

Computer-assisted Language Tests for the English Classroom: Blackboard® Tests and Google Forms

英語教育現場におけるコンピュータ支援テスト：Blackboard® テストツールとGoogleフォームの活用法

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ABSTRACT

Computer-assisted language testing (CALT) offers language teachers the opportunity to transform the work they do in the language classroom. Apart from saving teachers time to mark and manage the grading process, the immediate feedback provided to students can have a powerful impact on their learning. In a review of Center for English as a Lingua Franca (CELF) teachers' use of the Blackboard content management system (CMS), however, Milliner & Cote (2016) identified that very few CELF teachers are making use of CALT. This article attempts to make a case for CALT and introduces two formats that teachers can adopt: (1) the Blackboard® CMS, and (2) Google Forms and Google Sheets with some helpful add-on applications.

KEYWORDS: CALL, Blackboard®, Google Forms, Computer-assisted language testing, CALT

1. INTRODUCTION

In the case of contemporary internet-connected language classrooms, the use of computer-assisted language tests (CALT) represents an efficient and effective way for teachers to manage assessment, homework, and other classroom tasks. However, evaluations of computer technology use in English classrooms both in the Center for English as a Lingua Franca (Milliner & Cote, 2016) and at other universities in Japan (Bracher, 2013) suggest that CALT are seldom used. This article promotes the use of CALT and will introduce two formats for their design and delivery: (1) the online test function available in the Blackboard CMS, and (2) the free services offered by Google: Forms and Sheets.

2. COMPUTER-ASSISTED LANGUAGE TESTS (CALT)

The authors define CALT as any test delivered via the internet to a personal computer or mobile device (e.g., a smartphone or tablet). Apart from test management, CALT also mark students' responses and provide feedback on their test performances (e.g., overall test scores, test item analysis and comparisons with other class members). In the next section, the authors will introduce the benefits and drawbacks of CALT.

2.1 Benefits of CALT

The use of CALT provides teachers with a range of opportunities to improve their effectiveness in the classroom. Firstly, in light of the growing trend towards formative assessment, where teachers conduct larger numbers of short, diagnostic-type tests, Ćukušić, Garača, and Jadrić, (2013) argued that this type of assessment can be more efficiently managed using CALT. CALT also create reports in real-time which allows teachers to more objectively and efficiently scrutinize the effects of their teaching (Ćukušić et al., 2013; Roever, 2001). For example, a teacher can use analytical tools such as item analysis to establish detailed summaries of individual and class responses (Wang, 2014). Moreover, when teachers change their homework tasks to an online test format, they can promote greater student accountability (Bracher, 2013; Roever, 2001; Suvorov & Hegelheimer, 2014) as it is easy to discern whether or not students have completed their assignments.

Another argument for utilizing CALT is that they remove barriers between teachers and students (Ćukušić, Garača, & Jadrić, 2013). Teachers can quickly identify students who need remedial attention (Wang, 2014). Students who are having problems sometimes prove difficult to identify in a large class, or language classes specifically, because of the various language abilities. Teachers who establish an intervention online, can offer support outside of class and provide support in a context that is more confidential for students.

Lastly, one of the strongest arguments for using CALT is that students can receive immediate feedback on their learning progress (Ćukušić et al., 2013; Roever, 2001; Vanderkleij, Eggen, Timmers, & Veldkamp, 2011; Wang, 2014). In the case of a class without CALT, students completing a homework assignment or take-home test would be required to wait until the upcoming class to receive feedback from their teacher, thereby potentially dampening motivation to focus on errors or refine study techniques. Moreover, students can retake a test to confirm their learning progress. Along with individual feedback, students can see how their performance compares with peers by using item analysis or overall average data (Wang, 2014). This factor can also have a motivating impact upon students (Vanderkleij et al., 2011). When students learn to use the feedback data more effectively for their learning, students are learning to (a) become less dependent on their teachers, and (b) become more self-directed or autonomous (Ćukušić et al., 2013; Wang, 2014). Also, as Ćukušić et al. (2013) noted, learning how to evaluate and respond to feedback can be a powerful

step in preparing students to engage in adult life and work settings.

