

**LECTURERS' AWARENESS OF, ACCESS TO AND
COMPETENCY IN THE USE OF GOOGLE APPS FOR
EDUCATION IN NIGERIAN UNIVERSITIES**

Ph.D. THESIS

BY

**ALIMI, Adebayo Emmanuel
91/029935**

SEPTEMBER 2017

**LECTURERS' AWARENESS OF, ACCESS TO AND COMPETENCY
IN THE USE OF GOOGLE APPS FOR EDUCATION IN NIGERIAN
UNIVERSITIES**

Ph.D. THESIS

BY

**ALIMI, Adebayo Emmanuel
91/029935**

**DEPARTMENT OF EDUCATIONAL TECHNOLOGY,
FACULTY OF EDUCATION,
UNIVERSITY OF ILORIN, ILORIN, NIGERIA**

DECLARATION

I declare that this thesis, Lecturers' Awareness of, Access to and Competency in the Use of Google Apps for Education in Nigerian Universities is my own work and has not previously been submitted by me or any other person for any course or qualification at this or any other tertiary institution.

I also declare that as far as I am aware, all cited works have been acknowledged and referenced.

Name: ALIMI, Adebayo Emmanuel

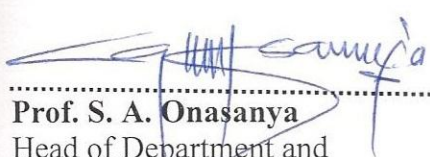
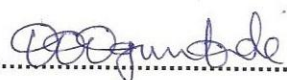
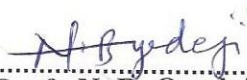
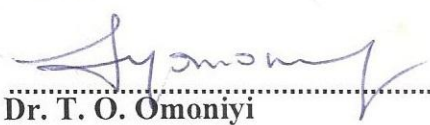
Matriculation No.: 91/029935

Signature:

Date:

CERTIFICATION

This is to certify that this research was carried out by ALIMI, Adebayo Emmanuel (91/029935). The thesis had been read and approved as meeting the requirements for the award of the degree of Doctor of Philosophy in Educational Technology, in the Department of Educational Technology, Faculty of Education, University of Ilorin, Ilorin, Nigeria.

Name	Date
 Dr. C. O. Olumorin Supervisor	<u>28/09/2017</u>
 Prof. S. A. Onasanya Head of Department and Chief Examiner	<u>28/09/2017</u>
 Dr. A. Tella Internal Examiner from Related Department of Library and Information Science	<u>28/09/2017</u>
 Dr. Oyeronke O. Ogunlade Departmental Postgraduate Programmes Coordinator and Internal Examiner	<u>28/09/2017</u>
 Prof. N. B. Oyediji Dean, Faculty of Education	<u>29/09/2017</u>
 Dr. T. O. Omoniyi External Examiner	<u>28/09/2017</u>

COPYRIGHT

**LECTURERS' AWARENESS OF, ACCESS TO AND COMPETENCY IN THE
USE OF GOOGLE APPS FOR EDUCATION IN NIGERIAN UNIVERSITIES**

BY

**ALIMI, Adebayo Emmanuel
91/029935**

©2017

All Rights Reserved

DEDICATION

This work is dedicated to The Almighty God.

ACKNOWLEDGEMENTS

My first appreciation goes to The Almighty God, the Father of Our Lord Jesus Christ, the only Saviour of the World. I am also grateful to my project supervisor, Dr. C. O. Olumorin for all his efforts and advice during the course of this project. I shall forever be grateful to him. Also, my profound gratitude goes to my internal/external supervisor, Dr. A. Tella of Library and Information Science, Faculty of Communication and Information Sciences.

Worthy of mention is the Head of Department of Educational Technology, Prof. S. A. Onasanya, who despite his tight schedule took pain to go through this work and made necessary contributions. Equally, I appreciate all the academic staff of the Department of Educational Technology, University of Ilorin, Ilorin, Nigeria who have immensely contributed to the success of this work. They are: Prof. M. O. Yusuf, Director, Computer Services and Information Technology (COMSIT), University of Ilorin who also is the immediate past Head of Department of Educational Technology, Dr. O. O. Obielodan, Dr. M. A. Fakomogbon, Dr. Mosiforeba V. Adegbiya, Dr. Oyeronke O. Ogunlade, Dr. Nafisat A. Adedokun-Shittu, Dr. Aderonke K. Soetan, Dr. Florence O. Daramola, Dr. A. I. Issa, Dr. A. A. Falade, Dr. A. A. Abd-Elaziz, Dr. A. A. Amosa, Mr. N. J. Alasan, Mr. K. K. Oladosu, Mr. T. A. Sanni, Mr. S. J. Obadoyin, Mr. M. R. Abdulraman, Mr. K. J. Muhammed, Mr. A. M. Aderoju, Mr. S. A. Hamza, and Mr. E. S. Ibironke. I thank them all.

I am also grateful to all non-teaching staff of the Department for administrative assistance rendered during the course of this study, May God bless you all. I acknowledge also my wife - Choice, a virtuous and noble woman indeed, for her tolerance and endurance with me during the course of this work; may God renew your strength and perfect His purposes for our home in Jesus name. Also my appreciation goes to all

members of Life Moulders Assembly (Headquarter) Olunlade, Ilorin, Kwara State, Nigeria for their prayers and moral support, I wish all of you, heaven at last in Jesus name. Finally, I appreciate all authors and researchers whose works were cited in this study, I thank them and may God richly bless them all. Amen.

TABLE OF CONTENTS

Title	i
Declaration	ii
Certification	iii
Copyright	iv
Dedication	v
Acknowledgements.....	vi
Table of Contents	vii
List of Tables.....	x
List of Figures	xi
Abstract	xii

CHAPTER ONE

INTRODUCTION

Background to the Study	1
Statement of the Problem	12
Purpose of the Study	13
Research Questions	13
Research Hypotheses	14
Scope of the Study	14
Clarification of Major Terms and Variables	15
Significance of the Study	16

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Theoretical Framework for the Study	19
Pedagogical Practices of Using Information and Communication Technology (ICT).....	22
Meaning, Nature, Awareness and Evolution of Google Apps for Education	28
Influence of University Proprietorship on the Access and Use of Google Apps for Education.....	47
Studies on University Lecturers' Academic Status on the Use of Google Apps for Education for Academic Purposes	50
Studies on University Lecturers' Competence in the Use of Google Apps for Education.....	51
Influence of Lecturers' Gender on the use of Google Apps for Education.....	52
Conceptual Framework for the Study.....	54
Appraisal of the Reviewed Literature.....	61

CHAPTER THREE

METHODOLOGY

Research Design	65
Sample and Sampling Techniques.....	65
Research Instrument	67
Validation of the Research Instrument	67
Procedure for Data Collection	68
Data Analysis Techniques	69

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

Data Analysis	70
Results	72

Summary of Findings	85
---------------------------	----

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Discussions	85
Implications of the Findings	89
Conclusions	91
Limitation of the Study	92
Recommendations	92
Suggestions for Further Studies	93
REFERENCES	94

APPENDICES

Appendix I: Questionnaire	106
Appendix II: List of Nigerian Universities	110
Appendix III: Israel's Model for Determining Sample	117
Appendix IV: Nine Basic Lessons in Google Apps for Education (GAFE)	118
Appendix V: Google Apps for Education Core Services	149
Appendix VI: Reliability Statistics on Awareness of, Access to and Competency in the Use of Google Apps for Education.....	150
Appendix VII: University Ethical Review Committee Approval.....	154
Appendix VIII: Approval of Doctoral Research Protocol	155
Appendix IX: Instruction Validation Form	156
Appendix X: Ph.D. Budget.....	165
Appendix XI: Ph.D. Research Plan and Timeline Rescheduled.....	166

LIST OF TABLES

Table 1: Services of Google Apps by Type of Account and their Requirements	5
Table 2: Sample Size of the Study Based on Israel's Model (2013).....	66
Table 3: Number of Sampled Respondents	70
Table 4: Percentage Distribution of Respondents by Gender.....	71
Table 5: Percentage Distribution of Respondents by Status.....	71
Table 6: Percentage Distribution of Respondents by University Proprietorship.....	72
Table 7: Frequency Count and Percentage of Respondents on Lecturers' Awareness of GAfE	72
Table 8: Frequency Count and Percentage of Respondents on Lecturers' Access to Google Apps for Education.....	73
Table 9: Lecturers' Competence in the Use of Google Apps for Education	74
Table 10: Gender Influence on Respondents Use of Google Apps for Education.....	75
Table 11: Status on the Use of Google Apps for Education.....	77
Table 12: Proprietorship Influence on the Use of Google Apps for Education.....	78
Table 13: Difference between Male and Female University Lecturers' Awareness in the Use of Google Apps for Education.....	78
Table 14: Difference between Male and Female University Lecturers' Access to the Use of Google Apps for Education.....	79
Table 15: Difference between Male and Female University Lecturers' Competence in the Use of Google Apps for Education.....	80
Table 16: University Lecturers' Use of Google Apps for Education.....	80
Table 17: Post Hoc Tests for Lecturers' Status.....	81
Table 18: Scheffe Means for Groups in Homogeneous Subsets.....	82
Table 19: Influence of University Proprietorship on Lecturers' Use of Google Apps for Education.....	83

LIST OF FIGURES

Figure 1: Current Scenario in the Digital Age	4
Figure 2: Process of Staff Development, the Relationships of Belief, Attitude to Usage and Perception of Future use of ICT	48
Figure 3: Google Apps for Education on Substitution Augmentation Modification Redefinition (SAMR) Model	54
Figure 4: Diffusion of Innovation Theory.....	56
Figure 5: Five Innovation Adopter Categories	57
Figure 6: Technology Acceptance Model (TAM).....	59
Figure 7: Proposed Hypothetical Researcher-Designed Conceptual Model.....	60
Figure 8: Summarized Results of the Field Study Model.....	84

ABSTRACT

The emergence of Information and Communication Technology (ICT) and its integration into teaching and learning have led to qualitative delivery of lecture and learning by lecturers and students respectively. However, studies reveal that most lecturers in Nigerian Universities have low level of awareness, access to and competency in handling ICT tools. This research therefore, investigated lecturers' awareness of, access to and competency in the use of Google Apps for Education (GAfE) in Nigerian universities. The objectives were to investigate: (i) university lecturers' awareness of GAfE; (ii) university lecturers' access to GAfE; (iii) competency of University lecturers' use of GAfE; (iv) influence of gender on the use of GAfE; (v) influence of University lecturers' status on the use of GAfE; and (vi) the influence of university proprietorship on lecturers' use of GAfE.

The research was a descriptive method of the survey type. The population comprised all lecturers in Nigeria universities registered with Google (2,800), out of which 1,042 lecturers were sampled. A researcher-designed questionnaire entitled "Lecturers' Awareness of, Access to and Competency in the Use of GAfE in Nigerian universities" was used to collect data. The instrument was subjected to face and content validity by experts and tested for reliability using Cronbach alpha. The three sections of awareness, access and competence yielded 0.71, 0.84 and 0.81 respectively. Descriptive statistics, percentage and means were used to analyse collected data for the research questions, while t-test and Analysis of Variance (ANOVA) were used to test the hypotheses at 0.05 level of significance.

The findings were that:

- i. university lecturers were aware of GAfE (74.1%);
- ii. a total of 531 (55.4%) lecturers had access to GAfE in their personal offices while 44.6% had access to it at home and other places in the academic area like library, computer laboratory and classroom;
- iii. lecturers were generally not competent in the use of GAfE as the observed grand mean of 1.96 was lower than the benchmark score of 2.5;
- iv. gender had significant influence on respondents' use of GAfE in favour of male lecturers ($t = 4.04$, $p = 0.000$);
- v. lecturers' status had significant influence on the use of GAfE in favour of graduate assistant ($t = 4.04$, $p = 0.000$); and
- vi. university proprietorship had significant influence on lecturers' use of GAfE in favour of Federal Government owned universities ($t = 6.89$, $p = 0.000$).

The study concluded that lecturers were aware and had access to GAfE but access limited to their offices. Given chance, there is readiness in lecturers to make use of GAfE for instruction. The implication was that, using GAfE for teaching would revolutionize classroom activities and would enhance the process of communication both within and outside the university. It was recommended that Nigerian university be licenced to use GAfE for teaching and learning. Opportunity should be created for lecturers to use GAfE outside their offices; while training and re-training on GAfE be regular in order to leverage on University lecturers' competency for GAfE usage.

Word Count = 494

CHAPTER ONE

INTRODUCTION

Background to the Study

The application of evolving technology for instruction is an idea that has characterized the twenty-first century research, teaching and learning. Nigeria Computer Society (NCS) opined that emerging technologies is an integral part of Information and Communication Technology (ICT) that has the potential to accelerate, motivate and engage both lecturers and students for instruction (Nigeria Computer Society, NCS, 2014). Some of these technologies are cloud computing, games and gamification, tablet computing, mobile learning, open content, learning analytics, three dimensional (3D) printing, wearable technology, Massively Open Online Courses (MOOCs), Online learning, remote laboratories, Edmodo, periscope, learning management system (LMS), Google Apps for Education (GAfE) and so on.

The application of emerging technologies has greatly improved the quality of research, teaching and learning at every level. Google Apps for Education (GAfE) is an offshoot of emerging technology with the capacity to move research, teaching and learning from analogue to digital technology (Twaki, 2013). GAfE have implications for future infrastructural requirements and could as well have impact on instructional organization because it can not be separated from wider issues impacting on education and training.

GAfE is a cloud-based productivity suite that possess feature that has the capacity to help connect users and get work done from anywhere, on any device. It is simple to setup, use and manage the application. It is a suite that enables users to work smarter and focus on what really matters. It is a productivity suite for institutions who signed a Memorandum of Understanding with Google (Google, 2016). It is easy to use for both students and teachers, because some of the tools are being used already like Google Mail, Calendar, Sites, Sheets and so on. GAfE tools work together in a similar menus and functions that are related to

regular generic software like Words Document, Excel, PowerPoint and PageMaker. Files on GAfE are cloud based that back up files and documents on Google's servers which make them accessible from any computer and mobile device. Instruction on GAfE can become engaging, interactive, and collaborative. GAfE users are well informed through Google+, Google reader, and Google news. GAfE allows users to search more efficiently with scholar, safe search, advanced search and other custom searches. GAfE allows connection and communication with students, parents, and colleagues using Gmail and Google+, Google+ Circles, Google Groups, among others (Yusuf, 2016).

There are different types of Google apps, namely: Google apps for business, Google apps store, Google apps account, Google scholar, Google Apps for Education among others. Google Scholar was introduced in November, 2004 as a free citation analysis tool that can be used in conjunction with the traditional commercial subscription citation products such as Thomson Reuters Web of Science and Scopus (Web of Science, 2015). There are lot of advantages associated with using Google Scholar: it very fast and easy to use; it is a free search tool that offers content that are free, open, visible and retrievable; it indexes academic literature across an array of publishing types and formats; it is very broad, comprehensive and also an important free citation source that indexes resources that the traditional commercial citation databases do not cover (Web of Science, 2015).

In relation to Google Scholar, GAfE is a new discovery for teaching and learning (Google, 2015). It is a powerful solution to meet the needs of both lecturers and students. It is a web-based application that gives room for email, calendar, drives, sites and documents collaboration for study anytime, anywhere. Google Apps for Education contains some suits of productivity tools which include Google Drive, Classroom, Slides, Sites, Calendar, Gmail, Docs, Sheets among others. It is a tool that was designed hand-in-hand with teachers or lecturers to help them keep Online (Virtual) classes organised, manage time, and improve interaction with students (Jeff, 2011).

Google (2015) asserts that classroom is made available to anyone with GAFE, this enable lecturers communicate with their students and easily share assignments, materials, and information. Plan is in progress with Google to make classroom available to everybody with Google account. This will enable individual to run GAFE and not necessarily to be attached to an institution. Google Apps for Education include dozens of critical security features specifically designed to keep institution's data secure, safe and in a perfect control. In a scenario where lecturer is teaching in classroom situations, efforts are made to view the students holistically while students enter classroom from a variety of background and bring with them different expectations, experiences and assumptions. More than two million students and lecturers around the world are using Google Apps for Education because it can be used across different devices and operating systems (Google, 2016). GAFE support acquisition of 21st century skills lecturers and students need for the future. These include collaboration, communication, creativity and critical thinking.

Google Apps for Education could allow both lecturers and students to possess enough wealth of research, build and produce technology needed for the university. This is why universities are being equipped technologically for the twenty-first century challenges. Google, (2015) identified Nigerian universities (Appendix II) that have engaged GAFE for the purpose of teaching, learning and research. That is, each of these universities has duly signed a memorandum of understanding (MoU) with Google. The universities are University of Ibadan, Ibadan; Ladoke Akintola University of Technology, Ogbomoso; Federal University of Technology, Minna; Covenant University, Ota and University of Ilorin. These are few of the institutions in Nigeria to introduce GAFE for adequate research, teaching, learning and for collaboration among intellectuals.

Google (2014) described how to get Google Apps for Education devices; the procedures apply to both institution and individual subscribers. Interested institution needs to set up a Google app for education account. When the institution is ready to order the

devices, Google Sales team will work with that institution to get devices for the institution. To activate Google Apps for Education, lecturers and students in that institution must have Chrome-books or Android tablets with a management license. The management license is the key to unlocking the Google Apps for Education. The next step is to find out how to activate Google Apps for Education on the laptop, tablet or personal computer (PC). Generally, to sign up to GAfE requires Information Technologist (IT) or Administration's assistance because the process requires access to the school's web domain.

GAfE is for schools, with daily support at no cost after the initial subscription. It never needs any ads-on, and the data is made strictly confidential and personal. It makes available for the user to create, share, and edit files in real-time. It enables lecturers and students to be on the same page, and the page is spontaneously put in storage in the cloud (Figure 1). Cloud technology enables individual and organizations to consume computed resources as a utility, just like electricity rather than having to build and sustain computing infrastructures in-house. It makes the learners to enjoy a consistent experience from any computer, tablet, or phone and grant ability to work anywhere and at any time (Cloud-Computing, 2015).



Figure 1: Current Scenario in the Digital Age

Source: Adapted from Jeff, (2011)

GAfE makes available additional storage across Gmail and drives that guarantee 99.9% uptime, it enhances security features and support full administration of all user accounts (Jeff, 2011). GAfE allows storage space of about 30 gigabites (GB) per account, allocated for use across all products including e-mail. GAfE supports content management system, that is, branded Google Classroom for document sorting and communication (Google, 2015). Microsoft Company is now making classroom available also to its subscribers but GAfE is a good choice to improved communication, collaboration and envisioned ways to enhance teaching and learning in Nigerian universities.

Table 1 shows the other services of Google apps by type of account and their requirement. Details on how some of these apps function can be found in appendix IV.

Table 1: Services of Google Apps by Type of Account and their Requirements

Google Apps	Requires Google Account	Gmail Address	Google Apps for Work	
			Standard	Higher
Gmail	Yes	Yes	Yes	Yes
Google Apps Sync	Yes	Yes (Using Microsoft Exchange)	No	Yes
Google calendar	Yes	Yes	Yes	Yes
Google Contacts	Yes	Yes	Yes	Yes
Google Contacts Sync	Yes	Yes (Microsoft Exchange)	Yes	Yes
Google Drive	Yes	Yes	Yes	Yes
Google Groups	Yes	Yes	Yes	Yes
Google Sites	Yes	Yes	Yes	Yes
Google Tasks	No	Yes	Yes	Yes
Google Voice	No	Yes	Yes	Yes
Google Analytics	No	Yes	Yes	Yes
Google+	Yes	Yes	Yes	Yes
Classroom	Yes	Yes	Yes	Yes

Source: Google, (2014)

There are some universities in Nigeria that have Internet services available but not subscribed to GAFÉ while there are only few universities that subscribe to GAFÉ but do not utilize the benefits from the technology (Jeff, 2011). Nigeria comprises of thirty-six States and the Federal Capital Territory (FCT). The Federal Government of Nigeria through National Universities Commission (NUC) has enacted policies to enable tertiary institutions in the country to benefit from new technologies available in the digital society. Educational organizations are expected to implement the Federal Government reform agendas and lecturers are challenged to make full use of ICTs tools to develop student learning outcomes (Afolabi, 2011). Nigerian universities therefore need to build their programmes on the platform of knowledge and skills as prevalent in developed countries like Japan, United States of America, Canada, France and so on. Part of these strides include adequate legal framework for a knowledge based education, data security, infrastructure, Information Technology (IT) literacy, and Google Apps for Education application (NCS, 2014).

The university education in Nigeria is regulated by the National Universities Commission (NUC). Nigerian universities as indicated in appendix II, have programmes aimed at training high level manpower for national development through certificate in Bachelor (B.A., B.Sc., B. Ed., LLB and MB;BS), Masters (M.A., M.Sc., M. Ed., MLB and Doctoral Degrees (Ph.D.) in the areas of Agriculture, Arts or Humanities, Education, Engineering and Technology, Medicine, Sciences, Social Sciences and so on. The NUC enunciated that university education shall contribute to the national development through high level relevant human power training. It is expedient that lecturers train students to be relevant and active participants in this global Information and Communication Technology (ICT) age, National Policy on Education (Federal Republic of Nigeria, FRN, 2014). The NUC is the constituted body in Nigeria that is empowered to monitor and in full supervision of the standard of education; encourage availability of infrastructural facilities and introduces the emerging technologies for the advancement of universities education.

It is the responsibility of the proprietor of university to provide the necessary infrastructures for adequate research, teaching and learning. Therefore the onus of raising Nigerian universities to international standard is the obligation of their proprietors. The proprietors are the vision and mission bearer of their institutions. The proprietor carryout their obligations in accordance to NUC regulations and in conformity with the national policy on education by complying with minimum standard laid down by the National Policy on Education (FRN, 2014).

The Nigerian Universities are owned by different proprietors: there are Federal Government owned universities, there are State Government owned Universities and privately owned universities. There are male and female academic staff with different status namely professor, reader or associate professor, senior lecturer, lecturer I, lecturer II, assistant lecturer and graduate assistant. Lecturers are the resource persons involved in research and teaching at the university. Among these lecturers are digital natives and digital immigrants. The digital natives, mostly, are the young lecturers, speakers of the digital language of computers, Internet and video games. The digital immigrants are the lecturers who were born before the digital age but have at one time or the other become fascinated by and adopted many or most aspects of the new technology (Twaki, 2013).

Bozalek, Ng'ambi and Gachago (2013) asserted that some of the digital immigrants lecturers were not ready to learn new technology because they thought that their own era was fading away and that it could not be easy to catch-up with the younger generation. The researcher is of the opinion that lecturers be updated in the use of new technology with the ability to use GAfE especially for communication, teaching and research purposes. The awareness to use GAfE however made the university lecturers have concern for the benefits inherent in competency and use of GAfE as introduced by the individual proprietorship.

The Oxford Advanced Learner's Dictionary (2001) defines gender as the biological sex of an individual that is, usually male or female. However sex is further defined by

Hornby (2000) and Pocket Oxford Dictionary (1994) as the biological characteristics of a person which portrays him or her as a male or female. Therefore, gender is a state of being male or female, boy or girl, man or woman, that is, femininity or masculinity. Proficiency of lecturers have been linked with awareness and access to ICT resources. Biological factors within the learners and cultural variables could account for differences in abilities of male and female. For instance, in traditional African society as well as in many societies in the world, it is common that gender determines the role to be ascribed to either male or female. For example, African men are projected to be aggressive, determinant, agitated, and exploratory while woman are projected to be submissive, compliant, reserved and reliant on. A consequence of this societal or cultural expectation is that a specific learning competency is marked out in the females than males (Afolabi, 2011).

There are many technologies currently available for teaching and learning in tertiary institution globally therefore Nigerian universities should not be in exception to integrate these technologies. Moreover, it was discovered that some of these universities are not engaging in the use of these technologies for instruction as expected when likened to the industrialized countries like America, Japan, Italy, France and so on (Twaki 2013 & Niba 2014). It is possible that, some of these universities are not aware of these technologies which include cloud computing, wearable technologies, social media, GAfE and many more. Thus, awareness to new technology is imperative since this will accelerate the incorporation for teaching and learning. Twaki (2013) asserts that, some of the universities that are aware of GAfE are not using it to the maximum because they lack infrastructure like internet, bandwidth and internet service provider (ISP) to fully employ the usage by the lecturers for teaching, learning and research.

In relation to this, Jeff (2011) asserted that, there were some of the university lecturers that were eager to use these emerging technologies for instruction, but the available infrastructures could not support their use. This may be as a result of lack of regular power

supply, low bandwidth, lecturers' dread and access to these emerging technologies. This led to the NUC's decision to upgrade some of the universities to international standard (Afolabi 2011).

Ip and Fox (2004) opined that the use of ICT for teaching and learning depend on the amount and range of ICT resources available to the lecturers. Where there are limited numbers of ICT resources in a class, this limits their impact, because each individual student is only able to use the ICT resources for a few minutes. Whole-institution use of technology has both positive and negative effects. It promotes students' debates and helps them visualize difficult concepts and processes. However, some lecturers focus only on the presentation aspects, disregarding the use of simulations and modelling that was made easy using GAfE and which might be more challenging for the students (Bozalek, Ng'ambi & Gachago, 2013).

University of Ilorin was among the universities chosen by the NUC in 2014 for upgrading to the twenty-first Century University (University of Ilorin Bulletin, 2014). It is expected that the universities be upgraded in term of infrastructure and information and communication technology (ICT) facilities. This would open the opportunity for the provision of e-library facilities increase and upgrade bandwidth with introduction of fibre optic for Internet availability in the University. This will also prompt the State owned universities and private universities to equally fund their institutions in the area of infrastructure and provision of ICT facilities centrally on the Internet. This is the premise on which the use of GAfE can strive just as it is at University of Ibadan (Unilorin Bulletin, 2013).

The University of Ibadan, Distance Learning Centre (DLC), was the first unit to use GAfE. At a time the Centre was facing some challenges in maintaining its own IT infrastructure and depended entirely on internally generated funds. This put a lot of constraints on resources and the centre could only provide one single, official university email address to lecturers. The lecturers having been empowered via training, seminars and

workshops strengthened the forms of communication other than face-to-face interactions. Afolabi (2011) opined that lecturers were not confident in the use of ICT resources. Also few lecturers were confident in using a wide range of ICT resources, and limited confidence affected the way lectures were conducted, because many lecturers were not making much use of these technologies in teaching (University of Ibadan Website, 2015).

At Ladoke Akintola University of Technology (LAUTECH), Ogbomoso, both academia and administrative staff found the cultural adjustment of going digital very challenging, as they were completely unfamiliar with using technology and were more comfortable with the paper-based approach. LAUTECH addressed this by firstly engaged in training lecturers and students on how to use GAfE. With a suitable technology infrastructure in place, LAUTECH was able to supply students with email addresses, eliminating the hacking attacks which prevented lecturers from using their email accounts, as well as saving the IT team's time in fire-fighting security issues. To encourage adoption of GAfE, the management of LAUTECH issued a mandate for all offices to go paperless after series of seminars, workshops and conferences held (Afolabi, 2011). The engagement in the use of GAfE has since greatly improved communication between the administration, staff and students of the institution.

Similarly at Covenant University, Ota, Ogun State, Nigeria and Federal University of Technology, Minna, Niger State, Nigeria, GAfE was introduced to enhance better collaboration among administrators, staff and students. The challenge of going digital drove the two institutions to embark on series of seminars, lectures, workshops and conferences on the application of emerging technology in education. Among other innovations GAfE was given priority in the drive to go paperless, improve on the mode of communication among lecturers, students, parents, wards and administration and rank the highest among others (Covenant University Website, 2014 and Federal University of Technology Website, 2014).

Some of these universities through using GAfE improved in general communication, as this enable quick responses to queries over Gmail and access to course information via Sites. This helps to break communication barriers between lecturers and students. GAfE employ the advantages of social media via phones between lecturers and students for collaboration. This boosts communication and collaboration of all kinds across the campus and has positively impacted on the culture and the smooth-running of institution. Olumorin (2008) emphasised the fact that, there is distinction between possession of knowledge and the competency to use such knowledge and skills for appropriate purposes. Thus, with all the seminars, training, workshops and conferences on GAfE, the competency level was still noted to be poor, following United Nations Educational, Scientific and Cultural Organisation (UNESCO) definition.

UNESCO (2005) defines competency as a set of attributes that covers knowledge, skills and attitudes for enabling one to effectively perform activities of a given occupation or function to the standard expected in employment. The competency with regard to the use of GAfE for instruction is wider than the general skills needed to use ICT. The type of competency needed in this regard is ability to manipulate, control, and use Google Apps for Education packages or programmes for instruction in relation to academic matters. The rationale for accessibility and use of GAfE for teaching, learning and research process in Nigerian Universities is justified on the strength of the strategic position Universities occupy in the educational system and manpower development.

Statement of the Problem

Current world economy system recognises the advancement in digital technological development and benefits derived from ICT in various industries, like banking system, business, transportation, aviation, communication and so on, hence education industry should not be left out. There is serious need therefore to digitised activities in the classroom in order to produce competent manpower for the new age.

The use of technologies in Nigerian Universities is still very poor and this makes education to lag behind as new technologies particularly for teaching and learning are not adequately embraced (Patrick, 2014). Yusuf and Onasanya (2004) and Cothran (2012) acknowledged ICT tools as crucial to teaching and learning, in view of this, ICT's use in education by academia and students has become a vital tool that is yet to be used to its fullness.

Afolabi (2011) and Patrick (2014) revealed that there was a low level of awareness of and access to ICT infrastructure in Nigerian University because, availability of these infrastructures by the universities' proprietor were still inadequate. Availability of ICT tools and usage was opined to be the solution to inherent challenges of inadequate lecture room for large class, increased virtual library system and Internet usage caused by massive increase in admission intake yearly (Afolabi, 2011).

Similarly, it was observed that few lecturers are confident in using a wide range of ICT resources, and limited confidence affects the way lecturers conducted their lessons. This was why Afolabi (2011) concluded that lecturer's technological phobia, lack of adequate awareness and access to new technologies prevent them from making much use of new technologies in their teaching.

Kathy, (2015) reported that there are few cases where technologies are available for instruction but the lecturers' competency in handling them are still very low. This might have prompted lecturers adhering to their traditional method of chalkboard, paper and pencil

assessment and method of communication. Studies like Afolabi (2011), Patrick (2014) and NCS (2014) revealed that most lecturers in Nigerian Universities have not acquired adequate competency in handling new technologies among which is Google Apps for Education. Hence, the study sought to ascertain the level of lecturers' awareness of, access to and competency in the use of Google Apps for Education in Nigerian universities.

Purpose of the Study

The main purpose of the study was to assess lecturers' awareness of, access to and competency in the use of Google Apps for Education in Nigerian Universities. Specifically the study:

1. investigated University lecturers awareness of Google Apps for Education;
2. investigated University lecturers' access to Google Apps for Education;
3. assessed the competency of University lecturers' use of Google Apps for Education;
4. examined the influence of gender on the use of Google Apps for Education;
5. examined influence of University lecturers' status on the use of Google Apps for Education; and
6. examined the influence of University proprietorship on lecturers' use of Google Apps for Education.

Research Questions

The following research questions were generated to monitor the conduct of this study:

1. Are University lecturers aware of the use of Google Apps for Education?
2. Do University lecturers have access to Google Apps for Education?
3. What is the level of University lecturers' competent in the use of Google Apps for Education?

4. What is the influence of University lecturers' gender on use of Google Apps for Education?
5. What is the influence of University lecturers' status on the use of Google Apps for Education?
6. What is the influence of University proprietorship on lecturers' use of Google Apps for Education?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

- Ho₁: There is no significant difference between male and female University lecturers' awareness in the use of Google Apps for Education;
- Ho₂: There is no significant difference between male and female University lecturers' access to the use of Google Apps for Education;
- Ho₃: There is no significant difference between male and female University lecturers' competency in the use of Google Apps for Education;
- Ho₄: There is no significant difference in the competency of University lecturers' in the use of Google Apps for Education based on status; and
- Ho₅: There is no significant difference in the influence of University proprietorship on lecturers' use of Google Apps for Education.

Scope of the Study

This study primarily focused on University lecturers in Nigeria. The Universities comprised federal universities, state universities and private universities. Specifically, the study assessed lecturers' awareness of, access to and competency in the use of Google Apps for Education (GAfE) in the selected Nigerian universities. The study employed descriptive research design of the survey method for the investigation by administering questionnaire to

seek the respondents' opinion. The researcher make use of Israel (2013) model to determine the sample size. The sample size for the study consisted of 1,585 out of 2800.

The independent variables were lecturers' awareness, access and competency in the use of GAfE. The intervening variables of gender, status and proprietorship were also examined. However, awareness, access and competency in the use of GAfE were based on lecturers' responses to the questionnaire and self-report of use, which would be subjective.

Clarification of Major Terms and Variables

The following terms and variables were operationally used in this study are defined as follow:

Access: the privilege to use GAfE. Also, it is a panacea for effective adoption and integration of GAfE into teaching in Nigerian University.

Assessment: An opinion or a judgement about lecturer's use of GAfE for instruction based on their self-report.

Awareness: University lecturers' knowledge or familiarity to the existence of GAfE.

Competency: Lecture self-rating on their ability to manipulate, control, and use Google Apps for Education packages in instruction for other academic purposes.

Digital Immigrants: These are the lecturers who were born before the digital age but have at one time or the other become fascinated by and adopted many or most aspects of the new technology

Digital Natives: These are the young lecturers, speakers of the digital language of computers, Internet and video games.

Google apps: A cloud-based productivity suite that help lecturers and students connect and get work done from anywhere on any device.

Google Apps for Education: The critical features specifically designed for communication and collaboration by Google for instruction to keep education data safe, secured, controlled, digitalised and for easy communication in the classroom.

Proprietorship: A person or group of people who are owners of the university and also responsible for providing necessary facilities for uninterrupted research, teaching and learning.

Status: A professional position or ranking for University lecturers using GAfE for instruction, in this study, they are Professor, Reader, Senior lecturer, Lecturer I, Lecturer II, Assistant Lecturer and Graduate Assistant Lecturer.

Use: Intensities and stages of applying Google Apps for Education effectively by University lecturers for instruction.

Significance of the Study

It is expected that this study would be of great benefit to various stakeholders of university system which include government, both at Federal and State levels, proprietors of private universities lecturers, students, policy makers, curriculum planners, instructional software developers, examination bodies and future researchers.

Findings from the study would be useful to the Federal Government, State Government and proprietors of private universities to know the competency levels of universities lecturers on the use of ICT equipment and GAfE in particular for instruction. This would help the government to know the areas in which to intervene and at what level in providing Internet facilities to their Universities for instruction purposes. It would also help the government to determine the type of training, seminar, workshop and conferences to organise for lectures in order to update and leverage their ICT knowledge and the use of GAfE for instruction among their colleagues.

The study would also be beneficial as it could help solve problems encountered with the conventional teaching that made use of chalk and blackboard, since the application of Google Apps for Education could facilitate the lecturers' duties in the lecture room. This could be so because lecturers would be aware that GAfE can be used to give and monitor an assignment as at when due. It could also reduce the time taking in giving and receiving feedback from assignment. They would also be aware that GAfE could be used to communicate parents and guardians with ease and granted the latter the opportunity to receive feedback on the child or wards' performance.

The outcome of the study would also create the awareness in students that their parents and guardians could be communicated about their performance in school, this may prompt students to be more serious in their studies because their parents and guardians can receive detail information about their performance in school. It may also assist the students to communicate freely to their lecturers without stress.

Educational policy makers would also be aware about the benefits of GAfE to education and may find it good to introduce the use of GAfE to Nigerian Universities based on the advantages that could be derived from it. Parents and guardians also may enthusiastically accept the reviewed policy as the knowledge is already established that implementation of GAfE would be of great benefit to them and students. This may also lower the overhead cost of administration and hence improved efficiency.

