THE USAGE OF GOOGLE APPS AS COMMUNICATION TOOLS: A CASE STUDY OF SENIOR HIGH SCHOOLS IN JAKARTA

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THE USAGE OF GOOGLE APPS AS COMMUNICATION TOOLS: A CASE STUDY OF SENIOR HIGH SCHOOLS IN JAKARTA

by

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TABLE OF CONTENTS

ACKNOWLEDGEMENT ..... **ii**

TABLE OF CONTENTS ..... **iii**

LIST OF TABLES ..... **vi**

LIST OF FIGURES ..... **vii**

LIST OF ABBREVIATION ..... **viii**

ABSTRAK ..... **ix**

ABSTRACT ..... **x**

CHAPTER 1 INTRODUCTION **1**

1.1 Background of the Study 2

1.1.1 New Media Applications in Classrooms 4

1.1.2 Communication Through Collaboration in Classrooms 6

1.1.3 Why and What is Google for Education 8

1.1.4 Indonesian Context of Usage and Adoption of Google for Education as Communication Tool 12

1.2 Statement of the Problems 16

1.3 Objectives of the Study 19

1.4 Research Questions 19

1.5 Significance of the Study 19

1.6 Scope of the Study 21

CHAPTER 2 LITERATURE REVIEW **23**

2.1 New Media in Education 23

2.1.1 New Media as a Learning Medium 25

2.1.2 New Media as Communication Tools 29

2.2 Google Applications for Education 31

2.2.1 Applications in Google for Education 33

2.2.2 Google Applications for Communication Tool in the classrooms ... 33
2.3 Indonesian Education System ... 36
2.3.1 Indonesian Present Situation ... 42
2.4 Issues towards Adoption of New Media in Education in Indonesia ... 46
2.5 Adoption of New Media as in Communication Process in Education in Indonesia and its Comparison ... 53
2.6 Digital Divide ... 55
2.7 Challenges and Opportunity ... 57
2.8 Usage and Adoption of Technology in Education ... 61
2.9 Technology Acceptance Model in Interpretive Paradigm, Qualitative Research, and Case Study Method ... 64
CHAPTER 3 METHODOLOGY ... 74
3.1 Research Method ... 74
3.2 Methods of Data Collection ... 78
3.3 Data Collection Process ... 84
3.4 Data Analysis and Interpretation ... 87
3.5 Data Collection & Data Analysis Diagram ... 93
CHAPTER 4 FINDINGS AND ANALYSIS ... 97
4.1 Main Research Participants ... 97
4.1.1 SMK X ... 99
4.1.2 MAN X ... 103
4.1.3 SMA X ... 107
4.2 Analysis ... 111
4.2.1 SMK X ... 113
4.2.2 MAN X ... 150
4.2.3 SMA X ... 186
CHAPTER 5 DISCUSSIONS AND CONCLUSION ... 218
5.1 Discussion ... 218

5.1.1 To Explore Issues Pertaining to the Usage of GFE as a Communication Tool in the classroom 218

5.1.2 To Understand the Complexity of The Adoption of GFE as a Communication Tool in the Classroom 223

5.1.3 To Analyze How Effectively Schools Can Adopt GFE as a Communication Tool in the Classroom 226

5.2 Limitations of Study 229

5.3 Suggestions and Recommendations for the Future Studies 230

5.4 Theoretical Contribution 231

5.5 Practical Contribution 233

5.6 Conclusion 236

REFERENCES 239

LIST OF TABLES

Page

Table 4.1 Respondents of SMK X……...…....102

Table 4.2 Respondents of MAN X……...…....106

Table 4.3 Respondents of SMA X……...…....110

Table 4.4 Summary of response for the usage of Google Applications as communication tool in SMK X……...…....114

Table 4.5 Summary of response for the adoption of Google Applications as communication tool in SMK X…….……..…..131

Table 4.6 Summary of response for the usage of Google Applications as communication tool in MAN X……...…….....……..150

Table 4.7 Summary of response for the adoption of Google Applications as communication tool in MAN X……..…...…….……167

Table 4.8 Summary of response for the usage of Google Applications as communication tool in SMA X……..……..187

Table 4.9 Summary of response for the adoption of Google Applications as communication tool in SMA X……...……...……..200

LIST OF FIGURES

Page

Figures 1 TAM Model for Usability Attributes……...……...69

Figures 3 Data Collection & Data Analysis…….……...…94

LIST OF ABBREVIATION

GC	Google Classroom
GD	Google Docs
GEG	Google Educators Group
GF	Google Form
GFE	Google for Education
GS	Google Slide
LMS	Learning Management System
MA	Madrasah Aliyah
MAN	Madrasah Aliyah Negeri
PD	Personal Development
PEoU	Perceived Ease of Use
PU	Perceived Usefulness
SMA	Sekolah Menengah Atas
SMK	Sekolah Menengah Kejuruan
TA	Thematic Analysis
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action

