Google Workspace for Education: A Study and Case Usage of Google Apps in the Classroom

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INTRODUCTION

In the COVID-19 era, teachers and educators around the globe are trying their best to manage the teaching difficulties associated with being online. The transition to online learning, screen fatigue, a lack of physical interaction, inadequate resources, and unfamiliarity with teaching in a new environment have all contributed to the challenges associated with information & communication technologies (ICT). However, the prompt innovation of various applications, systems, and online teaching methodologies improved the academic experience. Indeed, a teacher's knowledge and confidence in using online tools may be a more critical factor in adopting effective online tools (Wingo et al., 2017). As the world returns to a state of normalcy following the COVID-19 pandemic, discussions about how to conduct effective classes are being investigated. Given the new or integrated tools gained from online teaching, these classes may differ from those conducted in the past.

One component of a learning tool that was integrated and developed rapidly was the usage of learning management systems (LMS). An efficient LMS provides features that support online or offline learning activities, such as supplementary textbook activities, assignment submissions, on-demand discussions and forums, and interactive elements. While many LMS systems are being utilized in all facets of academic education, one of the more popular applications used in many institutions is Google Workspace for Education, formerly Google G-Suite for Education (De Vynck and Bergen, 2020). The acceptance of Google Workspace for Education as an effective LMS system can be attributed to its nearly free cost to educational institutions, its extensive knowledge base for users and administrators, and the simplicity of deploying it into classrooms with very little preparation and installation. At Keiwa College, Google Workspace for Education was fully adopted into the classroom in 2019, and it is still used as the primary LMS system today. This paper will look at an in-depth analysis and case studies of some of the main Google applications used

in the classrooms, the challenges of using Google Workspace for Education versus other comparable LMS systems, and the outlook of LMS in academia.

OVERVIEW OF GOOGLE WORKSPACE FOR EDUCATION

With the continuous development and improvement of online education apps, there has been an exponential rise in their adoption in the classroom (Pritchett & Wohleb, E, 2013). In particular, when an app is designed for academic use, programmers and designers try their best to bridge the connection between education and technology with the intention to enhance learning, teaching, researching further, or administrating at institutions. From this, Google Apps for Education was first formed.

Started in 2006, Google Apps for Education is a suite of cloud-based applications, which means they can be accessed online through the internet; this enables users to store, share, and manage most of their data online from anywhere, using virtually any device. During that time, cloud systems were generally not widely available, and their concepts were relatively in their infancy, especially education apps (Vouk, 2008). Google sought to enter the educational sector by developing and deploying these apps at institutions worldwide. After a name change in 2019 to Google Workspace for Education, the academic suite is being used in schools with more than 70 million students and teachers utilizing it (Fenton, 2017).

Google Workspace for Education initially had four Google Apps deployed, including Google Talk (discontinued), Google Calendar, Google Page (now Google Sites), and Google G-mail. The original idea was to connect schools and institutions to these apps (ibid.). That same year, Google introduced the educational productivity apps Google Docs, Sheets, Forms, and Slides. This became the Google for X Edition series, divided into individual, business, education, and government subcategories.

(Figure 1. Google Apps in 2006)

As the internet continued to grow rapidly in popularity (Enis, 2013), Google introduced its Google Drive service, which allowed users to store data and files in the cloud. This was to compete with several popular cloud-based storage systems, including Dropbox, OneDrive, Apple iCloud, and Box.com (Shiohara, 2014). Shiohara points out that Google Drive arguably migrated a number of new and existing users onto the Google ecosystem not only for its cloud storage but also for the integration to other Google Apps, something that the other competing storage systems did not have at the time.

Another major Google educational app developed after Google Drive was Google's own LMS software, Google Classroom. Google Classroom is seamlessly integrated into the Google suite, allowing institutions to assign and collect submissions from any Google app.

Additional advantages of what is now Google Workspace for Education are that it is virtually free for any educational institution and its compatibility and usability across all Google apps in its ecosystem.