2.2 Concerns of CALT

As was noted in the introduction, Milliner and Cote (2016) evaluated CELF teachers' usage of the Blackboard CMS, and found that even though a majority of teachers were using the Blackboard system, the online test function was used in only 21 out of 76 classes. In a survey of English teachers' use of internet-based tools at other Japanese Universities, Bracher (2013) found that only 26 out of the 100 respondents reported using CALT in their classes. Brasher (2013) also observed a drop in usage between teachers who responded in 2012 and those who responded in 2008.

There are a number of reasons why some language teachers are opting not to use CALT. A lack of understanding of the tools and functionality is one reason. Next, busy teachers may be choosing not to invest lesson planning time on creating a CALT when the questions and answers are already provided in the textbook or teacher's guide. The investment of time to: (a) learn how to make an online test, and (b) program test templates may also appear to be too great, particularly when teachers face unstable work circumstances and a revolving list of class allocations each semester (i.e., the test materials could not be reused in a later course).

The preparedness of students to use this online learning tool effectively is another concern. Eklund and Sinclair (2000) admit that while e-Learning tools represent an opportunity for students to learn more actively, students are also more likely to become lost, fail to use the navigational tools effectively, skip important parts, and choose visually stimulating content over material that may be more informative. As tertiary-level Japanese students are reported to have limited PC knowledge (Bracher, 2013; Lockley & Blyth, 2014) and digital literacy (Cote & Milliner, 2016; Gobel & Kano, 2014), one has to question whether they will be able to use this learning tool to its full potential. Moreover, to mediate this issue, language teachers will have to dedicate time towards training students and structuring CALT in a way that students can slowly learn how to use this learning tool effectively.

A final concern surrounds test security, or students sharing answers with their peers (Suvorov & Hegelheimer, 2014). Although making tests available online and providing students with feedback relating to their test performance are significant advantages of this approach, test security can be compromised. Students may complete tests together or take screenshots of the test and feedback data and later share it with their classmates or friends. While some tests use computer-adaptive test features (e.g., randomized questions and rotating a large bank of test questions) and stricter management of test settings, this issue has led Roever (2001) as well as Suvorov and Hegelheimer (2014) to caution against using CALT for higher stakes language testing.

In the following sections, the authors will introduce two approaches for delivering CALT: (1) Using the Blackboard CMS, and (2) Google Forms and Google Sheets with add-on applications. It is worthwhile noting here that if teachers

are interested in using a system that provides automated feedback, developments in technology still limit CALT to managing receptive learning tasks (Suvorov & Hegelheimer, 2014). Some examples of how CALT can be used in the English classroom include: collecting reading or listening test responses, managing vocabulary quizzes, completing a TOEIC® test or other standardised test practices, completing questions from a textbook, running an online poll, or managing action research or diagnostic instruments. Note, however, that manual grading tools are available in CALT that allow the teacher to give feedback on productive tasks such as writing, but the feedback is not immediate for students.

3. BLACKBOARD CALT

Creating a CALT in the Blackboard CMS involves a four-step process:

3.1 Create a test template in Microsoft Excel

Although teachers are able to manually create a test within the Blackboard system, it is recommended that teachers create a test answer template in Microsoft Excel (and save the file in a rich text format- rtf). In the case of a textbook or a textbook generated test for example, a template can be copied and edited to reflect the answers for a later test or chapter. Although a computer can only mark multiple choice (MC) or true/false (T/F) questions reliably, teachers can program their template to include other question types and manually mark students' work inside the system. As seen in the example below (Figure 1), a line of short-response (SR) questions (10-13) and fill in the blank (FIB) questions (14-18) were included in this test template along with multiple choice and true/false questions.