The outcome of the study would be useful to the educational curriculum planners because they would be aware, equipped and enlightened to always consider GAfE in the curriculum planning based on the numerous reimbursements that GAfE promised to give. This could add credit to the curriculum planner because the government, parents and students would gladly accept such curriculum having seen the benefits that application of GAfE abilities to educational sector in the country.

The indigenous instructional software developers could also find the study useful as they would be encouraged to work harder and introduce more indigenous instructional software as at when due to the educational sector. Indigenous instructional software developers' field is dynamic and call for frequent updating especially in the twenty-first century technology.

Nigerian university entrance examinations body would as well find GAfE useful to inculcate the use for examinations. This would empower government to have first class information on how to assist the lecturers in their performance by sponsoring and organising training, workshops, conferences and seminars. The introduction of GAfE to examination could also help manage examination malpractices and reduce the overhead cost as it involved less use of paper.

Finally, future researchers would also be provided with a base to build on with respect to the findings of the study and it application to teaching and learning in Nigerian Universities. They - future researchers, could also carryout similar study in other higher institutions different from the Universities.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter reviewed the related literature to this research by considering other researchers' opinions and views under the following sub-titles:

1. Theoretical Framework for the Study;
2. Pedagogical Practices of Using Information and Communication Technology (ICT);
3. Meaning, Nature, Awareness and Evolution of Google Apps for Education;
4. Influence of University Proprietorship on the Access and Use of Google Apps for Education;
5. Studies on University Lecturers' Academic Status on the Use of Google Apps for Education for Academic Purposes;
6. Studies on University Lecturers' Competency in the Use of Google Apps for Education;
7. Influence of Lecturers' Gender on the use of Google Apps for Education;
8. Conceptual Framework on Lecturers' Awareness, Access and Competency in the Use of Google Apps for Education; and
9. Appraisal of the Reviewed Literature.

Theoretical Framework for the Study

The theoretical framework adapted for the study are two, namely, the theory of individualized instruction model and the zone of proximal development theory. The term 'zone of proximal development' (ZPD) is a concept advanced by Vygotsky (1978) in Denhere, Chinyoka, and Mambeu (2013), explains the difference between a learner's ability to accomplish a task independently, without the guidance of an instructor. For example, a learner is able to perform simple addition when working with his or her teacher or parent, but the same student is frustrated when performing the task alone. Guiding the student to use tools, strategies, and by asking questions about why he or she is using each tool or strategy,

the student is able to fortify knowledge and eventually improve independently. A scenario where a college student struggles on his own to understand a current philosophy that is being studied when it is discussed in class. The lecturer works with the student in order to help him learn how to approach the philosophy book and how to consider the right questions to ask himself while reading alone.

Another example is a medical student who struggles to effectively put in stitches. A more experienced student helps him or her to learn how to do so through modelling by rendering a help and later releasing full responsibility to the newer student. By understanding what students are able to achieve alone, as well as what they are able to achieve with assistance from their lecturer can develop plans to teach skills in the most effective manner possible, giving students a gradual release of responsibility to perform tasks independently. The zone of proximal development has contributed greatly to the field of education and is used in developing age appropriate curriculum and teaching techniques (Owayid & Uden, 2014).

The second adapted model is that of individualized instruction model (IIM). The improvement of instruction has been a goal of educators as far back as the teachings of the Greek philosopher Socrates. Although there are a wide variety of approaches, in most cases instruction can be characterized by the following tasks: setting objectives, teaching content based on these objectives, and evaluating performance. This formula is indeed the most common; however, there were many alternative approaches. Among the alternative approaches was one that focus on a more individualized approach to instruction, where the traits of the individual learner are given more consideration (Kurniabudi, Sharipuddin, Setiawan & Assegaff, 2014).

Each approach to individualizing instruction is different, but they all seek to employ the three following fundamental variables (i) pace - which is the amount of time given to a student to learn a particular content; (ii) method - which narrates the way that the instruction

is structured and managed and (iii) content - that explains the material to be learned. Individualized instruction is an instructional method tailored to fit the educational needs and skills of an individual learner. This involves changing the pace the information is delivered, the methods through which the content is offered, and the materials distributed.

Based on the IIM, learners are provided with in depth and effective educational materials, such as interactive media or textbooks. Lecture time and presentations are usually kept to a minimum, and learners are encouraged to review, research, and learn the materials on their own. This allows each learner to acquire knowledge at his/her own pace, and is particularly useful in classrooms that have a high learner to teacher ratio. The four main principles of the Keller Plan and the individualized instruction model are: (1) learners should complete the work on their own, in order to grasp all concepts; (2) assessments should be performed at the end of each section, to determine if the concept has been “mastered” by the learner. This is known as the “unit-perfection requirement”; (3) learners are encouraged to use the written materials. Presentations are generally only utilized as a supplementary instructional tool; and (4) proctors are supposed to be helping learners and to incorporate a social element into the learning process (Terri, 2011).

Most proponents of individualized instruction see the computer as a way to further improve the design and delivery of individualized instruction—now in an electronic environment called computer-assisted instruction (CAI). With the advent of the computer came the potential to deliver individualized instruction in a more powerful way. This potential was anticipated long before the proliferation of the home computer with specific benefits that the computer could offer. Computer has a very large memory capacity that can be used to store instructional content material and process such material to output. The computer can perform complex analyses of student responses and the computer can make decisions based on the assessments of student performance, matching resources to individual student needs among others (Owayid and Uden, 2014). This study was built on these two

models of: the theory of individualized instruction model and the zone of proximal development theory that allow students to learn at their own space and time. It also empowers students' collaboration both with their lecturers and among their colleagues.

Pedagogical Practices of Using Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is a widely accepted tool for multi-faceted developments in every industry and in particular education. It is noted that hardly will one see a lecturer existing without possessing little knowledge of ICT. Yusuf, Onasanya and Asuquo, (2007), identified ICT as an essential teaching and learning facility, which has become a natural part of man's daily life. In view of this, ICT's use in education by academia and students has become a vital tool. Chris, Ellen, and Alan (2008) asserted that an important influence on the use made of ICT in subjects and classes is the amount and range of ICT resources available to the teachers. Where there are limited numbers of computers in a class, this limits their impact, because each individual student is only able to use the computer for a few minutes.

Whole-class use of an electronic whiteboard has both positive and negative effects. It promotes students' debates and helps them visualize difficult concepts and processes. However, some lecturers focus only on the presentation aspects, disregarding the use of simulations and modeling which might be more challenging for the students. Han, (2010) stated that, only a few lecturers report using subject-specific software which links directly to the content and purpose of the curriculum. However, very few lecturers have a comprehensive knowledge of the wide range of ICT resources now available in education. This means that their students are not given all the learning opportunities which ICT could provide (Chris et al, 2008).

To obtain a better understanding of lecturers' visions and practices, it may be useful to examine relevant system level and school-level characteristics. Voogt and Knezek, (2008)

state that the school provides the organizational structure for the learning process and that educational policies affect how teaching and learning take place and are organized. This implies that it is useful to view the practices of lecturers and students in a larger context to comprehend how innovative practices are best fostered. A number of relevant dimensions concerning this context could be investigated.

Merely learning ICT skill is not sufficient, but using ICT to advance the teaching and learning is the key for pedagogy-technology integration (Ottestad, 2010). Reflect a scenario of a lecturer who has just started to use ICT for his normal classroom activities of teaching and learning. Initially he or she needs to prepare lesson plans and compile lesson materials for the classroom lecture. To prepare such materials, a lot of processes took place that has to go through the act of drafting phase, editing phase, revising phase and lastly distributing the lesson plans and course contents. Word processor application packages can be of great help to accomplish this task in a professional and productive way to circumvent repetition, duplication of manual work and concentrate on excellence of the course materials.

The lecturer also need to make lists of the name of the students for monitoring and to record students' academic performance. The lecturer also analyze and perform a statistical analysis to take some remedial measure if any, in the lesson plan and delivery of instruction. Spreadsheets can be a good choice for generating class lists, recording students' performance and executing statistical analysis upon them. While delivering the class lectures, any ground-breaking teacher needs to draw diagrams, show pictures, animate some objects to elucidate critical concepts, and could even play some video clipping of real time operation. All these multimedia applications can guarantee a very productive, interesting, motivating, interactive and quality delivery of classroom instruction. Presentation application software like power point can be a good choice for teachers to perform such tasks (Voogt & Knezek, 2008).

With the best hard work of teachers in the classroom, there are some learners who may not be satisfied with the pace of instruction of the teachers. There may be a fast learner,

average learner and slow learner. In a classroom situation it is difficult to placate all categories of learners with their definite learning styles. It is in these situations that teachers become helpless in a conventional teaching and learning environment. One way to resolve such problem is to make interactive multimedia based instructional materials where learner is given control to review the topic at their own pace and in accordance to their individual interests, needs and cognitive developments (Cothran, 2012).

Multimedia courseware can be of great advantage to teachers to meet the challenges of such classroom situation. With the availability of user friendly authoring tools for instruction, it is possible to develop multimedia courseware by any lecturer to support drill and also practice to master basic skills, simulate complicated situations, and produce individualized instruction with multimedia elements, built-in evaluation questions and scores. Such multimedia courseware can yield profound changes in the learning outcomes when it is being used along with face-to-face instruction (Voogt & Knezek, 2008).

Learners always look for flexibility in time, space, place, content selection and delivery of instructions. It was somewhat impossible to satisfy such requirements in traditional classroom due to the non-availability of proper tools. However, it is now feasible and possible to implement open and flexible learning strategies using ICT as tools. Flexible access to content and learning resources via network across conventional classrooms, homes and community centers is the defining characteristic of what has come to be known also as distributed learning (Voogt & Knezek, 2008). Learning anytime, anywhere with synchronous and asynchronous communication across the globe, time and pace is the key to web based instruction. With the availability of online tools, it is now possible to create content websites, online education to backing and assist face to face instruction in an innovative way (Chris et al, 2008).

Communication with electronic-mail, searching for information, locating a proper website is now the key to success. Developing online and offline learning resources using

various learning management system software or tools will become one of the key competencies of modern day lecturers. Searching, locating and categorizing knowledge and information via internet has open a new vistas in implementation of flexible learning strategies.

Starting from the productivity software as such to specialized educational software, there are several examples of various applications of the ICT tools in the teaching and learning system. Therefore, preparation of lecturers to face the challenges of an ICT enriched teaching and learning environment is crucial. First teachers need to be equipped with the fundamentals of ICT tools and sufficient understanding on the integration of these tools in teaching and learning and secondly efforts must be oriented towards changing mind set and developing positive attitudes towards ICT application in teaching and learning. Understanding the changing role of lecturers from instructor to facilitators, lecturer lead instruction to learner-centered instruction is the key for successful implementation of pedagogy-technology integration for lecturer development (Cathcart & Roberts, 2006).

In designing learning materials using ICT productivity tools certain pedagogical principles needs to be considered carefully. Mere ICT tools by themselves do not make good pedagogy. Teachers should continue to learn through their lives new ways of using technology for the growth of their learners as well as the very systems of education. The critical question in education is- in what ways ICT can enhance learning and teaching practices?

Ottestad, (2010) opined that ICT tools help to open up opportunities for learning by enabling major key processes in transforming teaching and learning. Entrée is described as ideas and information from diverse sources through searching, locating, selecting, and authenticating material in a wide range of multimedia forms. He further described information across local, national and international networks by interacting electronically with others in actual and or delayed time.

Interestingly access extend, transform and share resources, this represent key processes by which students learn and become independent learners and self-starters. Through the processes learners express their creativity and imagination. These processes can be applied in all areas of learning and in all levels of tertiary education. There are three broad categories of educational software namely generic tools for learning, content-based resources and interactive instructional courseware (Voogt and Knezek, 2008). Starting from productivity tools to simulation and modeling, there are countless generic tools that help lecturers and students to access, extend, transform and share information. Content-based resources help students to access a vast source of educational resources that effectively can be integrated with the curriculum objectives. Interactive instructional course-ware are basically self-paced learning materials that engage the use of GAfE. These programs are helpful to students to control their learning at their own place and convenience (Hyunjung, 2014).

The integration of ICT resources with teaching and learning has produced some of the significant positive gains in both lecturers and students' knowledge, skills and competency by providing ways of exploring and representing information dynamically and in many forms. Lecturers become socially aware and more confident; increase motivation; communicate effectively about complex processes; develop better understanding and broader view of processes and systems; and greater problem solving and critical thinking skills with GAfE application (Voogt & Knezek, 2008).

In the drive towards ensuring access to information and communication technology (ICT) infrastructure, FRN, (2013), asserts that, there should be development of a national fibre-optic backbone infrastructure that ensures high bandwidth availability. There should be a universal access funding and programmes, Internet connectivity and telecommunication access network extensions. There should also be encouragement of private operators to rollout nationwide high speed broadband and data infrastructure and use of appropriate

existing government structures as platforms for extending ICT to rural communities. Tella, (2011) is of the opinion that access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education.

Backhouse, (2013) asserts that, the proprietors of the Nigerian universities are not helping the matter, as some of these universities are not adequately funded. Lecturers are not benefitting from learned conferences, seminar, field trip and some other programmes that could help in exposing lecturers to GAfE for instruction. As a result of the aforementioned, lecturers are to be given opportunity to benefit from the staff development funds of the institution for proper update in the use of modern technologies including GAfE (Backhouse, 2013). Employing GAfE technology could definitely be of great benefit to parents, proprietors, lecturers and students as there would be ease of communication. This may save time, cost and reduce wastages in both human and material resources. It could also make classroom to become a Global room.

Owayid and Uden, (2014) opined that GAfE could make classroom available to anyone because it is a free suite of productivity tools. It includes gmail, drive, docs, my account, search, google+, mail, calendar, sheets, slides, sites, groups, contacts, maps and a host of others. Classroom is designed to improve lecturers' competency to create and collect assignments in a paperless manner. It has time-saving features like the ability to automatically make a copy of a Google Document for the student. It also creates drive folders for each assignment and for student to help keep documents organized. Lecturer can keep track of what's due on the assignment page and begin working with just a click. Lecturers can quickly see who has or has not completed the work assigned to students, and provide direct, real-time feedback and grades right in the classroom (Neuhaus, 2006). Thus required lecturers to be competent in the use of the newly introduced technology for instruction as identified by United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2005).

There are lots of challenges faced when giving continuous assignments (CA) to students and process of collecting CA can be reduced and improved upon by engaging GAfE. The challenges faced when communicating with parents and wards can also be reduced and fastracted by using GAfE for communication among the parents, wards, lecturers and students (Ofolu, 2007). GAfE could reduce the challenges of students' collaboration in classroom activities, using slides to creat engaging and dynamic presentations. Challenges of encouraging students to read electronically, creating appointment slots to schedule parent-teacher conferences and teaching students time management by scheduling due dates and review dates.

Buabeng-Andoh, (2012), opined that effective adoption and integration of ICT into teaching in school depends mainly on the availability and accessibility of ICT resources such as GAfE. Therefore, maximum migration of GAfE into the Nigerian Universities is highly a factor of the proprietor of the Universities readiness to provide the enabling environment.

Meaning, Nature, Awareness and Evolution of Google Apps for Education

Google Apps for Education GAfE is a fundamental suite of productivity applications that Google offers to schools and educational institutions like universities. The communication and collaboration apps in GAfE include Gmail, Calendar, Drive, Docs and Sites. A GAfE account unlocks access to dozens of other collaborative tools supported by Google. All of these applications exist completely online, or in the cloud, meaning that all creations can be accessed from any device with an Internet connection. Once any school resolves to Google Apps for Education, they can register their school domain, web address like www.unilorin.edu.ng, and administer all teacher and student accounts from an administrative dashboard (Google, 2014).

Raja, (2009) defined Google Apps as a central suite of communication and collaboration applications that permit students to work from any device on documents and projects. Once a school registered email address is registered with Google Apps for

Education, teachers and students can unlock Google's apps with one login. An office suite of tools like Docs, Sheets, Slides, and more, that offers the ability to work from any device as well as share and collaborate. Because all Google Apps save to the cloud, lecturers and students gain the flexibility to work from any computer or device. Students and lecturers can seamlessly save work and collaborate both synchronously and asynchronously (Rena, Pavlina & Paul, 2007).

Malo and Motyčka, (2003) asserted that distance learning is synchronous learning where learning and teaching takes place in real time that is, same time, while the trainer and learners are physically separated from each other. Examples include listening to a live radio broadcast, watching live a television broadcast, audio/video conferencing, Internet telephony, online lectures and two-way live satellite broadcast. Asynchronous learning is the fact that that the trainer prepares the courseware material before the course takes place. The learner is free to decide when he wants to study the courseware; this is e-learning or e-tutoring. Examples include self-paced courses taken via Internet or CD-ROM, video-taped classes, stored audio and video Web presentations or seminars, recorded audio tapes, question and answer mentoring and reading e-mail messages (Rena, 2007).

The awareness of Google Apps for Education (GAfE) is important aspects of adoption and is needed for the benefits of GAfE to be fully realised. Awareness can be described as the state of being informed about GAfE, in other words, it is a state of having the knowledge that GAfE exists. There is need for University lecturers' awareness of the existence of GAfE and other ICT enable technologies for their effective adoption in education in Nigerian universities. GAfE emergence may bring a change into how lecturers access and use educational technology. Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources Falade, (2013). Therefore

University lecturers can now benefit from knowledge proliferation that GAfE borne to the century. In line with this, Mulder, (2008) observed that knowledge is a treasure safeguarded only by being given away.

Evolution:

The advancement of Google Apps for Education (GAfE) according to Google (2014) acknowledged the following development details yearly on Google's growth as a company over more than a decade. Google progressively developed as from the year 1995 when two students began collaborating on a search engine called BackRub. BackRub operates on Stanford servers for more than a year. However it eventually consumed too much bandwidth.

Google.com was then registered as a domain on September 15, 1997. The name imply a play on the word "googol," this was a mathematical term for the number represented by the numeral 1 followed by 100 zeros. This reflects the two students' mission to organize a seemingly infinite amount of information on the web. One of the student conversely launched a monthly "Google Friends Newsletter" to inform fans about institution news. Google Friends Newsletter was later shut down in favour of blogs, Google+ and other methods of sharing institution news (Google, 2014, NCS, 2014).

Google (2014) stated that Google has a mysterious knack for returning extremely pertinent results and identifies Google as the search engine of choice in the Top 100 Web Sites for 1998. Owayid and Uden (2014) opined that Google moved to their first Mountain View location in 1999. By November the same year Google hired for the first time chef called Charlie Ayers. Recently Google's food programs focus on providing healthy, sustainably sourced food to fuel Googlers around the globe (Jeff, 2011).

By April 2000, Google announced the MentalPlex, that enable Google to read the mind as one visualizes the search results desired. Google won it first Webby awards for Technical Achievement voted by judges and Peoples' Voice voted by users. Google later ran a series of doodles featuring a little unfamiliar which is the first doodle that was not

associated with any particular event. Google.com first 10 language versions were released namely French, German, Italian, Swedish, Finnish, Spanish, Portuguese, Dutch, Norwegian and Danish. By the year 2000 search is available in over 150 languages (Google, 2015). By September, 2000, Google New York that started in a Starbucks on '86th Street' with a one-person sales 'team'. Later in the same year, more than 4,000 Googlers work in Google New York office, in the former Port Authority building at 111 Eighth Avenue. Google then launched offering search in Chinese, Japanese and Korean, bringing Google total number of supported languages then to 15.

Jeff, (2011) asserted that Google AdWords inaugurations with 350 customers by October 2000 introduced the self-service 'ad program' promises online activation with a credit card with keyword targeting and performance feedback. The first doodle was by a guest artist called Lorie Loeb. Since then, many artists has contributed their talents to the Google homepage, among others were: Wayne Thiebaud, Christoph Niemann and Eric Carle. Google Toolbar was released, this is a browser plug-in that makes it possible to search without visiting the Google homepage (Google, 2014).

Google Deja.com was acquired in February 2001. Google added search and browse features which was launched as Google Groups. Eric Schmidt was named chairman of the board of directors in March 2001 and Swedish Chef became a language preference as search engine. Google then added several joke languages, including Klingon. Google Images was launched which initially offered access to about 250 million images. By August 2001, Eric Schmidt became Google chief executive chairman (CEO) and opened their first international office, in Tokyo, Japan. Larry and Sergey are named presidents of products and technology, respectively. Google later released their first annual Google Zeitgeist which was a visual look at what millions of people searched for over the years. Google continued to release Zeitgeist every year (Jeff, 2011).

In February 2002 Google first product for enterprises was released, that is, the Google Search Appliance which is a yellow box that business organization can plug into their computer network to enable search capabilities for their documents. NCS, (2015) opined that Google released a major renovation for AdWords, including new cost-per-click pricing and Google released the first set of Google APIs that enable developers to query more than 2 billion web documents and program in their favourite environment. This include Java, Perl and Visual Studio. In the same year, Google released Google Labs which allowed people to try out beta technologies and was the proving ground for sundry Google features, such as Google Transit, Google Scholar and Google Trends.

Google winded down Google Labs 10 years later in order to prioritize their product efforts. In September, 2002 Google News was launched with 4,000 news sources. By the twenty-first century Google News includes over 50,000 news sources with 70 regional editions in different languages of the world. Google News and other services send publishers' 6 billion clicks per month as at October 2002. A few months after this first employee in Australia started selling AdWords from her lounge room and Google opened office in Sydney, the second office after Japan office. And the first local AdWords client was eBay Australia. With the launching of Froogle, which became Google Shopping in 2012 that enable people to search for stuff to buy through Online activities (Kurniabudi, et al, 2014).

In February 2003 Google acquired Pyra Labs, the creators of Blogger, nearly as old as Google itself, Blogger has started since 1999 and in this twenty-first century more than 300 million people visit Blogger monthly. Google then announced Google AdSense, a new content-targeted advertising service that enables large and small publishers to access Google's vast network of advertisers. This later prompted Google to launch Google Grants that is a non-profit edition of AdWords. This provides non-profit organizations with about \$10,000 per month in in-kind AdWords advertising to encourage their initiatives. In October

2003 registration opened for programmers to compete for cash prizes and acknowledgment at the first ever Code Jam. Google Code Jam now attracts tens of thousands of contestants each year, and this enable finals contestants to voyage to country like Tokyo, Dublin, London and New York City. By December 2003 Google launched Google Print, now known as Google Books, indexing small excerpts from books to appear in search results (Jeff, 2011).

In 2004, the program expands through digital scanning partnerships with libraries. Google launched Orkut, the most important social network in several countries. It moved to the new Googleplex at 1600 Amphitheatre Parkway in Mountain View with over 800 employees. Google Local was then offering relevant neighbourhood business listings, maps, and directions. Eventually, Google Local was combined with Google Maps. Google Gmail was launched on April Fools' Day, that is, April first. As at 2004 it boasted more than 425 million users. Fun fact, the internal code name for Gmail was Caribou, inspired by a Dilbert cartoon. The Official Google Blog went live and by 2004, Google offered a wide variety of ways including Google+ pages and Twitter accounts, for people to get news from Google, in many different languages of the world (Google, 2014).

Google announced the first winners of the Google Anita Borg Scholarship, awarded to outstanding women studying computer science in June 2004. These scholarships are open to students in Africa, Asia, Australia, Canada, Europe, India, Middle East, New Zealand, and the United States of America. Google then acquired Picasa, which helps people organize and display photos Online. Google opening public offering of 19,605,052 shares of Class A common stock took place on Wall Street with an opening price of \$85 per share. Google Hong Kong office was the first Google office to open in the Greater China region in September 2004. By October 2004, Google has acquired Keyhole, a digital mapping company whose technology later became Google Earth. Google SMS was launched, which

enabled users to send text search queries to GOOGL or 466453 on mobile devices (Jeff, 2011).

Google launch Google Scholar in beta which was a free service that abetted people search scholarly literature, such as peer-reviewed papers, theses, dissertations, books, preprints, abstracts and technical reports. In December 2004 Google established Google.org, devoted to the idea that technology can aid make the world a better place (Google, 2014). By 2005 Google added satellite views and directions to the product follow by Google Maps that can be use on mobile phones started in the U.S., offering driving directions and local data to people on the go. The first Google Maps released in Europe was geared to U.K. users only. France, Germany, Italy and Spain follow in 2006. Google offer driving directions in more than 190 countries around the globe. Currently over 100 hours of video are uploaded every minute and people watch 6 billion hours of video per month (Maleski & Phillion, 2009). Later Google Personalized Homepage, that was designed for people to modify their own Google homepage with content modules. This followed the released of Google Mobile Web Search specially articulated for viewing search results on mobile phones. Google unveil Google Earth, a satellite imagery-based mapping service that allowed users to take a virtual journey to any location in the world.

NCS, (2015) opined that Google launch “Google Talk” by August 2005, this solicitation is a downloadable application that allowed Gmail users to talk or send instant message with friends real time Online and easily; Chat was introduced to Gmail the following year. In 2013, Google announced that Talk will be moved into Hangouts, Google's new single communications system. Googlers later volunteer to produce an author event with Malcolm Gladwell in Mountain View. Ever since that time, the Talks at Google program have hosted over 1,500 authors and other thought leaders in 18 offices. Follow by the released of Google Analytics for measuring the impact of websites and marketing campaigns. Since then, Google have run Doodle for Google contests in countries across six

continents, with more than one million doodles submitted by students eager for the chance to see their artwork on the Google homepage. Google Transit launches in the Portland, Ore. metro area. However, Transit has schedules for more than one million public transit stops worldwide (Google, 2014).

As at 2006, Google Finance launches completed with interactive charts and related headlines from Google News, to aid people find financial information more easily. Google launched Google Calendar to help keep track of events, special occasions and appointments, and to share schedules with other users. Google Translate launches, offering translations between Arabic and English only. Currently Google machine translation service provides translations between over 70 different languages across the globe. Google later in the year released Google Trends, a way to visualize the popularity of searches over time. Gmail launches in Arabic and Hebrew, bringing the number of interfaces up to 40 (Google, 2014).

Google announced Google Checkout, a fast and easy way to pay for online purchases which paved the way for broader payments with Google Wallet. Picasa Web Albums enables Picasa users to upload and share their photos online. The Oxford English Dictionary added the word "Google", as a verb. And by August 2005 Google Apps for 'Your Domain' was released. This suite of applications, including Gmail and Calendar, is the precursor to Google Apps Premier Edition, which launched later that brought cloud computing to businesses. More than 5 million businesses are using Google Apps now (Owayid and Uden, 2014).

NCS, (2014) stated that in the year 2006, Google launched Apps for Education; the first deployment was to Arizona State University. However now, Apps for education has more than 25 million users, and is being used by 74 of the top 100 universities. Google released web-based applications Documents (Docs) and Spreadsheets (Sheet), now called Docs and Sheets. In January 2007, Google are now proud been able to create a company culture where employees are empowered to do casual things that matter. It was the

year's Valentine's Day doodle causes a stir. Many people think Google left out the "l" and linked it to a 17th century poet named 'Googe'; others think it's homage to a band called My Bloody Valentine. Many of the 2008 Presidential candidates including then-Senator Barack Obama and Senator John McCain - visit the Googleplex throughout the campaign. Google add traffic information to Google Maps for 30+ cities around the U.S. presently, live traffic information is available in over 50 countries, covering highways, streets and more in 600+ major cities (Google, 2014).

On April 1, 2007, that is April Fools' Day, Google introduce the Gmail Paper Archive and Toilet Internet Service Provider (TiSP). Followed by the installation of solar panels on Google Mountain View campus, which is the largest corporate solar panel installation of its kind at the time. The solar panels that power 30 percent of the buildings they sit on. Google unveil a new green initiative aimed at accelerating the acceptance of plug-in hybrid electric vehicles. Google then retire "theRechargeIT" initiative, though Google continue to offer electric vehicles as part of google employee car sharing service (Google, 2014, Jeff, 2011).

Mobile AdSense was introduced giving sites optimized for mobile browsers the capability to host the same ads as a standard websites. New application was added by Google for making slide presentations to Google Docs. Google then announced Android which is the first open platform for mobile devices and collaboration with other companies in the Open Handset Alliance. Renewable Energy Less Than Coal was an ingenuity designed to create electricity from renewable sources that are cheaper than coal. The program has been retired, but Google continued to apply what they learned to other renewable energy projects (Owayid and Uden, 2014).

In 2008 the BOLD Internship program was launched by Google providing opportunities to students historically underrepresented in technology. Combined with Google other internships prior to this period have had the chance of having an impact at

Google on projects like engineering. Google completed the acquisition of Double Click, a digital marketing company that provided ad management technology for agencies, marketers and publishers. Google host the first Google Input and Output (I/O), Google annual developer conference, in San Francisco. I/O has grown since then. The first Google Serve, that is, Google global week of service took place. Yearly Googlers leave their inboxes behind to participate in projects that give back to the immediate community. Google Map Maker was launched and this enabled people to directly update geographic information in Google Maps and Google Earth, helping guaranteeing that the map accurately reflects the world. However Map Maker is available in over 200 countries and territories across the globe (Google, 2014).

Jeff, (2011) explained that Google first downloadable iPhone app that was empowered to enable quicker mobile searching, debuts with the launch of the Apple 3G iPhone was introduced July 2008. By the following year this effort was taken to the next level with Google.com/elections, making available news and Online tools for elections worldwide. The updated Google Mobile App for iPhone makes it possible to do a Google web search using voice only. Google first message on Twitter got back to binary and Google launched Voice Search on Android. This made android users the privilege to search the web by voice with only a touch of a button making mobile web surfing easy and fast (Google, 2014).

In 2009, Google released Google Voice, which improved the way users use their phone with features like voicemail transcription. Google took the beta label off both the enterprise and consumer versions of Gmail, Google Calendar, Google Docs and Google Talk. Google then introduced the DoubleClick Ad Exchange, which is a real-time marketplace that helps large online publishers on one side and ad networks and agency networks on the other, buy and sell display advertising space. On the birthday of the father of science fiction, Google unveiled the truth behind a mysterious series of doodles in tribute

to H.G. Wells and also released an international series of doodles for the 40th anniversary of Sesame Street (Owayid and Uden, 2014).

By the year 2010 Google introduced the Nexus, this device shows what is possible on Android devices. The Nexus line of devices has since grown and now included tablets as well as phones. In response to the Haiti earthquake, engineers built Person Finder to connect loved ones in the wake of disasters and similar event. Google launched Person Finder for other crises this include the Tōhoku earthquake and tsunami in Japan and formed Google Crisis Response, a team that responds to global disasters. After detecting a sophisticated cyber-attack from China, Google announced they are no longer willing to continue censoring their services on Google.cn, their local domain (Google, 2014).

However, users in mainland China can access search via Google.com.hk. This is the first-ever Google Super Bowl ad that tells a love story through search terms and is one of many videos made to celebrate the human side of search. Google announced a plan to build and test ultra-high-speed broadband networks, delivering Internet speeds up to 100 times faster than what most Americans have access to. That attracted more than 1,000 communities that submitted proposals in response (Google, 2014).

NCS, (2015) opined that, in the effort of Google to accelerate the distribution of renewable energy, Google made their first direct investment in utility-scale renewable energy project. This represent part of Google long-term goal to power various operations with 100% renewable energy. Google thereafter announced an agreement to purchase the clean energy from 114 megawatts of wind generation in Iowa. Life in a Day is a cinematic experiment to document one day as seen through the eyes of people around the world that was created with thousands of submissions from YouTube users' globally. Priority Inbox helps users handle information overload in Gmail by automatically sorting their email through importance, using a variety of signals. Google Instant shows search results as one type so one can quickly get to the information looking for on the web (Google, 2014).

Three years after Google first launched Street View in U.S. cities, Open up the technology to explore all seven continents at eye level with the addition of Brazil, Ireland and Antarctica imagery. Google also announced a developed technology for cars that can drive themselves in November 2010. The taught was that self-driving cars can help prevent traffic accidents, free up people's time and reduce carbon emissions to the environment. The automated cars have since logged more than 500,000 miles on the American road. YouTube introduced TrueView, a new kind of ad that made users to know after 5 seconds, if an ad does not seem relevant or interesting to user, user can skip it. TrueView is part of Google effort to ensure viewers watch ads that are most relevant and interesting to them, and made advertisers to reach the right audience of their choice (Google, 2014).

NCS, (2014) explained that Google introduced an advanced opt-in security feature called 2-step verification to help people keep their Google Accounts secure in 2011. A 2-step verification is now available in 40 languages and over 150 countries around the world. Larry Page who took over as CEO ten years after he last held the title granted Eric Schmidt opportunity to become the executive chairman. Charlie Chaplin's 122nd birthday was the occasion for their first-ever live-action doodle and encouraged Google to announce the first Chrome-books from partners Samsung and Acer companies. Chrome-books are designed to be fast, simple, secure and easy to keep updated anytime anywhere. Google also brought offline access to Gmail, Calendar and Docs for people using Chrome as their browser. Google acquired Zagat to help user find the very best places in which Android 4.0, also known as Ice Cream Sandwich, was designed to work on both phones and tablets, and to make the power of android inviting and natural. Google launch Google+ Pages to connect users with businesses, organizations and other things globally that appealing to them (Owayid and Uden, 2014).

In 2012 Google joined thousands of other sites to encourage users to stand up against two legislatives proposals in the U.S. that is, SOPA and PIPA, which would have censored

the Internet and impeded innovation and the following day the bills are set aside. Android Market became Google Play which is a digital content store offering apps, games, books, movies, music and among others. Project Glass was unveiled and Google Drive launched, enabling user to create, share, collaborate and keep files, including videos, photos, Google Docs and PDFs all in one place. Hangouts on Air became available worldwide and many public figures, institutions and organizations have hosted Hangouts to connect directly with the public. Google introduce the Knowledge Graph in Search that made it easier for user to discover information about real-world things, landmarks, celebrities, cities, sports teams, movies, work of art and among others globally (Google, 2014).

Google Knowledge Graph that was launched is built on Google acquisition of 'Metaweb'. Google acquired Motorola Mobility and expand users Transparency Report with new section on copyright, providing information on the number of requests Google got from copyright owners to remove Google Search results, because they allegedly link to infringing content. Google unveil 'DoubleClick' Digital Marketing, which was a new platform that enabled seamless 'ad' campaign management for agencies and advertisers. Google announced 'Google Now', which brought the information user need, before even ask, like what today's weather will be like? How much traffic to expect on your way to work or your favourite team's score while they are playing? (Google, 2014).

Google released the first 'Nexus 7', a powerful 7 inches tablet designed to bring Google Play content to life and bring users the best of Google in the palm of their hand anytime anywhere. Later in the year, the Nexus family expanded to include a 10 inches tablet and the 'Nexus 4' phone. This enabled the world to watch the Olympics live on YouTube for the first time. Viewers watched about a total of 230 million video streams, and the most live-streamed Olympics to date. Google provided an unprecedented look inside their data centres' and the Samsung Chrome book became available for just \$249 (Google, 2014).

Google began to install Google Fibre, ultra-high speed Internet access that is up to 100 times faster than current average broadband for their first customers in Kansas City, Kansas and Kansas City Missouri. Google committed to invest \$200 million in a wind farm in west Texas by January 2013, this brought total clean energy commitments to more than \$1 billion, which can generate over 2 GW enough to power all the public elementary schools in the New York city, Wyoming and Oregon for a minimum of one year (Google, 2014). Google introduced enhanced campaigns, which updated AdWords for the multi-screen world. In 50 words Glass Explorers can tell what they would do if they had Glass. The first Explorers got Glass later in the year and Google newest laptop, the Chromebook Pixel was designed from the ground up for power users that embraced the cloud. It was now easy to get just the information user needed at the right time with the release of Google Now for iPhone and iPad. Google unveiled their latest Google[x] project: balloon-powered Internet access. Google hope Project Loon that was an option for connecting rural, remote and underserved areas, and for crisis response communications around the globe (Google, 2014).