PENGGUNAAN APLIKASI GOOGLE SEBAGAI ALAT KOMUNIKASI: KAJIAN KES DI SEKOLAH TINGKAT ATAS DI JAKARTA

ABSTRAK

Perkembangan teknologi dalam pendidikan semakin meningkat dari hari ke hari, salah satu kemajuannya adalah penggunaan aplikasi dalam pembelajaran, di mana Google memperkenalkan platform bernama Google for Education (GFE) Namun, di Indonesia penggunaan dan adopsi daripada aplikasi ini, khususnya Google for Education tidak lancar dan tersebar tidak merata, selain daripada faktor teknikal, faktor bukan teknikal seperti motivasi dan pengetahuan guru adalah halangan. Kajian ini cuba menggali lebih mendalam di tiga sekolah tinggi yang berbeza, dengan menggunakan analisis kajian kes jenis *single-embedded Yin* untuk menyiasat dan menerangkan sekolah yang dipilih, dan kemudian cuba membandingkan hasilnya untuk mendapatkan pemahaman tentang penggunaan dan adopsi kejayaan atau masalah yang dihadapi. Dari hasil kajian dapat disimpulkan bahawa penggunaan GFE dalam mata pelajaran tertentu menghadapi kesulitan teknikal kerana keserasian dengan aplikasi yang sebelumnya digunakan, dan Google Classroom adalah aplikasi yang paling banyak digunakan kerana mampu menjadikan pelajar menjadi berdikari dalam pembelajaran tanpa memerlukan kehadiran guru yang siap sedia. Dari tiga sekolah yang dipilih, SMA X adalah sekolah yang cukup maksimum dalam menggunakan dan menerapkan GFE, kebiasaan menggunakan iPad sebagai media pembelajaran dan penguasaan maksimum teknologi dari gurunya adalah alasannya. Akhirnya, secara teorinya dapat dilihat bahawa untuk mencapai penggunaan dan penerimaan maksimum, isu luaran kekal sebagai perbincangan penting, walaupun dalam tahap dan tempoh penggunaan yang berbeza.

THE USAGE OF GOOGLE APPS AS COMMUNICATION TOOLS: A CASE STUDY OF SENIOR HIGH SCHOOLS IN JAKARTA

ABSTRACT

Technological developments in education are growing day by day. One of the advances is the use of applications in learning, where Google introduced a platform called Google for Education (GFE). However, in Indonesia, the use and adoption of these applications, notably Google for Education, is not smooth and evenly distributed. Apart from technical factors, non-technical factors such as teacher motivation and knowledge are the obstacles. This study tries to dig into these problems in three different high schools by using Yin's single-embedded type case study analysis to investigate and explain three schools selected, and then try to compare the results to understand the difference. From the research results, it can be concluded that GFE use in certain subjects encountered technical difficulties due to compatibility with the applications previously used. And Google Classroom, as the mainly used Applications, became a mainstay application because it made students independent in learning without the need for a standby teacher. From three schools selected, SMA X is a school that is quite maximum in using and adopting GFE. The habit of using iPad as a learning medium and complete mastery of technology from its teachers are the reasons. Finally, theoretically it can be seen how to get maximum use and adoption, external issues remain an important apprehension. Although the level of acknowledgment and duration of use are different, external issues play a significant role in each level.

CHAPTER 1

INTRODUCTION

The integration of technology has given many changes, including in the education field. Some potential benefits are: enabling lifelong learning, changing the role of teachers and students, providing public access to material content and information, overcoming constraints of time and space, reinforcing learning management, and creating collaborations (Fitriyadi, 2015).

Communication and information are two main learning elements, regardless of whether one sees learning as acquiring knowledge, meaningful community engagement, or the development of expertise. Therefore, many educators are promoting innovative changes in teaching and learning enabled by digital media and emerging technologies (Lin, Chen, & Chai, 2015, p.1). Technology may be used for educational purposes with these two contexts: i) classroom use in schools, and ii) home use by students. These contexts differ fundamentally in making the investment decision and controlling how the technology is used (Bulman & Fairlie, 2016).

In the Indonesian context at an annual event, Matt Thompson, organizer of Global Educational Supplies and Solutions Indonesia, said that one of Indonesia's main challenges is its vast territory and far-reaching outlying areas; therefore, technology greatly helps to close this gap (Anugerah, 2017). Research conducted by EdConnect mentioned that technology is growing so fast and has not been maximized by Indonesia’s educational system. The teaching and learning process still relies on paper as the primary medium (Rachmatunnisa, 2017). These problems are expected to be overcome by using technology in education, especially in Indonesia.

The requirement for digital strategy to take two places was mentioned in a recent article ("Driving digital strategy in schools," 2018). First, at the institutional

level: to meet specific pedagogical goals, schools must purchase equipment. Otherwise, the technology will not be used, and programs will fail. Second, is at a wider level: the government. There is a lack of cohesive digital solutions for educators at the moment. Guidance is fragmented, and teachers often lament a lack of independent knowledge to assist them in the procurement of technology for classrooms.