	A1	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	TF	A-1	FALSE	TRUE												
2	TF	A-2	TRUE	FALSE												
3	TF	A-3	FALSE	TRUE												
4	TF	A-4	TRUE	FALSE												
5	MC	B-1	A	incorrect	B	correct	C	incorrect								
6	MC	B-2	A	incorrect	B	correct	C	incorrect								
7	MC	B-3	A	correct	B	incorrect	C	incorrect								
8	MC	B-4	A	correct	B	incorrect	C	incorrect								
9	MC	B-5	A	incorrect	B	incorrect	C	correct								
10	SR	C-1	1000g/m													
11	SR	C-2	The teacher found out that he cheated													
12	SR	C-3	f/ a failing grade													
13	SR	C-4	Vicente Moore / an English professor													
14	FIB	2A-1	inventor													
15	FIB	2A-2	online													
16	FIB	2A-3	port													
17	FIB	2A-4	Web site													
18	FIB	2A-5	salve													
19	FIB	2A-6	monitor													
20	MC	2B-1	A	incorrect	B	correct	C	incorrect	D	incorrect						
21	MC	2B-2	A	correct	B	incorrect	C	incorrect	D	incorrect						
22	MC	2B-3	A	incorrect	B	correct	C	incorrect	D	incorrect						
23	MC	2B-4	A	incorrect	B	incorrect	C	incorrect	D	correct						
24	MC	2B-5	A	incorrect	B	incorrect	C	correct	D	incorrect						
25	MC	2B-6	A	correct	B	incorrect	C	incorrect	D	incorrect						
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Figure 1. A test template created in Microsoft Excel.

3.2 Uploading the test template to Blackboard

Teachers then upload their Excel template to the Blackboard CMS. After uploading, teachers can consider a range of settings to manage the release of their tests (as seen in Figure 2). For example, teachers can: (1) set time-limits or due-dates for taking the test; (2) restrict the number of times students can repeat a test; (3) determine how much feedback students receive (e.g., display of correct answers or showing the class average); and (4) shape the way test questions are presented (e.g., random display of questions and time-limits for specific questions).

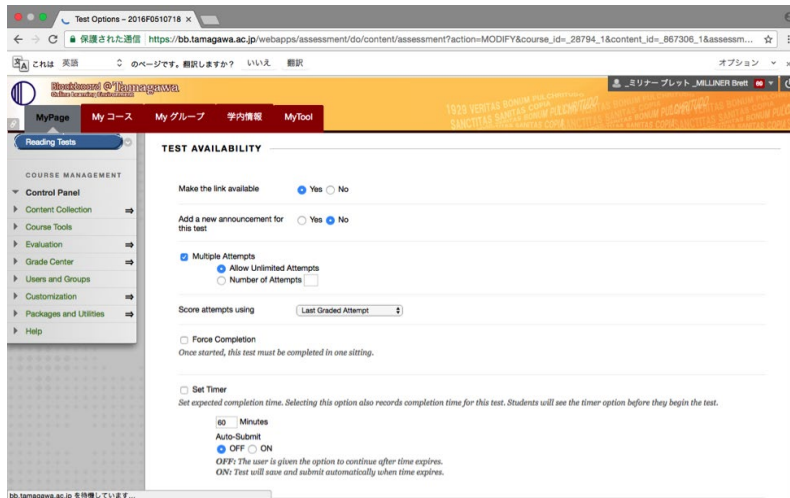


Figure 2. Blackboard test settings.

3.3 Release the test on Blackboard

Figure 3 below provides an example of how the test appears on a student's computer. After taking the test, students can: see their overall score, check results for individual questions and compare their results with the class average. One of the greatest advantages of the Blackboard test function is that teachers can funnel test scores to the Blackboard Grade Center. This saves time for the teacher, and students can immediately identify how a test score influences their overall grade for the class.

