

Google Sheets: Suggestions for Automated Quizzes and Record-Keeping

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This paper covers several basic suggestions of how teachers may use Google Sheets to automate record- and grade-collection, calculation, and analysis, which may be useful to language instructors who seek to improve the efficiency of this routine, bureaucratic aspect of their courses. The suggestions centre on the use of Google Forms to provide smartphone-accessible quizzes, how to automatically draw the results from these quizzes into *catcher* sheets, and methods to organise the resulting data for student feedback and trend analysis. These suggestions may be nominally applicable to most teaching contexts, though may not be compatible with LMSs which have inbuilt grade-collection systems, such as Google Classroom. Despite this, and the relatively technical nature of some of the Google Sheet formulas that these suggestions require, we hope that they may provide food for thought for teachers with an eye for analysis and back-end improvement.

この論文では、講師がグーグルシートを使用して記録と成績の収集、計算、分析を自動化する方法についていくつかの基本的な提案を取り上げています。これは、コースのこのルーチン的な側面の効率を改善したいと考えている語学講師にとって役立つ可能性があります。提案の中心は、携帯でもできるクイズを提供するためにグーグルフォームを使用すること、これらのクイズの結果をシートに自動的に取り込む方法、および学生のフィードバックと傾向分析のためにデータを整理する方法である。これらの提案は、名目上はほとんどの教育環境に適用できるかもしれないが、グーグルクラスルームなどの成績収集システムが組み込まれているLMSと互換性がない可能性がある。それにもかかわらず、またこれらの提案に必要なシートの数式の一部が比較的技術的であるにもかかわらず、バックエンドの改善に目を向けている教師にとって、検討する価値があると思われる。

As technology in wider society continues to advance and expand its capabilities, more often educators may feel under pressure to incorporate recent services and software into their classrooms. While it would of course not be wise to reject all available, normalised technologies out of hand, neither would it be wise to strive to include them in an educational context without due and informed consideration. This point itself is not particularly revolutionary; experts and practitioners in fields throughout history have urged caution with the onboarding of novel technologies with the potential to cause large-scale shifts in the typical presage-process-product paradigm (Bax, 2011; Chambers & Bax, 2006). However, as it is important to ensure that one does not equate apples to oranges, each introduction of new technology should be considered with regards to how its technological aspects (Kozma, 1991) interact with both educational theory (Raine, 2023) and extant systems (Giovanni et al., 2024) within the classroom and beyond.

Though many institutions currently utilise a wide variety of Learning Management Systems (LMS), some are all-inclusive (such as Google Classroom) and others—such as institutional-internal LMSs—are not quite so advanced. It is often the case (as it is for the authors) that a single course requires the collecting of data from a wide range of LMSs and other such sources. This commonly leads to instructors employing a spreadsheet (e.g., Google Sheets or Microsoft Excel) to keep track of and calculate these multiple scores. While this is not necessarily a negative thing—indeed, one might argue that more time and effort spent on such tasks would result in both a higher awareness of the data and in fewer mistakes—it certainly could stand for some improvement and optimisation by using technology and techniques already normalised and available for most knowledge-society professionals.

In this paper, we will briefly outline the rationale for creating an automated Google Sheet, hosted on Google Drive and making use of Google Form quizzes, with an aim on improving homework/activity accessibility for students and data-collection, management efficiency, and analysis for instructors. Following this, we will explain several formulas and methods which may be used to automatically feed data from these Google Form

quizzes into a master Dashboard Google Sheet, and to analyse ranks, trends, and points for concern in the collected data. While the authors are aware that this information is perhaps better experienced and learned about via visual presentations and hands-on examples (provided in Appendix A), by introducing relevant concepts, keywords, and steps here we hope to provide practical implications for interested instructors with an eye on efficiency.

Background and Rationale

Students: Accessibility and Completion-Rates

From a student perspective, online homework is accessible due to use of familiar technologies such as smartphones, QR codes, and Google Form quizzes. These are widely used in society, requiring little training due to high cognitive familiarity (Bax, 2011; Chambers & Bax, 2006; Raine, 2023). In fact, in Japan, 97% of people aged 12–40 use smartphones, while non-work-related computer use is declining (Nippon.com, 2022). QR codes, commonly scanned for payments or information access, and Google Form quizzes, a familiar assessment tool in Japanese education (Aleles, 2009; Barry, 2004; Miura, 2010), leverage this familiarity for effective homework deployment.