Microsoft explained in more general terms how clumsy the use of technology is more dangerous than helping students to learn. Schools must avoid encouraging students to use devices blindly without knowing whether they are engaging or merely entertaining them, and also argues that schools around the world have not paid enough attention to technology preparation or understanding how I am engaging (Baker, 2018).

1.1 Background of the Study

There are tremendous opportunities and challenges for digital media technology to enrich the teaching-learning processes that involve teachers and learners. The successful use of new media technologies inevitably depends on the teaching faculty as they are the ones who have to become qualified in the creative use of new media technologies. So that students can enriched their learning process to understand better the subjects they are studying (Rego, 2017).

Accessible online classes, flipped classroom concepts, e-libraries, smartphone applications, and dozens of social media outlets such as Facebook, Twitter, YouTube, and blogs, just to name a few, are some of the latest media adapted to the multi-layered education environment worldwide to varying degrees (Rego, 2017). Social networking websites improve the solidarity of people using their communal characteristics,

according to Maloney (2007). Jones and friends (2010) suggested that websites for social networking are opportunities for teachers and students to improve education (Bicen, & Uzunboylu, 2013).

Ajjan and Hartshone's (2008) research found that social networking websites facilitate contact between students and their interest in lessons when used for educational purposes. However, teachers' use of these resources is uncommon (Bicen, & Uzunboylu, 2013). In addition, social networking on Facebook with students can be an important way for teachers to catch these positive effects on student learning (Sarapin, & Morris, 2015).

In addition to Facebook, YouTube also allows people to connect by subscribing, posting comments, and responding to videos, especially by sharing videos. This provides a perfect opportunity for individuals to use the internet and social networks to make quality education open to everyone and not just a select few (Saurabh, & Sairam, 2013).

As a pedagogical instrument, a structured approach to video blogging can increase participation in large-scale undergraduate courses. This activity allows a "risk-free" approach to increasing involvement by all students participating in the course and the opportunity for volunteer students to advance their soft skills in technical exposure through skilled video composition (DeMara, Salehi, & Muttineni, 2016).

It can be concluded that the application of new media, each with its own unique character and features, can help the field of education in many ways, especially to become a communication tool in classrooms and return to the special characters brought by each application so that the applications can be more specific to help teachers and students in-class interaction. Interaction has become necessary in solving

most educational problems. According to the Chairman of the Indonesian Teaching Movement Foundation, Hikmat Hardono (Wurinanda, 2016), without good interaction, the program is not necessarily accepted by the community. Hardono also mentioned how young teachers could build intense interactions with communities and schools. It is expected to change teachers' performance to improve the quality of education in Indonesia (Wurinanda, 2016).

1.1.1 New Media Applications in Classrooms

To embrace collaborative learning and content development, students' immediate access to networks and social media has encouraged an increase in their level of standards in the higher education classroom. The essence of how we interact, access knowledge, interact with peers and colleagues, learn and even socialize is evolving this new paradigm. Nowadays, new media technology, with digital technology, network technology, mobile technology, wireless communication network, and mobile communication terminal as its core, has witnessed a boom in development and has created a new media context. New media has changed the circumstance to communicate educational information as well as individual cognition. Traditional classroom information communication system has been influenced by new media which provides fractional, diversified, and quantitative data and expresses information in an equal, open and interactional way (Zhang, 2016).

As explained by Ruangguru (2016), the reasons why teachers need to believe new media technology can improve their interaction with students are:

1. The learning method is always new and exciting – no boring activities and the interaction created will have more impact.

2. Teaching is more flexible because teachers can easily share learning materials through the internet as teaching materials and assignments can be provided from anywhere and anytime.
3. Teaching students to use technology positively by routinely sharing lessons related to learning, such as sharing E-books, articles on blogs, or related sites, can help the learning process.
4. Another positive value is when students read interesting content, making them curious to explore the material directly.
5. No more boring classes as taking advantage of the various media while teaching will undoubtedly make the class fun by teaching using video, movies, or other new media types.
6. Being admired by students will create a sense of closeness between students and teachers so that the interaction has more leverage (Ruangguru, 2016).

Based on this, new media and its applications are essential to support teacher-student learning experiences. McLoughlin and Lee (2010) noted, “digital-age students, want an active learning experience that is social, participatory, and supported by rich media” (p. 28). According to the Educause Center for Applied Research (2010), this holds accurate as over 67 percent of students reporting that mediated learning is essential to their academic success (Strawser, 2017).

The worrying fact is teachers' readiness who lack competence in using new media, as noted by the Teachers Association of the Republic of Indonesia (PGRI) of Bekasi City. Approximately 40 percent of teachers in public schools do not understand and have not mastered information technology skills to support their application in the educational curriculum (Surjaya, 2014). Researchers have identified several factors influencing the adoption and integration of technology into classrooms. Charles

Buabeng-Andoh, (2012), in his article, stated factors that influence teachers' adoption and integration of information and communication technology into teaching: User characteristics, material characteristics, technical considerations, and organizational ability were also defined by Stockdill and Moreshouse (1992) as factors affecting ICT adoption and incorporation into teaching. Balanskat, Blamire & Kefalla (2007) described the variables as teacher-level, school-level, and system-level. Incorporating ICT into teaching by teachers is often affected by organizational conditions, attitudes to technology, and other variables (Chen, 2008, Tondeur; van Braak & Valcke, 2008; Lim & Chai, 2008; Clausen, 2007). Sherry & Gibson (2002) say that technical, human, organizational, and institutional factors should be considered when analyzing ICT adoption and incorporation. (Buabeng-Andoh, 2012).