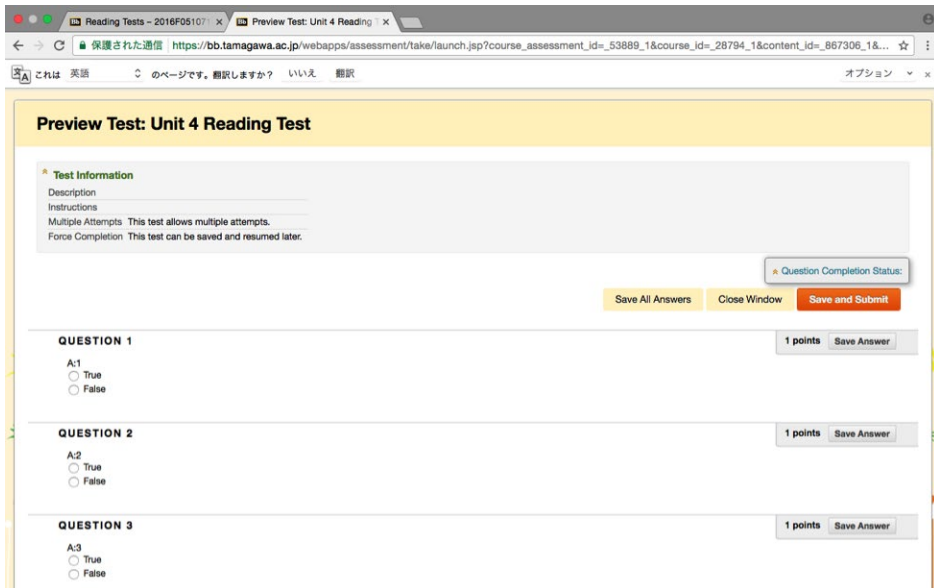


Figure 3. Preview of a test in a student's browser.

3.4 Analyse the test results

Blackboard generates a range of analytic data concerning test results. Figure 4 (below) illustrates the test statistics function (focusing on test-item analysis). This data informs teachers about weaknesses or areas where further instruction is required.

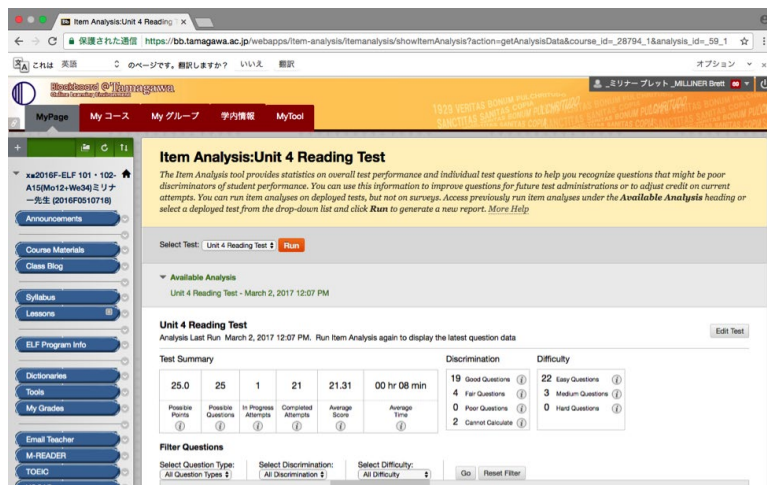


Figure 4. Example of test statistics.

4. GOOGLE FORMS TESTING

In order to create tests that provide learners with feedback, there are two Google applications that can be used in conjunction, Google Sheets and Google Forms. However, within Google Sheets two add-ons need to be enabled to simplify the

process, *formCreator* by John McGowen - used to build test templates and generate forms rapidly; and *Flubaroo* by Dave Abouav of edCode.org - a tool that can rapidly calculate and deliver test results to students by email.

The process to build a digital test with Google tools can be broken into two stages, with an additional two stages for enabling graded feedback and viewing analytics.