Additionally, Japanese students face significant time pressure from school, club activities, cram schools (Hirst, 2013), part-time jobs (Lees, 2015), and socializing (Warrington, 2006). This often leads to rushed homework completion, often just prior to the deadline (Landsberry, 2018). Smartphone-accessible online tasks, completable during commutes, could theoretically improve completion rates, engagement, and grades.

Instructors: Efficiency, Feedback, and Analysis

For instructors, the development and deployment of Google Form quizzes provides opportunities for improved efficiency, as well as several avenues for provision of feedback to students based on collection and analysis of course-relevant data. First, instructors dedicate considerable time weekly to preparing materials, grading, and tracking student progress. Technologies such as Google Forms' auto-grade quizzes, linked to Google Sheets via `=IMPORTRANGE`, `=VLOOKUP`, and `=RANK` formulas, can automate data collation, generate ReportCards for student feedback, and facilitate data analysis, freeing time for reflection and course enhancement. Second, Google Forms quizzes offer immediate feedback on answers, including text, links, or videos that are accessible via smartphones. Automated data collection into a Dashboard enables instructors to create periodic ReportCards based on grades and attendance, supporting progress

updates for the cohort or targeted students to address absence or low performance. Third, automated data collection streamlines during- and post-course analysis, allowing instructors to identify trends, compare cohorts, and enhance teaching. The Google Forms and Google Sheets system thus helps improve routine tasks, student feedback, and research opportunities.

System: Why Google?

It is also important to specify why, for this paper (and indeed the project it is based on), the choice of Google Forms and Google Sheets was made over other alternatives, such as Microsoft Forms. Indeed, while both Google and Microsoft have a suite of tools for creating quizzes, each with distinct strengths across cost, accessibility, functionality, output to spreadsheets, and educational use, upon the following analysis Google's software was chosen. First, Google Forms comes free with a Google account (also free), while Microsoft Forms is free for personal use but requires a Microsoft 365 subscription, making Google Forms more cost-effective for educators. Second, functionally, Google Forms supports diverse question types (e.g., file upload, linear scale) and robust branching, whereas Microsoft Forms has fewer question types and limited branching, though it offers visually appealing themes. For spreadsheet output, Google Forms integrates seamlessly with Google Sheets for real-time data analysis, while Microsoft Forms requires manual export to a spreadsheet, which supports more advanced analytics but is less intuitive. In standalone educational contexts, Google Forms offers free access and extensive quiz templates, while Microsoft Forms suits Microsoft 365-integrated schools with auto-grading and Teams compatibility but has fewer templates. Overall, Google Forms excels for cost and flexibility reasons, while Microsoft Forms is ideal for Microsoft-centric environments and more advanced analytics (Stackby, 2025). As the target educational contexts—i.e., the universities at which the authors work—both had university-determined LMSs and no Microsoft-based software environment, the Google suite of software and cloud-based Form- and Sheet-hosting system was selected.

Google Forms

Making Quizzes

To create a potentially effective series of homework activities, perhaps to review prior material, to practice simple receptive and productive skills, or to pre-load important information for the next lesson, with a few adjustments to the relevant settings instructors can employ Google Forms as a quiz platform. To begin with, create new

folders in your Google Drive to hold the quizzes that you will make (the authors generally use Google Forms for “Homework,” “Vocabulary Tests,” and “Review/Checklists,” and therefore have separate folders named accordingly), and then make a new Google Form. After opening the form, convert it into a quiz through the settings menu (usually at the top in the centre), and ensure that “collect email addresses” option remains disabled; this allows students to access and complete the quizzes without needing to log in to an institutional email account, thus improving ease of access. Following this, create an identification section; this should be something discrete and as foolproof as possible; the authors would recommend either using a reliably unique section of students’ Identification Numbers, or perhaps a short one-word nickname, so as to link the respondents’ result to a specific student and help mitigate against spelling/linking errors which might arise with Romanised versions of students’ full names. After this, create a new section in the quiz and add your questions. Depending on your educational context, it might be worth considering adding dual-language support (i.e., providing a Japanese translation of the question after the initial English) to decrease the potential for confusion, and be sure to create questions with a clear, closed answer (as opposed to open-ended questions), such as multiple choice or short answer questions (where the answer is just one word or a short chunk of grammar). Next, set the correct answers within each question’s answer key, and assign points for each question. Once again, enter the settings menu, and ensure that grades are released immediately upon completion. Preview the quiz to verify functionality, then share the link with students either via a link in your institutional LMS, or perhaps via a QR code (though you will need to create each QR code yourself, this enables instructors to better manage the time and place where certain quizzes, such as reviews or tests, are accessed). Finally, repeat the process for the required number of quizzes by clicking “Make a Copy” in the menu of the Google Form in Google Drive, checking the settings remain correct, and then overwriting the questions as needed.