1.1.2 Communication Through Collaboration in Classrooms

As mentioned above, communication in education or classrooms can be seen from the collaboration and exchange of information between individuals, from fellow students, or between teachers and students, and how new media such as the internet and applications can mediate these communication activities. Giska (2021) emphasized that, communication and collaboration skills are inseparable from information technology-based abilities to apply collaboration in the teaching process (Giska, 2021). Communication that occurs in digital form also makes it easier for many interested parties, especially in education. The demands of the role of teachers are expected to bring positive change and collaboration, which is an essential factor in this communication activity that can be realized more efficiently, especially during a pandemic like now (Giska, 2021).

Mulyanto (2021) explained how communication can help teachers, students, and even other stakeholders in the teaching and learning process. Learning using applications is one of the main factors in collaboration in education or in the classroom. Online learning, which is the primary model, especially during the pandemic, requires teachers and students to use technology, new media, especially applications. The simplest example is an e-mail which can assist teachers in collecting the results of previously distributed assignments. Of course, the use of online meeting applications can ensure that face-to-face and synchronous communication can still occur (Mulyanto, 2021).

Communication and collaboration are two essential things that cannot be separated. This encourages students, especially in group learning activities, where the connection between students and teachers becomes more accessible, especially in exchanging information, discussions, and the question-and-answer process. The collaboration that is part of this communication process ensures teachers and students can be more connected. All information can be more quickly disseminated or exchanged so that no student is left out of information, even though there are times when students do the private part of their assignments. However, there are still sessions where their independent work is combined and collaborated to share ideas and understanding (Nugraha, 2021).

A collaboration which is an essential keyword in the GFE environment can be translated into several contexts. Mutual supporting and helping fellow teachers in learning and using GFE becomes a critical point for situations where the use and adoption of GFE is still in its early stages.

Collaboration as part of communication, is the mutual support between school management and teachers is also an essential point in ensuring the growth of ideas and

acceleration of using and adopting technology in the classroom. And the last thing that needs to be emphasized is how the acceleration of technology in the world of education will have a more significant impact if applied with the use of technology, new media. More specifically, applications in the GFE environment can build teachers to think critically, creatively, and collaborate to ensure that maximum communication can be provided between all interested parties (Adikara et al, 2021).

1.1.3 Why and What is Google for Education

Communication through applications is composed of and shared channels as part of new media that allow us to become producers and distributors of all types of content. In any combination of words, pictures, sounds, or video and has produced a significant shift in information delivery and can potentially impact large audiences. That's why students should learn how to use mobile as digital media resources (Goodloe, 2017).

And in the education area, where like cloud email systems, many trends take root. Google's streamlined management style could trickle up to large businesses compared to Microsoft and Apple with similar goods, saving them money with each big app update (Kelly, 2017). Google derives much of its revenue from online advertisements, unlike Apple or Microsoft, which make money mainly by selling smartphones or software services, making it easier to push Google's acceptance in the classroom. At the same time, Apple and Microsoft continue to exploit conventional distribution channels (Singer, 2017). And Google recently announced what it had called the most significant upgrade to its free web-based Google Classroom class management program since its introduction in 2014. The most important new feature, Classwork, is a classroom page that allows teachers to organize questions and

assignments for learners by subject or module flexibly (such as a standard syllabus contains content) (Catalano, 2018).

The applications contained in GFE are expected to be the maximum medium for delivering messages in classroom learning. Teachers as communicants have wider opportunities to provide learning material.

And as part of the computer-mediated communication, the use of GFE applications was also aimed at evaluating the degree to which asynchronous media analysis was oriented instead of synchronous media. Rarely is the importance of asynchronous media challenged. These media allow students at any time to log in to the class, think about what has been written, and post responses when they want to (Palloff & Pratt, 1999). Synchronous conversations have been recorded in online courses to strengthen the environment and speed up knowledge flows within a team (Carr, Cox, Eden & Hanslo, 2004). Asynchronous and synchronous media balance each other, building on these results (Ellis, 2003; Leh, 2002; Hrastinski, & Keller, 2007).