(Figure 2. Google Workspace for Education in 2022)

GOOGLE APPS OVERVIEW

There are dozens of Google apps available for use in the Google Workspace for Education. This paper will take a more in-depth look at some of the higher-usage apps at Keiwa College and how Google Workspace is being utilized in the classroom:

GOOGLE CLASSROOM

Arguably one of the most significant draws to joining the Google platform, the Google Classroom LMS enables teachers to create an online classroom where they can manage and integrate virtually all files created from

any Google app. Instructors can distribute materials on the subject being taught, post supplementary resources, assign tasks and assignments to students, and upload grades in real time so students can keep track of their progress.
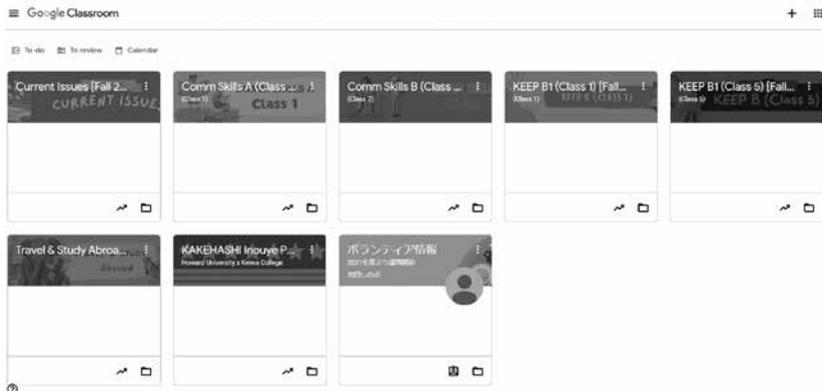
(Figure 3. Google Classroom Overview)

As stated before, Google Classroom is well-integrated with other Google Apps. There is essentially no limit on how many classrooms a user can create (Wijaya, 2016), and creating a classroom is relatively straightforward. Once created, the editability and flexibility to design materials are left to the user. Once students join the class, whether through invitation, manual upload, or class code, they can interact with the teacher(s) within Google Classroom through a multitude of platforms, including general announcements, e-mail, private chat, or commenting on posts or replies. Google Meet can be used for virtual office hours, imprompt group sessions, or as an additional video conferencing method (the video conferencing software used at Keiwa College is Zoom). A Google Drive folder within Google Classroom can be shared among all users to share files or upload other media for viewing, editing, or commenting. Google Classroom also syncs with Google Calendar, reminding students of upcoming schedules, assignment deadlines, or other important dates.

(Figure 4. A Google Classroom Writing Course, with Google Meet,
Google Calendar, & Google Drive enabled)

Within the classroom, assignments can be assigned to a whole class, designated group members, or individuals. Assignments can include a forum post, uploading media assets, writing assignments, or taking a quiz. All these resources can be created using one of the other powerful Google Apps and shared seamlessly between applications.

The Google Classroom LMS can indeed be a simple yet powerful tool that the average user can create and deploy in a reasonable amount of time; however, it does lack the ability to extend beyond its coding. Its limitations can be overlooked by its formidable features, which are somewhat uncomplicated and make it a time-saver for the average teacher. Many of the current popular LMS software is open-source, meaning it can be extended and expanded on with third-party applications, additional add-ons, template creation, or even code editing within the system itself. Google Classroom, on the other hand, is closed-source; it is not possible to add different types of assignments, layouts, or other internal settings (Putri, R. et al., 2022).