Google acquired Waze to help outsmart traffic, this was funded by Lawrence Berkeley National Laboratory to investigate the energy impact of cloud computing. The research indicated that moving all office workers in the United States for example to the cloud could reduce the energy used by information technology by up to 87 percent. Google previewed the new Maps for desktop at Google I/O and also released the updated Google Maps app for smartphones and tablets, part of Google redesigned Maps across devices. Chrome cast is a small and affordable device that made it easy for user to use phone, tablet or laptop to bring favourite online entertainment to the TV screen at will (Google, 2014).

In September 2013 Android passed 1 billion device activations, reflecting the work of the entire Android ecosystem and thanked all the enthusiasm of users around the world. Google announced thereafter Calico which is a new company that will focus on health and well-being. Google also introduced the new Nexus 5 which is an update to Google+ and

photos was now easier to find, perfect and easy for user to share best life moments. Also Compute Engine, which lets developers build and host applications on Google's infrastructure, became generally available (Hyunjung, (2014).

NCS, (2014) reported that Google acquire Nest, a company that reinvents unloved products for the home, like thermostats and smoke alarms. Google announce a new Google[x] project focused on using miniaturized electronics in a contact lens to measure glucose levels and help people with diabetes. Working with organization Polar Bears International, Google collect Street View imagery of the Canadian tundra, giving one an intimate look at polar bears in their natural habitat. Chromebox for meetings brings together Google+ Hangouts and Google Apps to make it simpler for any company to have high-definition video meetings. Then introduce Street View in Google Maps that now let one explore historical imagery dating back to 2007. Google first 3D doodle celebrates the 40th anniversary of the Rubik's Cube (Google, 2014).

NCS, (2015) described the next leg in the journey for Google self-driving cars is prototypes that are designed to operate safely and autonomously without requiring human intervention. Google publicly share data about the diversity of their workforce. At Google annual I/O conference, Google announce new updates that bring Android to one everywhere, whether in their car, on the TV and on wrist. During the World Cup in July the same year, Google share over 100 real-time search trends showing what people were curious about during the tournament, and create over 60 doodles live from Brazil (Google, 2014). By August, 2014 and till date, the development of Google was so rapid and can only be described by the following uses of Google apps and in particular the use of Google Apps for Education.

Details outline of the uses of GAFE as presented by Google, (2014) is hereby enumerated. The Google docs can be used by lecturers to Collaborate on lesson plans, keep running records of meeting notes, create a shared lesson plan repository, improve the writing

process, publish student work, translate letters home to parents, track student homework, coordinate sign-ups, personalize flashcards, collect, share, analyze data and use slides to create dynamic and engaging presentations. The Google Forms enable lecturers to submit answers in a form and see results, administer assessments to students, survey student interests, collect observation feedback, submit reading records online, keep track of discipline referrals and automatically grade forms with Flubaroo (Google, 2015).

Google Calendar allow lecturers to manage their schedule effectively, share calendars, check out shared resources, map out the standards of their teaching, create appointment slots and teach time management. The Gmail allows lecturers to communicate in different languages of the world, find global pen pals, and enable labs to increase productivity. The Google Groups enable lecturers to group students by subject and skill level and create parent support groups. Google Talk allows lecturers to invite a guest lecturer into their classroom and hold office hours and homework help. The Google Sites empowers lecturers to create a classroom website, manage student ePortfolios, submit student projects and build a curriculum portal. Video within drive assists lecturers to bring approved video clips to the classroom, share professional development videos and control sharing settings on student videos (Google, 2014).

Google, (2015) identified the following uses of Google Apps for Education (GfE) that could help increase lecturer efficiency, student engagement and school-wide collaboration. Namely: collaborate on lesson plans; Google Apps for Education Docs can be used by lecturer to work on the same lesson plan at the same time with a colleague. Keep a running record of meeting notes, lecturer can use Google Apps for Education to take meeting notes in a Google Doc and share the notes with entire staff and staff members can access the notes at any time. Lecturer can use Google Apps for Education to create a folder for one grade level to share resources, store lesson plans in school shared-folder so that students and other lecturers in the school can find and access them (NCS, 2015).

Google Apps for Education could have students work collaboratively from anywhere, give students ongoing and simultaneous feedback and lecturer can use revision history to hold students accountable for their work. Publish student work; Google Apps for Education could facilitate multiple sharing settings that allow lecturer to publish students work by sharing it within one class, within one school or district, or by making it public on the web. Translate letters home to parents; Google Apps for Education could be used to translate letters, permission slips, and newsletters home to parents and guardians by the lecturer. Track student homework; GAFE enable lecturer use Sheets to track student homework and share with parents. Hence it enable lecturer to use the spreadsheet and give each student an anonymous name or number (Google, 2014).

Coordinate sign-ups; lecturer can have parents sign up for parent-teacher conferences or other meetings using a spreadsheet and use revision history to ensure that everyone is using the sheet to schedule fairly. Personalize flashcards; Lecturer can create differentiated flashcards for the students using the Flash Cards gadget. Collect, share and analyze data; both lecturer and student can collect data in a sheet, then use charts and gadgets, like the motion chart to graph and analyze the data for research work. Brainstorm group names with Google Sets; assist lecturer to activate Google Sets within Sheets by typing in at least 3 related terms. Highlight the three terms and (hold Control + drag) or (hold Option + drag) to fill the set (Google, 2014).

Create amazing presentations; lecturers and students can use GAFE Slides to create engaging and dynamic presentations. Administer assessments; lecturers can use Google Forms to give their students a pre-assessment at the beginning of class, modify instruction based on the results and then give students an exit ticket at the end of class to see what they learned. Survey students' interests; lecturers could survey students at the beginning of the year to find out their interests and Change the template to make the form more exciting. Collect observation feedback; one can use Forms on smartphone or tablet to do teacher or

student observations and the data will automatically populate in a spreadsheets (Google, 2014).

Submit reading records online; it encourages students to read by having them complete their reading records electronically. Keep track of discipline referrals; it helps keep track of discipline referrals across a school and also recognize discipline patterns and share with key stakeholders. Automatically grade forms with Flubaroo; Flubaroo is an Apps Script that allows lecturers to automatically grade assessments that have been submitted using a Google Form. www.flubaroo.com. Manage one schedule effectively; GAFE assist both lecturers and students to look at his/her work schedule, personal calendar, and any other relevant calendars in one view. It also made it easy to change events as well. Share calendars; lecturers and students can share calendar with colleagues, and overlay their shared calendars to better schedule meetings and events (Google, 2014).

Check out shared resources; lecturers could schedule shared resources like rooms (libraries, conference rooms) and equipment (projectors, laptop carts) within a Calendar invitation. Map out the standards one is teaching; creates a backwards map of the standards lecturer need to teach by the end of the week/ semester/year to ensure that every item is covered. Create appointment slots; lecturers could use appointment slots to schedule parent-teacher conferences or guidance counselor sessions. Teach time management; lecturers could teach students time management by scheduling due dates and review dates. Communicate in different languages; lecturers could use the translate feature in GMail to communicate with parents who might speak a different language. Find global pen pals; gives students access to pen pals in another state, province, or country. With Google Translate it's OK if they don't speak the same language! (Google, 2014).

Enable labs to increase productivity; labs is a testing ground for experimental features that are not quite ready for primetime. Some of them may be useful to one, so lecturers or students can take the time to explore. Group students by subject and skill level; lecturers can

create classroom placement groups to better distribute differentiated materials and resources. Groups also encourage discussion among peers. Create parent support groups; create groups for parents so that they can easily communicate with each other and share news and updates. Invite a guest lecturer into the classroom; invite an expert into the class as guest to lecture through Video Chat or invite a grandparent who lives in another state to read to the class during story time. Hold office hours and homework help; let students know that lecturer will be available to help online at a certain time and to provide video conference with students who are absent (Google, 2014).

Create a classroom website; lecturer can create a site for the class and embed a class calendar, videos, and presentations. Manage student e-portfolios; lecturer can use sites to create student ePortfolios and showcase student work and pass it on from year to year. Submit student projects; lecturer can have students do projects or create reports using sites and can also have them do their submission for the Global Google Science Fair. Build a curriculum portal; lecturer can build a portal that houses lesson plans, resources, and other grade-level or subject-specific resources. Bring approved video clips to the classroom; enable lecturer to upload approved video clips to share during class time (NCS, 2014).

Share professional development videos; student can record lecturers and teachers as they demonstrate various instructional strategies and share the video within the school. Control sharing settings on student videos; allow students to create videos, but give them the ability to keep the videos private to their lecturers or teacher, class, and school. Run your classroom through Blogger; lecturer can use Blogger to structure and run the lessons and students can access their 'Do Now', independent practice, and exit slip through the blog entry (Owayid and Uden, 2014). Use Moderator to extend classroom discussions; lecturer can have students reflect on their daily learning through Google Moderator. Also students can read each other's reflections and vote up the responses that they like the best.

Influence of University Proprietorship on the Access and Use of Google Apps for Education for Instruction

The University education is the highest institution of learning in Nigeria. The proprietorship varies from Federal government owned universities, State Government owned universities and Private owned universities. The university is accorded the responsibility of awarding degrees in various disciplines like Medicine, Sciences, Arts and Humanities. The approved entry examinations bodies are West African Examinations Council (WAEC), the National Examinations Council (NECO), National Business and Technical Examinations Board (NABTEB) and Joint Admission and Matriculation Board (JAMB). These bodies over the years have been responsible for various achievement examinations for certificate and placement as the case may be. The number of credits and points required for admission and placement is the only difference by the various universities (Olumorin, 2008).

Bolt, Fitzgerald, & Jessen, (2010) submitted that a decision about whether to use Google Apps for education has implications far beyond a traditional technology decision. It involves activities related to the future of technology in higher education, outsourcing, cloud technologies, collaboration, and continual development cycles. It also touches on learning styles, responsibilities of support teams, strategic alignment and the readiness of Universities proprietor to adequately made Internet facilities available. A decision on a training plan that would address all generations of employees, that is both the academia and administrators. The assumption to use GAFÉ without guidance or training that will provide the documentation appropriate for the users should always be discouraged (Owayid and Uden (2014).

Byrd and Koohang, (1989) in Olumorin, (2008) stated that teachers are in dire need of high quality training, which should encompass all necessary potential use of ICT irrespective of type of proprietorship. A model was developed to buttress the point as presented in Figure 2.

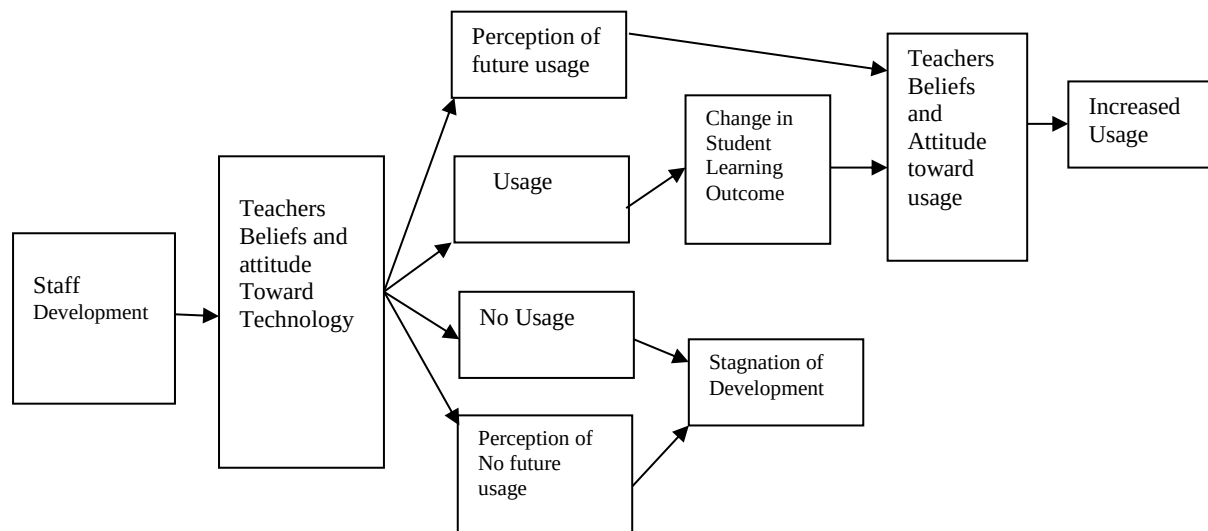


Figure 2: Process of Staff Development, the Relationships of Belief, Attitude to Usage and Perception of Future use of ICT

Source: Olumorin, (2008)

The decision of when, how to use ICT must be that of the teacher. Therefore, the end result of the use, according to the model in Figure 1 is an achievement for the teacher. The model has six columns with the column having four rows, the last box at the bottom is the terminal point on the original model of Byrd and Koohang (1989), and however an additional box receiving arrows from “No Usage” and “Perception of No Future Usage” was inserted by Olumorin, (2008). This according to him was to give understanding to the fact that a lecturer who does not use and who does not intend to use ICT in future would get stagnated as far as development is concerned. The researcher therefore having critically examined Olumorin, (2008) describe the relationship between proprietorship readiness to provide enabling environment for GAfE and the end result of lecturers’ competency in applying GAfE for research, teaching and learning (Barbra, 2011).

The decision of when, how to use GAfE is that of the proprietor readiness to adequately fund their institution to provide the emerging technologies in particular. The provision will cover availability and access to Internet facilities with high bandwidth; and subscribe to an efficient and reliable Internet Service Provider (ISP) for the Internet

activities. The funding and provision will also afford lecturers to adequately develop through staff training, seminar, conferences and workshops. This will definitely expose the lecturers to have access to GAfE for improvement in research, teaching and learning. It will also ease communication among the lecturers, parents, wards and students. The overall result will be that of classroom transformation and digitalization of classroom activities. The researcher then underscored the fact that, lack of proper funding by the respective proprietor could lead to unavailability of these facilities, hence discourage lecturers usage and eventually leads to stagnation of lecturers' development (Google, 2014). This could also hinder Nigerian universities to favourably compete with their counterpart in the developed countries around the world.

Olumorin, (2008) claimed that learning is a crucial component of teachers. Hence proprietors should be committed to improving and upgrading skills of lecturers in priority areas such as GAfE. It was gathered later in the study that building relationship with varying proprietors would enhance prime performance. Yusuf, (2004) enumerated the benefits of Internet, a major arm of ICT, wrote, the internet is a useful tool in the tri-personality of a lecturer; a teacher, a lifelong learner and a researcher. All lecturers therefore must be ICT compliance and in actual, emerging technologies like GAfE. Thus moving both the lecturers and classroom activities from analogue to digital based on the current trend of events globally. Among the current trend is moving the telecommunication industry from analogue to digital.

Studies on University Lecturers' Academic Status on the Use of Google Apps for Education for Academic Purposes

The Academic Staff of the Universities Union (ASUU) comprises of various status which is being measure by seniority. The seniority is based on hardworking and years of service. The status is made up of various cadres starting from Graduate Assistant to Professor. That is, Graduate assistant, Assistant lecturer, Lecturer II, Lecturer I, Senior lecturer, Reader (Associate Professor) and Professor (University of Ilorin Conditions of Service, 2014).

Lecturers use teaching and learning technologies in response to top-down initiatives, and that some also initiate bottom-up experiments with their own teaching practice, driven by both pragmatic and pedagogical concerns (Backhouse, 2013). Emerging technologies are those teaching and learning technologies that are new, or are used in new ways, or in new contexts to change teaching practices (Bozalek, Ng'ambi, & Gachago, 2013). The rationales that lecturers use in explaining their practices include a mix of pedagogic concerns, pragmatism and external imperatives. These rationales speak to common higher education expositions on effective learning, the welfare of students, inaccuracy and control. Efficiency in the face of the circumstances of higher education; as well as the external imperatives of the knowledge economy and learning situation (Backhouse, 2013). The study carried out implied that lecturers who engage with emerging technologies are asserting themselves creatively and claiming a more positive positioning in the challenging landscape of modern higher education.

In a study by Bozalek, Ng'ambi, & Gachago, (2013) agreed that an anchorage is widening between the technologies used by students, educators and those provided by institutions. Conversely, knowledge about the impact of purported emerging technologies on learning or the readiness of higher education institutions to engage with such technologies in the Nigerian context is relatively thin. The study concluded that, in order to substitute a greater uptake or more institution-wide movement of use of emerging technologies,

institutional view lecturers' need to purposefully create an enabling environment by providing acknowledgement to and collaborating with change agents, and developing policies that will encourage institutional use of these emerging technologies (Niba, 2014) and Lee and Kim 2005). The engagement of GAfE in instruction is status sensitive as submitted by Backhouse, (2013) that lower cadre lecturers are more digital natives than upper cadre lecturers. However both lower and upper cadres' lecturers in the university environment must be ready to employ these emerging technologies for the benefit of transforming the educational sector for the twenty-first century developmental goal of digitalizing classroom activities.

Studies on University Lecturers' Competency in the Use of Google Apps for Education

A major concern in this study has been that of lecturers' willingness not only to use emerging technologies in the general sense but that of classroom application. As a result of this, ICT awareness and access by lecturers as well as that of their competency has attracted research attention for some time. Jegede, Dibu-Ojerinde and Ilori, (2007) investigated the relationship between ICT competency and attitude as well as attitudinal constructs of teachers. The findings revealed that attitude bears significant relationship with and also predicts competency. It was further obtained that two of the five attitude constructs predict competency. It was observed that as teachers perceived computers to be useful in their pedagogical enterprise, the interests become aroused which in turn help their computer skills.

Akpan, (2008) sought to find out the influence of ICT competency on lecturers' Job Efficacy in two Nigerian universities. Two hypotheses were formulated to guide the study. The sample of the study consisted of 500 University lecturers randomly sampled from a population of 1,795 lecturers. Data for the study were collected using ICT Competency and Job Efficacy Questionnaire. The data were analysed using Chi-square and One-way Analysis of variance (ANOVA) statistical techniques. The results of the study revealed that male and

female lecturers did not differ significantly in their level of ICT competency. Lecturers with high ICT competency were found to be more efficacious in classroom instruction, research/publication, communication and recordkeeping than those with moderate and low ICT competency. The findings of this study revealed that the level of ICT competency of lecturers significantly enhanced their job efficacy. Premised on these findings, it was recommended that lecturers should be well motivated to develop their ICT competency as this has been found to improve job efficacy for high productivity. University management should encourage lecturers to participate in ICT training programs and ICT facilities should be provided in lecturers' offices to enhance their job efficacy (Barbra, 2011).

Yusuf, (2005)⁸⁰ and Olulube, (2006) in their studies showed that teacher ICT competency in Nigeria is below expectation and access to ICT resources like the internet and computer is mostly limited in campuses of various higher institutions. This finding is supported by the work of Akpan, (2014)⁶⁵ who reported that lecturers' perception of the role of ICT in management of university education was significantly low. The implication of these findings is that the level of university teachers' ICT competency could greatly impact upon their job efficiency in classroom teaching, communication, students' record keeping, research and publication. As a result of these, the study among other things is eager to look into the lecturers' competency in using GAfE for research, teaching and learning in Nigerian Universities.

Influence of Lecturers' Gender on the use of Google Apps for Education

Gender is an important factor in every aspect of learning; it has a significant impact on all stakeholders of education generally and especially on GAfE. The innovation, integration and application of the emerging technology and who uses it make Information and Communication Technology (ICT) extremely gendered. However, in reality; gender issues are not holistically addressed in the integration or application of ICT. One of the reasons the researches is considering investigation of gender perception on GAfE integration

is that women and girls are poorly placed to benefit from the knowledge economy because they have less access to scientific and technical education specifically, and to education in general (Gender Advising Board (GAB), 2001).

GAfE is an offshoot of information and communication technology which has been recognized as a potent force to transform the development, pace and status of a country. In recent time, the teaching and learning process has been dramatically changed by the synthesis of variety of emerging technological, instructional and pedagogical developments. Maleski and Phillion (2009) and Google, (2015) corroborated that emerging technology is challenging the area where GAfE have heralded the development and implementation of new and innovative teaching strategies.

The emerging technologies also offer many opportunities for women and girls to gain the education and technical skills required for them to participate equally in the knowledge economy and in particular classroom collaboration. Computer skills are a severe barrier for women and girls in accessing the emerging technologies in ICTs. The World Links gender research found that girls had inequitable access to the computer laboratories in some schools as a result of several conditions: college student-to-computer ratios at first-come, first-served policies did not favour the girls; girls access was limited due to domestic chores responsibilities (Gender Advising Board, GAB, 2001). The factor mentioned by Green may also affect the female lecturers in accessing GAfE.

A research conducted by Niba, (2014), revealed that there was no difference between the post-test mean scores of male and female physics students in the experimental group at 0.05 level of significance, that the performances of the male and female students in the experimental group were equally enhanced by the use of the ICT software.

The Gender Working Group of the United Nations Commission on Science and Technology urges that it is important for all nations to move toward gender equality in science and technology, so as to accelerate the pace of national progress and achieve

sustainable development (GAB, 2001). There is, therefore, ample evidence that without gender sensitive program design, GafE is unlikely to result in an equitable learning environment. More so, in a study carried out by Falade, (2013) indicated that there was a significant difference between male and female in their perceived ease of use of ICT for learning in Nigeria with male having a more positive perception than their female counterparts.

Conceptual Framework for the Study

A conceptual framework is used to make standard differences in organization of ideas for apprehending realities with ascribable ways that is simple to adopt and adapt for general purposes. It is an analytical practical device with several variation and contexts. Figure 3 illustrate Google introducing GafE on SAMR model in which “S” stand for Substitution, “A” for Augmentation, “M” for Modification and “R” for Redefinition. SAMR is the acronym summarising a four stage model for looking at and understanding one’s use of educational technology.

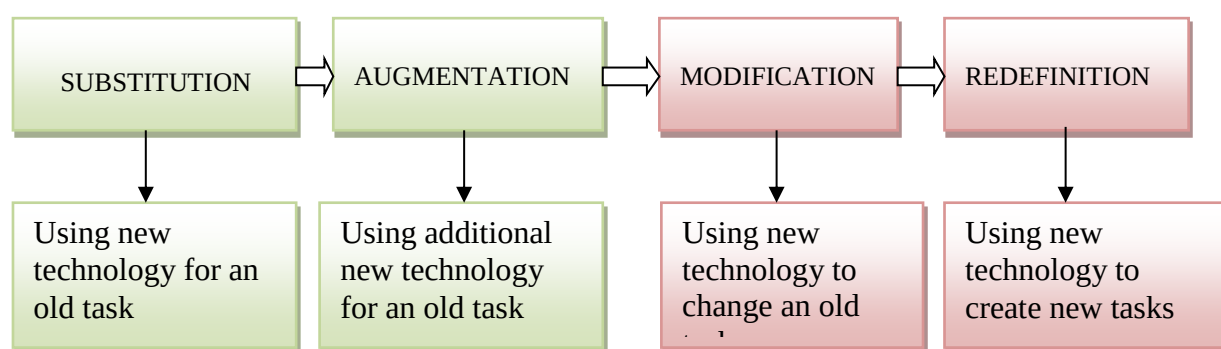


Figure 3: Google Apps for Education on SAMR Model
Source: Puentedura, (2014)

Substitution means that lecturers using new technology for an old task, keeping in mind what to gain by replacing old technology with the new technology. It is the first step in redefining one classroom. Augmentation stands for lecturers using additional new

technology for an old task taking into cognisance the contribution of the new design. It is the second step in digitally enhancing one classroom. The classroom technology acts as a direct tool substitute that introduced some functional improvement to teaching and learning. Modification is lecturers using new technology to change an old task paying more attention to the degree of contribution of the new technology. It is the step that begins to transform the lecturer's lesson and Redefinition are lecturers using new technology to create new task. During this phase, the ultimate goal, classroom technology allows for the creation of new tasks and projects that were previously inconceivable within a traditional classroom or lesson.

An example of GAfE on SAMR model is, considering original task of writing a report about Nigeria using paper, pen, glue and scissors through books in the library for research. Putting SAMR to use indicate thus; Substitution: using Google Docs and research on the Internet to create the report. Augmentation: using Google Docs and research on the Internet to create report and share the document with the lecturer. Modification: using Google Docs and research on the Internet to create report and share the document with the lecturer and students. The students use the comments feature in GAfE to provide peer feedback. Redefinition: used Google Hangouts to connect to a virtual tour of the city hosted by a class in the target city with a reciprocal arrangement. Questions and pictures are shared using Google+. Group of students can also collaborate to create a report using their choice of GAfE solution, for example, Doc, Slides, YouTube and Blogger. The report would include multimedia elements. This can help create report more meaningfully and student-centred learning experiences. The SMAR is in agreement with Rogers, (2003)⁷⁶ diffusion of innovation theory illustrated in Figure 4.

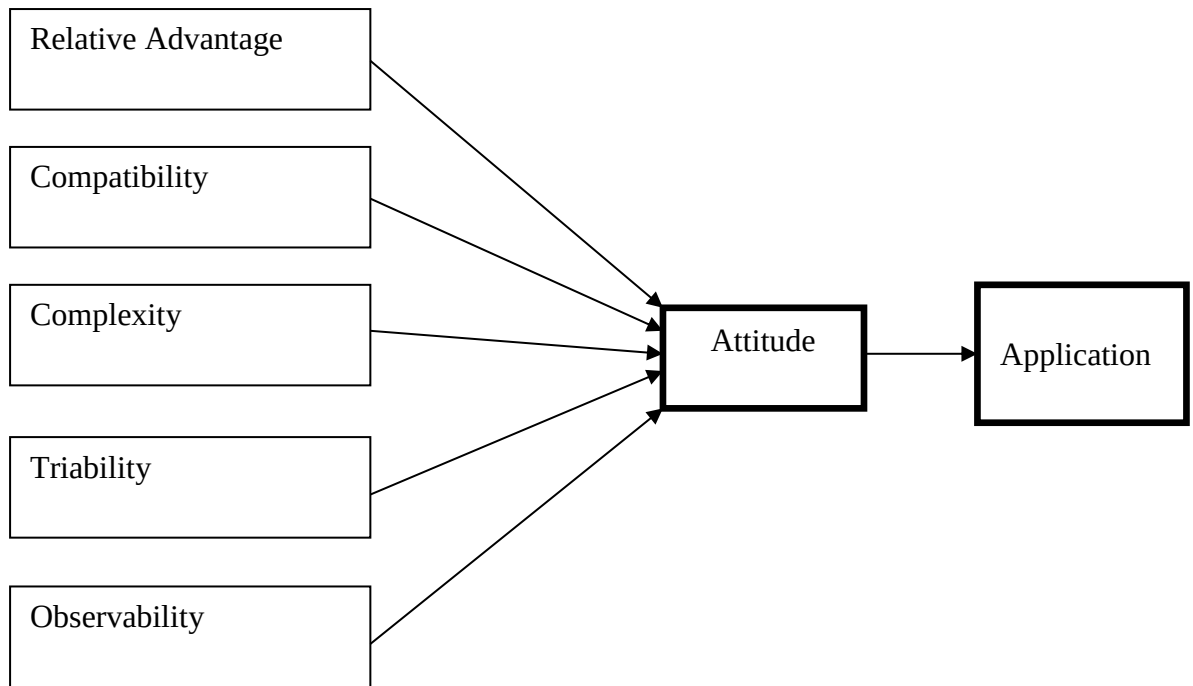


Figure 4: Diffusion of Innovation Theory
Source: Rogers, (2003)

The theory of diffusion seeks to elucidate how, and why, new ideas and technology blowout through cultures. The theory of diffusion of innovation has been used successfully in many fields including: Communication, Agriculture, Public Health, Criminal Justice, Social Work and Marketing. That is why its adoption in Education and in particular, University institution could be a welcome idea because of the enormous benefits to be derided.

Innovation is the process of translating an idea or invention into a good or service that creates value or for which customers will pay. To be an innovation, an idea must be replicable at an economical cost and must have satisfied a specific need. Innovation as a concept is therefore defined as an idea, practice or object that is perceived as new by an individual. An innovation diffusion research has attempted to explain the variables that could influence how and why users adopt a new idea or technology and also existence of middle change agents and gatekeepers that are included in the process of diffusion (Yousafza, Foxall

& Pallister, 2007). When promoting an innovation, there are five strategies used to appeal to the different adopter categories display in Figure 5.

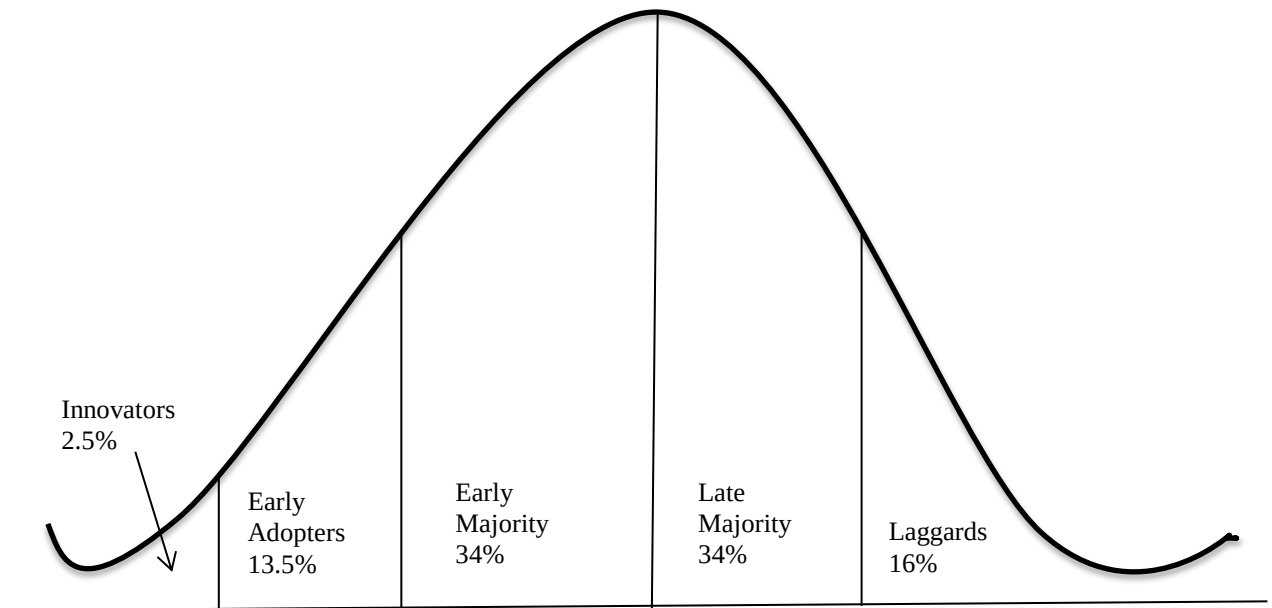


Figure 5: Five Innovation Adopter Categories
Source: Robinson, (2009)

Innovators are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very willing to take risks, and are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to this population.

The early adopters are people who represent opinion leaders. These people enjoy leadership roles, and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change.

The early majority group are rarely leaders, but they do adopt new ideas before the average person that said, they typically need to see evidence that the innovation works before they are willing to adopt it. This group of people need strategies like success stories and

evidence of the innovation's effectiveness to get involved. The late majority people are sceptical of change, and will only adopt an innovation after it has been tried by the majority. Strategies that appeal to this set of population include information on how many other people have tried the innovation and have adopted it successfully.

The last group are the laggards, these category of people are bound by tradition and very conservative. They are very sceptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups. The stages by which a person adopts an innovation, and whereby diffusion is accomplished, include awareness of the need for an innovation, decision to adopt or reject the innovation, initial use of the innovation to test it, and continued use of the innovation.

Communication channel influences the spread of a new idea. Communication is a means by which messages or information get from one individual or group to another. Olasedidun, (2014) defined it as a process by which individual create and share information with one another to reach a specified goal. Information of innovation is transferred more effectively from one place to another through a channel of communication which is the Mass Media.

Time is the innovation decision period that determine the length of time required by individual or group to pass through the innovation to form an attitude towards decision on adoption or rejecting to carry out the idea to confirm the decision. The rate of acceptance is the relative speed that an innovation is adopted by members of a social system. Rogers, (2003) suggested five processes involved in innovation decision time as: knowledge, persuasion, decision, implementation and confirmation. Knowledge. The person becomes aware of an innovation and some idea on how it functions. Persuasion is a situation where the intended user forms a favourable or unfavourable attitude toward the innovation. Decision stage is when the intended user engages in activities that lead to a choice to accept

or reject the innovation. At implementation stage, the person puts an innovation into practical use. While during confirmation stage the person evaluates the results of an established innovation-decision already.

The social system is a set of interrelated units that are engaged in joint problem solving to accomplish a common objective. Throughout the diffusion process there is evidence that all the members or units of the social system are relevant, however, there are opinion leaders who are influencing in dissemination of information about an innovation.

Davis, (1989) has instigated the technology acceptance model (TAM) as a tool to anticipate the prospect of a novel technology being implemented in an organization. The model has undoubtedly been the most recognized discussed model among all the others and is based on the theory of reasoned action as illustrated in Figure 6.

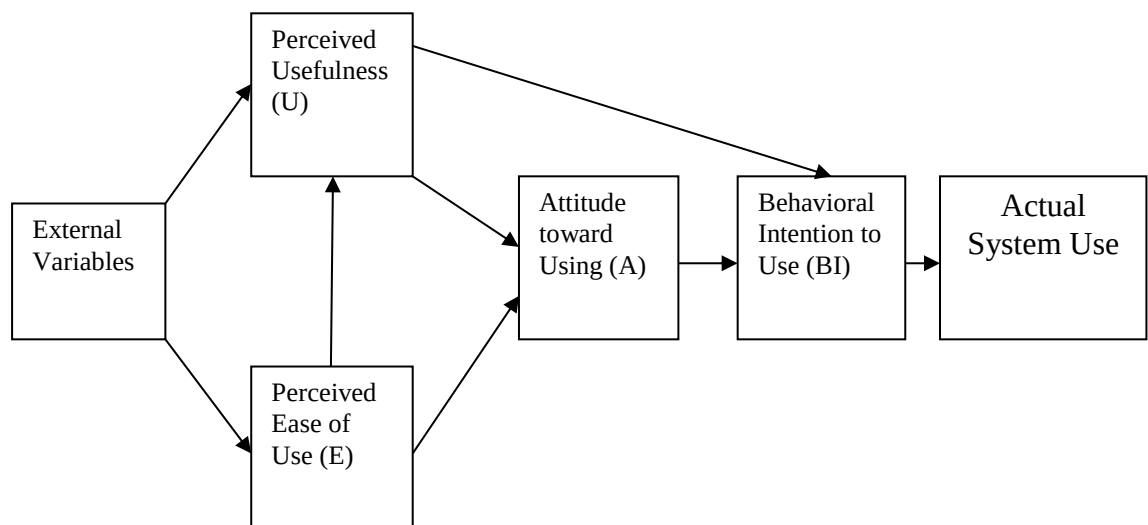


Figure 6: Technology Acceptance Model (TAM)
Source: Davis, (1989)

The structures and main concepts of TAM is defined by two beliefs; perceived ease of use which denotes the extent to which the potential user anticipate, no efforts will be required by the target system. Perceived usefulness represent a potential user's subjective likelihood employing particular application system will upsurge one's job performance

within an organizational context. TAM assumes that intention to use defines the usage of actual technology that consequently, is viewed as being mutually explained by the person's attitude towards perceived usefulness and the use of the technology. TAM hypothesized that the impacts of external factors, including training, development process and system characteristics on an intention to use are facilitated by perceived ease of use and perceived usefulness. The influence of perceived ease of use on perceived usefulness makes it more useful, according to TAM.

The conceptual framework for the study (Figure 7) is adapted from two models, namely SAMR and TAM to illustrate the potentiality of GAfE to transform and digitalized classroom activities by University lecturers in Nigerian Universities.