Applications also encouraged educators to reconsider and reimagine instructional methods, whether delivered on a tablet, Chromebook, or computer. With student access to technology continuing to expand in and outside the classroom, educators face critical decisions and almost unlimited choices on where their educational resources should be spent (Marshall, 2016). These Applications also allow learners to access data and make sense of content in new ways (Castek, & Beach, 2013). These skills are to use technology as a tool to study, coordinate, analyze and communicate information in line with 21st Century IT Skills, use digital technologies (computers, PDAs, GPS media players, etc.), use communication/networking tools and social networks appropriately to access, handle, integrate, evaluate and produce

information to operate effectively in a knowledge economy (Eppard, Nasser, & Reddy, 2016). Since many teacher applicants use Applications daily, it will help develop their conceptualization of Applications to understand what an app is and provide a sense for how they have grown. An app is simply a small computer program that can be downloaded easily to a mobile computer (such as a tablet or smartphone) and enabled automatically without restarting the system (Lucey, 2012; Pilgrim, Bledsoe, & Reily, 2012; Cherner, Dix, & Lee, 2014).

Google Applications for Education or GFE has become an essential part of this research because the applications used in the domain of Google Applications for Education can become communication mediums that deliver messages from a subject or lessons, so this needs to be maximized. GFE also focuses on collaboration, communication, and organization. Essential components in each classroom include communication and collaboration (Patrick, 2008; Cahill, 2011). The use of applications as a medium is expected to maximize the information received by students. Many students have a positive attitude towards using Applications in class, especially Applications that allow students to establish a personal bond between a game character, for example, and themselves (Kwak, 2017).

Another thing that has made the researcher interested in GFE research is the emerging ease, which should motivate teachers to implement GFE in their classrooms. Teachers' motivation is a significant variable as a mediator between readiness with ICT application in teaching and learning, especially learning science and social science (Copriady, 2014).

GFE will allow educational institutions to connect and work together securely from any web browser without the need for external servers, software or maintenance (Google, n.d).

Collaborative learning technologies apply to a range of task-specific collaboration instruments related to goal-oriented and work-oriented tasks. Collaborative technologies such as Google Applications have sparked a new wave of free online wikis, word processing, spreadsheet, presentation, and discussion forum tools after they were launched in 2005, the so-called "Web Applications" (AoW) (Rienzo & Han, 2009; Cheung & Vogel, 2013). They bring to a Web browser a level of sophistication initially associated with desktop applications, adding omnipresent possibilities for creating, editing, and sharing content. As a result, incorporating Google Applications as a kind of AoW for interactive project-based learning has become a significant subject for academic institutions (Cheung & Vogel, 2013).

Google Applications are a suite of free email and collaboration tools to create high-level legal agreements for K-12, University Education, or large school districts, university consortiums, and state governments (Railean, 2012, p.20). To improve self-regulated skills, the role of these instruments for teachers is to provide a learning atmosphere for teamwork as a necessity for each child. The child's creation and socialization are all part of imitation, collaboration, conflict, discussions, and sharing. In their cognitive, affective, and psychomotor functions, such instruments play an essential role (Railean, 2012, p.20). The proposed learning environment also offers suitable learning opportunities to promote motivation and involvement in student learning, such as using typical web applications. As a consequence of increased encouragement and engagement, teaching has become more effective. (Yen-Ting & Min, 2013).

Nwogbaga et al. (2015) illustrate how the meaning of communication in education can be incorporated, explaining how communication relates to the process of communicating information in oral, written, or signed forms with or between

persons, groups, institutions, and organizations through any available media (Natale, & Lubniewski, 2018). And as one of the media, GFE has the most well-known cloud applications available, which may be the suitable platform for mediated communication within individuals in classrooms that have completed themselves with word processing, spreadsheets, and presentation tools. Moreover, an Internet connection and a web browser are all that are required to access them. (Cahill, 2011).

Now, Google has announced that GFE already has over 70 million users in its ranks. That's up from 60 million users in October 2015 and 50 million users a year earlier (Wiggers, 2017).

1.1.4 Indonesian Context of Usage and Adoption of Google for Education as Communication Tool

Usage of Google Applications for Education in Indonesia is still developing. Akbar Pitopang (2015) adds an explanation from Pepita Gunawan, Indonesian Education Lead for Google Southeast Asia, to maximize usage of Google Applications for Education through Applications. For collaboration and discussion of work documents, Google Docs, and Google Drive, students can work on group assignments from their computers. Students no longer need to have a separate document that will need to be connected manually later on. Google Docs allows multiple people to collaborate on the same document in real-time. They can see each other's changes and discussions. The debate in the execution of tasks can be performed even though the group members do not meet each other. One new application that has merged into Google Applications for Education is Hangout. Hangout's capability allows a meeting between friends and groups to learn in person from remote locations. In addition to inter-student, Hangout can also be used by teachers to hold discussions with students.

This application can be installed either on mobile phones or PC. Another important application is Google Sites, where teachers and students can build a collaborative website consisting of student organizations or other student activities to display events or other information. Google Sites also enables integration with other Google Applications like Docs, Sheets, or Forms. (Pitopang, 2015).