GOOGLE DOCS/SHEETS/SLIDES

Often analyzed and compared to its closest competitor, Microsoft Office (Word/Excel/PowerPoint), Google Docs, Sheets, and Slides provide a free yet powerful tool to create documents, spreadsheets, and presentations. The tools and functions that both Microsoft Office and Google Docs/Sheets/Slides have

enabled are very similar, but there are some key features and limitations with Google Apps:

(Figure 5. Google Docs)

a. Free to Use

Each Google user has free access to all the Google Apps on their accounts. This is perhaps one of the main areas that attract people to Google's platform (Putri, A., 2020). The Microsoft Office Suite is a paid product, and users must purchase a suite package; each piece of software cannot be bought separately.
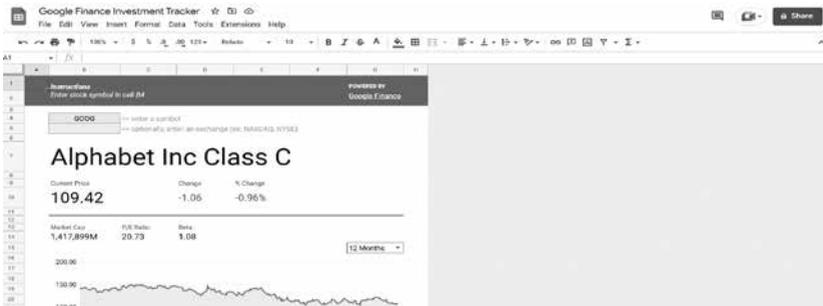
(Figure 6. Google Sheets)

b. Web-based Cloud System

While Microsoft Office has its own cloud-based system, it is not integrated as efficiently as Google's Workspace. All the Google Apps are web-based; they can be accessed online at any time while on the internet. Editing

or changes can be seen and viewed in real-time, and previous versions can be reverted as needed. Multiple people can work on a file within any of the Google Apps; real-time collaboration is one of the key features. Most of Microsoft Office's saved application files will be converted into an office format-readable file, which is physically saved on a user's computer. If a user overwrites that file version, the previous versions are deleted, and can be very challenging to revert.

On the other hand, being a web-based system, if a user is offline, accessing files from Google will be very difficult as the files are mainly stored online. This forces a user to have consistent access to the internet. Since the Microsoft Office suite is installed software, it can be used offline, and most files are saved on a user's physical hard drive.

c. Promoting Real-time Collaboration

Arguably one of the most potent and distinctive advantages over the Microsoft Office suite, virtually all of the Google Apps can be edited by multiple people at the same time; changes or comments that are happening on one device appear instantly across all devices so that users can continue to collaborate in real-time. All versions of any file Google App can be searched and reverted by any user at any time.


(Figure 7. Multiple Users Collaborating on a Single File)

GOOGLE DRIVE

A place to sync and store files, Google Drive continues to be one of the most popular online cloud-based storage systems (Alqahtani, 2019). Google

Drive allows multiple users to collaborate on virtually any file stored in its system and the ability to share them. It can handle all file types; backups are stored for 30 days under the education account. With a student storing roughly between 2-5 gigabytes of data (ibid.), Google Drive can be considered unlimited storage space for the duration of the account. Under the Google Workspace for Education umbrella, institutions using it will have a combined storage space of 100 terabytes. Collaboration between users is effective as all files can be shared through the application, e-mail, or a downloadable package.
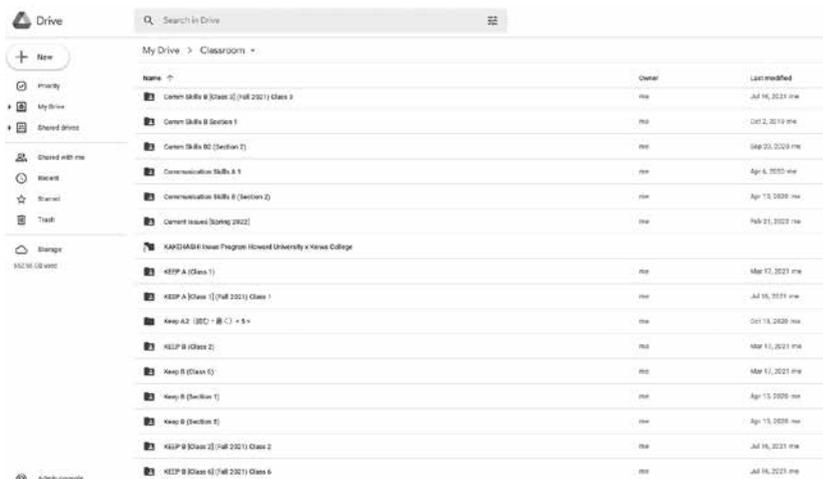
(Figure 8. Google Drive)

