digital Learning in the Community College” by Digital Learning Pulse Survey (2021):  
<https://cengage.widen.net/view/pdf/aednheaokk/student-faculty-administrator-perspectives-on-digital-learning-community-college-2079650.pdf>

**Contact email:** [kanakom@kumamoto-nct.ac.jp](mailto:kanakom@kumamoto-nct.ac.jp)