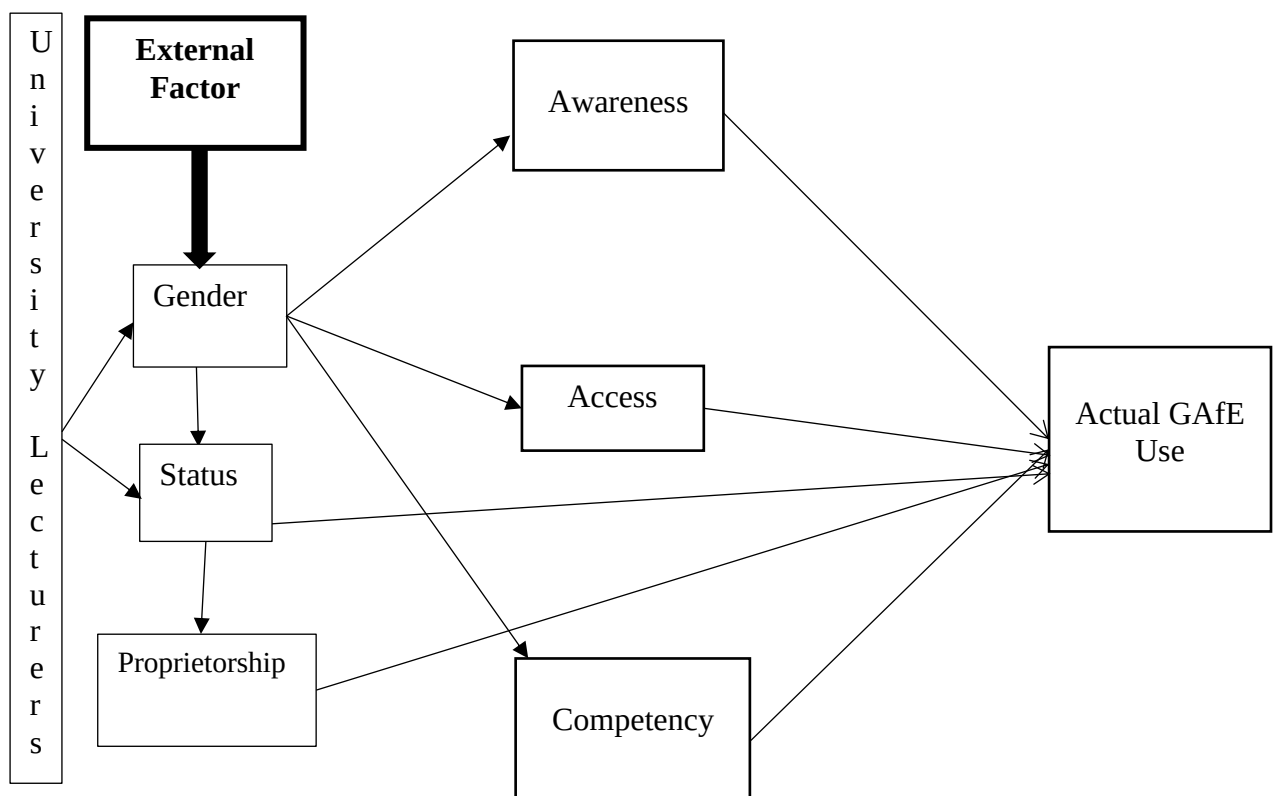


Figure 7: Proposed Hypothetical Researcher-Designed Conceptual Model

The proposed hypothetical researcher-designed conceptual model assumes that University lecturers' usage of GAfE technology is viewed as being mutually explained by the lecturers' awareness of, access to and competency in using GAfE technology. The researcher hypothesized that the impacts of external factors, including gender, status and proprietorship on actual usage of GAfE characterized and facilitated by lecturer awareness, access and competency in using GAfE.

The model find out how external factors of gender, status and proprietorship's influence would moderate the lecturers awareness, access and competency in actual use of Google Apps for Education (GAfE) in Nigerian Universities for research, teaching and learning. The researcher also used awareness, access and competency as independent variables while actual usage of GAfE to be the dependent variable (Figure 7). The actual use of GAfE lecturers is capable of digitalizing classroom activities, transforming Research, teaching and learning process in Nigerian Universities.

Appraisal of the Reviewed Literature

The reviewed literature focused on the pedagogical practices of using information and communication technology (ICT); meaning, nature awareness and evolution of Google apps for education (GAfE); influence of University proprietorship and gender on the access and use of GAfE; studies on University lecturers' status and competency in the use of GAfE among others. The different literature reviewed has tried to provide an in-depth insight into the evolution and trends of GAfE in education across the globe. GAfE concept, typology and relevance as one of the emerging technologies to enhance interactive, participatory and collaborative teaching and learning in Nigerian Universities were considered. The reviewed literature indicated that ICT is the pivot on which the emerging technologies rely on that has been worked upon by different writers as reviewed, these includes Kathy, (2015), Jeff, (2011) and Chris, Barry, Tony and Valerie, (2008).

Yusuf and Onasanya, (2004) identified ICT as an essential teaching and learning facility, which has become a natural part of man's daily life. It is an eclectic application of computing, communication, telecommunication and satellite technology. In view of this, ICT's use in education by academia and students has become a vital tool. Chris et al, (2008) asserted that an important influence on the use made of ICT in subjects and classes is the amount and range of ICT resources available to the teachers. Where there are limited numbers of computers in a class, this limits their impact, because each individual student is only able to use the computer for a few minutes. Chris et al, (2008) asserted that lecturers are not confident in their uses of ICT. Few lecturers are confident in using a wide range of ICT resources, and limited confidence affects the way the lesson is conducted. Many lecturers still fear some forms of technology, which prevents them for making use of them in their teaching.

Yusuf and Onasanya, (2004) identified ICT as an essential teaching and learning facility, which has become a natural part of man's daily life. It is therefore an eclectic application of computing, communication, telecommunication and satellite technology. Ottestad, (2010) asserted that in planning learning materials using ICT productivity tools, certain pedagogical principles prerequisites should be considered carefully. Ordinary ICT tools by themselves do not make good pedagogy but the most idea of how the learning environment were designed using ICT as tools. However the pedagogical principles takes the advantages of the best practices considering a unique environment afforded by ICT tools. These were the crucial idea that needed to be addressed by the use of ICT which should satisfy the sundry needs of all kinds of learners, characterized by all kinds of socio-cultural conditions including the diversity of multiple intelligences. This can be deduced from the research carried out by Yusuf, Afolabi and Loto (2013) that noted the capability of new technologies to solve educational problems if not eliminating these problems completely.

Barbra, (2011) sought to implement an instructional design module that can serve as an orientation for new users of Google Apps, so that lecturers will be able to gain an understanding of the tools and adopt them into their Professional Learning Community (PLC). ‘Voicethread’ presentations were embedded into the web-based modules so users would be able to view step-by-step procedures as a tutorial for Google Apps. The project was delivered in a hybrid approach, both synchronous and asynchronous, since lecturers’ technology abilities vary. The results indicated positive reactions to using Google Apps as a collaboration tool in their institution. Consequently, they have expressed concern that without total acceptance amongst their colleagues, GAfE collaboration tool would not be effective.

Owayid, & Uden, (2014) reported on the use of Google Apps services for higher education and investigated the use of Google Apps services like Mail, Docs, Drive, Calendar, and Sites as a package among information department staff and the use of Google Apps services package between academic staff and their students. The result revealed that lecturers were not frequent in using Google Apps services package with their students, hence result was less than average.

However studies like Rogers, (2003), Robinson, (2009), Puentedura, (2014) and Kathy, (2015) revealed that a famous conceptual model by Davis, (1989)⁶⁸ Technology Acceptance Model (TAM), is used as reference in developing e-learning acceptance conceptual models. Kathy, (2015) opined that the beauty of assessment is that there is no shortage of strategies and techniques available to lecturers to use in their classroom. This provided lecturers the valuable feedback they needed to adjust their teaching so student learning moves forward. The reviewed Google Apps for Education on SAMR Model (Puentedura, 2014), Five Innovation Adopter Categories Robinson, (2009), Diffusion of Innovation Theory (Rogers, 2003), and Technology Acceptance Model (Davis, 1989) has been generally prominent for constructing the conceptual framework. These have been

adapted for University lecturers' awareness of, access to and competency on the use of GAfE in Nigeria.

Considering the reviewed literatures Kathy, (2015), Owayid, and Uden, (2014), Barbra, (2011), Ottestad, (2010) and Yusuf and Onasanya, (2004) agreed that integration of ICT and emerging technologies in Nigerian Universities of higher learning has gained a whole of acceptance by lecturers. However, none of the researchers actually works on GAfE as an offshoot of ICT, that is, lecturers' awareness of, access to and competency in the use of Google Apps for Education in Nigerian Universities. This is the uniqueness about this study being one of the few works that evolved GAfE for digitalising classroom activities and emphasised guaranteed storage facility in the cloud which made information available anywhere in the world provided there is an access to internet.

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology that was adopted for the study. This was discussed under the following sub-headings: Research Design; Sample and Sampling Techniques; Research Instrument; Validation of Research Instrument; Procedure for Data Collection and Data Analysis Techniques.

Research Design

The study employed descriptive research design of the survey method. This type of research design usually involves large samples to ensure meaningful representation and description which is relevant to the study. This method also enables the researcher to find out and interpret event and idea the way they are without manipulation.

Sample and Sampling Techniques

The population for the study consisted of Nigerian University lecturers. Multi-stage sampling technique was adopted for the study. In the first stage, five Universities were purposively selected because these are the Universities in Nigeria that have subscribed to GafE and are already utilising the technology. The Universities included University of Ibadan, Ibadan, Oyo State; Ladoke Akintola University of Technology, Ogbomoso, Oyo State; Federal University of Technology, Minna, Niger State; Covenant University, Ota, Ogun State and University of Ilorin, Ilorin, Nigeria, which was used for the pilot testing exercise. Ladoke Akintola University of Technology, Ogbomoso which happened to be the only State University in the sample was not represented as a result of the industrial strike action embarked upon by staff of the university as at the time of conducting the study. All the Universities in the sample have signed a memorandum of understanding (MoU) with

Google. The researcher made use of Israel (2013) model (appendix III) to determine the sample size at University of Ibadan only while census sampling was used at Federal University of Technology, Minna and Covenant University, Ota because of their low population (Table 2).

The sample size for the study consisted of 1,585 out of 2,800. In the second stage, proportional sampling techniques was used to draw the precise number of representative sample from each of the University. The total number of lecturers that actually participated in the study were 959 because some completed copies of the instrument were not valid and some of the lecturers repudiated the instrument. This mean that, researcher received 61% of the instrument from the respondents.

Table 2:
Sample Size of the Study

University	Total Population	Sample based on Israel Model ($\pm 3\%$)
1. University of Ibadan, Ibadan, Oyo State	1,915	700
2. Federal University of Technology, Minna, Niger State	450	450
3. Covenant University, Ota, Ogun State	435	435
TOTAL	2,800	1,585

Source: Field Study Result

Research Instrument

The instrument for the research was a structured questionnaire titled Assessment of University Lecturers' Awareness, access and Competency in the Use of Google Apps for Education in Nigerian Universities. The questionnaire was a close-ended type, which contained a set of pre-determined options to the items presented. From the items in appendix I, the respondents select those that best describe their awareness of, access to and competency in the use of GAfE because they were not subjected to any practical test.

The questionnaire contains four sections. Section A required demographic information of the respondents such as University name, gender, status and University proprietorship. Section B contained items on lecturers' awareness of GAfE. Section C contained items on lecturers' access to computer, Internet and GAfE. Section D contained items on self-assessment of lecturers' competency in the use of GAfE in Nigerian universities. The items were structured using Likert Scale response format range from Advanced (A), Highly Competent (HC), Moderately Competent (MC), and No Competency (NC). This was represented by a four point rating ranging from No Competency (1), moderately competent (2), highly competent (3) to Advanced (4) using a mean score benchmark of 2.5.

Validation of the Research Instrument

The instrument was validated by the researcher's supervisor and nine experts from Educational Technology Department and Faculty of Information and Communication Sciences for suggestions, comments, views and opinions for face and content validity of the instrument. The comments and suggestions that was given led to the modification of the items in the questionnaire. All the items in the questionnaire were judge to be relevant to what is being measured thereby ensuring adequate content and face validity of the instrument.

To determine the reliability of the instrument, twenty copies of the questionnaire were administered on University of Ilorin lecturers who were not part of the sample for the main study. The reliability of the instrument was tested using Cronbach's alpha. The Cronbach's alpha yielded 0.79 reliability value as indicated in Appendix VI. Also, the independent variables: awareness of, access to and competency yielded coefficient value of 0.71, 0.84 and 0.81 respectively.

Procedure for Data Collection

The researcher collected letter of introduction from the Head of Department of Educational Technology, University of Ilorin to visit the sampled Universities. Copies of the instrument were personally administered by the researcher with the help of research assistants in the sampled Universities after taking due permission from the University Management and lecturers involved. The researcher and the research assistants administered 1,585 copies of the questionnaire and 959 copies were duly completed and returned. In order to have this done, the researcher and research assistants waited to collect the completed questionnaire from the respondents for further analysis.

For ethical reasons, Confidentiality and anonymity of the respondents was maintained. Also, the respondents were not compelled to respond to the instrument by any means. There was nothing to show the respondents' identity and the results were kept confidential. All information gathered during the course of the study was handled with absolute confidentiality by the researcher.

Data Analysis Techniques

Descriptive statistics involving frequency count, percentages and means were used to answer research questions 1, 2 and 3, mean was used for research questions 4 to 6. Hypotheses 1, 2, 3, and 5 were tested using the t-test while hypothesis 4 was tested using ANOVA with the aid of Statistical Package for Social Sciences (SPSS) version 21.0. The alpha value 0.05 level of significance was used for accepting or not accepting the hypotheses.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

This chapter presents the analysis and results obtained from the data to answer research questions and test the research hypotheses stated earlier in chapter one. The respondents' personal information on the following variables gender, status, University proprietorship and beneficiary of staff development programme on use of Google Apps for Education (GAfE) are presented in this chapter.

Data Analysis

Table 3:
Number of Sampled Respondents

University	Total Population	Sample based on Israel Model ($\pm 3\%$) And Census	Remark
1. University of Ibadan, Ibadan	1,915	700	Sampled
2. Federal University of Technology, Minna	450	450	Sampled
3. Covenant University, Ota	435	435	Sampled
TOTAL	2,800	1,585	

Source: Field Study Result

Table 3 indicated the sampled Universities. Israel model was used to sample lecturers at University of Ibadan while census sampling was adopted at Federal University of Technology, Minna and Covenant University, Ota because of their low population. This made the total respondents sampled to be 1,585.

Table 4:
Percentage Distribution of Respondents by Gender

Gender	No. of Respondents	Percentage (%)
Male	639	66.6
Female	320	33.4
Total	959	100

Source: Field Study Result

Table 4 showed that male respondents were 639 (66.6%) while female were 320 (33.4%). Male respondents formed the highest number with 639 (66.6%). This showed that male and female lecturers were duly represented in the study and that male respondents was more than their female counterpart.

Table 5:
Percentage Distribution of Respondents by Status

Status	No. of Respondents	Percentage (%)
Professor	16	1.7
Associate Professor	23	2.4
Senior Lecturer	159	16.6
Lecturer I	244	25.4
Lecturer II	305	31.8
Assistant Lecturer	207	21.6
Graduate Assistant	5	0.5
Total	959	100

Source: Field Study Result

Table 5 showed that Lecturer II constituted the highest respondents of 305 (31.8%) from the total sampled of respondents 959 while Graduate Assistant are the lowest respondents 5 (0.5%). Others were Professor 16 (1.7%), Associate Professor 23 (2.4%), Senior Lecturers 159 (16.6%), Lecturer I 244 (25.4%), Assistant Lecturers 207 (21.6%). This implies that all lecturers in Nigerian Universities irrespective of status were represented in the study.

Table 6:
Percentage Distribution of Respondents by University Proprietorship

University	No. of Respondents	Percentage (%)
Federal University	649	67.7
State University	-	-
Private University	310	32.3
Total	959	100

Source: Field Study Result

Table 6 showed that Federal University had the highest number of respondents 649 (67.7%) from the total sampled respondents 959 while Private University had the lower number of respondents 310 (32.3%). State University was not represented as a result of the industrial action embarked upon by Ladoke Akintola University of Technology, Ogbomosho at the time of conducting the research.

Results

Research Question 1:

Are University lecturers aware of the use of Google Apps for Education (GAfE)?

Table 7:
The Frequency Count and Percentage of Respondents on Lecturers' Awareness of GAfE

S/No	Items	No (%)	Yes (%)
1	I have heard about GAfE before	248 (25.9%)	711 (74.1%)
2	I have never heard about GAfE before	726 (75.7%)	233 (24.3%)
3	I am familiar with the concept of GAfE	535 (55.8%)	424 (44.2%)
4	I am just seeing the concept of GAfE for the first time	719 (75%)	240 (25%)
5	I heard about GAfE from a friend	804 (83.8%)	155 (16.2%)
6	I heard about GAfE Online	628 (65.5%)	331 (34.5%)

7	I heard about GfE in a conference	639 (66.6%)	320 (33.4%)
8	I heard about GfE in my school	664 (69.2%)	295 (30.8%)
9	I heard about GfE on a Network news	829 (86.4%)	130 (13.6%)
10	I heard about GfE from a colleague	560 (58.4%)	399 (41.6%)

Source: Field Study Result

Table 7 indicated that lecturers are aware of GfE with 711 (74.1%) respondents out of a total of 959. It also reveals that the number of lecturers who were familiar with the concept of GfE are 535 (55.8%). It can then be inferred that lecturers were aware of Google Apps for Education.

Research Question 2:

Do University lecturers have access to Google Apps for Education?

This question sought to find out the lecturer's access to Google Apps for Education.

Table 8:

The Frequency Count and Percentage of Respondents on Lecturers' Access to Google Apps for Education

S/No.	Items	No (%)	Yes (%)
1	I have access to a computer at home	17 (1.8%)	942 (98.2%)
2	I have access to a computer in the office	27 (2.8%)	932 (97.2%)
3	I have access to a computer in the school library	460 (48%)	499 (52%)
4	I have access to a computer in the school laboratory	641 (66.8%)	318 (33.2%)
5	I have access to the Internet in the laboratory	605 (63.1%)	354 (36.9%)
6	I have access to the Internet at home	203 (21.2%)	756 (78.8%)
7	I have access to the Internet in the office	49 (5.1%)	910 (94.9%)
8	I have access to the Internet in the library	407 (42.4%)	552 (57.6%)
9	I have access to the Internet on my mobile phone	90 (9.4%)	869 (90.6%)
10	I have access to the Internet in the lecture room	497 (51.8%)	462 (48.2%)
11	I have access to the Internet anywhere on campus	497 (51.8%)	462 (48.2%)
12	I have access to the Internet through WIFI	177 (18.5%)	782 (81.5%)
13	I have access to the Internet through Fibre-optic cable	737 (76.9%)	222 (23.1%)
14	I have access to GfE in the laboratory	792 (82.6%)	167 (17.4%)

15	I have access to GAfE at home	591 (61.6%)	368 (38.4%)
16	I have access to GAfE in the office	428 (44.6%)	531 (55.4%)
17	I have access to GAfE in the library	712 (74.2%)	247 (25.8%)
18	I have access to GAfE on my mobile phone	563 (58.7%)	396 (41.3%)
19	I have access to GAfE in the lecture room	738 (77%)	221 (23%)
20	I have access to GAfE anywhere on campus	744 (77.6%)	215 (22.4%)

Source: Field Study Result

Table 8 revealed the percentages of respondents on lecturers' access to GAfE. Respondents' access to GAfE in the office was the highest with 531 (55.4%) while access to GAfE in the laboratory was lowest with 167 (17.4%). It can thus be inferred that most of the respondents only have access to GAfE in the office while access to it at home and other places in the academic area like mobile phone, home, library, lecture room, and other areas in the campus were 396 (41.3), 368 (38.4%), 247 (25.8), 221 (23%) and 215 (22.4%) respectively.

Research Question 3:

Are University lecturers competent in the use of Google Apps for Education?

This question sought to find out the lecturer's competent in using Google Apps for Education.

Table 9:

Lecturers' Competency in the Use of Google Apps for Education

S/N	Items	N	Mean ($\bar{x}$)
1	I can send e-mail messages using Google Gmail Online	959	3.30
2	I can talk with video using Google Hangouts Online	959	2.17
3	I can create work in group using Google Hangouts Online	959	2.00
4	I can invite an expert into my class to do a guest lecture through Video Chat using Google Hangouts Online	959	1.66
5	I can share calendar schedule using Google calendar Online	959	2.14
6	I can use Google documents to collaborate Online	959	2.28
7	I can keep a running record of a lesson note using Google Vault Online	959	1.75
8	I can create folder for my documents using Google Vault Online	959	2.21

9	I can upload approved video clips to share during class time using Google Vault Online	959	2.02
10	I can store documents in the Google Drive Online	959	2.44
11	I can have students work collaboratively from anywhere using Google Classroom Online	959	1.92
12	I can give students instant feedback using Google Classroom Online	959	1.93
13	I can create classroom placement groups to better distribute differentiated materials and resources using Google Classroom Online	959	1.94
14	I can let students know that I will be available to help Online at a certain time using Google Classroom	959	1.97
15	I can have students reflect on their daily learning through Google Classroom Online	959	1.87
16	I can publish student work by sharing it within my class Online through Google Classroom	959	2.01
17	I can translate letters home to parents and guardians with their own language using Google Translator Online	959	1.72
18	I can use Sheets to track student homework with parents Online	959	1.60
19	I can collect data using Sheet Online	959	1.87
20	I can use Google Slides to dynamic presentations Online	959	1.95
TOTAL (40.78/20)			2.04

Source: Field Study Result

Table 9 indicates that respondent competency in the 20 items are not good enough, based on the mean score benchmark of 2.04 respondents were believed to be competent in only six items, that is, item 1, 2, 5, 6, 8 and 10 with mean score 3.30, 2.17, 2.14, 2.28, 2.21 and 2.44 respectively. Item 18 contain the least mean score 1.60. The rest were below the benchmark score of 2.04. Examining the mean scores it can be deduced that respondents are not competency in the use of GAfE for instruction in Nigerian Universities.

Research Question 4:

What is the influence of University lecturers' gender on use of Google Apps for Education?

Table 10:

Gender Influence on Respondents Use of Google Apps for Education

Gender	N	Mean (x)	Std. Deviation
Male	639	60.82	0.17
Female	320	54.85	0.19
Total Mean Difference	959	5.87	

Source: Field Study Result

Table 10 reports the influence of University lecturers' gender on the use of GAfE. The researcher captured data on use by considering the overall sum of the whole instrument, which is awareness, access and competence. Mean score for male respondents was 60.82 with standard deviation of 0.17 while the female respondents' mean score was 54.85 with standard deviation of 0.19. Male respondents had the highest number of respondents of 639 out of the total respondents of 959 while female respondents were 320. However, considering the mean difference 5.87 and the standard deviation 0.17 and 0.19 it can be deduced that gender has influence on lecturers' use of Google Apps for Education in Nigerian Universities.

Research Question 5:

What is the influence of University lecturers' status on the use of Google Apps for Education?

Table 11:
Influence of status on the Use of Google Apps for Education

Lecturers' Status	N	Mean ($\bar{x}$)
Professor	16	1.83
Associate Professor	23	2.05
Senior Lecturer	159	1.79
Lecturer I	244	1.74
Lecturer II	305	2.23
Assistant Lecturer	207	1.95
Graduate Assistant	5	2.62
Total	959	2.03

Source: Field Study Result

Table 11 showed that Graduate assistant has the highest mean score of 2.62 while lecturer I has the lowest mean score of 1.74. Others are 1.83, 2.05, 1.79, 2.23 and 1.95 for professor, associate professor, senior lecturer, lecturer II, and assistant lecturer respectively. Considering the differences in the mean scores of respondents, it is noted that lecturer I, graduate assistant and associate professor has mean score above the total mean score of 2.03 while others were below the total mean score. It can be inferred based on the differences in mean scores that respondents' status has influence on lecturers' use of Google Apps for Education in Nigerian Universities.

Research Question 6:

What is the influence of University proprietorship on lecturers' use of Google Apps for Education?

Table 12:

Proprietorship Influence on the Use of Google Apps for Education

University Proprietorship	N	Mean (x)
Federal Government	649	2.07
Private	310	1.73
Total	959	1.9

Source: Field Study Result

Table 12 revealed that Federal Government owned Universities has the highest mean score of 2.07 while Private owned Universities has 1.73. The sampled State University was not represented because of prolong industrial action as at the time of carrying out the survey. The mean differences between Federal Government owned Universities and private owned Universities was 0.34, it can be inferred from the result therefore that proprietorship has influence on lecturers' use of Google Apps for Education in Nigerian Universities.

Hypotheses Testing

The following hypotheses were tested in the study:

H₀₁: There is no significant difference between male and female University lecturers' awareness in the use of Google Apps for Education

Table 13:

No significance difference between male and female University lecturers' awareness in the use of Google Apps for Education

Respondents	F	X	SD	Df	T	Sig.	Remark
Male	639	13.52	1.68	957	3.49	.000	Rejected
Female	320	13.10	1.89				

Source: Field Study Result

Table 13 indicated that $t(957) = 3.49$, $p = 0.00$. Since the P value of 0.000 was less than 0.05, the stated null hypothesis was rejected. This was as a result of the t-value of 3.49 resulting in 0.00 significance value which is less than 0.05 alpha value. The null hypothesis which stated that there is significant difference between male and female University lecturers' awareness in the use of Google Apps for Education was rejected. This implied that there is significant difference between male and female University lecturers' awareness in the use of Google Apps for Education in Nigerian Universities.

Ho₂: There is no significant difference between male and female University lecturers' access to the use of Google Apps for Education

Table 14:

No significant difference between male and female University lecturers' access to the use of Google Apps for Education

Respondents	F	Mean	SD	Df	T	Sig.	Remark
Female	320	30.09	3.82	957	2.84	.005	Rejected
Male	639	30.92	5.07				

Source: Field Study Result

Table 14 revealed that $t(957) = 2.84$, $p = 0.005$. Since the P value of 0.000 was less than 0.05, the stated null hypothesis was rejected. This was as a result of the t-value of 2.84 resulting in 0.005 significance value which is less than 0.05 alpha value. The null hypothesis which stated that there is significant difference between male and female University lecturers' access in the use of Google Apps for Education was rejected. This implied that there is significant difference between male and female University lecturers' access in the use of Google Apps for Education in Nigerian Universities.

H03: There is no significant difference between male and female University lecturers' competency in the use of Google Apps for Education

Table 15:

No significant difference between male and female University lecturers' competency in the use of Google Apps for Education

Respondents	F	Mean	SD	Df	T	Sig.	Remark
Female	320	54.85	21.61	957	4.04	.000	Rejected
Male	639	60.82	21.54				

Source: Field Study Result

Table 15 indicated that $t(957) = 4.04$, $p = 0.000$ which means that the stated null hypothesis was rejected. This was as a result of the t-value of 4.04 resulting in 0.000 significance value which is less than 0.05 alpha value. The null hypothesis which stated that there is significant difference between male and female University lecturers' competency in the use of Google Apps for Education was rejected. This implied that there is significant difference between male and female University lecturers' competency in the use of Google Apps for Education in Nigerian Universities.

H04: There is no significant difference in the competency of University lecturers' use of Google Apps for Education based on status

Table 16:

Competency of University lecturers' Use of Google Apps for Education

Tests of Between-Subjects Effects					
Dependent Variable: Lecturers' competency in the use of Google Apps for Education					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	37339.420 ^a	6	6223.237	14.235	.000
Intercept	559003.833	1	559003.833	1278.620	.000
Status	37339.420	6	6223.237	14.235	.000
Error	416207.798	952	437.193		
Total	3771914.000	959			
Corrected Total	453547.218	958			

a. R Squared = .082 (Adjusted R Squared = .077)

Source: Field Study Result

Table 16 revealed that the dependent variable across the group is not equal because status significant value (.000) is less than the p value (.05) indicating a significant result. Since the hypothesis is rejected, there is significant difference in the competency of University lecturers' use of Google Apps for Education based on status. This is in agreement with homogeneity of variances assumption. The direction of the mean differences is shown in the post hoc analysis in Table 17.

Table 17:
Post Hoc Tests for Lecturers' Status

(I) Lecturers' Status	(J) Lecturers' Status	Mean Difference (I-J)	Sig.
Professor	Associate Professor	-6.7717	.986
	Senior Lecturer	1.1714	1.000
	Lecturer I	2.6270	1.000
	Lecturer II	-12.0899	.534
	Assistant Lecturer	-3.7283	.998
	Graduate Assistant	-23.8500	.550
Associate Professor	Associate Professor	6.7717	.986
	Senior Lecturer	7.9431	.821
	Lecturer I	9.3988	.643
	Lecturer II	-5.3176	.967
	Assistant Lecturer	3.0435	.998
	Graduate Assistant	-17.0783	.840
Senior Lecturer	Associate Professor	-1.1714	1.000
	Senior Lecturer	-7.9431	.821
	Lecturer I	1.4557	.998
	Lecturer II	-13.2607*	.000
	Assistant Lecturer	-4.8996	.552
	Graduate Assistant	-26.0214	.327
Lecturer I	Associate Professor	-2.6270	1.000
	Senior Lecturer	-9.3988	.643
	Lecturer I	-1.4557	.998
	Lecturer II	-14.7164*	.000
	Assistant Lecturer	-6.3553	.112
	Graduate Assistant	-26.4770	.250
Lecturer II	Associate Professor	12.0893	.534
	Senior Lecturer	5.3176	.967
	Lecturer I	13.2607*	.000
	Lecturer II	14.7164*	.000
	Assistant Lecturer	8.3611*	.003
	Graduate Assistant	-11.7607	.956
Assistant Lecturer	Associate Professor	3.7283	.998
	Senior Lecturer	-3.0435	.998
	Lecturer I	4.8996	.552
	Lecturer II	6.3553	.112
	Assistant Lecturer	-8.3611*	.003

	Graduate Assistant	-20.1217	.607
Graduate Assistant	Associate Professor	23.8500	.550
	Senior Lecturer	17.0783	.840
	Lecturer I	25.0214	.327
	Lecturer II	26.4770	.250
	Assistant Lecturer	11.7607	.956
	Graduate Assistant	20.1217	.607

Source: Field Study Result

Table 17 showed the information on multiple comparisons of lecturers' status showing mean difference (I-J) and significant value. It is only significant on the mean difference marked with asterisk (*) where the p value were less than .05. There was significance differences between senior lecturer and lecturer II in their competency in the use of GAfE. There was also significance differences between lecturer I and lecturer II in their competency in the use of GAfE. There was also significance differences existing between lecturer II and assistant lecturer among others. Table 18 further displayed Scheffe means for groups in homogeneous subsets.

Table 18:
Scheffe Means for Groups in Homogeneous Subsets

Lecturer' Status	N	Subset	
		1	2
Lecturer I	244	52.1230	
Senior Lecturer	159	53.5786	
Professor	16	54.7500	
Assistant Lecturer	207	58.4783	58.4783
Associate Professor	23	61.5217	61.5217
Lecturer II	305	66.8393	66.8393
Graduate Assistant	5		78.6000
Sig.		.501	.126

Source: Field Study Result

Similarly, Table 18 revealed Scheffe means for groups in homogeneous subsets with differences in subsets value. For example, assistant lecturer, associate professor and lecturer II were in the same means for homogeneous subsets. By implication the null hypothesis was rejected consequently, there was a significant difference existing among University lecturers use of GAfE based on status.

Ho₅: There is no significant difference on the influence of University proprietorship on lecturers' use of Google Apps for Education

Table 19:

Difference in the influence of University proprietorship on lecturers' use of Google Apps for Education

Respondents	F	Mean	SD	Df	T	Sig.	Remark
Federal Government	649	62.09	22.13	957	6.89	.000	Rejected
Private	310	51.99	19.28				

Source: Field Study Result

Table 19 showed the t-test result to determine whether there was any significance difference in the influence of University proprietorship on lecturers' use of GAFÉ. The outcome revealed that $t(957) = 6.89$, $p = 0.000$. The null hypothesis was rejected. This was as a result of the t-value of 6.89 resulting in 0.000 significance value which was less than 0.05 alpha value. The stated null hypothesis was established hence, there was significant difference in the influence of University proprietorship on University lecturers' use of Google Apps for Education in Nigerian Universities.

The summarized result of the Field Study Model is shown in Figure 8.

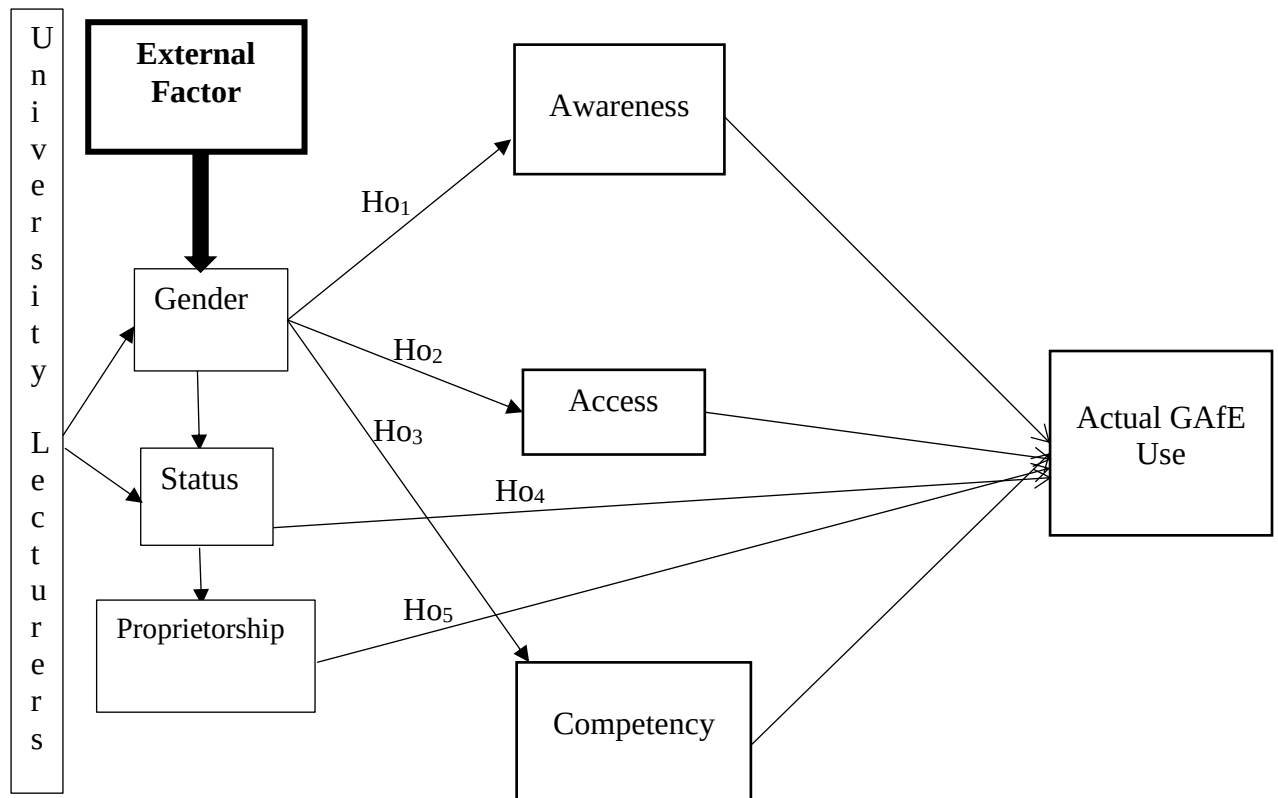


Figure 8: Summarized Result of the Field Study Model

The summarized result of the hypothesized model revealed the relationship that exist among variables as related to the study. In the model difference existed among University lecturers awareness, access and competency in the use of Google Apps for Education (GAfE) because the significant value .000, .005 and .000 was less than the alpha value of 0.05. There exist also difference among University lecturers based on the moderating variables of gender, status and proprietorship in the use of GAfE because the significant value .005, .000 and .000 was less than the alpha value of 0.05.