4.1 Build a template using the formCreator add-on in Google Sheets

Using the formCreator add-on in Google Sheets, teachers can generate a setup sheet (Figure 5) that is used as a template for generating a Google Forms test. Similar to Blackboard tests, these templates can be reused for textbooks with repeating formats, or the templates can be readily copied and edited to reflect unique contents. The formCreator spreadsheet provides teachers with a quick and easy way to edit contents for a Google Form. Working directly in Google Forms can be a slow process to navigate as contents can be spread across a lengthy webpage. The formCreator add-on allows users to view the contents of the form in a condensed spreadsheet that is navigated with ease before creating the Google Form with a single click.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Ingested Form Title	Form Published URL	Question Type	Question Title	Question Help Text	ImageURL with format: =Image("URL")	Required Question?	Begin Choices (Depending on question Type)					
2	Unit 9 Homework		TEXT	Name			YES						
3			TEXT	Student Number			YES						
4			TEXT	email			YES						
5			PAGE_BREA	Unit 9 Homework									
6			SECTION_HI	LANGUAGE CHECK (page 85)									
7			SECTION_HI	Section 2 - Grammar Check									
8			TEXT	(2) If I ___ a car...									
9			LIST	(2) I ___ you to the station.				would buy	would study	could go	would practice	would take	would drive
10			TEXT	(3) If I ___ a holiday...									
11			LIST	(3) I ___ to France.				would buy	would study	could go	would practice	would take	would drive
12			TEXT	(4) If I ___ my own house...									
13			LIST	(4) I ___ beautiful artwork for the walls.				would buy	would study	could go	would practice	would take	would drive
14			TEXT	(5) If I ___ thirty years younger...									
15			LIST	(5) I ___ to be a doctor.				would buy	would study	could go	would practice	would take	would drive
16			TEXT	(6) If I ___ more free time...									
17			LIST	(6) I ___ basketball everyday.				would buy	would study	could go	would practice	would take	would drive
18			TEXT	(7) If you ___ so busy...									
19			LIST	(7) We ___ on longer holidays.				would buy	would study	could go	would practice	would take	would drive
20			TEXT	(8) If you ___ richer...									
21			LIST	(8) I ___ work.				would buy	would study	could go	would practice	would take	would drive
22			SECTION_HI	Section 3 - Vocabulary Check									
23			LIST	2)				engaged	exercise	wedding	recommend	decision	complain
24			LIST	3)				engaged	exercise	wedding	recommend	decision	complain

Figure 5. A template using formCreator in Google Sheets.

4.2 Finalize the Google Forms test

Once the Google Forms test is generated, teachers should link the response destination to a Google Sheets document. This will generate an additional tab in your Google Sheets document that will contain responses from the form in a spreadsheet.

Generally, if the template was set up correctly in the formCreator spreadsheet, the Google Forms test should be ready to distribute using a weblink. The form can be edited for style and color. In addition, teachers can add pictures and enable data validation for specific fields to set character limits or to require particular types of text such as email addresses.

In a Google Form, teachers can generate a wide variety of question types,

including multiple choice questions, drop-down lists (Figure 6), checkboxes for multiple selections, scales, grids, short texts, and paragraph texts. However, the grading functions directly in the Google Forms site are currently limited to closed-response questions. Alternatively, teachers can perform more grading functions with the Flubaroo add-on in Google Sheets.

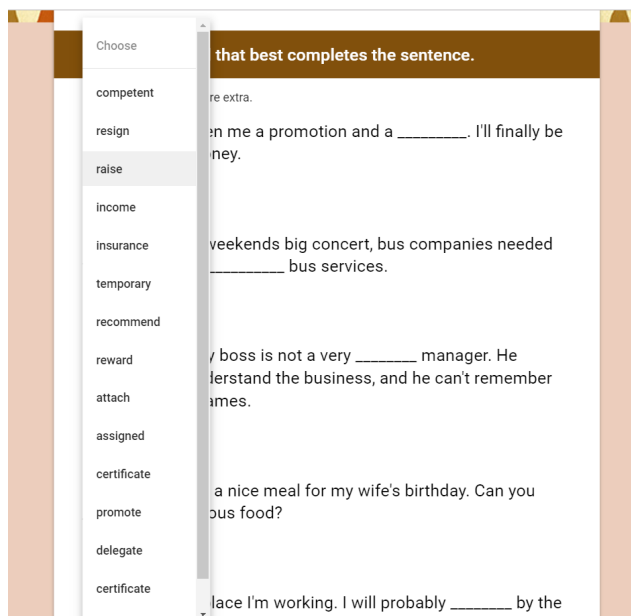


Figure 6. Example of a Google Form's test with drop-down choices.