Brawijaya University, located in Malang, East Java, is one of the Indonesian educational institutions that launched Google Applications for Education in 2012. Forty-five thousand students and teachers of Brawijaya have access to a whole new way of doing things: an upgraded, secure email system bearing the name of the institution; networking resources in the form of Google Docs and Groups, as well as access from different access points across the campus to the World Wide Web. As one of the universities joined, Brawijaya University proud to join other educational institutions worldwide by completely embracing technology to transform the way they interact, collaborate, and learn from the university community. This will help build a community that simulates the ever-competitive global workplace, offering the country's best minds for the future (Setiawan, 2012).

Another educational institution that just recently joins Google for Education is SMP Santa Maria II Sidoarjo. As reported by jawapos.com, seven classes from this school are currently implementing G Suite for Education in their classes, called "Google class." In Google class, students can connect with other students online.

They were given an e-mail with a large storage capacity connected to a network that the school created. For example, in Bahasa Indonesia class, they enter the specific Indonesian-class network to access the specific material provided by the teacher, and this network can be accessed from anywhere, laptops or mobile phones. Teachers can

control the network, give tasks within the group, text or video, or provide a direct assessment (JawaPos.com, 2016).

On Google Applications for Education implementation in the classroom at schools in Indonesia, the latest news was when Ipeka Integrated Christian School (IICS) Jakarta collaborated with Acer to implement this system. In collaboration with Ipeka, Acer provides Acer Chromebook laptops to all students to create a digital classroom. According to Herbert, Director of Acer Indonesia, "Now the classroom is rapidly changing, and adopting the function of technology is the main way for teachers and students to run education in the digital age as it is now." Meanwhile, Google Indonesia fully supports this program. Head of Education Development of Google Indonesia Ganis Samoedra said that using technology in the classroom will make the learning process more interactive. Students will also be more active because they can easily access new knowledge. He added, "Technology in an interactive classroom will be a catalyst for fundamental changes to the teacher's role, from information to transformation, and passive student activity to more active and independent access to the latest knowledge," he said (Rosyadi, 2017).

Several success stories above can certainly be a reference in Google Applications for Education development as expected by addressing the issues already discussed earlier. Because of the total number of senior high schools in Indonesia that reaches about 26,380 schools, much work still exists (Kementerian Pendidikan Dan Kebudayaan, 2017). One of the Google-supported teacher communities, the Google Educator Group, routinely tries to provide Google Applications for Education training and socialization to schools. There are currently 14 GEGs scattered across Indonesia that can be an initiator of the Google Applications for Education development (Google, n.d.)

It can be concluded that what Google does with Google Applications for Education applications is to collaborate between teachers and students, students and students, anytime and anywhere, with a range of features for education. With Google Applications for Education, teachers can create learning opportunities, simplify administrative tasks, and challenge students to think critically. All can be done without interrupting existing workflows. The applications from Google Applications for Education can be very sophisticated and integrates better ("G Suite for Education | Google for Education," n.d.)

Google also concludes in its paper how the program can be used in Google Applications for Education. Divided into five classes, Google clarified how to simplify the classroom; Easily manage your classroom by designing classes, assigning assignments, providing quizzes, submitting reviews, and using Classroom and Google Form to display everything in one location. Manage with trust by adding students, handling computers, and configuring protection and configurations so that Vault keeps the data secure. With Google Drive, Docs, Sheet, and Slides collaborate anywhere, co-edit papers, spreadsheets, and presentations in real-time. Manage activities, create to-do lists, create reminders for tasks, and arrange to Keep and Calendar conferences. Communicate your way with Gmail and Hangouts via email, chat, and video conferencing.

By providing various types of uses as above, Google hopes that the application in Google Applications for Education can be maximized in-classroom use by teachers to help teachers deliver material in class and make learning more interesting and fun.

1.2 Statement of the Problems

In Indonesia, communication process that involve teaching technology skills in classes where technology is not the subject is the problem for most educational institutions. Therefore, lecturers or teachers who do not have time or space within the current curriculum to introduce new courses can integrate technology skills within existing courses. This is also supported by another study in Indonesia, which found that only 25% of students were active in the class; 75% of students lacked participation and collaboration in learning in the classroom (Fahmi, 2017).

Another thing that challenges the adoption and usage of new media technology is the digital gap between teachers and students, where teachers are digital immigrants and students are digital natives (Cahyani, 2016). As mentioned in a recent article, many teachers are not very familiar with technology in teaching, as mentioned by Norman Ganto, CEO of BulletinBoard, an online application provider, in the process of learning and teaching. Many teachers are reluctant to use technology. Some are still looking at this technology as being only limited to social media usage alone. With specific education applications, teachers in Indonesia can begin to take advantage of technological developments, especially technology, to improve productivity in education (Herman, 2016).

However, the problem is that based on World Bank data, it is stated that Indonesia is experiencing a digital talent gap, which requires nine million digital talents in 15 years or an average of 600,000 digital talents per year (Kurniadi, 2021).