GOOGLE GMAIL & GOOGLE CALENDAR

With 1.8 billion active users and over 43% of the market share among its competitors, Google Gmail is one of the most popular e-mail services in the world (Gilbert, 2022). In an academic setting, Google Gmail is primarily used to communicate with users and user groups quickly, share information and resources, and attach files created with any Google App used; any work created by a Google App can be uploaded and attached to an e-mail or shared link via Google Drive. Google Gmail is also one of the few Google Apps that can be customized with view layouts, template designs, and logos. Over 30 million students, faculty, and staff use Google Workspace for Education to create, collaborate, and share their work.
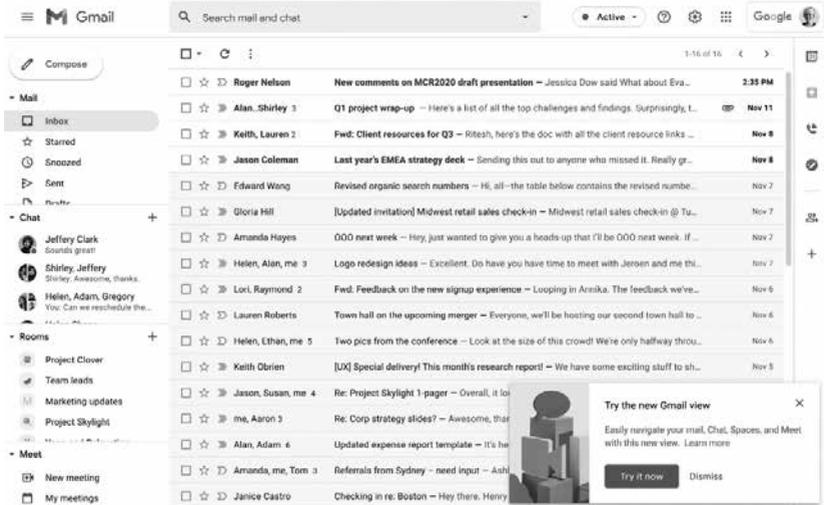
(Figure 10. Google Gmail Inbox)

Google Calendar is often linked to Google Gmail as it is often used to create and schedule meetings (Crompton & Burke, 2018). The calendar is synced with other Google Apps, including Google Classroom (i.e., to remind students of upcoming assignments) and Google Meet (a more recent application of the video conferencing platform; however, it is not covered as it is not used at the author's institution due to security concerns). The user's Google Calendar can be shared with other users to see an overview of their daily, weekly, monthly, or yearly schedule. It is also customizable, being able to color-code tasks or meetings, switch the view layout according to time, and change the style of notifications to signal a user.

(Figure 11. Google Calendar)

GOOGLE JAMBOARD

Google Jamboard is a virtual whiteboard that can be used in a variety of different ways; users can interact with it via text, sticky notes, images, drawings, or a multitude of other media inserts. One of the main advantages of Googe Jamboard versus a traditional whiteboard is that multiple users can add, edit, and delete in real time from any device, incorporating online collaboration much more effectively (Gavin, 2019). As with the others, Google Jamboard also interacts with all Google Apps, whether saving it onto a Google Drive, attaching it to a Google Slide, or submitting it as an assignment to Google Classroom.

(Figure 12. a Google Jamboard Group Virtual Session)

GOOGLE SITES

To create simple websites, Google Sites allow users to create their own web pages that do not require a high level of coding knowledge. Google Sites has a bank of templates available for usage and pre-defined layouts for simple creation. Users can add additional resources, including images, YouTube videos, hyperlinks, redirects to other web pages, social media links, and customizable icons to enhance a website.