Adding Feedback

As explained previously, Google Form quizzes can be transformed into useful educational tools via their ability to incorporate comprehensive feedback, which students are able to see immediately after they complete said quiz. To do this, after setting up a quiz (as outlined above), instructors can add feedback into each question by clicking on the “Answer Key” sections. For correct answers, instructors may simply provide text-based encouragement or further model answers. For incorrect responses, Google Forms is able to embed YouTube videos, offering a chance for instructors to create and

link their own explanation videos, as well as providing URL links to supplementary online materials (perhaps hosted on the instructor’s Google Drive). Thus, using Google Form quizzes offers a simple and accessible method by which to assess students’ comprehension of the target material, and facilitates immediate learning reinforcement, thereby enhancing the educational and engagement value of the quiz.

Automating Result-Collection into Google Sheets with Formulas

Simply put, specified sections of one Google Sheet can be linked to another Google Sheet via use of the =IMPORTRANGE formula. This is a very useful technological function for data managers, which, often, instructors are required to be, as it allows the results, or outputs, from a Google Form’s data-catching Google Sheet to be automatically copied into other Google Sheets, thus removing the need for frequent rounds of information searching, checking, and copy-and-pasting. To link sections of different Google Sheets together, this function requires the middle section of the URL of the source Google Sheet from which you wish to import data. Then, in your destination Google Sheet, enter the function with the syntax:

=IMPORTRANGE(spreadsheet_url, range_string)

Here, “spreadsheet_url” is the middle section of the URL of your source sheet (see Figure 1) and “range_string” specifies the cells to be copied (e.g., “Sheet1!A1:B10”). When linking a Google Sheet for the first time, upon completing the formula in the required cell of the *receiving* Google Sheet, you will see a “#REF!” error that clears once you click the “Allow Access” button to grant access to the ‘sending’ Google Sheet and complete the link. After access has been granted, the targeted data will take a few seconds to copy into the receiving Google Sheet.

The authors use this method sequentially to link all the semester’s “Homework”, “Vocabulary Test”, and “Review/Checklist” tasks into separate tabs of specific catcher Google Sheets, which use a database list of student identification tags/numbers and the =VLOOKUP formula to gather all of the results onto a master tab. Following this, the master tab of each catcher Google Sheet is, in turn, linked by the =IMPORTRANGE formula to specified tabs in a master Dashboard Google Sheet, in which the data can be used and analysed as necessary. A simple visual representation of these links is shown in Figure 2.

Figure 1
Example of where to locate the URL/ID required for =IMPORTRANGE formulas