Summary of Findings

The finding of this study based on the research questions and the hypotheses formulated were summarised as follows:

1. university lecturers were aware of GAfE (74.1%);
2. a total of 531 (55.4%) lecturers had access to GAfE in their personal offices while 44.6% had access to it at home and other places in the academic area like library, computer laboratory and classroom;
3. lecturers were generally not competent in the use of GAfE as the observed grand mean of 1.96 was lower than the benchmark score of 2.5;
4. gender had significant influence on respondents' use of GAfE in favour of male lecturers ($t = 4.04$, $p = 0.000$);
5. lecturers' status had significant influence on the use of GAfE in favour of graduate assistant ($t = 4.04$, $p = 0.000$); and
6. university proprietorship had significant influence on lecturers' use of GAfE in favour of Federal Government owned universities ($t = 6.89$, $p = 0.000$).

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

This Chapter focuses on discussion of the findings, conclusions drawn from the findings and recommendations. Other aspects included are the limitation to the study and suggestions for further research.

Discussion on the Research Findings

The findings of this study are discussed under the following sub-headings:

1. University lecturers awareness of the use of Google Apps for Education;
2. University lecturers access to Google Apps for Education;
3. University lecturers competent in the use of Google Apps for Education;
4. influence of University lecturers' gender on use of Google Apps for Education;
5. influence of University lecturers' status on the use of Google Apps for Education;
- and
6. influence of University proprietorship on lecturers' use of Google Apps for Education.

Lecturers' awareness was addressed in section B of the instrument comprises of ten items analysis varying from "I have heard about GAfE before" having the percentage of respondents on lecturers' awareness to be very high. Most of the respondents confirmed that they have heard about GAfE before. And for corroboration, the question was intervened in item 2 – "I have never heard about GAfE before", where most respondents confirmed that they have heard about GAfE before. Which also discloses that the number of respondents who were familiar with the concept of GAfE was high. Most of the other respondents also responded that they were not seeing the concept of GAfE for the first time. Conclusively, result revealed that University lecturers were aware of Google Apps for Education.

The result also indicated that most respondents were aware of Google Apps for Education however, they were not familiar with the concepts of GAfE. This may be one of

the reasons why they were not competent in using the technology for classroom activities. It was also noted among the respondents that they were not seeing the concept of GAfE for the first time, other responded that they did not heard about GAfE from friends but from other sources like Online, conferences, Network news, school and colleague. It can therefore be deduced from the result that lecturers' were aware of Google Apps for Education in Nigerian Universities from different sources and at different time.

The result revealed that most of the lecturers had no access to GAfE except in the office. That is, they had no access to GAfE in the laboratory, home, library, mobile phone, lecture room and most places on the campus. Thus access to GAfE by Nigerian University lecturers' was limited and needed to be improved upon. It was also showed that most respondents did not have access to a computer at home, office, library and laboratory. Correspondingly most respondents did not have access to an Internet in the school laboratory, home, mobile phone, lecture room and library. In the same way most respondents responded that they did not have access to GAfE in the library, mobile phone, lecture room and anywhere on campus. It can be deduced from the result that lecturers' access to Google Apps for Education in Nigerian Universities was limited.

The result on lecturers' competency in basic Google apps for education established that lecturers were not competent in the use of Google Apps for Education having compared the total mean score with the benchmark, it was noted that the total mean score was less than the benchmark. This agreed with Chris et al (2008) who worked on ICT resources and reported that many lecturers still fear some form of technology, which prevents them access and making use of them for teaching and research. This assertion is contrary to Barbra (2011) who revealed through the post survey results that indicated positive reactions to using Google Apps as a collaboration tool in the professional learning community (PLC).

Consequently, the result revealed that most University lecturers had no skill in using some of the apps or applications available with GAfE like sending email messages using

Google Gmail, on how to talk with video using Google Hangouts, on how to create work in group using google hangouts. No skill to invite an expert into their class as guest lecturer through Google Hangouts, no skill to share calendar schedule using google calendar, no skill to teach their students time management by scheduling due dates and review dates using Google calendar, no skill to use Google documents to collaborate Online, no skill to keep a running record of a lesson notes using Google Vault Online, no skill to create folder for documents using Google Vault Online, nor skill to upload approved video clips to share during class time using Google Vault Online.

Similarly, no skill to store documents in the Google drive Online, no skill to have students work collaboratively from anywhere using Google Classroom Online, no skill to give students instant feedback using Google Classroom Online, no skill to create classroom placement groups to better distribute differentiated materials and resources using Google Classroom Online, no skill to let students know that they will be available to help Online at a certain time using Google Classroom, no skill to have students reflect on their daily learning through Google Classroom Online, no skill to publish student work by sharing it within their class Online through Google Classroom, no skill to use Google to create Site to showcase their instructional materials using Google Site Online, no skill to have students do projects or create reports using Google Sites Online.

More so, no skill to translate letters home to parents and guardians with their own language using Google Translator Online, no skill to use Sheets to track student homework with parents Online, no skill to collect data using Sheet Online, no skill to use Google Slides for dynamic presentations Online, no skill to automatically grade assessments that have been submitted using a Google Form with Flubaroo Online, no skill to use Google Forms to give their students a pre-assessment at the beginning of class Online, no skill to have parents sign up for parent-teacher conference or other meetings Online, no skill to create differentiated flashcards for their students using the Flash Cards gadget Online, no skill to survey students

at the beginning of the year to find out their interest Online, no skill to keep track of discipline referrals across a school Online and no skill to create a backwards map of the standards need to teach by the end of the semester to ensure that they have covered them all.

The study reveals the mean score of male respondents to be higher than the female respondents. It can be deduced that gender has relative influence on lecturers' use of Google Apps for Education. The finding agree with Babalola (2016) and Derbyshire (2003) who opined that female are less participant in utilizing ICT for sharing intellectual ideas and that male uses computers more often for personal and academic purposes. The study also disagreed with Akpan (2014) who opined that male and female lecturers did not differ significantly in their level of ICT use.

The finding reveals that Graduate assistants had the highest mean score followed by Lecturer II, Associate Professor, Assistant Lecturer, Professor, Senior Lecturer and Lecturer I. It can be deduced then that status has influence on university lecturers' use of Google Apps for Education. It was also revealed that University proprietorship has influence on lecturers' use of Google Apps for Education credited Federal Government owned University while Private owned University was credited with lower value. The study is in agreement with Yusuf (2011) who opined that Federal Government institution of higher learning are better in the use of ICT utilization than the State Government owned institutions. That is to say younger lecturers are more readily at alert to embrace the use of new technology like GAfE for classroom instruction.

Implication of the Findings

The implications of the study was that, despite lecturers' awareness of and access to GAfE, they were not using the tool as expected. This implied that communication and collaboration process in Nigerian Universities would be hinder because GAfE was not given attention required which has been introduced as one of the medium of communication in the

classroom activities for such purpose. It was also capable to solve problem of inadequate classroom. Application of GAfE for teaching and research irrespective of lecturers' status and gender will improve and enrich teaching and research productivity in Nigeria educational sector as this is one of the benefit GAfE offered.

It was revealed in the study that most of University lecturers only had access to GAfE in the office. This by implication limited lecturers' access to GAfE and thus all that GAfE have to offers would be underutilized. This would help stakeholder of the Universities to put necessary facilities like Internet, power supply, larger bandwidth among others in place because these are the forerunner of GAfE.

The finding as well revealed that University lecturers' were not competent in the use of GAfE, this would enlighten the stakeholders the need for training, seminars, workshops, conferences among other for lecturers update and leveraging of their teaching pedagogies knowledge which should not be restricted, any way by gender or status. As it was also revealed that gender and status has significant difference on lecturers' use of GAfE.

The study similarly revealed that proprietorship had significant difference on University lecturers' use of GAfE. By implication it would encourage stakeholders of the Universities to adequately equip their institution with modern technologies of the twenty-first century to maintain the popularity and trademark of University. Proprietors of University would likewise see the need to make the infrastructure facilities ready and to provide a conducive environment for implementation of new technology like GAfE and other emerging technologies for teaching and research.

Conclusions

The finding of this study indicated that most of the lecturers were aware of the use of GAfE but had limited access that warrant poor competency in handling some basic apps of GAfE. The success of lecturers teaching with GAfE depends largely on awareness, accessibility and competency in handling the new technology for academic use. It is of note that the decline in quality of education in Nigeria might not be unconnected with the traditional teaching techniques of lecturers (Ofolu, 2007; Musa & Ainol, (2014). That may be one of the reason why sampled Universities embraced GAfE for communication and collaboration among staff and students so as to set the pace among others in Nigeria.

With the implementation of Google Apps for Education across its population, the University of Ibadan, Distance Learning Centre (DLC) and Covenant University, Ota for examples were able to offer world-class technology to lecturers and students. Instead of the lengthy physical mail process, students can now submit assignments via Gmail granting lecturers ability to distribute main and additional course materials through Google Docs and Google Site. GAfE had a dramatic impact on their clients delivery platform and enhanced communication with all stakeholders especially students and lecturers. It has also reduce the use of paper, as course materials and assignments are sent electronically. It was noted also that GAfE has completely transformed the way these institution communicate with students and that it has had a dramatic impact on course delivery platform and enhanced communication between lecturers and all stakeholders. Conclusively, GAfE has the potential of transforming the teaching processes to paperless and high performance in research, teaching and learning in Nigerian Universities if adequately used.

Limitations of the Study

The following limitations can be observed regarding the study:

1. the study was designed to investigate lecturers' awareness, access, and competency in the use of Google Apps for Education in Nigerian Universities so it cannot be use on other workers of the University like administrators and other non-academic staff;
2. the study was limited to lecturers self-assessment and there is the tendency that all the information may not be accurate, hence the need for an experimental research on this topic;
3. the study involved four Universities in Nigeria because these were the only University that subscribe with Google for collaboration in the use of GAfE as at the time of conducting the study. Hence the study could be repeated as more Universities registered with Google in future; and
4. the study did not consider the socio-cultural and organisational factors of the use of Google Apps for Education other researcher may want to consider that aspect for a more robotic interaction.

Recommendations

Based on the findings and conclusions of this study, the following recommendations were made:

1. it was recommended that Nigerian university be licenced to enable lecturers use GAfE for teaching and learning. Opportunity should be created for them to use GAfE outside their offices without gender or status bias;
2. it was also recommended that ICT resources like, very high Internet connectivity with high bandwidth should be made available in Nigerian Universities for lecturers to have access to and harness GAfE opportunities available for them when the need arises;

3. that training and re-training of lecturers be consistent with adequate information in order to leverage University lecturers' competency on the technology without gender or status bias;
4. the education policy maker are to enforce the availability of GAfE tools which the researcher called forerunner like Internet, large bandwidth, fibre optics cables, WIFI, subsidised branded computers and other ICT tools for lecturers easy access and use to improve efficiency in classroom pedagogy;
5. lecturers should motivate themselves by demonstrating high sense of commitment and readiness to use GAfE so as to shift from traditional method of teaching to adopt pedagogy innovation available in education; and
6. as at the time of this study, only four (4) Universities in Nigeria signed Memorandum of Understanding (MoU) with Google with the intention to use GAfE, other Universities in Nigeria can be examined whenever they join the Google team.

Suggestions for Further Studies

Based on the outcome of this study, the following suggestions were made for further studies:

1. the study encompassed four Universities in Nigeria because these were the University that subscribe to GAfE usage for research, teaching and learning. Hence this study could be repeated as more Universities whenever they register with Google;
2. similar study could also be carried out on the use of cloud computing for educational collaboration in research, teaching and learning; and
3. the study could also be carried out on undergraduate or postgraduate students' awareness, access and competency in the use of GAfE in Nigerian Universities.

REFERENCES

- Adegbija, M. V., & Alimi, A. E. (2010). Evaluation of secondary school teachers' application of the systems approach theory in instruction in Ilorin, Kwara State, Nigeria. *Journal of Educational Computing and Instructional Technology*, 7 (1), 66–72.
- Afolabi, S. S. (2011). A Model of Transformational Teacher for Nigeria National Development. *Conference Proceedings for the 2nd Annual Conference of Collaboration of Education Faculties in West Africa (CEFWA)*. 1-10.
- Akpan, C. P. (2008). Lecturers' perception of the Role of ICT in the Management of University Education for Sustainable Development in Nigeria. *Nigerian Journal of Educational Administration and Planning*. 8 (1), 113-127.
- Akpan, C. P. (2014). ICT Competency and Lecturers' Job Efficacy in Universities in Cross River State, Nigeria. Department of Educational Administration and Planning University of Calabar Calabar, Cross River State, Nigeria. *International Journal of Humanities and Social Science* 4 (10), 97 – 121.
- Allen, A. (2008). Unlocking the power of teams. Retrieved from: <http://web.ebscohost.com.eres.library.manoa.hawaii.edu/ehost/pdfviewer/pdfviewer?vid=29&hid=9&sid=bb5a3ec7-c52e-4ea3-ad2b-7c940f5901f7%40sessionmgr12>. *eWeek*, 6, 20-22.
- Anderson, R. G. (1990). *Data Processing, Principles and Practice*. Seventh edition, UK: Longman Group, 1 (1), 24-30.
- Anthes, G. (2010). Security in the cloud. *Communications of the ACM*, 53 (11), 16-18. Doi: 10.1145/1839676.1839683
- Ashworth, M. J. (2006). Preserving knowledge legacies: Workforce aging, turnover and human resource issues in the US electric power industry. *The International Journal of Human Resource Management*, 17 (9), 1659-1688.
- Association of State Colleges and Universities (ASCU, 2008). *Public policy agenda*. Washington, DC: AASCU. Retrieved from http://www.aascu.org/media/pdf/08_ppa.pdf Accessed January 13, 2014.
- Babalola, T. O. (2016). Postgraduate Students' Access to and Self-efficacy in Information and Communication Technology Utilization for Research in South-west, Nigeria. Unpublished Ph.D. Thesis, Educational Technology Department, Faculty of Education, University of Ilorin, Ilorin, Nigeria.
- Backhouse, J. (2013). What makes lecturers in higher education use emerging technologies in their teaching? *Knowledge Management & E-Learning*, 5 (3), 345–358.
- Barbra, K. B. (2011). Using Google Apps in Professional Learning Communities. Educational Technology, University of Hawai'i at Mānoa, Kailua-Kona, Hawai'i USA. Retrieved from kaimulooa@hawaii.edu

- Bellamy, M. (2006l). Creating global citizens through study abroad connection: *The Journal of the New England Board of Higher Education*, (2), 20-21.
- Bolt, B. Fitzgerald, M., & Jessen, S. (2010). Implementing Google Apps for Faculty and Staff (Research Bulletin 21, 2010). Boulder, CO: EDUCAUSE Centre for Applied Research, 2010. Retrieved from <http://www.educause.edu/ecar>
- Bonk, C. J., & Graham, C. R. (2005). *Handbook of blended learning: Global perspectives, local designs*. San Francisco, CA: Pfeiffer.
- Bozalek, V., Ng'ambi, D., & Gachago, D. (2013). Transforming teaching with emerging technologies: implications for higher education institutions. *South African Journal of Higher Education*, 27 (2), 419-436.
- Buabeng-Andoh, C. (2012). Factors Influencing Teachers' Adoption and Integration of Information and Communication Technology into Teaching: A Review of the Literature. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT)*, 8 (1). 142-155.
- Byrd, D., & Koohang, A. (1989). A professional development question: is computer experience associated with subjects' attitudes toward the perceived usefulness of computers? *Journal of Research on Computing in Education*, 1(2), 401-410.
- Cathcart, R. & Roberts, A. (2006). Evaluating Google Scholar as a Tool for Information Literacy. Florida Atlantic University Libraries. Library Faculty and Staff Publications.
- Cathy, B. (2015). I'm not sure I ever Realized how Much Time I Spent Photocopying Work for Students not to Mention the Amount of Paper. Retrieved from <https://www.google.com/edu/resources/programs/google-teacher-academy/> Accessed April 3, 2014.
- Chia, R. C., Poe, E., & Wuensch, K. L. (2009). Attitude change after taking a virtual global understanding course. *International Journal of Social Sciences*, 4(2), 75-79.
- Chris, N., Ellen, N., & Alan, A. (2008), Google Scholar Goes to School: The presence of Google Scholar on College and University Web Sites. *The Journal of Academic Librarianship*, 34 (1), 39-51.
- Cloud-Computing. Retrieved from <http://searchcloudcomputing.techtarget.com/definition/cloud-computing> Accessed February 15, 2015.
- Common Cartridge Working Group. (n.d.). In IMS Global Learning Consortium. Retrieved from <http://www.imsglobal.org/commoncartridge.html> Accessed January 20, 2013.
- Computer Literacy. Retrieved from http://en.wikipedia.org/wiki/Computer_literacy. Accessed March 28, 2014.

- Computer Science, (2014). Retrieved from http://webopedia.lycos.com/TERM/C/computer_science.html Accessed April 10, 2014.
- Cothran, T. (2012). Google Scholar acceptance and use among graduate students: A quantitative study. *Library and Information Science Research. Evidence Based Library and Information Practice*, 33 (4), 293-301.
- Covenant University Website, (2014). Information and Communication Technology in Education. Retrieved from <http://covenantuniversity.edu.ng/Publications2>
- Cuban, L. (2001). *Oversold and Underused – Computers in the Classroom*. Boston: Harvard University Press.
- Culatta, R. (2010). Rapid Prototyping. Retrieved from http://www.instructionaldesign.org/models/rapid_prototyping.html
- Daramola, S. O. (2006). *Research and Statistical Methods in Education for Students and Researchers in Tertiary Institutions*. Revised Edition. Ilorin, Bamitex Printing and Publishing.
- Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, 13, 319-340.
- Demeter, K., Szabó, K., Maior, E., Farcas, S., Kálcza, J. K., and János. R. (2015). Associations between academic performance, academic attitudes, and procrastination in a sample of undergraduate students attending different educational forms. *Babes Bolyai University, Faculty of Psychology and Educational Sciences, Department of Applied Psychology, Cluj Napoca, 400604, Romania. Procedia - Social and Behavioral Sciences*, 187, 45 – 49.
- Denhere, C., Chinyoka, K. and Mambeu, J. (2013). Vygotsky's Zone of Proximal Development Theory: What are its Implications for Mathematical Teaching?
- Derbyshire, H. (2003). Gender issues in the use of computers in education in Africa, Retrieved from <http://www.enawa.org/icons/Tekstbestanden/Gender%20Report%20the%20>
- Dick, Carey & Carey (2005). *The Systematic Design of Instruction*. (Sixth edition), U.S.A: Library of Congress Cataloguing-in-publication Data.
- Dziuban, C. D., Hartman, J., Juge, F., Moskak, P. D., & Sorg, S. (2005). Blended learning enters the mainstream. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of Blended Learning Environment*. San Francisco, CA: Pfeiffer. 195-208.
- Fakomogbon, M. A. & Adegbija, M. V. (2006). Instructional Media and their Sources for Teaching and Learning in Tertiary Institutions: A Nigerian Perspective. *African Journal of Educational Research (AJER)* 4 (2), 127-137.
- Falade, A. A. (2013). Stakeholders' Perception of the Integration of Information and Communication Technology into Distance Learning in Nigeria. Unpublished Ph.D. Thesis. University of Ilorin, Nigeria.

- Farrell, T. F. (2011). Veterans Enter Energy Workforce. *Transmission & Distribution World*, 63 (12), 22.
- Federal Republic of Nigeria National Policy on Education FRN, (2013). Lagos: NERDC Press.
- Federal Republic of Nigeria National Policy on Education FRN, (2014). Lagos: NERDC Press.
- Federal University of Technology, Minna Website, (2014). Retrieved from <https://www.futminna.edu.ng/index.php/directorates-centres/center-a/information-technology-services-its>
- Gender Advising Board, GAB, (2001). World Gender Power. Retrieved from <http://en.wikipedia.org/wiki/Genderpower/r>. Accessed August 7, 2013.
- Gerlack, V. S., & Ely, D. P. (1975). *Teaching and media: A systematic approach*. Second Edition. NY, Prentice-Hall.
- Google, (2013). Metaweb. Retrieved from Google Website, <https://sites.google.com/site/metaweb> Accessed August 1, 2014.
- Google, (2014). Apps for Work. Retrieved from http://en.wikipedia.org/wiki/Google_Apps_for_Work. Accessed March 13, 2014.
- Google, (2015). What is GAFE? Retrieved from Google Website, <https://sites.google.com/site/teachertechtutorials/googleapps> Accessed August 15, 2014.
- Google, (2016). Google-apps-and-samr-model. Retrieved from www.googleappsaction.com. Accessed October 15, 2016.
- Han, Y. (2010). On the clouds: a new way of computing. *Information Technology & Libraries*. 29 (2), 87-92.
- Hastings, R. (2009). Collaboration 2.0. *Library Technology Reports*, 45(4), 5-6.
- Havnes, A. (2009). Talk, planning and decision-making in interdisciplinary teacher teams: a case study. *Teachers & Teaching*, 15, 155-176.
- Henning, P. H. (2004). Everyday cognition and situated learning. In D. H. Jonassen (Ed.), *Handbook of Research on Educational Communications and Technologies*. 143-168.
- Hornby, A. S. (2000). *Oxford Advanced Learner's Dictionary of Current English*. Sixth edition, S. Wehmeier (Ed.) Italy. Oxford University Press.
- Hyun Jung, K. (2014). An Investigation of Information Usefulness of Google Scholar in Comparison with Web of Science. Retrieved from <http://dx.doi.org/10.14699/kbiblia.2014.25.3.215>
- IMS Question and Test Interoperability Specification, (n.d.). In *IMS Global Learning Consortium*. Retrieved April 10, 2014 from <http://www.imsglobal.org/question/>

- International Society for Technology in Education, (2008). *National educational technology standards for teachers (NETS-T)* (2nd ed). Retrieved from <http://www.iste.org>. Accessed June 4, 2013.
- Ip, P. S., & Fox, R. (2004). Changing schools through exploring innovative pedagogical practices using ICTs. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* 444-454. Perth. Retrieved from <http://www.ascilite.org.au/conferences/perth04/procs/ip.html>. Accessed June 20, 2014.
- Israel, G. D. (2013). Sampling the Evidence of Extension Program Impact. Program Evaluation and Organisational Development, IFAS, University of Florida. PEOD-5. Retrieved from <http://www.goo.gl/x8JIAW>. Accessed September 12, 2015.
- Jeff, D. (2011). The Evolution of Classroom Technology. Retrieved from <http://www.edudemic.com/classroom-technology/> Accessed April 18, 2014.
- Jegede, P. O., Dibu-Ojerinde, O. O., and Ilori, M. A., (2007). Relationships between ICT competency and attitude among some Nigerian tertiary institution lecturers. *Educational Research and Review*, 2 (7), 172-175. Retrieved from <http://www.academicjournals.org/ERR>
- Jeter, H. (2002). Computer, Technology and Office equipment show (CTO): Keynote address. Retrieved from <https://www.nwea.org/blog/2015/growing-list-50-digital-education-tools-apps-formative-assessment-success/> Accessed March 20, 2014.
- Jonassen, D. H. (2011). Learning to solve problems. *A handbook for designing problem-solving learning environments*. New York, NY: Routledge.
- Jonassen, D. H., & Kim, B. (2009). Arguing to learn and learning to argue: Design justifications and guidelines. *Educational Technology Research and Development*, 58 (4), 439-457.
- Kathy, D. (2015). Growing the List 50 Digital Education Tools and Apps for Formative Assessment Success. Retrieved from <https://www.nwea.org/blog/2015/growing-list-50-digital-education-tools-apps-formative-assessment-success/> Accessed March 20, 2014.
- Kolodner, J. L., Ownesby, J. N., & Guzdial, M. (2004). Case-based learning aids. In D. H. Jonassen (Ed.), *Handbook of Research on Educational Communications and Technologies* (2nd ed.), Mahwah, NJ: Lawrence Erlbaum Associates.
- Kurniabudi, A. D., Sharipuddin, N. P., Setiawan, S. A. & Assegaff, J. T. (2014). A Literature Review: Acceptance Models for e-learning Implementation in Higher Institution. *International Conference on Advances in Education Technology (ICAET)*. Atlantis Press. 86-87.

- Lee, M., & Kim, D. (2005). The effects of the collaborative representation supporting tool on problem-solving processes and outcomes in web-based collaborative problem-based learning (PBL) environments. *Journal of Interactive Learning Research*, 16 (3), 273-293.
- Maleski, E., & Phillion, J. (2009). International field experiences: The impact of class, gender, and race on the perceptions and experiences of preservice teachers. *Teaching and Teacher Education*, (25), 52-60.
- Malo, R., & Motyčka, A. (2003). E-learning Solution. Retrieved from <http://www.e-learning-site.com/elearning/indelea.htm> Accessed January 1, 2015.
- Microsoft Encarta (2009). Information and Communication Technology. Microsoft Corporation.
- Miller, W. H., Jonassen, D. H., Marra, R. M., Neumeyer, G. M., Etter, R. L., Easter, M., . . . Ionas, I. G. (2009). *The role of instructional technologists in the development of a problem-centered radiation protection technician curriculum*. Paper presented at the 2009 Conference on Nuclear Training and Education CONTE 09: An International Forum on Nuclear Training and Education and Workforce Issues Facing a Renewed Nuclear Energy Option, Jacksonville, Florida.
- Miller, W. H., Jonassen, D. H., Schmidt, M., Easter, M., Ionas, I. G., Marra, R. M., & Meffert, B. (2007). *Radiation protection technician curriculum initiative—US DOL president's energy sector HGJTI grant*. Paper presented at the Health Physics Society 2007 Annual Meeting, Portland, Oregon.
- Mocumbi, P. (2002). Computerisation Policy Implementation Strategy. Retrieved from <http://www.allafrica.com/stories/200209040245.html> Accessed July 20, 2014.
- Moore, A., Fowler, S., Jesiek, B., Moore, J., & Watson, C. E. (2008). *Learners 2.0? IT and 21st-century learners in higher education* (Research Bulletin, Issue 7). Boulder, CO: EDUCAUSE Center for Applied Research.
- Mulder, J. (2008). Knowledge Dissemination in Sub-Saharan Africa: What Role for Open Educational resources (OER)? Amsterdam: International School for Humanities and Social Sciences, University of Amsterdam.
- Musa, M., & Ainol, M. Z. (2014). Self-perceived Assessment Competencies and Practices Among University Lecturers, *Journal of Applied Research in Higher Education*, 6 (2), 269 – 284. Retrieved from <http://www.emeraldinsight.com/doi/abs/10.1108/JARHE-04-2013-0020#> Accessed February 8, 2013.
- My School Gist (2015). UNILAG Lecturers Assessment Form to be Filled by Students. Retrieved from <http://www.myschoolgist.com.ng/ng/unilag-lecturers-assessment-form/> Accessed August 4, 2014.

- National Council for Accreditation of Teacher Education, NCATE, (2008). *NCATE professional standards for the accreditation of teacher preparation institutions*. Washington, DC: NCATE. Retrieved from <http://www.ncate.org/documents/standards/NCATE%20Standards%202008.pdf> Accessed March 20, 2014.
- Nigeria Computer Society, NCS, (2014). Nigeria Computer Society (NCS), Building a Knowledge-Based Economy in Nigeria: The Role of Information Technology. Conference Proceeding, 25, 52-65. <http://www.ncs.org.ng/events/conferences/conference-2014/>
- Nigeria Computer Society, NCS, (2015). Nigeria Computer Society (NCS). Information Technology for Inclusive Development. Conference Proceeding, 26, 200-215. <http://www.ncs.org.ng/events/conferences/conference-2015/>
- Neuhaus, C., Neuhaus, E., Asher, A. & Wrede, C. (2006). The Depth and Breadth of Google Scholar: An Empirical Study. *Portal: Libraries and the Academy*, 6 (2), 127–141.
- Niba, A. E. (2014). Information and Telecommunication Influence in Nigeria. Retrieved March 12, 2014 from http://www.el_niba.org/itinfluence/4933
- Nigeria National Computer Policy (1988). Federal Ministry of Education, Lagos, Nigeria.
- Nigerias-hurdles-building-knowledge-based-economy. Retrieved September 12, 2013 from <http://www.vanguardngr.com/2014/07/ncs-highlights-nigerias-hurdles-building-knowledge-based-economy/#sthash.S0F1E29F.dpuf>
- National Universities Commission, NUC, (2014). National Universities Commission website. Retrieved from <http://www.nuc.edu.ng>
- National Universities Commission, NUC, (2015). Nigerian Universities. Retrieved from <http://nuc.edu.ng/nigerian-universities/private-univeristies/>
- Ofolu, G. O. (2007). Nigeria literacy education and their technological needs in a digital age. *Educational Focus*, 1 (1), 22-30.
- Ogunlade O. O. (2008). Evaluating Educational Technology Component of Teacher Education Curriculum in Colleges of Education in Nigeria. *Sokoto Education Review* 10 (2), 200–210.
- Olasedidun, O. K. (2014). Relationship Among Lecturers Perceived Usefulness, Ease of Use, Attitude and Intention toward Social Media in South-west, Nigeria. Unpublished Ph.D. Thesis: Department of Educational Technology, University of Ilorin, Ilorin, Nigeria.
- Olulube, N. P. (2006). Appraising the relationship between ICT usage and integration and the standard of teacher education programs in a developing economy. *International Journal of Education and Development using Information and Communication Technology* (IJEDICT), 2 (3), 70-85.

- Olumorin, C. O. (2008). Lecturers' Attitude to, Competency in, and Use of Computer in Tertiary Institutions in Kwara State, Nigeria. Unpublished Ph.D. Thesis. Department of Educational Technology, University of Ilorin, Ilorin, Nigeria.
- Onabanjo, T. (1997). Need for Examinable National Computer Curriculum Education in Nigeria. Paper presented at the COAN Conference Series. 8.
- Onasanya, S. A & Asuquo, E. N. (2007). Secondary School Teacher's Perception of Problems and Challenges Associated with Web Based Learning in Nigeria. *Ife Journal of Curriculum Studies and Development (IJCSD)*. A publication based in Obafemi Awolowo University, Ile-Ife 3 (1), 1- 9
- Onasanya, S. A., & Adegbiya, M. V. (2007). Practical Handbook on Instructional Media. Second Edition. Graphcom Publishers, 277, Lagos Road, Ilorin.
- Onasanya, S. A., Shehu, R. A, Oduwaiye R. O. & Shehu L. A. (2010).: Higher Institutions Lecturers' Attitude towards Integration of ICT into Teaching and Research in Nigeria. *Research Journal of Information Technology*. 2 (1), 44 – 56.
- Onasanya, S.A., Fakomogbon, M. A., Shehu, R. A. and Soetan, A. K. (2010). Learning Information and Communications Technology Skills and the Subject Context of Introductory Technology Learning in Nigeria. *Journal of Artificial Intelligence*, 3(2), 59-66.
- Ostyn, C. (2007). In the eye of the SCORM. An introduction to SCORM 2004 for content developers. Retrieved from <http://www.ostyn.com/resources.htm/SCORM> Accessed March 5, 2013.
- Ottestad, G. (2010). Norwegian Centre for ICT in Education, Vika, NO-0112 Oslo, Norway. Blackwell Publishing Ltd.
- Owayid, A. M. & Uden, L. (2014). The Usage of Google Apps Services in Higher Education. LTEC 2014, CCIS 446, 95-104, 2014. Springer International Publishing Switzerland.
- Oxford Advanced Learner's Dictionary (2001). Special Price Edition. Oxford University Press. Great Clarendon Street, Oxford OX2 6DP. New York.
- Oyejola, B. A. (2003). Design and Analysis of Experiments for Biology and Agriculture Students. Olad Publishers, Ilorin, Kwara State, Nigeria.
- Partnership for 21st Century Skills (2007). *Framework for 21st century learning*. Retrieved from <http://www.21stcenturyskills.org/> Accessed August 8, 2014.
- Patrick, U. O. (2014). Assessment Score of University Lecturers. *Journal of Education and Practice*. 5 (2). Retrieved from <http://www.iiste.org/Journals/index.php/JEP/article/view/10632> Accessed July 27, 2013.
- Pocket Oxford Dictionary (1994). Oxford University Press, Walton Street Oxford OX2 6DP.

- Puentedura, R. (2014). SAMR and TPACK: A hand-on-Approach to Classroom Practice. Retrieved from www.hippasus.com/rpweblog/archives/2014_12.html Accessed June 13, 2016.
- Raja, T. K. (2009). VIETNAM: Student assessment of lecturers a waste. Retrieved from <http://www.universityworldnews.com/article.php?story=20091127122117753> Accessed April 20, 2013.
- Rena, H., Pavlina, R. & Paul, S. (2007). A preliminary assessment of Google Scholar as a source of EAP students' research materials. *Internet and Higher Education*, 10, 65–76.
- Robinson, L. (2009). A summary of Diffusion of Innovations. Retrieved from <http://www.enablingchange.posterous.com> and <http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/SB721-Models/SB721-Models4.html> Accessed April 2, 2016.
- Rogers, E. M. (2003). Diffusion of Innovation. 5th Edition. New York: Free Press.
- Rusch, R. B. (1969). Computers: Their history and how they work. New York: Simon and Schuster.
- Ryan, M. (2011). Cloud computing privacy concerns on our doorstep. *Communications of the ACM*, 54(1), 36-38. Doi: 10.1145/1866739.1866751
- Sahin, I. (2005). Understanding Faculty Adoption of Technology Using the Learning Adoption Trajectory Model a Qualitative Case Study. *The Turkish Online Journal of Educational Technology*, 21-30.
- Sen, P. K. (2012). *Electric energy workforce demographics: An essay*. Paper presented at the Rural Electric Power Conference (REPC), 56 Annual Conference, Milwaukee, Wisconsin.
- Shank, R. C., Fano, A., Bell, B., & Jona, M. (1993). The design of goal based scenarios. *The Journal of the Learning Sciences*, 3 (4), 305-345.
- Stern, N. B. (1981). From ENIAC to UNIVAC: an appraisal of the Eckert-Mauchly computers. Bedford, Mass: Digital press.
- Stern, Z. (2010). Work smart with online collaboration tools. *PC World*, 28, 29-30. Retrieved from: <http://web.ebscohost.com.eres.library.manoa.hawaii.edu/ehost/pdfviewer/pdfviewer?vid=30&hid=9&sid=bb5a3ec7-c52e-4ea3-ad2b-7c940f5901f7%40sessionmgr12>
- Tanya, C. (2011). Google Scholar acceptance and use among graduate students: A quantitative study. *Library & Information Science Research*, 33, 293-301.
- Teacher Tech Tutorials. Retrieved from <https://sites.google.com/site/teachertechtutorials/googleapps> Accessed June 3, 2014.

- Tella, A. (2011). Predicting Users' Acceptance of E-library from the Perspective of Technology Acceptance Model. *International Journal of Digital Library Systems*, 2 (4), 34-44.
- Terri, Z. (2011). Individualizing Instruction through Understanding Different Types of Learners. Retrieved from <http://www.scilearn.com/blog/different-types-of-learners-individualized-instruction>
- The Holy Bible, King James Version (Red Letter Edition), Genesis Chapter two verse eighteen (Gen 2:18)
- Timothy, J. N., Peggy, A. E., & Erin, M. K. (n.d.). *International Journal of Design for Learning*. The INSITE Project: Engaging Students in International Team Collaborations to Create a Web 2.0 Tool Repository. newby@purdue.edu
- Twaki, S. A. (2013). *A Seminar on the Use of ICT Tools to Enhance Learning in Education*. 4-5. Seminar on the use of ICT tools to enhance learning in education.pdf. Retrieved from <http://www.itvessel.com/a>
- Typing. Retrieved from <http://en.wikipedia.org/wiki/Typing> Accessed January 12, 2014.
- United Nations Educational, Scientific and Cultural Organization, UNESCO, (2005). Regional Guidelines on Teacher Development for Pedagogy-Technology Integration. Retrieved from www.unesdoc.unesco.org/images/0014/001405/140577e.pdf.61 Accessed May 17, 2014.
- University of Ibadan Bulletin, UI Bulletin, (2015). The Story so Far. Retrieved from <http://bulletin.ui.edu.ng/content/2015>
- University of Ilorin Bulletin, Unilorin Bulletin, (2009). Technology and the Role of University. Monday, August 31, 2009. 3 (81), 4.
- University of Ilorin Bulletin, Unilorin Bulletin, (2013). National Universities Commission Upgrade Its Universities. Monday, June 17, 2013.
- University of Ilorin Bulletin, Unilorin Bulletin, (2014). National Universities Commission Marching Order to Universities. Tuesday, June 10, 2014.
- University of Ilorin Computer Centre Training Manual (1999). Computer Appreciation training course manual. Unilorin Press, University of Ilorin, Nigeria.
- University of Ilorin Conditions of Service, (2014). Revised Conditions of Service for Senior Staff. Unilorin Press. 21st November, 2014, 68-69.
- University of Ilorin Diary, (2008). Retrieved from <http://www.unilorin.edu.ng> Accessed January 23, 2013.
- University of Ilorin Ethical Review Committee Research Policy, (2012). Retrieved from <http://www.unilorin.edu.ng/download/UNIVERSITY%20ETHICAL%20REVIEW%20COMMITTEE%20Ompidan%20final%20final.pdf> Accessed September 23, 2013.