In an article written by Murdaningsih and Awaliyah (2018), Indonesian Minister of Research and Technology, Mohammad Nasir, in the 2018 National Working Meeting, give seven recommendations cover learning and student affairs, which are institutions, resources, strengthening research and development,

strengthening innovation, bureaucratic reform, and integrity zones to the Corruption Free Area (WBK) and Bureaucracy Serving (WBBM). In learning and student affairs, 3 points of recommendation were produced. Namely, schools and universities to prepare for curriculum reorientation, prepare hybrid / blended learning through new media technology and provide grants and consultations (Murdaningsih & Awaliyah, 2018)

In response to these problems, this study attempts to answer the following core question: How is the usage of Google Applications for Education as a communication tool, and how is the complexity of the adoption process of Google Applications for Education as a communication tool for teachers? It is important to know how Google Applications for Education as a communication tool is used and adopted in the classroom to improve and increase participation and collaboration in the classrooms. This is indeed one of Google's goals that introduce blended learning by using Google Applications for Education that involves technology, increasing participation, encouraging collaboration, and learning fun (Google, n.d.).

Collaboration in free online wikis, word processing, spreadsheets, presentations, and discussion forums can become a useful communication tool in the classroom (Rienzo & Han, 2009; Cheung & Vogel, 2013). In Indonesia, collaboration and critical thinking ability are a capability that needs to continue to be developed due to the digital transformation in the education system in Indonesia (Kunjana, 2017).

For example, Google Drive and Google Docs are two examples of how GFE can facilitate the collaboration of its users. Google Drive can also connect with other applications like Doc, Sheet, and Slide Applications. Students need to create spreadsheets and presentations and then store them on Google Drive for later editing or reviewing by fellow students (Google. n.d.). With these features, students are

expected to show creativity and collaboration with other students. And, it is expected that interaction arises in the form of a bigger response from students. For example, in the Math subject, mathematics Applications permit flexibility with grouping, fostering mathematical language and communication, and can be more spontaneously integrated into classroom programs. Mathematics Applications bring visual, interactive elements to the learning situation, which potentially can support more interaction and understanding of geometric properties (Kucirkova, & Falloon, 2016).

And with Google Docs, teachers can assign tasks through Google Docs and automatically create duplicates for each student. Students can then directly perform tasks in the document.

Collaboration in real time remains the flagship of this application, which is between fellow students, or between students and teachers. Which can contribute directly to each other in the same document, and can be edited or commented on by students or teachers who have access to the document. online storage also makes this easier, which is supported by a large enough storage capacity, which is 15GB provided by Google for each Google Drive account for all users (Admin, 2020).

Google Docs is a word processing application with smart editing and styling tools to help users easily format text and paragraphs. It can choose from hundreds of fonts, add links, images, and drawings with templates to create documents faster. It can be accessed through any device (Google, n.d).

From these samples, it is hoped that a more detailed description and characteristic of usage and adoption of each school will be obtained to see how Google applications involved as communication tool in the classroom.

1.3 Objectives of the Study

Based on the research background, the objectives of the study of this research are:

1. To explore issues pertaining to the usage of GFE as a communication tool in the classroom.
2. To understand the complexity of the adoption of GFE as a communication tool in the classroom.
3. To analyze how effectively schools can adopt GFE as a communication tool in the classroom.

1.4 Research Questions

1. What and are the issues pertaining to GFE usage as a communication tool in the classroom?
2. How complex is the adoption of GFE as a communication tool in the classroom?
3. How to effectively adopt GFE as a communication tool in the classroom?

1.5 Significance of the Study

The findings of this study will contribute to teachers who are considering new media technology or, more specifically, GFE to play an important role as one of the communication tools in the classroom.

It is hoped that knowing the reasons for the issues and complexity of usage and adoption of GFE in the classroom, and teachers can find solutions to problems that arise. So, factors such as digital gaps, focusing only on social media, or time constraints can be overcome, improve collaboration, increase efficiency, save costs

and reduce environmental impact without sacrificing privacy or security (Edspire, 2014). GFE brings new and exciting opportunities to education and can make communication easier, leading teachers and students to have more powerful collaborative and connected experiences (Speranza, 2015).

The usage and adoption process of GFE is also expected to be easier, especially for teachers. So, the absorption and use of technology in the class can benefit teachers and students in the learning process, especially as teachers can find and select Applications that match the subject or material being taught. Information and learning experiences can have more impact.

Communication and collaboration applications provided by Google Applications for Education allow teachers and students to develop and work on projects and documents from any device.

The introduction of how technology becomes part of communication is that higher education organizations and delivery are already being transformed by technology. Increased access to information, connectivity, synchronous and asynchronous learning, cooperation and collaboration, cost-effectiveness, and pedagogical progress are the pedagogical and socio-economic factors that have guided higher learning institutions to implement and integrate ICTs in teaching and learning. (Sife, Lwoga, & Sanga, 2007). To use GFE, teachers, and students can access all the applications by just signing in. They can access an office suite of tools, comprising of Google Docs, Slides, Sheets, and more, which offers the potential of working on any document from any device and sharing and collaborating with others. Teachers and students have the flexibility of working from any computer or device with an active internet connection since all Applications are saved in the internet. Students and

teachers can save their work seamlessly and collaborate synchronously and asynchronously with each other (Noori, & Al-hamdani, R, 2017).