(Figure 13. Google Sites Travel Portfolio)

Many academic institutions will utilize Google Sites as a portfolio, where students can easily showcase their work and share it with other participants. This encourages students to publish their ideas and comment on others' work through commenting and feedback (Data, 2022). Other institutions use Google Sites as a startup option to learn more about the basics of website design before moving on to more advanced software applications.

CHALLENGES OF USING GOOGLE WORKSPACE FOR EDUCATION

LMS software is one of the leading e-learning tools used at schools and institutions worldwide. There are several examples of academic LMSs, such as Moodle, Canvas, Microsoft Teams, Blackboard, Edmodo, Universal Passport EX, and Google Classroom. While Google Workspace for Education is technically not an LMS system due to its "Education" word modifier, the community has generally accepted it as a blended LMS suitable for providing

a practical e-learning experience (Al-Emran & Malik, 2016). However, some argue that Google Workspace is not a fully-fledged LMS due to limitations and possible privacy issues (Gray, 2016 and Iftakhar, 2016) that make other LMS software more effective to use in the classroom:

a. *Closed-Source Infrastructure*

Google Apps is mainly designed to work "out-of-the-box"; no additional installation settings or setup is required beyond signing up. Many of the LMS software is aimed to be installed and deployed on a hosted web server. While this can take a significant amount of initial setup time and additional routine maintenance afterward, the system can then be configured to virtually limitless specifications and designs. These types of LMS software are considered open-sourced, where the coding and programming are highly configurable.

Google Workspace for Education is closed-source. Other than the pre-made templates, users and IT administrators are unable to edit or change any functionality within the system. This forces users to utilize and accept what Google has designed. For academia, a sizable number of people would generally be content with it (Fryer & Nakao, 2014); however, it limits the potential usage and opportunities to expand the software as institutions should continue to adapt to the growing needs of students and their academic work.

b. *Data Privacy*

Most LMS software is hosted on a web server, usually owned by the users that deploy the system. As such, much of the data and information stored is enclosed and managed by the administrator. They can then decide how to share and distribute that information; this is critical as ownership stays internally.

Many critics of Google will argue that Google technically owns data inputted by users. While files can be limited to sharing among selected people, data collection or mining for information can be tracked and used for analytical purposes (Agrawal et al., 2016). In fact, the terms of service and privacy agreement note that Google makes users accept that random amounts of data collecting and statistics may be made available to Google in exchange for using their software (Hildebrandt & Tielemans, 2013). This debate is often discussed in connection with internet privacy laws, determining which entity actually

owns and controls user data.

For students and faculty using it at institutions, there is an ongoing controversy about what to share online through a closed-source infrastructure, whether personal information, contact information or other possible sensitive data (Peslak et al., 2019). For this reason, a significant number of schools will outright refuse to deploy Google Workspace for Education at their institutions.

OUTLOOK OF GOOGLE WORKSPACE FOR EDUCATION

During the pandemic, people from around the globe had to grapple with the sudden transition to the digital world. Students and teachers were virtually forced to take their classrooms online. The reliance on an e-learning platform to distribute resources and materials became crucial to continue providing quality instruction. Google has a vast amount of applications and software in its' company portfolio, but arguably the most popular and well-known application is Google Workspace. Google Workspace has several editions, and Google Workspace for Education is designed for academic institutions.

Many schools and universities use Google Workspace for Education as their LMS software of choice to integrate physical and digital materials in the classroom; however, there are limitations and drawbacks to integrating, mainly the restriction of configuration and data privacy. While it is free to use and set up if a school is a qualified academic institution, looking at other LMS systems that are open-sourced, highly customizable, and data controlled internally potentially outweigh the advantages over Google Workspace for Education. Google Workspace for Education is a good starting point for teachers and students who do not have an e-learning system. It is self-contained and does not require additional software or hardware to operate. Once students become familiar with Google Workspace, they can move on to more advanced systems, such as Moodle or Blackboard, that offer more functionality than Google Workspace.

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