- University of Ilorin, Research Policy (2012) Statement of Research Policy Objectives. 10.
- Voogt, J., & Knezek, G. (2008). IT in primary and secondary education: emerging issues. In *International Handbook of Information Technology in Primary and Secondary Education*. (1), 29-42.
- Vygotsky, L. S. (1978) in Denhere, C., Chinyoka, K. and Mambeu, J. (2013). Vygotsky's Zone of Proximal Development Theory: What are its Implications for Mathematical Teaching?
- Wald, P., Castleberry, M. (2000). Educators as learners: creating a professional learning community in your school. *Association for Supervision & Curriculum Development*. Retrieved from: <http://site.ebrary.com.eres.library.manoa.hawaii.edu/lib/uhmanoa/docDetail.action?docID=10115186>
- Wang, Q. & Woo, H. L. (2007). Systematic planning for ICT Integration in Topic Learning. *International Forum of Educational Technology and Society (IFETS)*, 10 (1), 148-156.
- Web of Science, (2015). Web of Science Retrieved from <http://login.webofknowledge.com/error/Error?PathInfo=%2F&Alias=WOK5&Domain=.webofknowledge.com&Src=IP&RouterURL=http%3A%2F%2Fwww.webofknowledge.com%2F&Error=IPError>
- Webopedia, (2016). Computer Competency. Retrieved from Webopedia Website, <http://www.killerstartups.com/Site-Reviews/www-webopedia-com-online-computer-dictionary>. Accessed April 20, 2016.
- West, C. (2010). Borderless via technology. *International Educator*, 19(2), 24-33.
- Wikipedia, (2016). The free encyclopedia – computer literacy. Retrieved from Wikipedia Website, http://en.wikipedia.org/wiki/computer_literacy. Accessed March 10, 2016.
- Williams, B. K., & Sawyer, S. C. (2005). Using Information Technology: A practical Introduction to Computers & Communications. (6th Ed.). McGraw Hill Companies, Inc. Americans, New York, NY 10020.
- Yousafza, S. Y, Foxall, G. R. & Pallister, J. G. (2007). Technology Acceptance: A Meta-analyses of the TAM; Part1, *Journal Modelling in Management*, 2(3), 251-280.
- Yusuf, M. A., Afolabi, F. O. & Loto, A. B. (2013). Appraising the Role of Information Communication Technology (ICT) as a Change Agent for Higher Education in Nigerian. *International Journal of Current Research and Academic Review*, 1 (4), 110 – 124.
- Yusuf, M. O. & Balogun, M. R. (2011). Student-Teacher Competency and Attitude towards Information and Communication Technology: A case Study in a Nigerian University, *Contemporary Educational Technology*, 2 (10), 18-36.

- Yusuf, M. O. & Fakomogbon, M. A. (2008). Availability, teachers' awareness and attitude towards the use of assistive technologies for special schools in Kwara State, Nigeria. Proceedings of the ED-MEDIA 2008 World Conference on Educational Multimedia, Hypermedia & Telecommunication, Vienna, Austria. 6228-6235. www.aace.org/conf
- Yusuf, M. O. (2004). Internet Browsing for Teaching, Learning and Research. Paper delivered at the Two-Day Workshop on the use of the Internet to enhance lecturers' productivity. Faculty of Education, University of Ilorin (May 6-7, 2004). 2.
- Yusuf, M. O. (2005). An investigation into Teachers' Self-Efficacy in Implementing Computer Education in Nigerian Secondary Schools. *Meridian: A Middle School Computer Technologies Journal*, 8(2), 99 - 115.
- Yusuf, M. O., & Onasanya, S. A. (2004). Information and Communication Technology (ICT) and Teaching in Tertiary Institution. A paper presented at the workshop on teaching for newly recruited university lecturers organised by Faculty of Education, University of Ilorin, Nigeria.
- Yusuf, M. O., & Onasanya, S. A. and Asuquo, A.M. (2007). Student-Teacher Competency and Attitude towards Information and Communication Technology: A case Study in a Nigerian University, *Contemporary Educational Technology*, 2 (10), 18-36.

APPENDIX I

**University of Ilorin, Ilorin, Nigeria
Faculty of Education,
Department of Educational Technology**

Research Questionnaire on

Assessment of University Lecturers' Awareness of, access to and Competency in the Use of Google Apps for Education in Nigerian Universities

Dear Sir/Ma,

I am a postgraduate research student of the above named University and working on the topic "Lecturers' Awareness of, access to and Competency in the Use of Google Apps for Education (GAfE) in Nigerian Universities".

This questionnaire is designed to elicit for information on your awareness, access and competency in the use of GAfE. Items in the questionnaire can be responded to within 15 minutes.

I am therefore requesting you to participate in this survey by diligently completing the questionnaire with all sincerity. Your responses will be used solely for academic research purposes and will be treated with utmost confidentiality.

Thank you.

Yours faithfully,



**ALIMI, Adebayo Emmanuel
Researcher**

QUESTIONNAIRE

Section A: Personal Information (Please fill-in the gap and tick [✓] respectively)

1. Name of the University:.....
2. Faculty:.....
3. Department:
4. Gender: Male ☐ Female ☐ Please tick [✓]
5. Status: Please tick [✓]
 - (a) Professor ☐
 - (b) Associate Professor ☐
 - (c) Senior Lecturer ☐
 - (d) Lecturer I ☐
 - (e) Lecturer II ☐
 - (f) Assistant Lecturer ☐
 - (g) Graduate Assistant ☐
6. University Proprietorship: Please tick [✓]
 - a. Federal Government ☐
 - b. State Government ☐
 - c. Private ☐
7. Have you benefited from any staff development programme on Google Apps for Education use? **YES** **NO** ☐ ☐

Section B: Lecturers' Awareness of Google Apps for Education (GAfE)

Please read each statement and tick [✓] the column that is applicable.

Key: Google Apps for Education (GAfE)

S/NO.	ITEMS	Tick only the one that is applicable [✓]
1.	I have heard about GAfE before	
2.	I have never heard about GAfE before	
3.	I am familiar with the concept of GAfE	
4.	I am just seeing the concept of GAfE for the first time	
5.	I heard about GAfE from a friend	
6.	I heard about GAfE Online	
7.	I heard about GAfE in a conference	
8.	I heard about GAfE in my school	
9.	I heard about GAfE on a Network news	
10.	I heard about GAfE from a colleague	

Section C: Lecturers' Access to Computer, Internet and Google Apps for Education (GAfE)

Please read each statement and tick [✓] the column that is applicable.

Key: Access to Computer, Internet and GAfE

S/NO.	ITEMS	Tick only the one that is applicable [✓]
1.	I have access to a computer at home	
2.	I have access to a computer in the office	
3.	I have access to a computer in the school library	
4.	I have access to a computer in the school laboratory	
5.	I have access to the Internet in the laboratory	
6.	I have access to the Internet at home	
7.	I have access to the Internet in the office	
8.	I have access to the Internet in the library	
9.	I have access to the Internet on my mobile phone	
10.	I have access to the Internet in the lecture room	
11.	I have access to the Internet anywhere on campus	
12.	I have access to the Internet through WIFI	
13.	I have access to the Internet through Fibre-optic cable	
14.	I have access to GAfE in the laboratory	
15.	I have access to GAfE at home	
16.	I have access to GAfE in the office	
17.	I have access to GAfE in the library	
18.	I have access to GAfE on my mobile phone	
19.	I have access to GAfE in the lecture room	
20.	I have access to GAfE anywhere on campus	

Section D: Lecturers' Competency in Basic Google Apps for Education (GAfE)

Please read each statement and tick [✓] the column that best suits your level of competency.

Key: A=Advanced, HC=Highly Competent, MC=Moderately Competent, and NC=No Competency.

S/NO.	ITEMS	A	HC	MC	NC
1.	I can send e-mail messages using Google Gmail Online				
2.	I can talk with video using Google Hangouts Online				
3.	I can create work in group using Google Hangouts Online				
4.	I can invite an expert into my class to do a guest lecture through Video Chat using Google Hangouts Online				
5.	I can share calendar schedule using Google calendar Online				
6.	I can use Google documents to collaborate Online				
7.	I can keep a running record of a lesson note using Google Vault Online				
8.	I can create folder for my documents using Google Vault Online				
9.	I can upload approved video clips to share during class time using Google Vault Online				
10.	I can store documents in the Google Drive Online				
11.	I can have students work collaboratively from anywhere using Google Classroom Online				
12.	I can give students instant feedback using Google Classroom Online				
13.	I can create classroom placement groups to better distribute differentiated materials and resources using Google Classroom Online				
14.	I can let students know that I will be available to help Online at a certain time using Google Classroom				
15.	I can have students reflect on their daily learning through Google Classroom Online				
16.	I can publish student work by sharing it within my class Online through Google Classroom				
17.	I can translate letters home to parents and guardians with their own language using Google Translator Online				
18.	I can use Sheets to track student homework with parents Online				
19.	I can collect data using Sheet Online				
20.	I can use Google Slides to dynamic presentations Online				

APPENDIX II

List of Nigerian Universities

These are the list of Nigerian Universities as published by NUC as at 2017.

S/N	FEDERAL UNIVERSITIES	VICE CHANCELLOR	WEBSITE ADDRESS	YEAR EST.
1	Abubakar Tafawa Balewa University, Bauchi	Professor Saminu Ibrahim	http://www.atbu.edu.ng	1988
2	Ahmadu Bello University, Zaria	Professor Ibrahim Garba	http://www.abu.edu.ng	1962
3	Bayero University, Kano	Professor Yahuza Muhammad Bello	http://www.buk.edu.ng	1975
4	Federal University Gashua, Yobe	Prof. Andrew Haruna	http://www.fugashua.edu.ng	2013
5	Federal University of Petroleum Resources, Effurun	Prof. Akii Ibhadode	http://www.fupre.edu.ng	2007
6	Federal University of Technology, Akure	Prof. Adebisi Gregory Daramola	http://www.futa.edu.ng	1981
7	Federal University of Technology, Minna	Professor Musibau Adewunmi Akanji	http://www.futminna.edu.ng	1982
8	Federal University of Technology, Owerri	Prof. Chigozie C. Asiabaka	http://www.futo.edu.ng	1980
9	Federal University, Dutse, Jigawa State	Professor Fatima Batoul Muktar	http://www.fud.edu.ng/	2011
10	Federal University, Dutsin-Ma, Katsina	Professor Haruna Abdu Kaita	http://www.fudutsinma.edu.ng	2011
11	Federal University, Kashere, Gombe State	Prof. Alhassan Mohammed Gani	http://www.fukashere.edu.ng	2011
12	Federal University, Lafia, Nasarawa State	Professor Muhammad Sanusi Liman	http://www.fulafia.edu.ng	2011
13	Federal University, Lokoja, Kogi State	Professor Angela Freeman Miri	http://www.fulokoja.edu.ng	2011
14	Federal University, Ndifu-Alike, Ebonyi State	Professor Chinedum Nwajiuba	http://www.funai.edu.ng	2011
15	Federal University, Otuoke, Bayelsa	Professor Seth Accra Jaja	http://www.fuotuoke.edu.ng/	2011
16	Federal University, Oye-Ekiti, Ekiti State	Prof. Kayode Soremekun	http://www.fuoye.edu.ng/	2011
17	Federal University, Wukari, Taraba State	Professor Mohammed Kundiri	http://www.fuwukari.edu.ng/	2011
18	Federal University, Birnin Kebbi	Prof. Auwal H Yadudu	http://www.fubk.edu.ng	2013
19	Federal University, Gusau Zamfara	Prof. Magaji Garba	http://www.fugus.edu.ng	2013
20	Michael Okpara University of Agricultural Umudike	Professor Francis O Otunta	http://www.mouau.edu.ng	1992
21	Modibbo Adama University of Technology, Yola	Professor Kyari Mohammed	http://www.mautech.edu.ng	1981
22	National Open University of Nigeria, Lagos	Professor Abdalla Uba Adamu	http://www.nou.edu.ng	2002
23	Nigeria Police Academy Wudil	Professor Munzali Jibril	http://www.npf.gov.ng	2013
24	Nigerian Defence Academy Kaduna	Professor S.O Okeniyi	http://www.nda.edu.ng	1985
25	Nnamdi Azikiwe University, Awka	Professor Joseph E. Ehaneku	http://www.unizik.edu.ng	1992
26	Obafemi Awolowo University, Ile-Ife	Professor Eyitope Ogunbodede	http://www.oauife.edu.ng	1962

27	University of Abuja, Gwagwalada	Professor Machael Umale Adikwu	http://www.uniabuja.edu.ng	1988
28	Federal University of Agriculture, Abeokuta	Ag. Professor Ololade Enikuomehin	http://www.unaab.edu.ng	1988
29	University of Agriculture, Makurdi	Prof. Emmanuel I. Kucha	http://www.uam.edu.ng	1988
30	University of Benin	Professor Faraday Orumwense	http://www.uniben.edu.ng	1970
31	University of Calabar	Prof. Zana Itinube Akpagu	http://www.unical.edu.ng	1975
32	University of Ibadan	Professor Abel Idowu Olayinka	http://www.ui.edu.ng	1948
33	University of Ilorin	Professor Abdulganiyu Ambali	http://www.unilorin.edu.ng	1975
34	University of Jos	Prof. Sebastian Maimako	http://www.unijos.edu.ng	1975
35	University of Lagos	Prof. Rahman A. Bello	http://www.unilag.edu.ng	1962
36	University of Maiduguri	Professor Ibrahim A. Njodi	http://www.unimaid.edu.ng	1975
37	University of Nigeria, Nsukka	Professor Benjamin C. Ozumba	http://www.unn.edu.ng	1960
38	University of Port-Harcourt	Professor Ndowa N Lale	http://www.uniport.edu.ng	1975
39	University of Uyo	Professor Enefiok Essien	http://www.uniuyo.edu.ng	1991
40	Usumanu Danfodiyo University	Professor Abdullahi Audu. Zuru	http://www.udusok.edu.ng	1975

S/N	STATE UNIVERSITIES	VICE CHANCELLOR	WEBSITE ADDRESS	YEAR EST.
1	Abia State University, Uturu	Prof. E. Uche Ikonne	http://www.absu.edu.ng	1981
2	Adamawa State University Mubi	Professor Alkasum Abba	http://www.adsu.edu.ng	2002
3	Adekunle Ajasin University, Akungba	Professor Mahzeem O. Mimiko	http://www.adekunleajasinuniversity.edu.ng	1999
4	Akwa Ibom State University of Technology, Uyo	Professor Eno James Ibanga	http://www.aksu.edu.ng	2010
5	Ambrose Alli University, Ekpoma	Professor Ignatius A. Onimawo	http://www.aauekpoma.edu.ng	1980
6	Chukwuemeka Odumegwu Ojukwu University, Uli	Professor Fidelis Uzochukwu Okafor	http://coou.edu.ng/	2000
7	Bauchi State University, Gadau	Prof. Ezzildin M. Abdulrahman	http://www.basug.edu.ng	2011
8	Benue State University, Makurdi	Professor Charity A. Angya	http://www.bsum.edu.ng	1992
9	Yobe State University, Damaturu	Professor Musa Alabe	http://www.ysu.edu.ng	2006
10	Cross River State University of Science & Technology, Calabar	Professor Effiom Ene-Obong	http://www.crutech.edu.ng	2004
11	Delta State University Abraka	Professor Victor Peretomode	http://www.delsu.edu.ng	1992
12	Ebonyi State University, Abakaliki	Professor F. I. Idike, OON	http://www.ebsu.edu.ng	2000
13	Ekiti State University	Prof. Samuel Oye Bandele	http://www.eksu.edu.ng	1982
14	Enugu State University of Science and Technology, Enugu	Professor Cyprian C. Onyeji	http://www.esut.edu.ng	1982
15	Gombe State Univeristy, Gombe	Professor Abdullahi Mahadi	http://www.gomsu.org	2004
16	Ibrahim Badamasi Babangida University, Lapai	Professor Muhammad N Maiturare	http://www.ibbu.edu.ng	2005
17	Ignatius Ajuru University of Education, Rumuolumeni	Prof. R. D.Green-Osahogulu(Ag)	http://www.iaue.edu.ng	2010
18	Imo State University, Owerri	Prof. B.E.B. Nwoke	http://www.imsu.edu.ng	1992
19	Sule Lamido University, Kafin Hausa, Jigawa	Prof. Abdullahi Yusuf Ribadu	http://www.slu.edu.ng	2013
20	Kaduna State University, Kaduna	Professor William Barnabas Qurix	http://www.kasu.edu.ng	2004
21	Kano University of Science & Technology, Wudil	Professor Ibrahim Garba	http://www.kustportal.edu.ng	2000
22	Kebbi State University, Kebbi	Dr. Amina Abubakar	http://www.ksusta.edu.ng	2006
23	Kogi State University Anyigba	Professor Hassan S. Isah	http://www.ksu.edu.ng	1999

24	Kwara State University, Ilorin	Professor A. Na-Allah	http://www.kwasu.edu.ng	2009
25	Ladoke Akintola University of Technology, Ogbomoso	Prof. Adeniyi S Gbadegesin	http://www.lautech.edu.ng	1990
26	Ondo State University of Science and Technology Okitipupa	Prof. Adegbite Adegoke Emmanuel	http://www.osustech.edu.ng	2008
27	River State University of Science and Technology	Prof. Blessing Chimezie Didia	http://www.ust.edu.ng	1979
28	Olabisi Onabanjo University, Ago Iwoye	Prof Saburi Adejimi Adesanya	http://www.oouagoiwoye.edu.ng	1982
29	Lagos State University, Ojo	Prof. John Oladapo Obafunwa	http://www.lasu.edu.ng	1983
30	Niger Delta University Yenagoa	Prof. Humphrey Ogoni	http://www.ndu.edu.ng	2000
31	Nasarawa State University Keffi	Prof. Muhammad Akaro Mainoma	http://www.nsuk.edu.ng	2002
32	Plateau State University Bokkos	Prof. Doknan Sheni	http://www.plasu.edu.ng	2005
33	Tai Solarin University of Education Ijebu Ode	Prof. Oluyemisi Obilade	http://www.tasued.edu.ng	2005
34	Umar Musa Yar' Adua University Katsina	Prof. Idris Isa Funtua	http://www.umyu.edu.ng	2006
35	Osun State University Osogbo	Prof Oguntola Jelil Alamu (Ag)	http://www.uniosun.edu.ng	2006
36	Taraba State University, Jalingo	Prof. Mohammed S Yahaya	http://www.tsuniversity.edu.ng	2008
37	Sokoto State University	Prof. Nuhu Yaqub	http://www.ssu.edu.ng	2009
38	Northwest University Kano	Prof. Razali Agus	http://www.nwu.edu.ng	2012
39	Oyo State Technical University Ibadan			2012
40	Ondo State University of Medical Sciences	Prof. Friday Okonofua		2015
41	Edo University Iyamo	Prof. Emmanuel Aluyor (Ag)		2016
42	Eastern Palm University Ogboko, Imo State	Prof. Chima Iwuchukwu		2016
43	University of Africa Toru Orua, Bayelsa State			2016
44	Bornu State University, Maiduguri			2016

S/N	PRIVATE UNIVERSITIES	VICE CHANCELLOR	WEBSITE ADDRESS	YEAR EST.
1	Achievers University, Owo	Professor Tunji Samuel Ibiyemi	http://www.achievers.edu.ng	2007
2	Adeleke University, Ede	Prof. Samuel E Alao	http://www.adelekeuniversity.edu.ng	2011
3	Afe Babalola University, Ado-Ekiti - Ekiti State	Professor M.O Ajisafe	http://www.abuad.edu.ng	2009
4	African University of Science & Technology, Abuja	Professor Charles Chidume (Ag)	http://aust.edu.ng	2007
5	Ajayi Crowther University, Ibadan	Prof. K.T. Jaiyeoba	http://www.acu.edu.ng	2005
6	Al-Hikmah University, Ilorin	Professor S. A. Abdulkareem	https://www.alhikmah.edu.ng	2005
7	Al-Qalam University, Katsina	Prof. Shehu G. Ado	http://www.auk.edu.ng	2005
8	American University of Nigeria, Yola	Dr. Margee Ensign	http://www.aun.edu.ng	2003
9	Augustine University	Prof. Steve Olaoluwa Afolami	http://www.augustineuniversity.edu.ng/	2015
10	Babcock University, Ilishan-Remo	Professor Kayode J. Makinde	http://www.babcock.edu.ng	1999
11	Baze University	Prof. Michael Hodd	http://www.bazeuniversity.edu.ng	2011
12	Bells University of Technology, Otta	Professor A. I. Adeyemi	http://www.bellsuniversity.org	2005
13	Benson Idahosa University, Benin City	Prof. Ernest B. Izevbigie	http://www.idahosauniversity.com	2002
14	Bingham University, New Karu	Professor Samuel K Leonard	http://www.binghamuni.edu.ng	2005
15	Bowen University, Iwo	Professor. Matthews Akintunde Ojo	http://www.bowenuniversity.edu.org	2001
16	Caleb University, Lagos	Professor Ayandiji D Aina	http://www.calebuniversity.edu.ng	2007
17	Caritas University, Enugu	Professor L. C. Onukwube	http://www.caritasuni.edu.ng/	2005
18	CETEP City University, Lagos	Professor Akin Aju	http://www.cetepuniversity.com	2005
19	Chrisland University	Prof Olusola Odeyemi	http://www.chrislanduniversity.edu.ng	2015
20	Covenant University Ota	Prof. Aderemi A Atayero	http://www.covenantuniversity.edu.ng/	2002
21	Crawford University Igbesa	Prof. Samuel A. Ayanlaja	http://www.crawforduniversity.edu.ng	2005
22	Crescent University	Professor Sherifdeen A. Tella	http://www.crescent-university.edu.ng	2005
23	Edwin Clark University, Kaigbodo	Prof. Timothy O Olagbemiro	http://www.edwinclarkuniversity.edu.ng/	2015

24	Elizade University, Ilara-Mokin	Prof. Adekunle Oloyede	http://www.elizadeuniversity.edu.ng	2012
25	Evangel University, Akaeze	Prof. C. Ike Umechuruba	http://www.evangeluniv.edu.ng	2012
26	Fountain Unveristy, Oshogbo	Prof. Bashir A.Raji	http://www.fountainuniversity.edu.ng	2007
27	Godfrey Okoye University, Ugwuomu-Nike - Enugu State	Prof. (Revd.) Chikelu. Anieke	http://www.gouni.edu.ng	2009
28	Gregory University, Uturu	Prof. Juliet Elu	http://www.gregoryuniversity.com	2012
29	Hallmark University	Prof. Segun Odunola	http://www.hallmark.edu.ng	2015
30	Hezekiah University, Umudi	Prof. Chukwuemeka Ezeonu	http://hezekiah.edu.ng/	2015
31	Igbinedion University Okada	Professor (Revd.) Eghosa E. Osaghae	http://www.iuokada.edu.ng	1999
32	Joseph Ayo Babalola University, Ikeji-Arakeji	Professor Sola Fajana	http://www.jabu.edu.ng	2006
33	Kings University	Prof. Diran Famurewa	http://www.kingsuniversity.edu.ng/	2015
34	Kwararafa University, Wukari	Professor Godwin Akpa	http://www.wukarijubileeuniversity.org	2005
35	Landmark University, Omu-Aran.	Professor Mathew Ola-Rotimi Ajayi	http://www.lmu.edu.ng	2011
36	Lead City University, Ibadan	Prof. Olufemi Onabajo	http://www.lcu.edu.ng	2005
37	Madonna University, Okija	Prof. Chucks E.Ezedum	http://www.madonnauniversity.edu.ng	1999
38	Mcpherson University, Seriki Sotayo, Ajebo	Prof. Adeniyi Agunbiade	http://www.mcu.edu.ng	2012
39	Micheal & Cecilia University	Prof. (Mrs.) Ibiynka A. Fuwape	http://mciu.edu.ng/	2015
40	Mountain Top University	Prof Elijah Ayolabi	http://www.mountaintopuniversity.org/	2015
41	Nile University of Nigeria, Abuja	Professor Huseyin Sert	http://www.ntnu.edu.ng	2009
42	Novena University, Ogume	Prof Chris Aniche Okoroafor	http://www.novenauniversity.edu.ng	2005
43	Obong University, Obong Ntak	Professor Enefiok S. Udo	http://www.obonguniversity.net	2007
44	Oduduwa University, Ipetumodu - Osun State	Prof. (Mrs) Olajumoke A. Olayiwola (Ag)	http://www.oduduwauniversity.edu.ng	2009
45	Pan-Atlantic University, Lagos	Professor Juan Manuel Elegido	http://www.pau.edu.ng	2002
46	Paul University, Awka - Anambra State	Professor Uche Abanike	http://www.pauluniversity.edu.ng	2009
47	Redeemer's University, Mowe	Professor Z. Debo Adeyewa	http://www.run.edu.ng	2005

48	Renaissance University, Enugu	Prof. Obiora S. Ejim	http://www.renaissanceuniversityng.com	2005
49	Rhema University, Obeama-Asa - Rivers State	Professor O. C. Onwudike	http://www.rhemauniversity.edu.ng	2009
50	Ritman University		http://www.ritmanuniversity.edu.ng	2015
51	Salem University, Lokoja	Prof. Joseph Adeola Fuwape	http://www.salemuniversity.org	2007
52	Samuel Adegboyega University, Ogwa.	Prof. Benard E. Aigbokhan	http://www.sau.edu.ng	2011
53	Southwestern University, Oku Owa	Prof. Babatunde A Ikotun	http://www.southwesternuniversity.edu.ng	2012
54	Summit University			2015
55	Tansian University, Umunya	Professor C.B Iwuchukwu	http://tansianuniversity.edu.ng/	2007
56	University of Mkar, Mkar	Prof. Emmanuel Hemen Agba	http://www.unimkar.edu.ng	2005
57	Veritas University	Prof. David Ker	http://www.veritas.edu.ng	2007
58	Wellspring University, Evbuobanosa - Edo State	Professor J. E. A. Osemeikhian	http://www.wellspringuniversity.net	2009
59	Wesley University. of Science & Technology, Ondo	Professor 'Tade Badejo	http://www.wusto.edu.ng	2007
60	Western Delta University, Oghara Delta State	Prof. Austin Oviguhe Asagba	http://wdu.edu.ng	2007
61	Christopher University Mowe	Prof. Friday Ndubuisi	http://www.christopheruniversity.edu.ng/	2015
62	Kola Daisi University Ibadan, Oyo State			2016
63	Anchor University Ayobo Lagos State			2016
64	Dominican University Ibadan Oyo State			2016
65	Legacy University, Okija Anambra State			2016
66	Arthur Jarvis University Akpoyubo Cross river State			2016
67	Crown Hill University Eiyenkorin, Kwara State	Prof. J. A. Olorunmaiye		2016
68	Coal City University Enugu State			2016
69	Clifford University Owerinta Abia State			2016

Source: NUC, (2017) <http://nuc.edu.ng/nigerian-universities/private-universities/>

APPENDIC III

Israel's Model for Determining Sample

Size of Population	Sample Size (n) for Precision (e) of:			
	±3%	±5%	±7%	±10%
500	A	222	145	83
600	A	240	152	86
700	A	255	158	88
800	A	267	163	89
900	A	277	166	90
1,000	A	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
Size >100,000	1,111	400	204	100

Source: Israel, (2013).⁷⁰ Sampling the Evidence of Extension Program Impact. Program Evaluation and Organisational Development

APPENDIX IV

Nine Basic Lessons in Google Apps for Education

Google Calendar Basics

The following Calendar Basics lessons will prepare you with a fundamental understanding of Calendar, its key features, and general benefits in the classroom. With a basic understanding of Calendar, you can plan more effectively with your colleagues and students, stay organized, and begin to customize your calendar experience (Google, 2014). You will learn how to:

- a. Create, share, and publish appointments and events
- b. Track various events using multiple calendars
- c. View events on mobile devices
- d. Organize appointments using appointment slots

To start, review the Basic lessons and conduct all activities. It is recommended you have a browser or computer screen available to practice the step-by-step exercises. When you are finished, review the advanced lessons in the Google Calendar section to gain a deeper understanding of how to use these tools to impact teaching and learning.

Lesson 1

Creating and Viewing Calendars (10 Minutes)

Access Google Calendar

Access Google Calendar by typing **calendar.google.com** in the browser or by clicking **Calendar** on the Apps launcher found on the top-right corner of your Gmail and Drive pages. The first calendar listed in your **My calendars** section of your Google Calendar dashboard is known as your primary calendar. Use this primary account in Google Calendar to create and view calendar events (like personal or school-related events) that only impact you.



You can create additional, or secondary, calendars to keep track of separate information. These secondary calendars can be school based, to organize other parts of your schedule such as class events (e.g. Math Period 1 or Algebra 2014), or they can be calendars to keep track of after-school clubs and/or faculty trainings. These secondary calendars can be layered with your primary calendar so you can clearly view your events and schedules for each class or club. For each calendar, you have the option to:

- a. Customize privacy settings and control access
- b. Color code events
- c. Turn calendar views on/off

- d. Change sharing settings
- e. Select an embed code for insertion in a website

Create Calendars

In addition to creating a personal calendar to help organize your own activities and priorities, it can be useful to create calendars to share information with groups of people. Here are some examples of group calendars that can be used at your school:

- a. Class calendar for class-related events such as activities, class meeting times, testing schedules and lesson objectives
- b. Calendar with school-related holidays, in-service days, testing days, and vacations
- c. Homework calendar with detailed descriptions of homework assignments, links to relevant materials and due dates
- d. Group project calendar
- e. School sporting event schedules
- f. Share daily lesson plans

View the following short video to see how Google Calendar can be used to create lesson plans.

Lesson 2

Creating Events on Google Calendar (20 mins)

Google Calendar makes it easy to schedule meetings, appointments, classes, or events with specific start and end times. A calendar entry is considered to be anything that you would add to your calendar - be it a two-day conference, a one hour meeting, or a three hour dinner. You can schedule all of these things on Google Calendar, and even have entries overlap with each other.

There are many ways to create a new calendar event using your desktop or mobile device. In this lesson we will share the most common ways to create an entry. Here is a list of all the ways you can create a calendar event.

Create an event from the Google Calendar window

The most intuitive way to create a calendar entry is to click on your Google Calendar window or navigate to calendar.google.com.

To create an event from the Google Calendar window:

1. Click on the day that you would like to create a new event (use the mini-calendar).
2. Click on the time you want your entry to start.
3. If the event spans over or under an hour, click and drag.
4. Type the title and event time for your new event in the box.
5. Finally, click **Create Event** to publish the event to your calendar immediately, or click **Edit event** to add additional information.
6. The event will appear on your calendar.

Add details to an event

When: Sat, September 21, 1pm – 2pm

What: Hangout with The Globe Theatre
e.g., Breakfast at Tiffany's

Calendar: English III 13–14

Create event Edit event »

To add details to an event:

1. Click on the event in your calendar to bring up the event bubble.
2. Click on the event title.
3. Edit the event title.
4. Click on **Edit event**.
5. Add your details such as time span, description, Hangout link and more.
6. Add invitees if necessary.
7. Click on **Save**.

Create an event from the navigation bar

1. Click on the Create button in the left column of your calendar.



2. The full event details page will open where you can enter as much information as you would like about your event.
3. Check the **All Day** box or add the start and end times of the event.

Untitled event

1/22/2012 5:00pm to 6:00pm 1/22/2012 Time zone

☒ All day ☐ Repeat...

Event details Find a time

If you would like the entry to span multiple days, click the second date box and choose your end day.

Untitled event

1/22/2012 5:00pm to 6:00pm 1/24/2012 Time zone

☐ All day ☐ Repeat...

On this page, you can also add guests, change a reminder setting, and publish your event to other users.

Add: Guests | Rooms, etc.

Enter email addresses

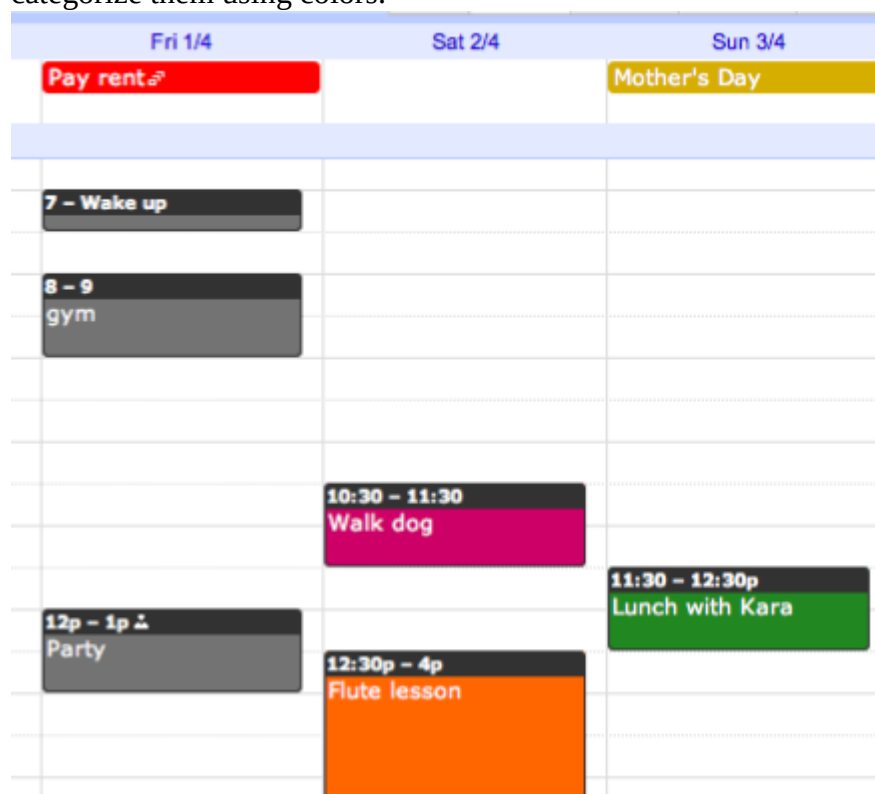
Guests can

- ☐ modify event
- ☒ invite others
- ☒ see guest list

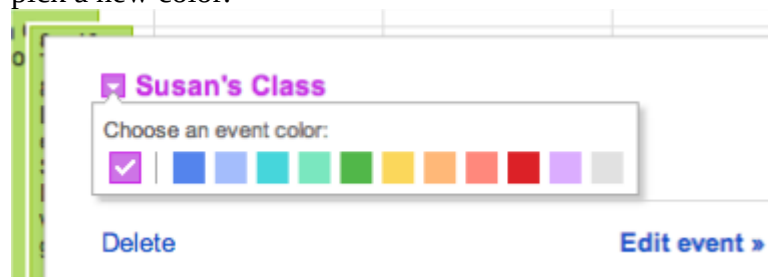
Once you have entered the appropriate information and selected the desired settings, click **Save**.

