



Google Apps and Their Applications in eLearning: A Study

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Abstract:

Technology has played immense role in each and every sphere among which educational sector is not an exception. The role of technology in the sphere of education is increasing at a phenomenal rate which has even revolutionized the traditional process of teaching-learning. Development of different types of technological tools catered these diverse backgrounds and demands of learners in educational system. This is among the most important explosion propelled by the internet transformation. Education beyond face to face is no more simply an assemblage of words understandable only by a few but the present situation it has become a part and parcel of everybody's life. This process operates through various apps & tools. Google provides different apps & tools for the purposes. Google plays a role as a panacea for e-Education system. This study mainly focuses on few Google tools such as Google Classroom, G-mail, Google Meet, Google Drive, and Google Forms. The main objective of the article is to highlight the role of Google apps & tools in imparting education beyond the traditional classroom. It further focuses on the various purposes of using the same, various problems faced in using such tools along with probable solutions. Also highlight the librarian's role to improve the application of Google apps and tools.

Keywords: Technology driven education, e-Teaching, e-Learning, Google apps & tools

1. Introduction:

Present century is very much technology dependent and the impact of technology on education is very much noted. The various electronic learning platforms act as tools in imparting education. This technology centric educational system is very much flexible, provides more active learning, and provides diversified teaching ways which attracts more and more students. This has provided a major shift in the concept of education from traditional mode to beyond the traditional mode. Thus, with the assistance of technology education has crossed the boundaries of traditional classroom. Earlier, teachers used to play the role of knowledge providers, but presently their role has expanded. Presently there has been a lot of emphasis on integrating technology in the traditional mode of imparting education through innovative teaching strategies which focuses on enabling students to achieve the desired learning objectives. E-learning process has focussed on virtual classrooms and various online tools. This resulted in the adoption of various digital tools for the successful running of the newly evolved system. There are so many educational apps and tools are available in the market which provide different services to the learners as well as teachers. Some of them are proprietary and some are free and

open source. On the other hand, academic libraries have been considered as the major nerve centres of academic institutions as they support teaching, research, and other academic programmes in several ways. These libraries have become a part and parcel of the digital classroom. The teachers along with the librarians can bring the ocean of knowledge before the students through online mode and break the physical barriers of learning.

2. Review of Literature:

Cox and Marshall (2007)¹ in their work explained that implementation of new classroom technology from traditional to modern is very much essential because it can help the students to get acquainted with the use of the digital platform, a major requisite in the digital era. Samy et al. (2008)² conducted a study considering the acceptance of the teachers in the effective use of technology in classrooms. According to Bailey and Card (2009)³, online instructors have been identified with the need to engage their students, which can be accomplished by utilizing emails and online discussion boards. Crawford-Ferre and Wiest (2012)⁴ suggested that professional development should emphasize how to promote effective online collaboration for students and to smooth the process of teaching learning. Bruggeman (2014)⁵ says that the key attributes of Google Apps for Education are communication and collaboration through effective and user-friendly applications, both on computer (accessible via the browser) and on mobile devices.

Anna and Chen (2016)⁶ stated that effective online instruction is dependent upon well-designed course content, motivated instructor–learner, well-prepared and fully-supported instructors; creation of a sense of online learning community; and rapid advancement of technology. Shaharane, Jamil, & Rodzi (2016)⁷ analyzed the active learning activities through Google classroom. Ishtaiwa-Dweikat & Aburezeq (2016)⁸ designed a study to examine pre-service teachers' proficiency, use, and their perceptions of the benefits and barriers to the use of Google

¹ Cox, M. J., & Marshall, G. (2007). Effects of ICT: Do we know what we should know? *Education and Information Technologies*, 12(2), 59-70.

² Samy, N. K., Che Rose, R., & Alby, J. L. D. (2008). Teachers' readiness to use technology in the classroom: an empirical study. *European Journal of Scientific Research*, 21, 603–616.

³ Bailey C.J. & Card, K.A. (2009). Effective pedagogical practices for online teaching: Perception of experienced instructors. *Internet and Higher Education*, 12, 152-155.

⁴ Crawford-Ferre, H.G. & Wiest, L.R. (2012). Effective online instruction in higher education. *The Quarterly Review of Distance Education*, 13(1), 11-14.