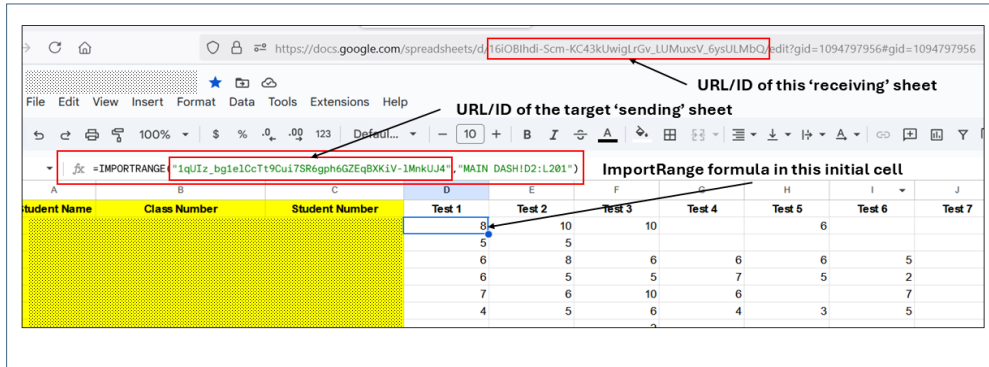
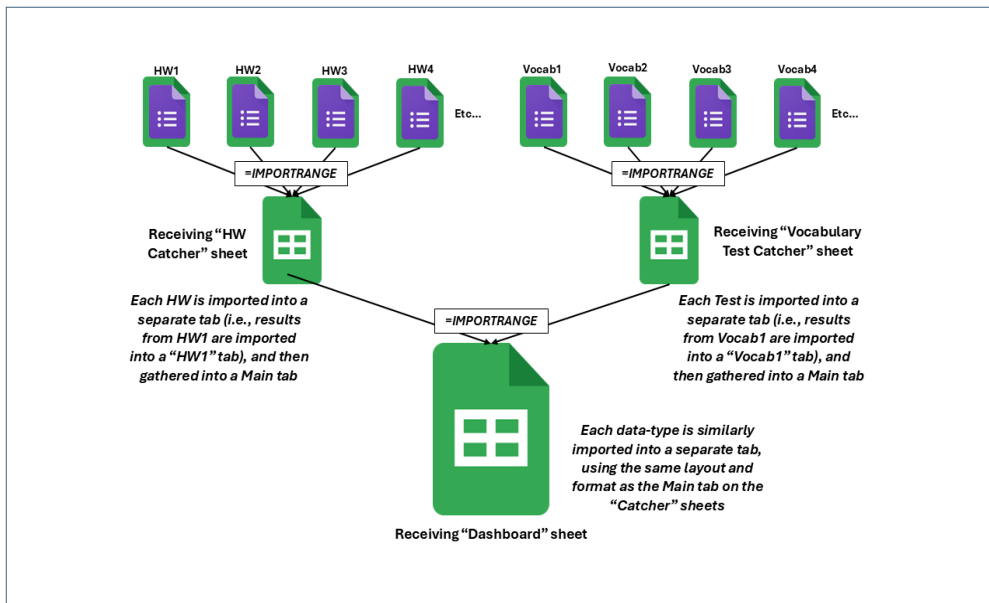


Figure 2
Example of the =IMPORTRANGE links between quizzes, catchers, and Dashboard



All this data transfer is automated through the =IMPORTRANGE formula and thus can save instructors a modest amount of time once the Google Sheets in the series are set up. However, one should be careful to consider performance, as importing large datasets—or indeed, data from many Google Sheets—can potentially slow down the transfer speeds. Data transfers or updates occur when the receiving Google Sheet is opened or recalculated. This method allows for seamless data integration and management across multiple Google Sheets, saving instructors time and enhancing the coherence of information within the system.

Google Sheets

Making a Dashboard

As previously introduced, the authors currently use a Google Sheet Dashboard to collect all the results automatically from the Google Form quizzes employed throughout their respective courses, and—along with copy-and-pasted data from other required LMSs—rely on this dashboard as a one-stop-shop for all student progress data relevant to the course. A Dashboard could be as simple or as complicated as an individual instructor wishes or needs it to be, though at its core, it is necessary to use the same database list of student identification tags present in the respective catcher Google Sheets, which are in turn used by students completing the Google Form quizzes, to function smoothly. The authors suggest a database list comprised of Cell Number (A2, A3, A4 and so on), Class Number (e.g., IEC44), Student Name (as written in the enrolment lists), and Identification Tag (as previously suggested, either the whole or a unique part of the students' identification number, a nickname, or some other unique code), which is situated in the upper left corner of the first tab—or *Main Dash*—of the Dashboard Google Sheet, ranging from cell A2 to D4, and descending as the number of students necessitates. Cells from D5 rightward should be constructed as necessary to contain the required grades and scores. In the second author's cases, these generally would include "Attendance," "Homework," "Vocabulary Tests," "Reviews/Checklist" (which are automatically received via the aforementioned =IMPORTRANGE flow), as well as "Listening Units" and "Writing Assignments" in the first author's case which, respectively, require copy-and-pasting from an institutional LMS and direct input. The data for these columns should be drawn from separate tabs and named accordingly, using the database list and =VLOOKUP formula. These tabs, once satisfactorily constructed to mimic the same layout as their respective catcher Google Sheets or the same format as their sending LMS data, will either receive data via =IMPORTRANGE or have data copy-and-pasted into them, which in turn will be drawn onto the Main Dash with the =VLOOKUP