Categorize events using colors

If your calendar ends up full of many different types of events, there is an easy way to categorize them using colors.



Just click on an event, then click the colored square in the top left of the pop-up bubble and pick a new color.



Only you and anyone else you have given permission to make changes to your calendar will be able to see the colors you choose.

Change the default length of events

If you frequently create 15 minute meetings rather than the default meeting length of one hour, you can make 15 minutes the default length for all your events. This way, you do not need to click into the event page to change the duration every time.

You can change the default length of your events from the Calendar settings page. (To access this page click on the button that looks like a gear on the far upper right of the screen). Next to the **Default meeting length** option, choose the length you would like from the drop-down menu on the right. From there, you can also enable Speedy meetings, which automatically shortens events that are 30 minutes or longer to allow you to prep for your next meeting or get to your next appointment if you have a packed schedule.

Default meeting length:

60 minutes

☐ Speedy meetings

Encourage meeting efficiency and get to your next meeting on time.

30 minute meetings end 5 minutes early, 1 hour meetings end 10 minutes early, etc.

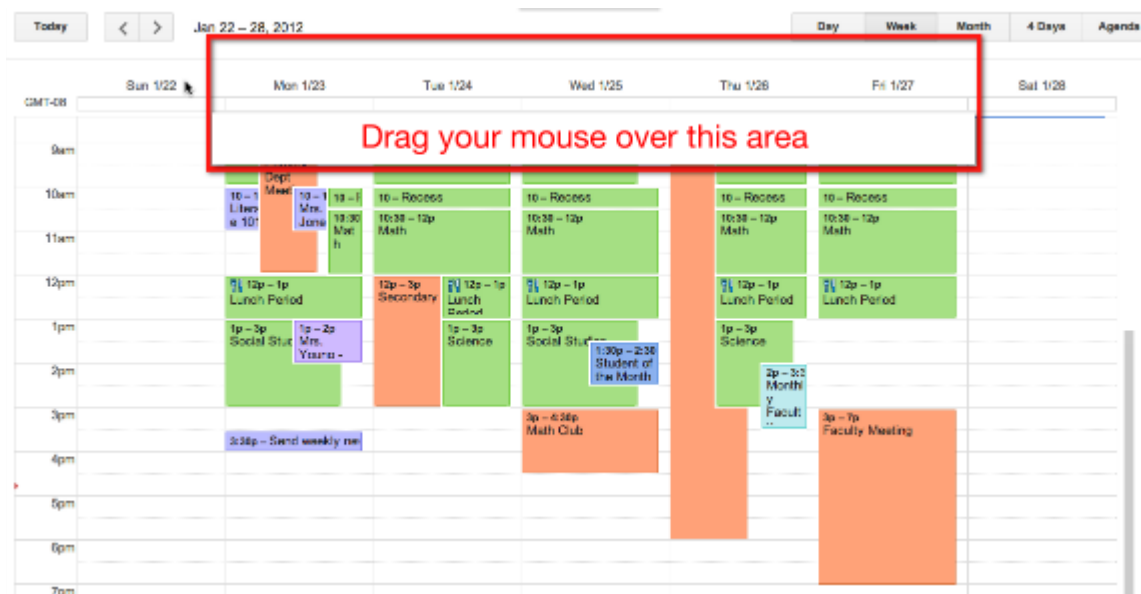
Create All Day or multiple day events

Oftentimes, there are things that needed to be added to the calendar that do not have a specific start or end time. For example, perhaps you would like to note a week you have set aside for class presentations, vacation, testing days, or parent-teacher conferences.

These types of calendar entries are referred to as **All Day** events. An **All day** event is an event that lasts for an entire day or multiple days.

To create All Day or multiple day events:

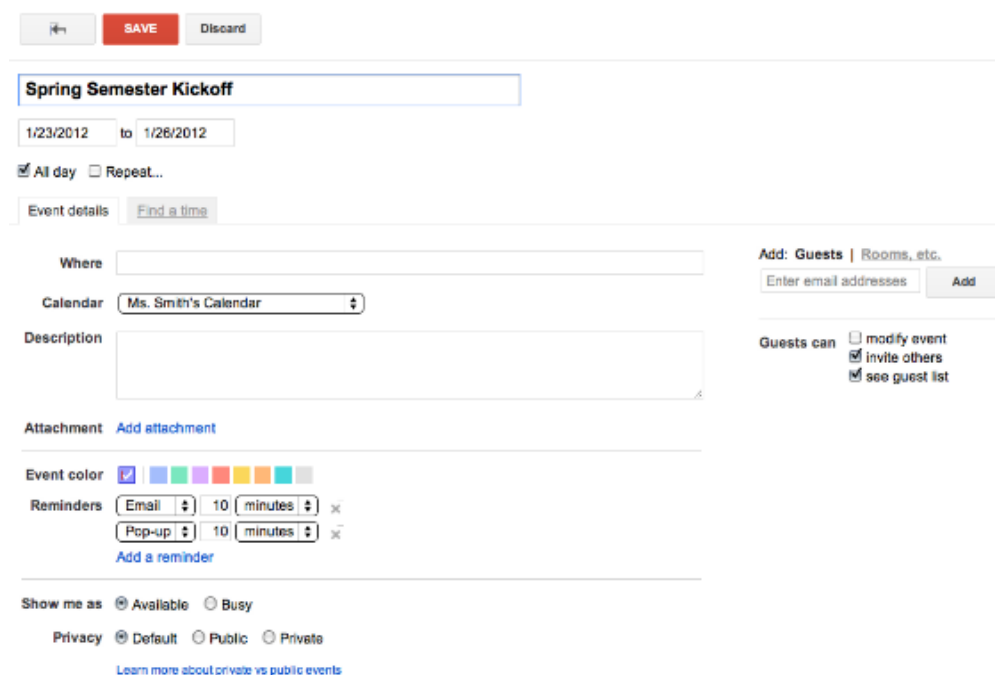
1. In the default Week view, click on the day in the space above the list of times (this area is enclosed by a blue box). This is the open space reserved for **All Day** events.
2. Select a date. If you want the entry to span multiple dates, click the date and drag until the end day.



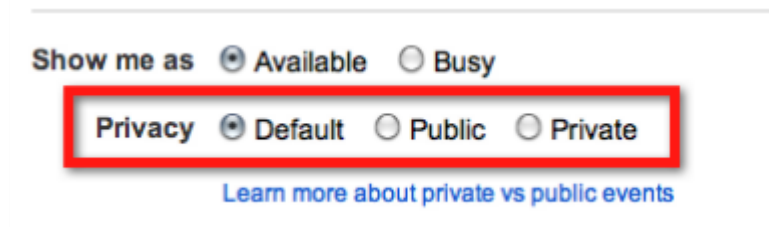
3. Name your calendar entry.



4. To add more event details such as a description, location, guests, and reminders, click **Edit** event. If you are fine with just entering a name, click **Create Event**.



5. **All Day** events will automatically be marked as free in the **Show me as** section. This will not block out the day on your calendar to prevent future scheduling. If you would like to block off the time during the day for your event, select **Busy** from the drop down next to **Show me as** on the **Events details** page.
6. If you are in the **Event details** page, add the relevant information and click **Save**.



Lesson 3

Adding and Managing Guest Access to Calendar Events (25 mins)

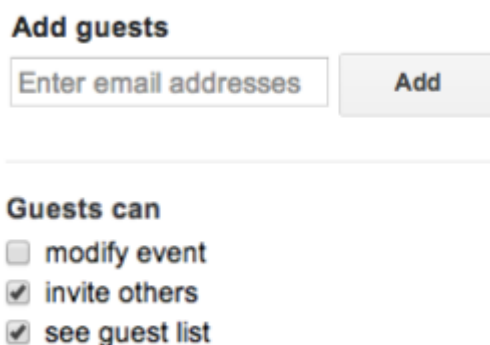
Invitations in Google Calendar let you circulate information about a particular event without requiring you to share your entire calendar with others. It also allows you to track the responses of the people you have invited.

Guests added by invitation to your calendar entries will also have the latest information about your event – whenever you make a change, they will also be notified of that change in their calendar, email, or their selected mode of notification.

Add guests to a calendar entry

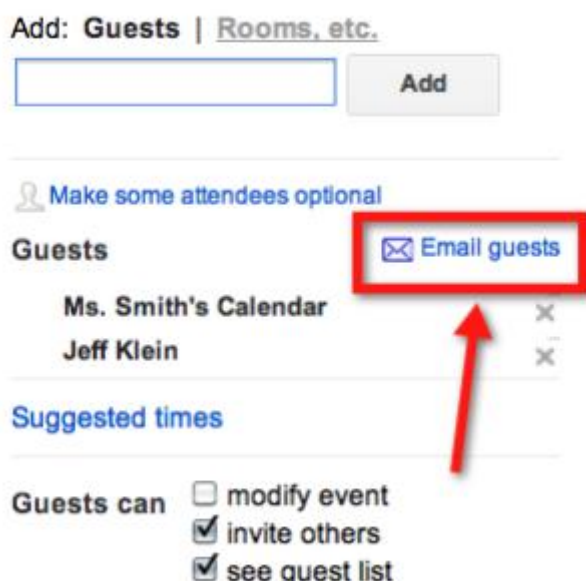
To add guests to an event:

1. Click on the event (or create a new event) and select **Edit event**.
2. In the **Add guests** section, enter the email addresses of the guests, separated by commas.



The screenshot shows the 'Add guests' section of a calendar interface. At the top, there is a text input field labeled 'Enter email addresses' and an 'Add' button. Below this, there is a section titled 'Guests can' with three checkboxes: 'modify event' (unchecked), 'invite others' (checked), and 'see guest list' (checked).

3. Click on the **Add** button to add the guests.
4. Beneath the box for entering guests, you can select the permission level for your guests and the calendar entry. Options include:
 - a. **Modify event**: Make changes to any of the event details
 - b. **Invite others**: Add new guests to the calendar entry
 - c. **See guest list**: View who has been invited and their attendance response
5. Click **Save**.
6. Your guests will automatically receive an email invitation to your event. If you click **Email guests**, you can craft a custom message to your guests. Note: If guests have turned off notifications for new events they will not receive an email invitation.



The screenshot shows the 'Add: Guests' section of a calendar interface. At the top, there is a text input field and an 'Add' button. Below this, there is a section titled 'Make some attendees optional' with a person icon. Underneath, there is a list of guests: 'Ms. Smith's Calendar' and 'Jeff Klein', each with a close button (X). To the right of the guest list, there is a button labeled 'Email guests' with an envelope icon, which is highlighted with a red box and a red arrow. Below the guest list, there is a section titled 'Suggested times'. At the bottom, there is a section titled 'Guests can' with three checkboxes: 'modify event' (unchecked), 'invite others' (checked), and 'see guest list' (checked).

- When adding invitees to an event, you also have the ability to communicate the importance of a meeting for each attendee by making the guest optional. Click on the person icon next to the guest to mark as optional.

Add: Guests | Rooms, etc.

Add

Click the  icons below to mark as optional.

Guests [Email guests](#)

Yes: 0, Maybe: 0, No: 0, Awaiting: 0, Optional: 1

	Ms. Smith's Calendar	
	Jeff Klein	

Check guest availability

When you are scheduling a calendar entry for multiple people, it can be useful to check the schedules of each party to make sure you choose a time that works for everybody. If you are adding guests who are also members of your school's Google Apps for Education account, you can check their availability to find a time that works, or use a Google Calendar tool to find the next available time everyone invited is free.

To check guest availability when you create a new calendar entry:

- Click **Edit event** if you are not already viewing that page.
- Click **Find a time** below the date and time boxes.

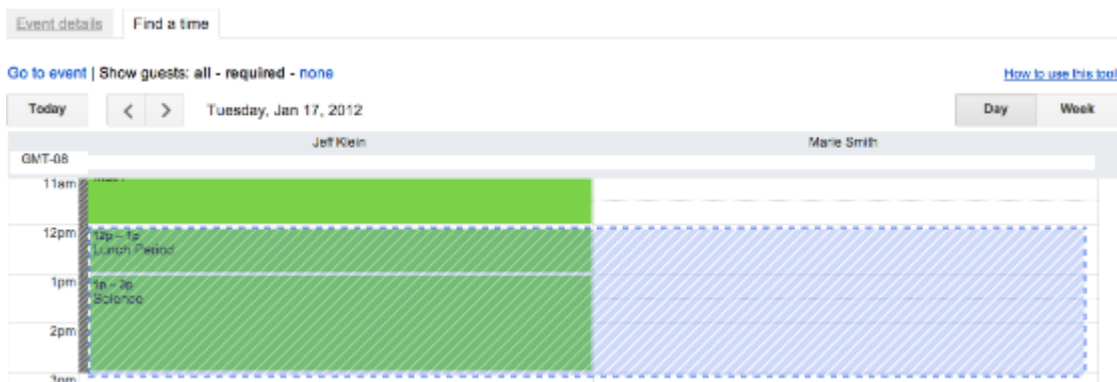
Secondary Meeting

1/17/2012 12:00pm to 3:00pm 1/17/2012 [Time zone](#)

☐ All day ☐ Repeat...

[Event details](#) **Find a time**

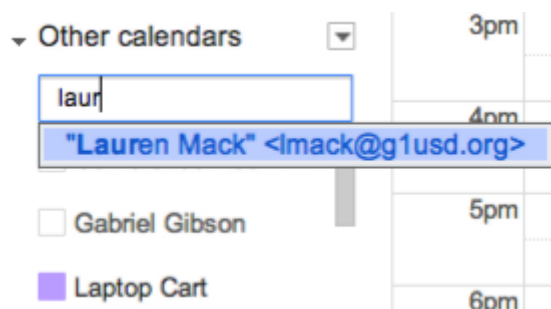
- Add the guest to your event.
- Events will show up when each individual is busy. The shaded area is the event. You can use this visual timeline to find an empty block when everyone can meet.



From your calendar window, you can view a calendar of someone who also has a Google Apps account at your school alongside your own calendar.

To view their calendar:

1. If you have done so already, add the guest's calendar to your calendar list by typing in their email address in the left-side column in the **Other Calendars** box.



2. The added calendar will automatically be highlighted and visible in your calendar window.
3. If you already added the guest, you can turn their calendar on or off by clicking on their name within the **Other Calendars** box.
4. If your event requires more guests, continue to add their calendars in the **Other Calendars** box.
5. With all the calendars viewable, you can now find free time on everyone's calendar.

Note: Currently, you can invite up to 500 guests per event. To accommodate an event with a guest list over 500, create additional events for every 500 invited guests.

Invite groups to events

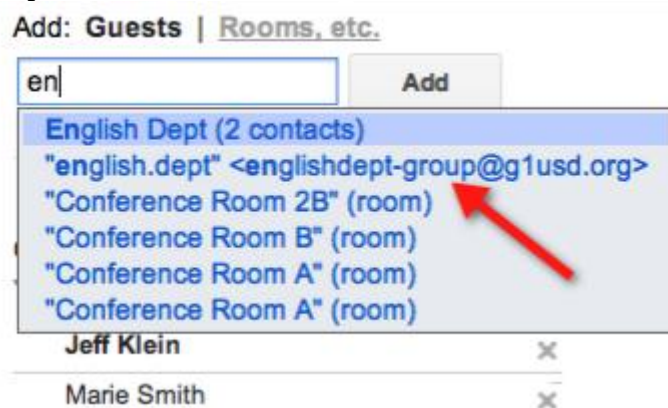
Google Groups is a feature of Google Apps that makes it easy to share information with multiple people at once. Because Groups are addressed via a single email address, you can easily add large numbers of users to a calendar event at once. An event can have a maximum of 500 invitees or 500 groups or a combination of the two.

If you invite a group to a calendar event, the group member list will expand if you have the appropriate viewing permissions for that group. This limitation protects the privacy settings for a group, and it applies to both users and administrators.

Add Group to a calendar entry

To add a group to a calendar entry, follow the same instructions as creating an event and adding individuals.

The primary difference is that instead of an individual email address, you will enter in the group email address:



Invite people who do not use Google Calendar

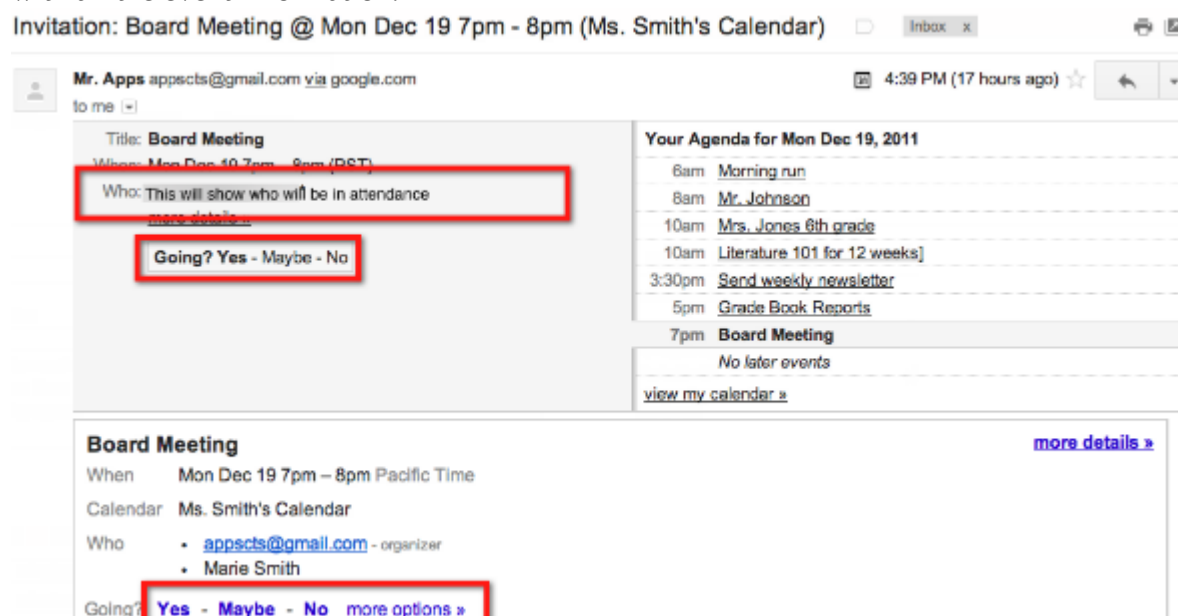
Anyone with an email address can receive invitations from Google Calendar, regardless of whether they use Google Calendar as a part of Google Apps for your school. This can include parents, students (if students do not have Google Apps accounts at your school), friends, or other individuals outside of school.

When the individuals receive an invitation, they will have the opportunity to RSVP and view the event details with a calendar entry link. They can later change their RSVP status or review the event details with that same link.

Google Calendar invitation

When guests receive a Google Calendar invitation, they will receive an email with the event name, date & time, location, and description. Within the email, there are links to RSVP as a Yes, No, or Maybe. There is also the option to add a comment to their RSVP status. If you have allowed guests to view the event guest list, the email invitation will also contain a Who section of other event attendees.

They can also click on the more details link within the invitation to see a webpage with all the event information.



If you change the event, you can choose to notify guests – for guests who do not use Google calendar, they will receive another email notification with all the event details. They can also continue to access the event details via the more details link.

View guest lists and responses

If you have created an event or just received an event invitation, you can check to see who else has been invited to an event.

Note: The owner of the calendar event can choose not to make the guest list visible. If you do not see a guest list, it may be because the owner has enabled this setting.

To check who is invited to an event, just click on the event – the attendees will be listed in the Who section of the event bubble.

For more detailed guest information (and to see the status of each person invited):

1. Click on the event.
2. Select **more details** or **Edit event** (depending on your level of access to the event).

3. The guest information on the right side of the event page lists the attendees and their status.

Add: [Guests](#) | [Rooms, etc.](#)

Guests [Email guests](#)

Yes: 1, Maybe: 1, No: 0, Awaiting: 1

- ✓ **Cristin Franklin** [x](#)
See you then!
- ? **Jeff Klein** [x](#)
Assuming my office hours don't run late...
- Lauren Mack** [x](#)

Guests can ☒ modify event
☒ invite others
☒ see guest list

Lesson 4

Customizing and Editing Events on Calendar (20 mins)

With Google Calendar, you can choose to view calendar information by day, by week, or by month. You can also view a list of calendar events using the Agenda view. Finally, you can also customize your calendar view to display as many days as you want in one view.

General navigation

Selecting **Expand All** will allow you to click on **More details** to view more details about an event to which you have been invited, and **Edit events** for events you have created.

[Expand All](#) [Collapse All](#)

Fri Jul 4 All day **Independence Day**
Calendar Holidays in United States
[copy to my calendar](#) [More details >](#)

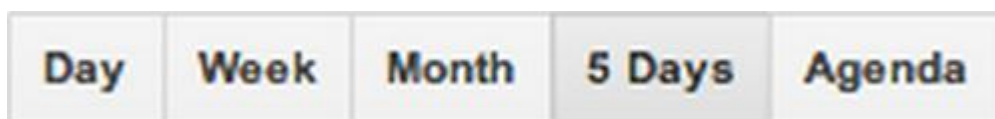
12:00pm – 5:00pm **BBQ**
Video call [Join meeting: blanca](#)
Color ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
[Delete](#) [Edit event >](#)

Mon Jul 7 12:00pm – 3:00pm **PD for Google Apps - JFK Elementary School**
Where JFK Elementary School [map](#)
Video call [Join meeting: blanca](#)
Color ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
[Delete](#) [Edit event >](#)

You can use the single arrows on the top-left corner of the calendar to move forward or backward to view more days. You can easily switch to the Day view by clicking on one of the date links.

View Calendar events

To change between different views, just click on the tabs in the top-right corner of your calendar. Or to quickly customize your view, just click and drag dates in your mini-calendar to include your desired start date to your end date.



Note: Keyboard shortcuts must be enabled in your Settings to use the commands above. You can quickly access a Day view by double tapping or double clicking on a day in the mini-calendar shown on the screen.



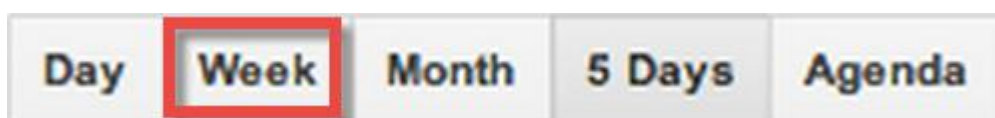
Day view

The Day view displays events for a single day. To use this view, click on the Day tab in the top-right corner of your calendar.



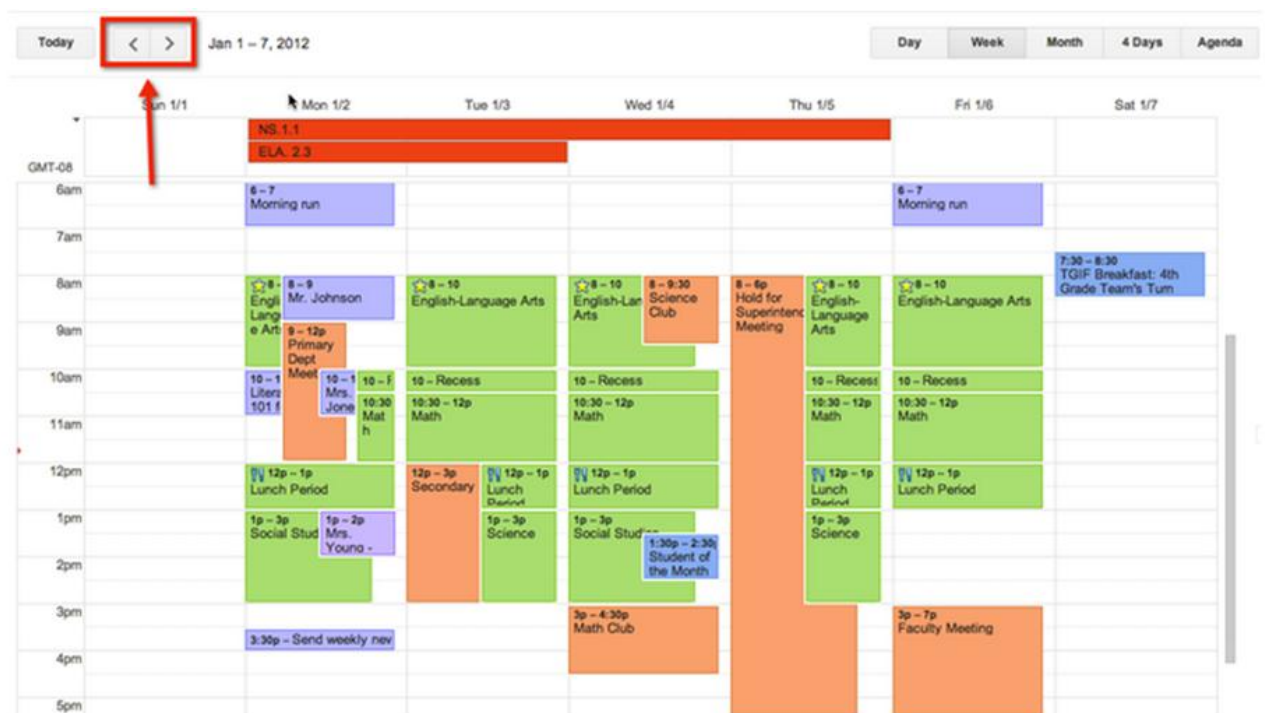
Week view

The Week view displays events for the current week. To use this view, just click on the **Week** tab in the top-right corner of your calendar.



The current day (today) will be marked with a yellow background. If you have an **All Day** event, it will be displayed at the top of the Day view enclosed in the blue box area. If you have multiple **All Day** events, you have the option to hide or unhide them using the arrow to the left of the **All Day** event section.

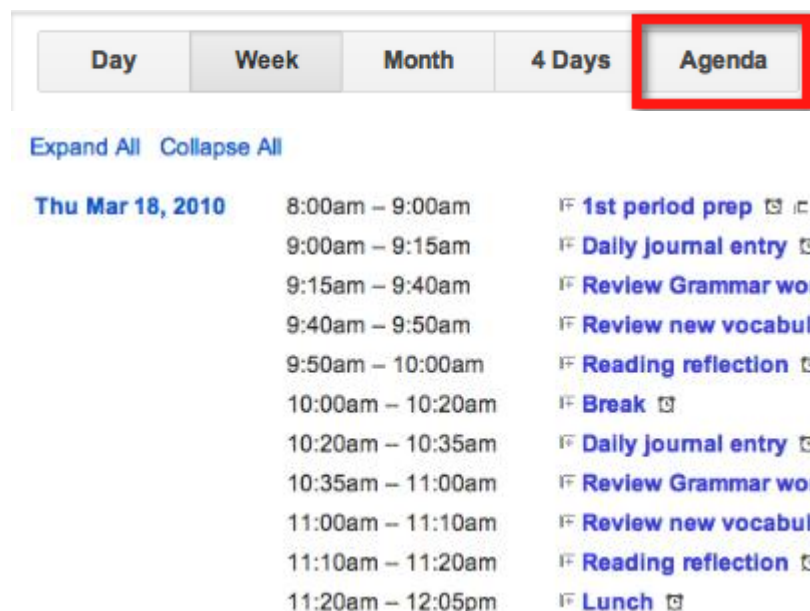
Use the single arrows on the top-left corner of the calendar to move forward or backward by a week.



Agenda view

Use the Agenda view to view all your events grouped by day. Unlike the Day or Week views, this view does not show blocks of time, but lists the timing of each event beside the event name (i.e. 9am-9:30am). In Lesson 5 we will show you how to use Agenda view to share daily lesson plans with students and view shared curriculum maps.

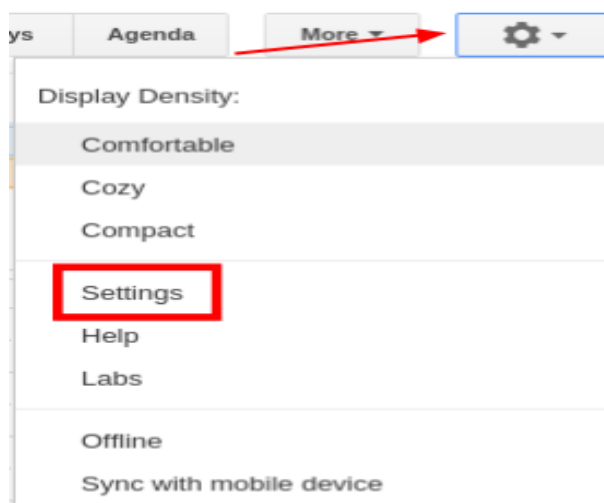
To display the Agenda view, click the **Agenda** tab on the top-right corner of the calendar.



Customize Calendar Views

In Calendar Settings, the **Custom View** tab default can be changed. In this example, we will create a 4 Days view so that we are able to select it in the View window.

1. Click **Settings** in the top-right corner of your calendar window.

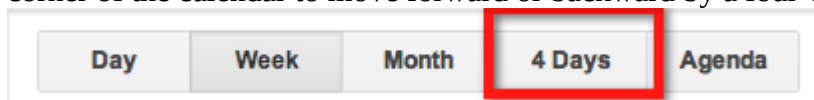


2. Make sure you are on the **General** tab.
3. In the **Custom view** section, select the desired time range from the drop-down menu (from 2 days up to 4 weeks).



4. Click **Save** at the top or bottom of the page.

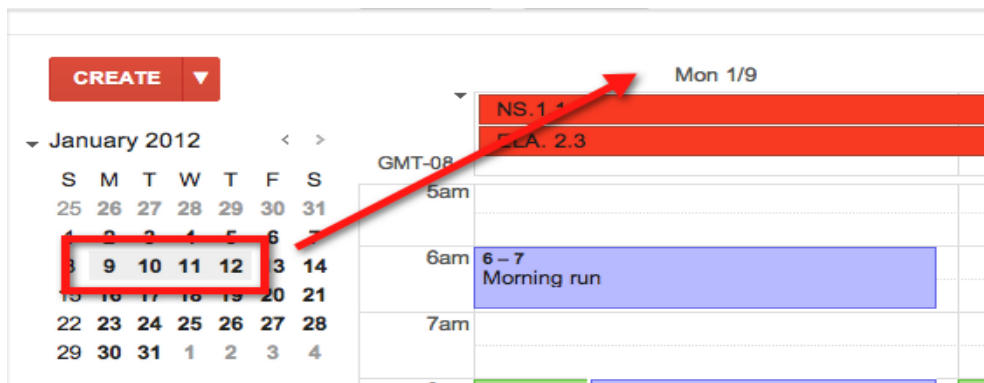
Now the fourth tab will display whatever time increment you selected (i.e. if you selected 6 Days, the fourth tab will now say 6 days). Use the single arrows on the top-left corner of the calendar to move forward or backward by a four-day increment.



Quick custom view

You can quickly customize the view of your calendar to be as many or as few days as you like using the mini-calendar on the left. This way you can quickly view 2 days at a time, or 2 weeks – you decide. To quickly view a set of days on your calendar, follow these steps:

- a. Click on a start date in your mini-calendar on the left side of your calendar window and drag to your desired end date.
- b. For example, to display March 1, 2010 to March 3, 2010, just click on March 1, 2010 in the mini-calendar and drag to March 3, 2010.



Note: This will not be a default calendar view or the take the place of the 4 Days tab in the top right. This is just a quick way to view multiple days in your calendar.

Change default view

Google Calendar by default opens to the Week view. If you would like to change this and have Google Calendar open to a different view, you can change the default view in your settings.

To change your calendar's default view:

1. Go to **Settings** in the top-right corner of your calendar window.
2. Select the **General** tab.
3. In the **Default view** section, select the desired view from the drop-down menu.
4. Click **Save**.

General [Calendars](#) [Mobile Setup](#) [Labs](#)

◀ Back to calendar

Language:

Country:
(choose a different country to see other time zones)

Your current time zone: Label:
☐ Display all time zones
[Show an additional time zone](#)

Date format:

Time format:

Default meeting length:
☐ Speedy meetings
 Encourage meeting efficiency and get to your next meeting on time.
 30 minute meetings end 5 minutes early, 1 hour meetings end 10 minutes early, etc.

Week starts on:

Working hours ☐ Show a warning to other people when they invite me to an event outside my working hours:
☒ Sun ☒ Mon ☒ Tue ☒ Wed ☒ Thu ☒ Fri ☒ Sat
 to 8 hours

Event dimming:
☒ Dim past events
☒ Dim recurring future events
 The brightness of these events will be reduced, so you can focus on today. [Learn more](#)

Show weekends: ☒ Yes ☐ No

Default view:

☐ Day
☒ Week
☐ Month
☐ Custom View (4 Days)
☐ Agenda

Custom view:

Edit Events

Delete or remove a calendar entry: To delete or remove an event from your calendar, simply click the event to display the event bubble (alternatively, click on the event title to view the event details page). You will then see a link to either remove or delete the event from your calendar.

Depending on your ownership of the calendar entry, you will see one of these link options:

Remove from this calendar: This option is only available for events that you are invited to and do not have permission to edit. Clicking this link will remove the event only from your calendar. The event will still exist on the calendars of other guests as well as the event organizer.

Delete: This option is only available for events that you have permission to edit. Clicking this link will remove the event from your calendar as well as the calendar of any invited guests. That is, the event will be completely deleted.

Lesson 5

Planning and Creating a Lesson Plan Calendar (20 minutes)

Whether you organize your lesson plans by day, by month, by semester, or by year, keeping track of lessons over time can be challenging, especially if you are constantly adjusting to meet the needs of your students. Take advantage of Google Calendar features to help you manage and save time:

- Add lessons to Calendar to keep track of standards that need to be addressed or topics that extend over time
- Use Calendar to organize student projects by noting milestones, due dates, team reviews, or presentation dates
- Help new teachers and substitute teachers understand what content needs to be covered
- Provide access to school administration, peers, and parents to share what is covered in class

In this section you will learn how to organize lessons using calendars and agendas.

Plan and create a lesson in agenda view

In the agenda view, it is easy to have a full list of activities for each day. This can be particularly useful for detailed lesson planning. For example, you can add individual activities to each fifteen or thirty minute increment of your agenda. The agenda items can also be linked to the course material relating to that particular activity.

You can have this available readily for yourself, but it can also be useful for sharing with others. For example, you could print off the agenda for a day and pass it along to a substitute teacher. Your lesson plans are not disrupted by your absence and then the substitute teacher has a detailed plan of action for the day.

Expand All Collapse All		
Thu Mar 18, 2010	8:00am – 9:00am	1st period prep  
	9:00am – 9:15am	Daily Journal entry 
	9:15am – 9:40am	Review Grammar worksheet 
	9:40am – 9:50am	Review new vocabulary 
	9:50am – 10:00am	Reading reflection 
	10:00am – 10:20am	Break 
	10:20am – 10:35am	Daily Journal entry 
	10:35am – 11:00am	Review Grammar worksheet 
	11:00am – 11:10am	Review new vocabulary 
	11:10am – 11:20am	Reading reflection 
	11:20am – 12:05pm	Lunch 

To create an event called daily lesson plan in Google Calendar, you will need to use new calendar entries to describe the activities you will conduct. It can also be helpful to create a separate calendar for these lesson plans if you do not want to include these activities in a broad class calendar that your entire class (students and parents) can view. You can easily do this by clicking the drop-down menu next to **My calendars** and selecting **Create new calendar**.

Follow the instructions below to view an example:
 Let's say for a 50 minute class on Tuesday at 9:00AM you set aside 20 minutes for reading a class book, 15 minutes for writing a reflection, and 15 minutes to conduct a class discussion.

1. Click the **Create Event** link on the left side of your calendar window.
2. Fill in the first event details:
 - a. What: Individual reading
 - b. When: Tuesday 9/22/12, start time of 9:00, end time of 9:20
 - c. Calendar: Lesson plan
 - d. Description: Students will read *Catcher in the Rye* for 20 minutes
3. Click **Save**. Now the first activity is planned.

← **SAVE** Discard

Rational Expressions 3.2

1/9/2012 10:00am to 11:00am 1/9/2012 [Time zone](#)

☐ All day ☐ Repeat...