Indonesian students' participation is expected to increase matching a study of the implementation of Google Applications for Education which showed that 87.5% of the students involved finished with positive feelings towards Google Applications for Education, 85% reported that it opened positive communication with other students, and 75% reported that it opened positive communication with the teacher (Lin & Jou, 2013; Thornton, 2016).

The greater technological growth, especially in the field of education, changes teaching approaches. Schools applying the suggested findings from this study are expected to create reliable teachers who can use powerful communication resources to understand students better. Because the future of education technology is all about the cloud and access anywhere, teaching and learning will be interactive in the future. Google Applications for Education will allow more social lessons to collaborate productively using classroom technology and work together using Applications on documents. They may be in different countries or in the same room. These are all good skills for teachers and students; having all these collaborative tools (Britland, 2013).

1.6 Scope of the Study

This study aims to investigate the usage and adoption process of GFE and how it may become and contribute as one of the communication tools in classrooms. This research is not concerned with any other learning method or media used in the classroom. This study includes in its scope the adoption process in Indonesia with limited numbers of schools and teachers who have already applied Google Applications for Education in their classrooms.

As the research object, three Senior High Schools will be chosen from the East Jakarta area, which already received training in Google Applications for Education. Google for Educators Group from the East Jakarta area will provide schools recommendations that meet established criteria. This community is quite active in providing new media technology training to teachers in Eastern Jakarta, Indonesia.

Case study method is expected to help the researcher answering research questions. A case study is used as a research design to explore and understand complex issues, specifically in chosen schools. Based on the Indonesian Internet Service Providers Association data, the higher the level of education, the higher the percentage of students who have access to the internet. As many as 41.4 percent of elementary students have access to the internet, 80.4 percent in junior high school, 90.2 percent in senior high school who have accessed the internet in the last three months. And this data is supported by the maximum use of the internet by teachers, which is 100%. (APJII, 2019). The high numbers indicate the level of awareness of the importance of the internet as part of new media has been felt by students and teachers. This can be a strong reason for how using applications in learning as part of a medium of communication between teachers and students can be maximized.

CHAPTER 2

LITERATURE REVIEW

2.1 New Media in Education

As part of the communication process, creation of programmed learning is essentially aimed at computerizing teaching by structuring information, evaluating learners' knowledge, and providing immediate feedback to learners without human interference other than hardware and software design and content selection and loading and evaluation questions. In 1954, Skinner began experimenting with teaching machines that made use of programmed learning. The first network to use the Internet protocol was Arpanet in the U.S.A in 1982. Murray Turoff and Roxanne Hiltz at the New Jersey Institute of Technology experimented with blended learning in the late 1970s, using the internal computer network of NJIT. They merged teaching in the classroom with online discussion groups and named this 'computer-mediated communication' or CMCC (Hiltz and Turoff, 1978; Bates, 2016).

In 1991, the Term Wide Web was officially launched. In 1993, Mosaic, the first web browser, was made available. The Web-enabled the development of the first learning management systems (LMSs) in 1995, such as WebCTT (which later became Blackboard). LMS offers an online teaching environment that can load and organize content and provide 'spaces' for learning goals, student activities, assignment questions, and forums for discussion. In 1995, the first fully online (for credit) courses began to appear, some using LMS, others only loading text as PDFs or slides. The papers were predominantly text and graphics (Bates, 2016).

Since the 90s, digital media has set the general tone of the discussion. Several technical, socioeconomic, and cultural parameters depend on the concrete type of communication through these new media (Fortner, & Fackler, 2014). In enriching

teaching-learning cycles involving students and teachers, digital media innovations have tremendous opportunities and challenges (Rego, 2017). New media provides a range of web-based resources and services designed through collaboration and knowledge sharing to facilitate community growth. As well as connections with other users, these resources offer opportunities for individual expressions. New media innovations have brought together many different cultures and communities worldwide (Auwal, 2015).

The computers, cell phones, and the internet, as the communication channel, that have made their way into our classrooms are examples of digital media in education. These are the new media technologies (NMTs), which are computer-based and, more particularly today, are resident in our pockets with the advent of mobile phones and 3G and 4G internet, available at the user's will (Rego, 2017). At all stages, these forms of media have filtered into the education sector. They are seen to have tremendous opportunities in the field of education as well as difficulties in enriching the teaching-learning processes involving students and teachers (Rego, 2017).

Because of all the knowledge acquisition functions available to the learner, digital media are a motivator in the learning process. Podcasts, blogs, Twitter, emails, Wiki, search engines, and YouTube are digital media resources used for teaching and learning. This could boost literacy and learn across different student populations, so interdependence allows learners to access information and other world areas using different media via one network (Udoudo, & Ojo, 2016).

This research discusses the usage and adoption of Google Applications for Education as one example of new media development in education, which has become increasingly widespread. Google Applications for Education has grown from 8 million users in 2010 to over 40 million users as of February 2015. The user base includes