⁵ Bruggeman, Bram. (2014). How Google Apps for Education Can Enhance Learning in a Networked Environment. https://www.academia.edu/7260001/How_Google_Apps_for_Education_Can_Enhance_Learning_in_a_Networked_Environment

⁶ Anna, Q. S. & Chen, X. (2016). Online Education and its Effective Practice: A Research Review. *Journal of Information Technology Education: Research*, 15(1), 157-190. <http://www.informingscience.org/Publications/3502>

⁷ Shaharane, I. N. M., Jamil, J. M., & Rodzi, S. S. M. (2016). Google classroom as a tool for active learning. *AIP Conference Proceedings*, 1761(1), 020069. <https://doi.org/10.1063/1.4960909>

⁸ Ishtaiwa-Dweikat, F. F., & Aburezeq, I. M. (2016). The Use of Google Apps to Support Teaching and Learning. *International Journal of Web-Based Learning and Teaching Technologies*, 11(4), 1–21. DOI:10.4018/ijwltt.2016100101

Apps to support their teaching and learning practices. Quantitative and qualitative methods were used. The findings showed that almost two-thirds (63%) of participants were advanced or expert users of Google Apps whereas almost one-fourth (24%) reported that they had intermediate experience and 13% reported possessing poor experience. It was found also that participants used Google Apps the most for communication purposes, backing up and sharing data, and accessing teaching materials. The findings also revealed that participants perceived Google Apps as a valuable tool to improve teaching and learning. Oznacar & Dericioglu (2017)⁹ conducted research in high schools reflecting the role of administrators in the use of technology. The study discovered that the administrators cited positive beliefs regarding the integration of technology in the traditional mode of imparting education. Martinez-Mones et al. (2017)¹⁰ called for an integration of learning analytics with Google classroom as they believed that this is a major limitation of the emerging tool.

Molla and Islam (2019),¹¹ has put forward several platforms for the continuation of the process. According to Barman (2022)¹² Information and Communication Technology (ICT) enhance the education quality in high degree of personal contact with learners. The use of ICT in Higher Education lends itself to more student-centered learning setting. The teaching-learning process, students' motivation, research, and scholastic performance of all the angel of the Higher Education must go on through the use of ICTs various components. Proper use of ICT in education enhances the quality of distance education and online courses.

Various literature reviews showed that technology-based teaching and learning is essential in the modern environment where Google can play an important role providing the various apps for online education in developing countries.

3. Objectives of the Study:

The main objectives of the article are:

- To examine the role of Google apps in education beyond the traditional classroom.
- To identify the various purposes of using the same.
- To determine the various limitations in using such tools along with probable solutions.
- To highlight the librarian's role to improve the application of Google apps and tools.

⁹ Oznacar, B., & Dericioglu, S. (2017). The Role of School Administrators in the Use of Technology. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(1), 253–268. <https://doi.org/10.12973/eurasia.2017.00615a>

¹⁰ Martinez-Mones, A., Reffay, C., Torio, J. H., & Cristobal, J. A. M. (2017). Learning Analytics with Google Classroom: Exploring the Possibilities. In *Proceedings of the 5th International Conference on Technological Ecosystems for Enhancing Multiculturality* (pp. 47:1–47:6). New York : ACM. <https://doi.org/10.1145/3144826.3145397>

¹¹ Molla, M. A., & Islam, M. Z. (2019, February 6). Slow Internet Speed: Blame game is all they can offer. *The Daily Star*. <https://www.thedailystar.net/backpage/news/slow-internet-speed-blame-game-all-they-can-offer-1698073>

¹² Barman, Basudeb. (2021). Uses of ICT in Higher Education. *IJSRR- International Journal of Research*, 7(1), 42-49.

4. Methodology:

Methodology is the systematic, theoretical analysis of the various methods applied in a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques.¹³ A methodology is not solution to problems only, but it offers the theoretical understanding of the set of methods that can be applied to specific case in order to calculate a specific result.

This work is based on secondary sources. The paper is descriptive in nature and for the purpose of writing this paper books, book chapters, journal articles, conference proceedings, newspapers and information available in public domain have been reviewed. By analyzing information from different sources, the argument had been presented in the article.