formula. Once all the required course data has been gathered onto the Main Dash tab, which enables instructors to track each students' progress—or, indeed, lack thereof—on just one page, it may be then manipulated, analysed, and used in simple formula-based grade amalgamators as usual, and all with far fewer logins, clicks, and cross-referencing required.

Conditional Formatting and Ranks

Adding a further level of visual accessibility to the Main Dash can be achieved with the use of conditional formatting and the =RANK formula. First, conditional formatting—an option within the “Format” tab of Google Sheets—can be used to add a colour scale to the grade, score, and attendance data discussed above. These colour scales can be selected automatically, though the authors suggest that instructors should configure the rules for the colours based on the necessary rules and cut-off points for their respective courses; as an example, if students need to complete 8 out of 13 “Listening Units” in order to be eligible to pass the course, any number under 7 could be set to red, while 8 to 10 could be green (i.e., acceptable pass), and 11–13 could be blue (i.e., exceptional pass). This visual aid makes it easier to spot high and low performers at a glance, saving instructors time and helping them to, in turn, help students to pass their courses. Second, the =RANK formula can prove useful for instructors who either like to gamify their courses—perhaps by offering motivational prizes or publishing weekly leaderboards—or those who are required to take into account bell-curve grading upon the conclusion of the semester. Based on the scores, grades, and attendance data drawn onto the Main Dash, the authors recommend that this data be placed to the columns rightward again and be range-specified for each class. Conditional formatting can of course be used here, and a further rank-of-ranks can be automatically created by first using a =SUM formula in one column, followed by another =RANK column to collate performance across the graded metrics. While, admittedly, not quite as critical as the previously discussed record-keeping techniques, there are certainly cases where such automated analysis may be useful.

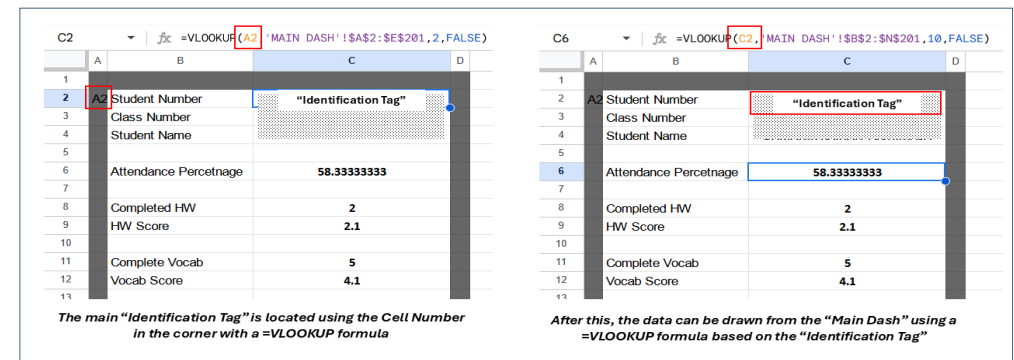
Making ReportCards

Dashboard Google Sheets can also be used to create automatically populated *ReportCards*, drawing on the database list to identify individual students and the relevant grade and attendance data gathered on the Main Dash, as previously explained. Within the Dashboard Google Sheet, add a new tab (named “ReportCard 1”). On this tab, create data headings for the scores and figures that you wish to show your students;

for example, Identification Tag, Name, Class Number, Cumulative Homework Score, Cumulative Vocabulary Test Score, and Attendance Percentage, as necessary. Make sure to add the Cell Number; this will likely be A2 for ReportCard 1, pointing to the first student on your Main Dash database list, and A3 for ReportCard 2, and so on. Once these steps are complete, the data that you wish to auto-populate each ReportCard can be drawn from the Main Dash by using a two-step =VLOOKUP formula. First, the Identification Tag should be linked to the correct student by using a =VLOOKUP formula based off the Cell Number on the ReportCard; after this is correctly targeted, the Identification Tag can then be used to draw the student's data through =VLOOKUP formulas. A somewhat-censored prototype version of a ReportCard, with its formulas highlighted, is shown here (Figure 3):