4.3 Using Flubaroo Add-on

4.3.1 Grading and Feedback with Flubaroo

In order to create an answer key for Flubaroo, the teacher must complete the test one time with correct answers. Next, teachers should return to the linked Google Sheets document to enable Flubaroo for grading.

There are a number of options at this point, but two are particularly useful for grading tests. The first is to grade all tests at one time and then release all test results at the same time. Alternatively, Flubaroo can be automated to release results immediately upon the completion of individual tests.

4.3.2 Grading and sending independently with Flubaroo

At the end of a test, the teacher can choose to grade assignment using the Flubaroo add-on. Then, teachers must set the weight of each question and decide how they would like Flubaroo to grade each item (Figure 7). As a default, Flubaroo tries to detect identifying fields such as name, student number, and email, and then it assigns every other item for normal grading, which automatically grades answers correct if the contents are the same as the answer key. This option works well for closed-

response or spelling tests. In addition, teachers can also choose to skip questions or *grade by hand*. Next, teachers will be prompted to select the line with the answer key and then activate the grading. At this point, Flubaroo produces an additional tab in the Google Sheet with graded results (Figure 8).

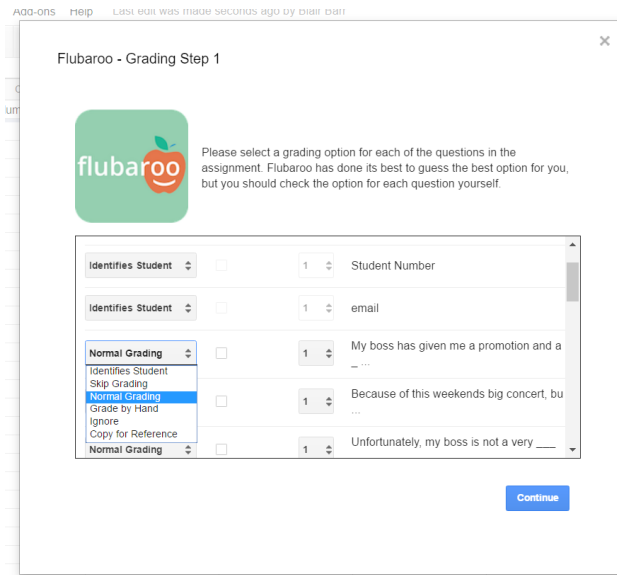


Figure 7. Grading settings in Flubaroo.

Because of this weekends big concert, bu ...																
				TO ENSURE FLUBAROO FUNCTIONS PROPERLY, DO NOT DELETE ROWS OR COLUMNS IN THIS SHEET												
2	Summary:															
3	Points Possible	20														
4	Average Points	13.07														
5	Counted Submissions	14														
6	Number of Low Scoring Questions	7														
8	Submission Time	Name	Student Number	email	Total Points	Percent	Times Submitted	Emailed Grade?	My boss has given me a promotion and a _ ...	Because of this weekends big concert, bu ...	Unfortunately, my boss is not a very ____ ...	I want to prepare a nice meal for my wif ...				
9	11/1/2016 11:29:1 M		1638	k	19	95.00%	1 x			1	1	1				
10	11/1/2016 11:30: N		1638	n	19	95.00%	1 x			1	1	1				
11	11/1/2016 11:30: M		1638	s	18	90.00%	1 x			1	1	1				
12	11/1/2016 11:30: M		1638	k	18	90.00%	1 x			1	1	1				
13	11/1/2016 11:31: M		1638	k	7	35.00%	1 x			1	1	1				
14	11/1/2016 11:31: C		1638	y	19	95.00%	1 x			1	1	1				
15	11/1/2016 11:31: T		1638	k	14	70.00%	1 x			1	0	0				
16	11/1/2016 11:33: K		1638	k	15	75.00%	1 x			1	1	1				
17	11/1/2016 11:33: M		1638	y	13	65.00%	1 x			1	0	1				

Figure 8. Summary of test results with Flubaroo.