5. Google Apps used in Education:

Google plays an important role which helps the educators to become more effective in learning. Google acts as an eLearning platform for an educational institution. Many education applications work with Google Classroom. These integrations save teachers and students time and make it seamless to share information between Classroom and their favorite apps. Google for Education tools work together to transform teaching and learning so that every student and educator can pursue their personal potential. Following Google apps are mainly being used for eLearning:

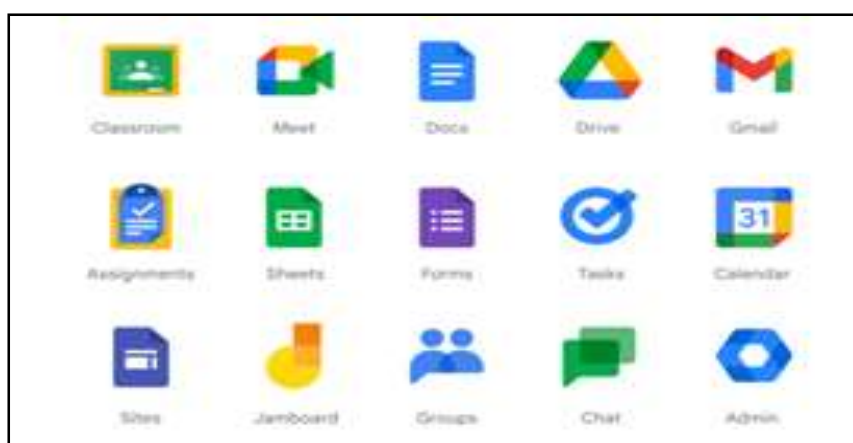


Figure 1: Google Workspace for Education¹⁴

¹³ Imy, S.I. and A.A. Rose. "Designing a Strategic Information Systems Planning Methodology for Malaysian Institutes of Higher Learning (isp- ipt). *Issues in Information System* 6.1 (2005): 17-22.

¹⁴ <https://edu.google.com/>

5.1. Google Classroom: Google Classroom facilitates the process of education. Google users started joining classes without G-Suite account in the year 2017. Generally, it ties with Drive, Docs, Sheets, Slides, Forms, Gmail etc for the smooth conduct of the teaching learning process in a virtual mode. As the result teachers got option for attaching files and even the students also got opportunity to view assignments. A separate folder for each class may be created with Google Classroom which remains stored in the respective Google Drive of the user. Here the student can submit their work for gradation by a teacher.

5.2. Gmail: It is a free [email](#) service developed by [Google](#). Through Gmail various types of files could be send and receive in the form of attachment. With a Gmail account the communication between students and teachers is easier and faster. Gmail also have storage capabilities of 15GB in an account which is more than enough for keeping files and documents.

5.3. Google Meet: Developed by Google, Google Meet is a [video-communication service](#). Main features of Google Meet include two-way and multi-way audio and video calls, ability to join meetings through a web browser or through Android or IOS apps, and Screen-sharing to present documents, spreadsheets, presentations. It is integrated with Google Calendar and Google Contacts for one-click meeting calls.

5.4. Google Drive: It is a [file storage](#) as well as a [synchronization service](#) developed by [Google](#). It allows users to store files on their servers, synchronize files across devices, and even [share those files](#). It further encompasses [Google Docs](#), [Google Sheets](#), and [Google Slides](#), which are a part of the [Google Docs Editors office suite](#). This permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more. The Google Doc files are saved in Google Drive.

5.5. Google Form: It is [survey](#) administration software and allows users to create and edit surveys online. The information gets collected automatically into a [spreadsheet](#) which further helps in the process of evaluation process.

5.6. Google Assignments: Assignments is an application for learning management system (LMS). It helps educators save time grading and guides students to turn in their best work with originality reports.¹⁵

5.7. Google Tasks: Google Tasks is a task management application developed by Google and included with Google Workspace. It included initially as a feature in Gmail and Google Calendar. Google Tasks launched as a core product with a standalone app in 2018.¹⁶

5.8. Google Calendar: It is a time-management and scheduling calendar service developed by Google which helps to create and edit events. Along with-it reminders can be enabled for events

¹⁵ https://edu.google.com/intl/ALL_in/workspace-for-education/assignments/

¹⁶ https://en.wikipedia.org/wiki/Google_Tasks

with options for type and time. Other users can be invited to the event location added through it. In the teaching learning process, it helps to maintain the assignments with their due dates.

5.9. Google Sites: It is a structured wiki and web page creation tool included as part of the free, web-based Google Docs Editors suite offered by Google. The app allows users to create and edit files online while collaborating with other users in real-time. It is used to create separate web sites for individual learning.

5.10. Google Chat: If students have any questions, they can chat with the teachers via Google Chat. For instant answers which are really important.

5.11. Google Jamboard: Jamboard is one smart display. Quickly pull in images from a Google search, save work to the cloud automatically, use the easy-to-read handwriting and shape recognition tool, and draw with a stylus but erase with your finger – just like a whiteboard.¹⁷

5.12. Google Groups: It is a service from Google that provides discussion groups for people sharing common interests. Google Groups became operational in February 2001.¹⁸

5.13. Google Docs, Sheets, Slides: A suite of applications to create text documents, spreadsheets and presentations.

5.14. Google Scholar: Allows searching academic works e.g., thesis papers, books, analytical summaries, articles, etc and to manage a library of references.