Figure 3

Example of the two-step =VLOOKUP formula used for ReportCards



This does require a modest amount of time and effort to set up correctly, though once it is done, the formulas do not need to be edited as they will automatically pull data from the Main Dash. Furthermore, once the first ReportCard (i.e., ReportCard 1) has been created to your satisfaction, all the remaining cards required for your student list can simply be copied, with only the name of the tab (i.e., ReportCard 2 and so on) and Cell Number on each card being incremental increased to point to the second, third, fourth, fifth, etc., students on the Main Dash tab.

Discussion and Conclusion

Discussion

Obviously, the specifics of different educational contexts would engender a wide range of variety as to the number, type, and data collected from the requisite ‘inputs,’ though this system, once set up, essentially permits instructors to spend less time on grading (for certain tasks) and bureaucratic clicking (i.e., transferring grades from paper to computer), focusing either on issues at any point in the larger picture, or giving frequent updates to students regarding their attainment status.

Regarding issues, for example, three weeks into a course the instructor notices several students with a different colour (e.g., dark orange, brought about by the combination of the =RANK formula and conditional formatting) in their homework-completion column on the Main Dash of their Dashboard Google Sheet. A quick cross-check shows that one student has yet to attend the class; therefore, it is simple to diagnose that they do not know about and thus did not do the homework. The instructor may then make a note to get the student up to speed when they eventually attend the class. The second student, however, has been present for all the classes, and has a good score on their in-class tests and activities. By tracking back along the =IMPORTRANGE chain of Google Sheets, the instructor may find that the student was simply not doing the homework or inputting their Identification Number incorrectly on the homework Google Form. For the former, a quick chat could raise their awareness of the issue, and for the latter, the instructor could simply edit the Identification Number in the response sheets for the homework tasks, thus permitting the scores to flow through the system, and let the student know to take care with their Identification Number in the future.

Furthermore, the authors deploy ReportCards whenever students ask to see their grades (to protect the privacy of their classmates), and to provide personal periodic progress reports throughout the course (i.e., every three weeks). We have found this method useful for raising awareness of how well each student is doing with the course homework, tests, and tasks; common little lapses in completion can be brushed over with encouragement; good attainment can be positively reinforced and praised; worry about some large misses, which may tempt students to drop out of the course, may be assuaged. Showing each student their own ReportCard demonstrates that their grades are their own responsibility and also provides time for questions and queries if necessary. This degree of visibility, transparency, and feedback helps to reduce the mystery of the grade/credit ‘black box:’ students know, you know, and they know that you know. In other words, everybody knows.

Conclusion

Though there is certainly quite a difficult curve for mastering some of these more advanced aspects of Google Sheets, just as there are likely situations and cases where instructors may find these techniques useful or cumbersome, the record-keeping methods outlined and explained above may prove both food for thought for some and a path towards greater data-management efficiency for others. For us, though these methods proved to be time-saving and reliable enough for us to consider introducing them to fellow instructors, we are acutely aware that prose is about as far from the best medium in which to introduce them. As with many process-based tasks, we would recommend that interested instructors—after reading through this article and the resources provided (Appendix A)—take to the internet and search for videos and other visual guides tailored to their level of expertise to learn and use these methods as they see fit. There is, of course, infinite diversity in nigh infinite combinations, and we hope that these methods may prove to be a mixture of eye-opening, inspiring, or just plain useful to you in your own educational context.

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Appendix A

Resources

Here are links to resources which may provide more insight into the creation process, for the system itself, as well as the standalone parts:

Presentation/Slides PDF

https://drive.google.com/file/d/112_BFhWezn2tg72ZcyQPoEFXfSif1VmC/view?usp=drive_link

Example Dashboard Google Sheet

https://docs.google.com/spreadsheets/d/12hohAJkBSTL-y6O9_uvVegdgunV3yFOn53hpry9ukWg/edit?usp=drive_link