The Flubaroo grades output not only contains individual scores and overall averages, but it also highlights low-scoring questions and low-scoring students (Figure 8). Note, however, that questions that are graded by hand will contain blank fields and incomplete grades at this point. Teachers, however, can insert additional columns next to the student output, and then assign point values for individual answers (Figure 9). These scores can be copied over to the Flubaroo grades sheet for the appropriate questions.

	AM	AN	AO	AP	
1	Where did you go on your score		What did you do on that v score		Y
	I have been to Oki Nawa.		3 I have been to Fukushima		0 Y
	I have ever been to Hawa		2 I went sightseeing.		3 Y
	The best vacation is USA		2 I went to Disney land.		3 Y
	"Shodoshima" is the best		2 I went to "olive park".The		3 Y
	My best vacation is Kyoto Because, I love Kyoto.	2			0 Y
	I went to Osaka. I ate mar		3 I went to Hokkaido for 4da		0 Y
	I went on my best vacatic		2 I went to Okinawa.		0 Y
s	My best vacation ever is		2 I visited aquarium.		2 Y
	I think best vacation is Ky Because kinkakuzi is ven		2 I went to Kamakura. I went to temple on there.		1 Y
	Thailand		1 Swimed in the sea.		2 Y
	I went on Okinawa.		2 I swam beautiful sea.		2 Y
	I have been to Kyoto. It is		3 I eat delicious food.		2 Y
	I went to best vacation in		2 I climbed a mountain.		3 Y
	My best vacation is Hiro		2 I went to Miyajima and G		3 Y

Figure 9. Text responses in Google sheets with manual grading.

Once scores have been tabulated, Flubaroo can then be used to share results with students via email (Figure 10). The email output will always include a score, however, teachers can optionally include feedback that highlights students' incorrect answers, displays hand-graded scores, or provides students with 'correct answers' (or sample answers) from the answer key. One concern with using Flubaroo is that security settings connected to students' cellphone mailboxes may prevent them from receiving email reports. This problem can be overcome if students supply internet-based email addresses (e.g., Gmail or Hotmail).

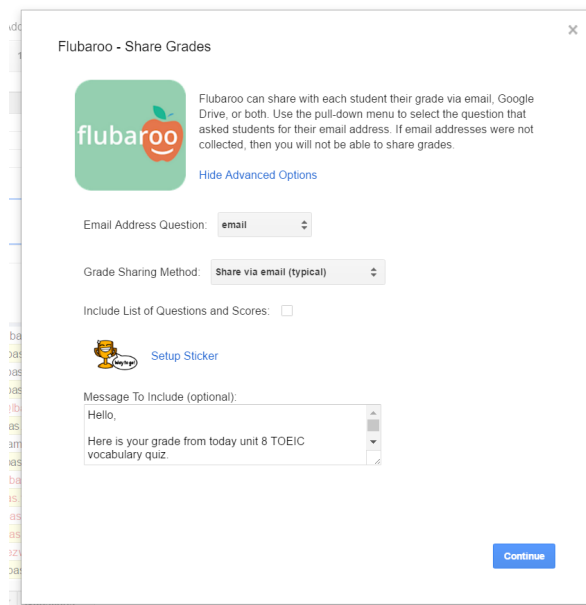


Figure 10. Sharing of grades through email with Flubaroo.

4.3.3 Automated grading and emailing of results

For homework assignments, teachers may also choose to provide learners with instant feedback. However, this option is only accurate with closed-response or spelling tests. The setup is nearly identical to that used in grading after a test, but teachers should select from the advanced options to enable autograding. At this point, teachers select the grading scales, choose the answer key, and finalize the mail settings. Once this is completed, students can receive immediate feedback in their email upon the completion of the test, enabling learners to consider errors while maintaining engagement.

5. Using Flubaroo and Google Forms as analytical tools

As with Flubaroo in the previous section, the output for the scores also includes a breakdown of each question so teachers can see what percentage of the students guessed each item correctly (Figure 8). This is a very helpful tool for guiding teachers to identifying reviewable contents. However, there are a couple of weaknesses with this display. For one, the Flubaroo output does not readily display which distractors led to errors. In addition, the output can embarrass learners with its clearly highlighted low scorers.