5.15. Chromebooks: A range of simple powerful devices with built-in accessibility and security features to deepen classroom connections and keep user information safe. Students can access their apps, settings, and more from any device.¹⁹

5.16. YouTube: YouTube is an American online video-sharing platform was bought by Google in November 2006 and now operates as one of the company's subsidiaries. It allows users in viewing, uploading, sharing, adding to playlists, reporting, commenting on uploaded videos, as well as subscribing to other users. In YouTube teachers may create and upload video lectures for the students.

6. Application Areas of Google Apps in Education:

Since its inception in 1998 Google has become the world's largest and most noted search engine site. It has further played eminent role in imparting education and has made knowledge accessible and comfortable for all. Its role in imparting education beyond face-to-face mode is noteworthy. The various Google tools discussed in the present article include Google Classroom,

¹⁷ https://edu.google.com/intl/ALL_in/jamboard/

¹⁸ https://en.wikipedia.org/wiki/Google_Groups

¹⁹ https://edu.google.com/intl/ALL_in/chromebooks/overview/

G-mail, Google Meet, Google Drive, and Google Forms, etc. The various role played by the Google apps and tools are discussed as below.

6.1. Preserving the documents: In Google any one can store and preserve the documents up to permissible limit. It is immensely helpful to the teachers as well as student, which may be accessed anywhere and anytime.

6.2. Sharing of documents: Most noted role of Google is sharing of educational documents. Privacy is strictly maintained in the process. Files also shared through links. By accessing the links, the users can easily read the files. The owner even may also set an access level for regulating permissions. It is completely user controlled. It has facilitated the process of imparting education virtually.

6.3. Viewing of files: Any type of file formats can be viewed through Google apps. Google drive serves this purpose. Files in other formats can also be handled using Google Drive with the assistance of third-party apps.

6.4. Screen sharing: It is another major feature especially while accessing class through Google Meet. One can present documents, spreadsheets, presentations using the share screen option. This adds to the effectiveness of the process and generates a friendly atmosphere in imparting education beyond face-to-face mode.

6.5. Calling facilities: It is another noted aspect. Ability to call into meetings using a dial-in number in the US is an added feature which facilitates this technology oriented educational system.

6.6. Scanning of documents: Through scan option one can scan any kind of document and stored in Google Drive. This helped teachers to scan their necessary documents using just a small android phone without using a scanner at home or visiting any place for scanning purpose.

6.7. Evaluation: Google Form helps in the evaluation process. Various types of questions starting from multiple choices up to paragraph form could be easily executed through it. This is a very rapid process of evaluation accessed through Google Drive. Even changes done could be automatically saved in the drive. Students can receive the answer scripts even after the exam is over.

6.8. Background features: This helps in changing the background in order to maintain the concentration during any kind of meeting. Even making the background blurred is another feature of this.

6.9. Third-party apps: Several external [web applications](#) work with Google Drive available from the [Chrome Web Store](#). Drive apps helps to view, edit, and even create files in various formats. It

further helps to edit images and videos, fax, and sign documents, manage projects, create flowcharts, etc.

6.10. Empowering of students: Google provides the students to explore the wide range of information available on the Internet irrespective of their age, socioeconomic status, nationality, gender, religion, ethnicity, and other such factors.

6.11. Wide range of choices: Google provide a wide range of choices to both educators & student. The various Google apps and tools are easily accessible since it can be used irrespective of time and place which facilitates imparting education beyond the traditional mode.

7. Limitations of Google Apps

Google apps are not free from loopholes. The various limitations in accessing these apps and tools are stated below:

7.1. Limited entry: Google has restrictions in the entry to its Meet.

7.2. Recording: This feature is completely unavailable in case of unpaid versions. For this reason, the students are unable to access their classes even after the scheduled time.

7.3. Drop-down menus: It is not displayed during screen sharing in Meet. For this reason, one has to return back to the previous path. This creates a large-scale problem for execution of teaching learning.

7.4. Network issues: Google Classroom is not effective where bandwidth is low. It creates problem to the students.

7.5. Settings: In case of Google Form this is a major problem. Settings largely influence the entire process of evaluation conducted through Google Form. Even minute mistakes disrupt the privacy of the entire survey, test whatever is being conducted through it.

7.6. Sign in Issues: It is a major problem of Google. This is completely related to the privacy issue. Regular sign in is necessary for accessing any such aspect.