As a solution to the two problems above, we return to Google Forms to view the summary of responses without isolating individually identifiable responses. For closed-response questions, the answers are displayed in a clearly labeled pie chart (Figure 11). These can be shared with the class. Then, learners can discuss the correct answers while also considering why specific errors occurred. For text-based answers, the answers appear in a list that can be shared with the class (Figure 12). In this case, learners could be asked to look through the list for errors, and then be encouraged to correct the errors before reporting back to the class. From experience, learners seem to engage with these activities because the feedback is quick, and the data is based on real contents generated by the learners themselves.

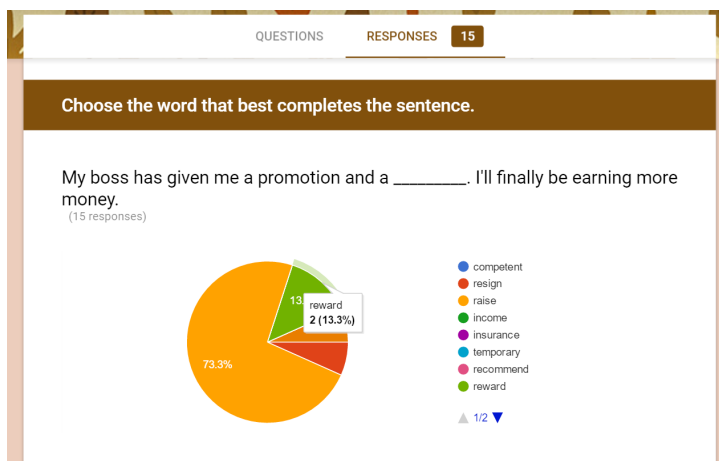


Figure 11. Summary of test results displayed in Google Forms.

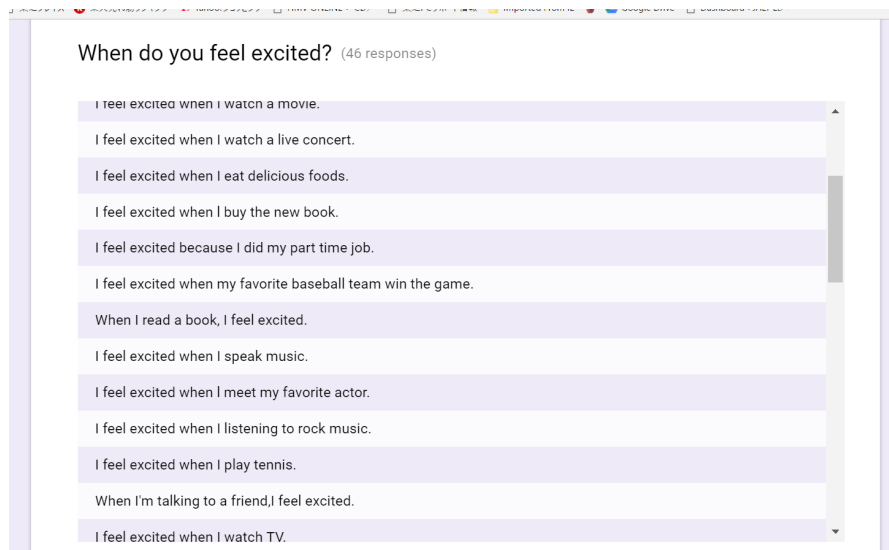


Figure 12. Summary of text input in Google Forms.

5. CONCLUSION

The use of CALT represents an opportunity for teachers to more efficiently and effectively manage homework and assessment items in their English classes. The level of feedback and the efficiency of delivery to students can be a catalyst for students exercising greater ownership and reflection on their learning. This paper introduced two formats for managing online testing: (1) the test function available in Blackboard, and (2) the free service, Google Forms and related add-ons. The authors hope that this paper will embolden more teachers to try out these tools for themselves. The authors are also looking forward to investigating student perceptions of CALT and measuring students' use of metacognitive strategies after receiving instant test feedback.

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