7.7. Attachments: Issues result owing to uploading and sending attachments especially through Gmail. There have been certain limitations in the quantity of sending attachments from Gmail.

8. Suggestions:

To solve the various limitations, Google Workspace for Education (formerly G Suite) is the noted solution of all the limitations faced in the use of free version of Google apps and tools and would help in the continuation of education beyond face-to-face mode to operate to its fullest. Google Workspace for Education provides a suite of cloud-based tools to K–12 along with higher-educational institutions. It being a service from Google provides independently customizable

versions of several Google products using a domain name provided by the customer. All Google Workspace plans provide a custom email and includes collaboration tools like Gmail, Calendar, Meet, Chat, Drive, Docs, Sheets, Slides, Forms, Sites, online storage, shared calendar and more. Here Google Apps makes collaboration simple and effective. You will have the ability to share spreadsheets and documents, create video conferences with Meet, and use instant messaging. Some of the new features include-

8.1. Google Classroom:

8.1.1. Offline mode: The latest Google Classroom feature includes a dedicated offline mode, where the app could be worked offline or with intermittent connections. This will help the students in reviewing as well as writing assignments and even open those in Drive even without internet connections.

8.1.2. Improved mobile grading: Google has seen many teachers around the world using mobile devices for giving feedback and this will make the task of grading easier.

8.1.3. Classroom add-ons: Classroom add-ons will allow educators to integrate their favourite third-party EdTech tools to connect directly into the classroom interface, without any extra log-ins.

8.1.4. Better pictures of homework: Combining photos into a single document, crop or rotate the image and adjust lightning are a few added features.

8.1.5. Student engagement tracking: Google will launch student engagement tracking inside Classroom where educator will be able to see relevant statistics to help them understand how students are interacting with Classroom each day.

8.2. Google Meet:

8.2.1. Multiple moderators: Later in this year Google Meet will start supporting multiple hosts. In such condition all hosts will be able to manage who can join, even can control who can use the chat, present their screen etc.

8.2.2. End meeting for all: This option will be available to the teachers which will restrict the students from remaining present in the call even after the teacher has left the meeting.

8.2.3. Mute all: This option will help the teachers to mute all participants at once as well as decide whether the students will be able to unmute themselves or not.

9. Role of Librarians to support the application of Google Apps in Education:

Libraries have been experiencing a noted impact of IT on information processing, sources and services. Librarians, library patrons and supporters, and above all, the government, join hands for the development of ICT based libraries in order to meet the changing demands of the users.

Electronic resources include online catalogues, databases, multimedia, online journals, digital repositories, electronic books, electronic archives and online or electronic services. The role of librarians in the use of Google apps in the teaching learning process is discussed as below:-

9.1. Ability to teach: With digital literacy, the librarian like anybody else is able to teach, even assess basic computer concepts and skills which results in the development of new social and economic opportunities. Through openness of digital literacy they are able to unleash peering, sharing, global acting, rapid accumulation and dissemination of information.

9.2. Better management: Librarians with innovative methodologies are able to deploy more interesting material facilitating the entire teaching learning process.

9.3. Online course developers: Many librarians work with online course developers as well as instructors in order to provide online guides. These include modules that help the incumbents to access huge number of resources. These when integrated into course and research material provided by the instructor.

9.4. Optimum utilization of resources: The librarians concentrate on other tasks such as research and consultancy making the process of teaching learning much more systematic, scientific. It further enables optimum utilization and sharing of resources among institutions by reducing the costs of implementing ICT solutions.

9.5. Flexibility of resources: Planning and preparation of lessons and designing materials has become much easier. It has become much more scientific also.

9.6. Information in electronic format: In the web 2.0 environment library and information professionals can activate Blogs, RSS at any Research Area, so that they can keep up-to date to their self.

10. Conclusion:

Technological influence has created immense impact on the education system which has even crossed the boundaries of traditional mode. This has reduced geographical distance which matters the most. This study highlighted the role of Google in the process. Google plays a dominating role in the teaching learning process. It is a dominant tool for this process of imparting education beyond face-to-face mode. It is extremely useful to understand ability, attractiveness, and operability. The platform is extremely useful in the assignment and collaborative learning which on the other hand facilitates research and development as well as facilitates the entire process of teaching learning. Those want to start the application of Google Apps initially they can use limited version i.e., free up to a certain limit, but to get all facilities, Google Workspace for Education is the noted solution of all the limitations faced in the use of free version of Google apps and would help in eLearning.

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