Event details Find a time

Where

Calendar Lesson plan

For the second activity:

1. Click the **Create event** link on the left side of your calendar window.
2. Fill in the second activity details:
 - a. What: Reading reflection journal entry
 - b. When: Tuesday 9/22/12, start time of 9:20, end time of 9:35
 - c. Calendar: Lesson plan
 - d. Description: Students will read write a reflection in their reading journals based on the *Catcher in the Rye* passage
3. Click **Save**. Now the second activity is planned.

For the third activity:

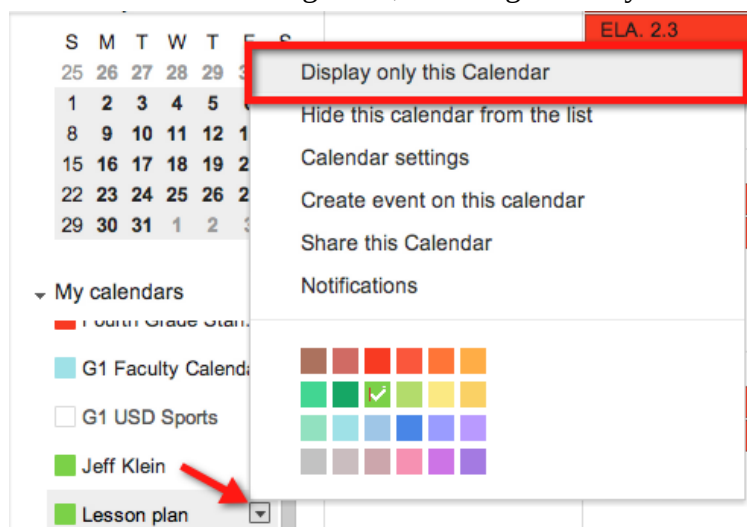
1. Click the **Create event** link on the left side of your calendar window.
2. Fill in the third activity details:
 - a. What: Class discussion of reading passage
 - b. When: Tuesday 9/22/12, start time of 9:35, end time of 9:50
 - c. Calendar: Lesson plan
 - d. Description: Class will engage in discussion of the reading passage based on discussion question prompts
3. Click **Save**. Now the third activity is planned.

View lesson plan calendar

Now that you have created lesson plans in your Lesson plan calendar you may want to view just this calendar and see it in the agenda view format (which will show the list of activities and the timing, instead of colored blocks of time).

To view only your Lesson plan calendar:

1. Calendars in the **My Calendars** list that are currently being viewed will have a colored background, while calendars that are hidden will have a white background.
2. Find your Lesson plan calendar and click the drop-down next to it.
3. Select **Display only this calendar**. The rest of the calendar names in your list should now have a white background, denoting that they are no longer visible.



4. Click the **Agenda** tab in the top right of the calendar window.

Now you can see only the entries on your Lesson plan calendar in the agenda view.

Expand All Collapse All		
Mon Jun 29, 2009	7:00am – 8:00am	IF free period
Tue Sep 22, 2009	8:00am – 8:20am	IF Individual reading
	8:20am – 8:35am	IF Reading reflection journal entry
	8:35am – 8:50am	IF Class discussion of reading passage
Mon Jan 9, 2012	8:00am – 8:20am	IF Individual reading
	10:00am – 11:00am	IF Rational Expressions 3.2
Showing events until 2/3/2013. Look for more		

If you would like to see the entries of your other calendars, simply click on their names in the **My Calendars** list. When they have a colored background, they will be visible in the Agenda view, and in all other views.

Lesson 6

Managing, Organizing, and Sharing Calendars with Staff, Students, Parents, and the World (15 mins)

With Google Calendar, you have the ability to schedule, organize, and manage everything from faculty meetings, to spelling bees. You can choose who can view these events, whether it be only the faculty in your school, or to your entire learning community. When organizing an event such as a faculty meeting, there are many options at your disposal, and with those options, are many factors that come into play.

A very useful feature of Google Calendar is the ability to create multiple calendars. This can allow you to visually manage your school day much more efficiently. You can choose to create all of your events in your personal calendar, but being able to view different events related to different parts of your school community can be hard this way. With multiple calendars, you can easily create events grouped by subject matter in separate calendars, and even color code each calendar separately to help differentiate the view of your events.

When you setup a faculty meeting, you will want to consider adding an agenda, attaching any relevant files, including a description which contains all of the important information, as well as any links which might be necessary for the faculty to prepare for the meeting. You will also need to decide how the faculty will have access to this event. Here is what you will need to consider:

- i. Shared Personal Calendar vs. Public Calendar
 - a. If you use your own calendar, you will need to share the faculty meeting event with your entire staff
 - b. If you use another shared calendar, for instance, a Faculty Meeting calendar, you will either need to share the event with the entire staff, or make sure the calendar itself is shared with everyone in the organization (only available in Google Apps for Education)

If you share the calendar with everyone in the organization this would only be recommended if you do not have student accounts
- ii. Is there an agenda, or any other file you need to attach to event?
 - a. Attachments can be added to calendar events
 - b. Please note that if you add a file from Google Drive, you will need to share that file with the entire faculty or share the file with everyone in the organization
- iii. In the description, accessible in Event Details when creating an event, add as much information that you feel is necessary

If you want to add a web address (URL) in the description, be sure to add http:// or https:// to the beginning of the URL

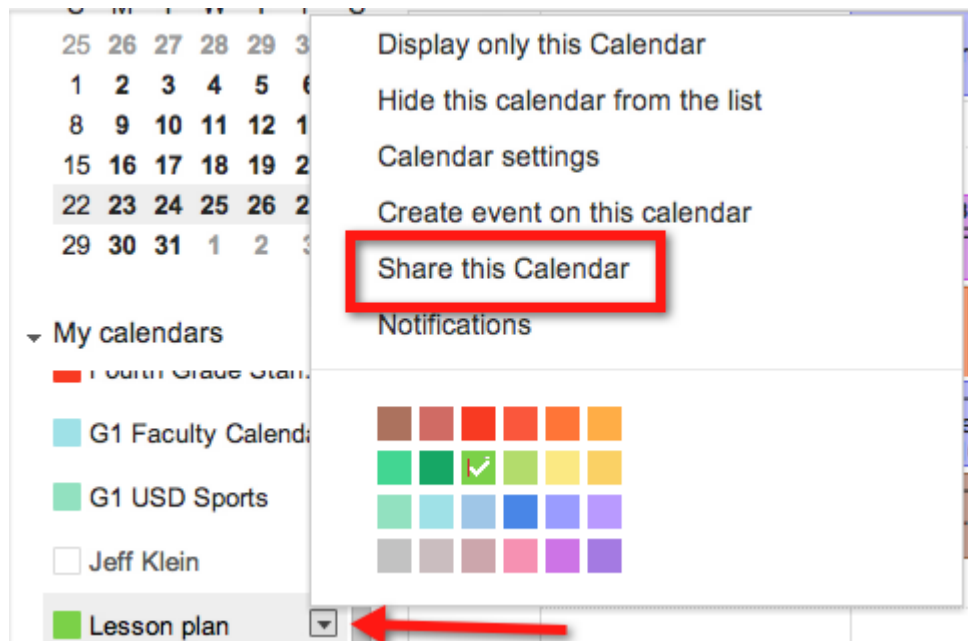
By considering these options carefully, you can easily create a faculty meeting event that can be shared with your entire staff!

Share a calendar with staff and students

Some calendars are appropriate to be viewed by anyone in your school, including other teachers and students. In this case, instead of adding each email address of everyone at the school individually, you can set a broad access setting for your entire school domain. With this setting, anyone who is logged in with a school Apps account will be able to view the calendar as you specify (either with all event details, or with only free/busy information).

To share your calendar with your school domain:

1. In the calendar list on the left, click on the down-arrow button next to the appropriate calendar, then select **Share this calendar**.



2. Select **Share this calendar with others**.
3. Select **Share this calendar with everyone** in myschool.org, where myschool.org is your school domain..
4. If you do not want the people at your school with Google Apps accounts to view the details of your events, select **Share only my free/busy information** from the drop-down **Permission Settings** menu.
5. Click **Save**.



To learn more about Google Groups, check out the Support Center.

Share a calendar with parents or others outside your school

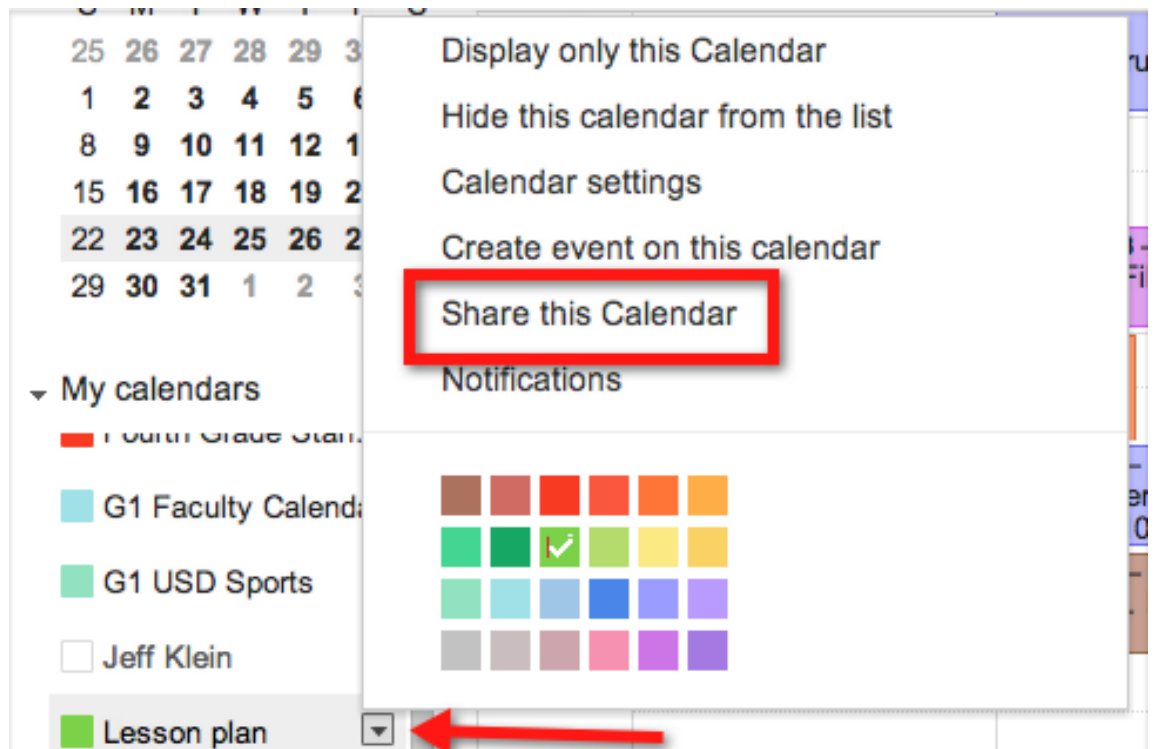
If you would like to share your calendar with people who do not have accounts at your school, you can choose to either:

1. Share a calendar with the public, then provide the relevant people with the calendar URL.
2. Share a calendar with a regular Google Group (which can include members with emails of any type) as reviewed earlier in this lesson.

Share a calendar with the world

If you would have a calendar that does not contain sensitive information and can be shared with anyone in the world, you can share your calendar with the public. With this setting, anyone – including parents or other individuals who do not have school Apps accounts – will be able to add your calendar to a Google Calendar account, view an HTML version of the calendar, or subscribe to the calendar using the iCalendar format. To share your calendar with everybody and make it public for the world:

1. In the calendar list on the left, click on the down-arrow button next to the appropriate calendar, then select **Share this calendar**.



2. Select **Make this calendar public**.



3. If you do not want others to view the details of your events, select **Share only my free/busy information**.
4. Click **Save**.

Lesson 7

Organizing Meetings with Parents and Students using Appointment Slots (10 minutes)

The appointment slots feature lets you set one period of time on your calendar, divided into available time slots for people to reserve. With this option, teachers can allow parents or students to reserve time to meet with them one on one.

Note that in order to reserve one of your appointment slots, the parent or student will need to have a Google account as well.

Set up appointment slots

1. Sign in to your account at **<https://calendar.google.com>**.
2. Make sure that you are in Week view or any Day view, since the appointment slots cannot be created when you are using any of the other Calendar views.
3. Click anywhere in the calendar grid. In the event bubble that pops up, click **Appointment slots**.
4. Enter a short title for the appointment slots, like Mr. Hipp's Office Hours.

Event | Appointment slots [X]

When: Wed, October 22, 5pm – 6pm

What:

Calendar: Parent / Teacher Conference

Type: ☐ Offer as a single appointment slot
☒ Offer as slots of: minutes

Create slots Edit details »

5. Indicate the details for the appointment slots using these fields:
 - a. Calendar drop-down menu: Choose the calendar in which you would like to create the appointment slots. You may need to create a specific calendar such as Parent/Teacher Conferences if you have not already done so.
 - b. Offer as a single appointment slot: Select this button if the entire time will be used for one appointment
 - c. Offer as slots of: Select this option if you would like to allow multiple appointments to be scheduled during the block of time; select and indicate the duration for each appointment (in minutes) in the text box to the right
6. When you have selected your time option, click **Create slots** on the bubble, or continue to the next step to add more details to your appointment slots.
7. Click **Edit details** to open the appointment slots details page and add more information, such as a location or description, or to make the appointment block repeat. To make the appointment block recur, click the **Repeat** checkbox to choose your settings.
8. If other people should be present during the appointment slot, you can invite them using the **Add Guests** field. For instance, a teacher may co-teach with another teacher, and wants that co-teacher to be there during the meeting, they could invite them using this feature.
9. Anyone that you add here will be invited to every individual appointment throughout the block of time, and will also receive an email each time someone reserves an appointment. To show the event to people who might reserve an appointment slot, give them the appointment page's URL that is listed at the top of the event details page.
10. When you are finished, click **Save**.

Your appointment block will display as a single event on your calendar and the calendars of any invitees. You can distinguish the appointment block from other events by a grid symbol in the upper left corner. Once actual appointments are booked, they will appear as regular events overlapping with the appointment block.

Make appointments

To let people start booking appointments, simply direct them to the appointment page. You can find the URL for it at the top of the appointment slot details page.

←
SAVE
Discard

How does this work? [Learn more about appointment slots](#) [Hide instructions](#)

1. Create appointment slots Pick a block of time you want to offer to others, and choose how many slots to split it up into; don't worry, you can always change it later.	2. Share your appointment page This is the link to your public appointment page. Anyone who has this link can book an appointment slot.	3. Guests book appointment slots Booked appointment slots appear right on your calendar as regular events.
--	--	---

Create appointment slots on calendar: Parent / Teacher Conference ▾

This calendar's appointment page: <https://www.google.com/calendar/selfsched?sstoken=UUIlc1VRblo0Tm85fGRlZmF1bHR8ZmNhMjMzNTMxODk3NTQ1NWU0OGQyMmEzYWJlODE4ZDQ>

Title

This title will be used for any appointment slot booked from this block.

Time block to ☐ Repeat...

Type: ☐ Offer as a single appointment slot
☒ Offer as slots of: minutes

Where

Description

Add: [Guests](#) | [Rooms, etc.](#)

Appointment page URL

Visitors to this page will see a calendar showing the available appointments. They will also see their own calendar overlaid on the appointment page, making it easy to see what times work for them.

To book an appointment, visitors simply click one of the available appointment buttons and click **Save**. Visitors can also edit other fields in the popup to make changes to the title, location, and event description.

Book an appointment ✕

What

When

Who

Where

Description

Tip: You can customize the details of the event after you save it.

Appointments that have been booked will not be visible to future visitors to the appointment page. Attendees can cancel their appointment by deleting or declining the event on their own calendar, which will appear as a decline on your calendar. The appointment then becomes bookable for future visitors to the appointment page.

Lesson 8

Accessing and Viewing Events Offline (20 minutes)

Google Calendar keeps you on time, even when you are not online. Offline Calendar allows you to access your events through your Google Chrome browser without requiring Internet access. It is perfect for intermittent connections.

The Offline Calendar app is available as a Google Chrome app. The app provides offline accessing by caching and serving application resources locally. Thanks to Chrome's HTML5 and sync capabilities, you can now be offline and:

- a. View calendars

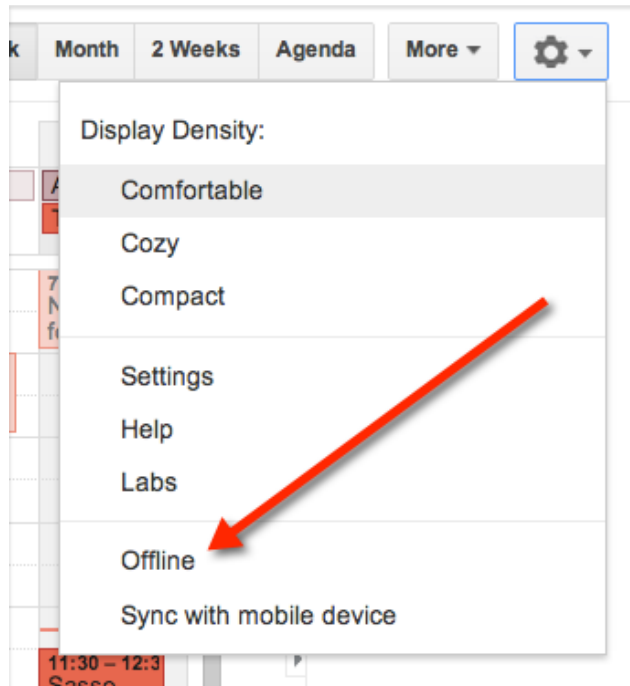
- b. RSVP to existing event invitations

So how does it work? Chrome simply stores your data on your profile while you are offline. Then, it syncs when you are back online.

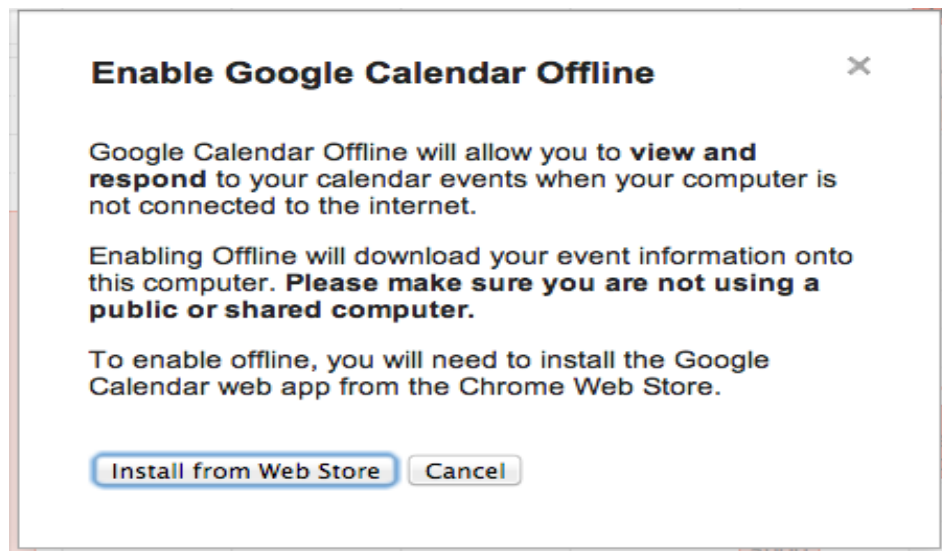
Enable Offline Calendar

To use Calendar offline:

1. Click the **gear** icon and choose **Offline** from the drop-down menu.



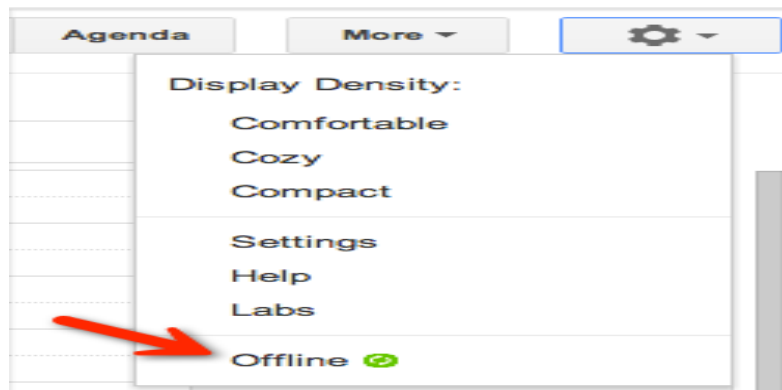
2. You will be prompted to install the Google Calendar web application from the Chrome Web Store. Click the **Install from Web Store** button.



3. You will be taken to the Chrome web store page for the Google Calendar web application. Click the **Add to Chrome** button.

The Google Calendar Web App download page opens in a separate window; if you accidentally closed it or it was prevented by a pop-up blocker you can try to open the download page again by clicking the **Install from Web Store** button in the popup again

4. Once installation is complete, a new Chrome tab will open and the **Google Calendar** web app icon will appear.
5. Click the **gear** icon again. Next to **Offline**, you should see a green icon with a checkmark . This means your calendar is synchronized and ready to be used offline. If your calendar is still syncing, you will see a green spinning icon  until it is completed.



Your offline calendar will update every time you go online.

Note: Offline will not work if you are using Chrome in an incognito window

Access your offline calendar

To access your calendar when you are not connected to the Internet, you will first need to enable offline access using the steps above. If you have the feature enabled already, type google.com/calendar into your browser to access your offline calendar, or click the Google Calendar web application shortcut icon in a new Chrome tab.

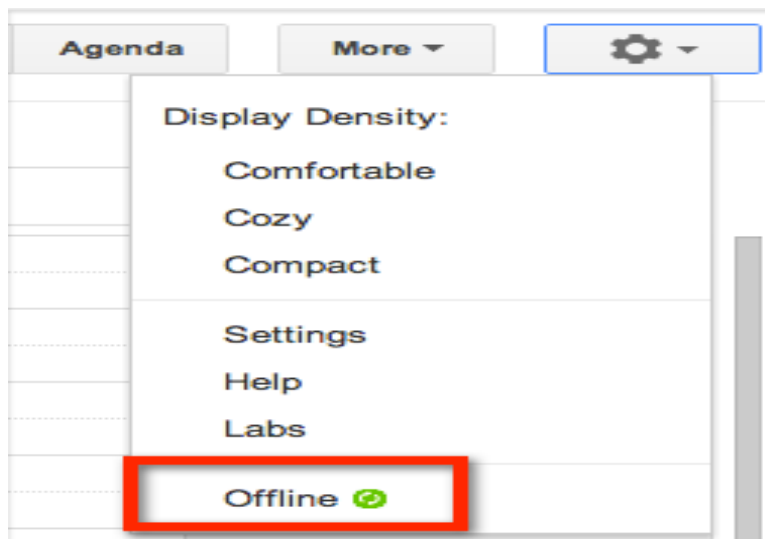
If you lose connectivity while you are online, Google Calendar will automatically switch into Offline mode. You do not have to do anything! When network problems are detected and connectivity is lost, you will see a message at the top of the calendar page letting you know you are offline, along with a link to try to reconnect.

Offline features

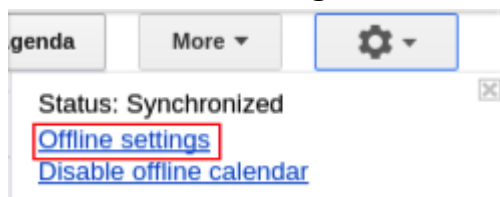
While offline, you can view event details and reply to events on calendars you have chosen to use offline. Google Calendar will be read-only. It will not be possible to create, edit, or delete events. You are only able to view events and reply to existing invitations.

Choose calendars to view offline

1. Click the **gear** icon and choose **Offline** from the drop-down menu.



2. Click the **Offline settings** link.



3. Click the checkbox under **Available Offline** next to each calendar that you would like to be able to view while offline.

My Calendars	
CALENDAR	Available Offline
Ms. Smith's Calendar	☒
A/V Room	☐
Board Room	☐
Conference Room 2B	☐
Conference Room A	☐
Conference Room B	☐
Fourth Grade Standards Mapping	☐
G1 Faculty Calendar	☐
G1 USD Sports	☐
Jeff Klein	☐
Lesson plan	☐
Library	☐
Mrs. Netter's 3rd grade	☐
Ms. Smith's Language Arts Assignments Assignments and due dates for Ms. Smith's Language Arts classes	☐

If you see a calendar that is gray, that means it is hidden from your normal calendar view. If you would like to make a calendar viewable, click the **gear** icon and

choose **Calendar settings**. On the Calendar tab, click the checkbox to **Show in list**. You will then be able to add them to your calendars viewable offline.

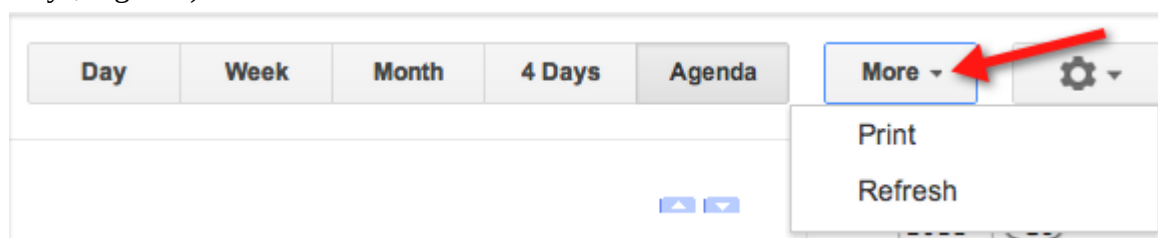
Lesson 9

Printing Calendars and Events (10 minutes)

Print Calendars and Events

To print a calendar or multiple calendars:

1. Make sure the the calendar(s) you wish to print are selected in the calendar list to the left of your calendar window. (The calendar names will be highlighted by a colored bar.)
2. Click on the view that you would like to print: **Day**, **Week**, **Month**, **4 Day**, or **Agenda**.
3. Click the print button in the top-right corner of your calendar window under the **More** drop-down menu, adjacent to the calendar view tabs (Day, Week, Month, 4 Days, Agenda).



4. A **Print Settings** menu will appear in a new window. Simply select the desired options for your printed calendar.
 - a. **Print range:** Select the dates you would like to print of your calendar
 - b. **Font size/Orientation:** Choose the size of the font and the orientation of your calendar (landscape/portrait)
 - c. **Events you have declined:** Choose to have events appear even if you have declined
 - d. **Black/White:** Check if you want to print in black and white
 - e. **Agenda view only options:**
 - i. Descriptions: If you would like to have all the details for your activities printed, select the Print descriptions checkbox (Note: this is not checked by default)
 - ii. End times
 - iii. Attendees
 - iv. My response
 - v. Events you have declined
5. Click **Print**. Alternatively, if you would like a PDF copy of your lesson plan, click **Save as** - this will download a PDF file of your lesson plan calendar.

Print Calendar and Events Video

Note: If you have scheduled a large number of events, your calendar may print on multiple pages to better display all your entries.

Lesson M

Using Calendar on Tablets and and Mobile Devices (20 minutes)

View calendar on a mobile device

Depending on the type of mobile device you have, you may be able to access Google Calendar up to four different ways:

- i. Mobile Web Browser
- ii. App (Android devices only)
- iii. Sync with your mobile device
- iv. SMS/text messages

With mobile access, you can get a view of your calendar, add or edit events, and get event notifications sent to your phone.

Mobile browser access

If you have a web browser on your mobile device, you can access Google Calendar just as you would using a desktop. You need to know your school Apps domain (i.e. if your username is me@myschool.org, then your school Apps domain is myschool.org).

Access your school Apps Google Calendar from your mobile web browser in two ways:

1. Type _____ into _____ your _____ mobile browser: **http://calendar.google.com/a/myschool.org**, replacing myschool.org with your school Apps domain. Then click on **Calendar**.
2. Type into your mobile browser: **http://www.google.com/m/a/myschool.org**, replacing myschool.org with your school Apps domain. Then click on **Calendar**.

On iPhone and Android-powered devices you will see a specially formatted Calendar for your screen where you can:

- i. Change your attendance status
- ii. Edit event
- iii. Add or remove guests
- iv. View the last viewed events even without mobile network connection

Home screen shortcuts for mobile web browser

If you have an Android-powered device, iPhone, or Palm webOS device, you can create an app-like experience with Google Calendar by adding a shortcut to your device's home screen (not all devices support this capability). This creates a Google Calendar icon that lives with the rest of the apps on your home screen, and it lets you quickly launch Calendar with just one tap or click.

On Android devices:

1. In the browser, go to your school Apps Google Calendar.
2. Press your device's **Menu** button.
3. Select **More**.
4. Select **Bookmark** page and select **OK**.
5. Press your device's **Home** button, then press the **Menu** button.
6. Select **Add > Shortcut > Bookmark**.
7. Find **Google Calendar** and select it.
8. A new Google Calendar icon will appear on your home screen

On iPhone devices:

1. In Safari, open your school Apps Google Calendar.
2. Tap the + at the bottom of the screen.
3. Select **Add to Home Screen**.
4. Tap **Add** to confirm.
5. A new Google Calendar icon will appear on your home screen.

Android Calendar App

Most Android devices come with a pre-installed Calendar application, which offers an experience similar to accessing Google Calendar in the browser but is faster and adds support for on-device alerts.

Your Android device must be associated with your school Apps Google Account for this to function correctly. For example, when you set up your Android device, you should provide your school Apps email address and password (me@myschool.org) and not a personal Gmail account. If you provide your personal Gmail account information, your school Apps calendar will not be viewable with the Android Calendar application.

Note: The Calendar application is available as a native app for Android devices only.

Google Sync

If you prefer to use your mobile device's native calendar application, you can integrate Google Calendar with your device using Google Sync. You will get on-device alerts and over-the-air synchronization of Google Calendar to the built-in calendar on your device.

To learn about Google Sync, check out the Support Center.

SMS

Google Calendar's SMS notification feature allows you to conveniently check your calendar when you are on the go. Just send Google Calendar a quick text message, and you will get an SMS notification with the information you requested. In order to use this service, you will need to register your cell phone number in school Apps Google Calendar.

Google Calendar is a free product and Google does not charge you to receive notifications. Please keep in mind that if you are in the US or Canada, your mobile service provider's standard rate for receiving text messages may apply.

To register your mobile phone with Google Calendar, you need to obtain a verification code. Here is how:

1. Click **Settings** at the top of any Google Calendar page, then select the **Mobile Setup** tab.
2. Select your country from the **Country** drop-down menu.
3. Enter your phone number in the **Phone number** field.
4. Select your carrier from the drop-down menu, if applicable. However, if you see the link **See Help Center for supported providers**, please *check if your provider is supported* before requesting your verification code.
5. If your carrier is supported, click the **Send Verification Code** button, and you will get a text message on your phone.
6. Once you receive this message, enter the code you received into the **Verification code** box and click the **Finish setup** button.

To receive a notification with your calendar information, send a text message containing one of the following commands to the shortcode **48368** (or **GVENT**). Please keep in mind your service provider's standard rate for sending text messages may apply:

- i. **next**: request your next scheduled event
- ii. **day**: request all of your scheduled events for the present day
- iii. **nday**: request your events scheduled for the following day

To create an event on your Google Calendar:

1. Send text message with event details to **GVENT** (or **48368**).
2. Follow the format of Calendar Quick Add such as [Open house at School 7pm Tuesday]. Google Calendar will figure out what you mean and add the new event to your school Apps calendar.

Self-Check Questions

1. Users can check their Google Calendars on which devices?

- b. ☐ Smart phone
- c. ☐ Tablet
- d. ☐ Laptop
- e. ☒ All of the above

2. Google Calendars work seamlessly with Gmail for making appointments and scheduling events.

- a. ☒ True
- b. ☐ False

3. Users of Google Calendars can easily “find a time” to conveniently schedule meetings with multiple participants.

- a. ☒ True
- b. ☐ False

4. What feature can teachers use to allow students and parents to schedule meetings?

- a. ☐ Notifications
- b. ☐ Dates
- c. ☒ Appointment Slots
- d. ☐ Event Appointments

APPENDIX V

Google Apps for Education Core Services



Classroom



Docs



Gmail



Sheets



Drive



Slides



Calendar



Sites



Vault



Hangouts

APPENDIX VI

RELIABILITY STATISTICS ON AWARENESS, ACCESS AND COMPETENCY IN THE USE OF GOOGLE APPS FOR EDUCATION

Warnings

Each of the following component variables has zero variance and is removed from the scale: Awareness, Access, Access

LECTURERS' AWARENESS

Case Processing Summary

	N	%
Valid	10	100.0
Cases Excluded ^a	0	.0
Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.711	.718	9

Intraclass Correlation Coefficient

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.215 ^a	.053	.547	3.458	9	72	.001
Average Measures	.711 ^c	.336	.916	3.458	9	72	.001

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

LECTURERS' ACCESS

Case Processing Summary

	N	%
Valid	15	100.0
Cases Excluded ^a	0	.0
Total	15	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.843	.843	18

Intraclass Correlation Coefficient

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.237 ^a	.119	.465	6.594	14	238	.000
Average Measures	.843 ^c	.709	.940	6.594	14	238	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

- a. The estimator is the same, whether the interaction effect is present or not.
- b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

LECTURERS' COMPETENCY

Case Processing Summary

	N	%
Valid	15	100.0
Cases Excluded ^a	0	.0
Total	15	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.812	.812	30

Intraclass Correlation Coefficient

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.531 ^a	.367	.743	34.945	14	406	.000
Average Measures	.812 ^c	.946	.989	34.945	14	406	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

- The estimator is the same, whether the interaction effect is present or not.
- Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.
- This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

LECTURERS' AWARENESS, ACCESS AND COMPETENCY

Case Processing Summary

	N	%
Valid	15	100.0
Cases Excluded ^a	0	.0
Total	15	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.792	57

Intraclass Correlation Coefficient

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.292 ^a	.174	.513	24.453	14	784	.000
Average Measures	.792 ^c	.923	.984	24.453	14	784	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

- a. The estimator is the same, whether the interaction effect is present or not.
- b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

APPENDIX VII

UNIVERSITY ETHICAL REVIEW COMMITTEE APPROVAL

UNIVERSITY OF ILORIN, ILORIN, NIGERIA.

UNIVERSITY ETHICAL REVIEW COMMITTEE

Vice-Chancellor: Prof. A.G. Ambali
DVM (ABU), M.V. Sc., Ph.D (Liverpool, UK),
MVCN, MCVSN, MNVMA, FCVSN
Registrar: Mr. E.D. Obafemi
B.A. (Hons), Cert. Public Information (Kaduna),
MNIPR



E-mail: P.M.B. 1515, Ilorin
uerc@unilorin.edu.ng
unilorin.uerc@gmail.com
Website: ethicalreview.unilorin.edu.ng
www.unilorin.edu.ng

Our Ref:

UIL/UERC/91/029935

Date:

9th June, 2016

Protocol Identification Code: UERC/ EDU 016

UERC Approval Number: UERC/ASN/2016/393

LECTURERS' AWARENESS, ACCESS AND COMPETENCE IN THE USE OF GOOGLE APPS FOR EDUCATION IN NIGERIAN UNIVERSITIES

Name of applicant/Principal Investigator: ALIMI, Adebayo Emmanuel
Address of Applicant: Department of Educational Technology,
Faculty of Education,

University of Ilorin, Ilorin.

Type of Review:

Full Committee Review

Date of Approval:

09/06/2016

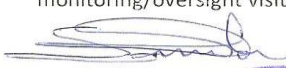
Notice of Full Committee Approval

I am pleased to inform you that the research described in the submitted proposal has been reviewed by the University Ethical Review Committee (UERC) and given full Committee approval

This approval dates from 09/06/2016 to 08/06/2019, and there should be no participant accrual or any activity related to this research to be conducted outside these dates.

You are requested to inform the committee at the commencement of the research to enable it appoints its representative who will ensure compliance with the approved protocol. If there is any delay in starting the research, please inform the UERC so that the dates of approval can be adjusted accordingly.

The UERC requires you to comply with all institutional guidelines and regulations and ensure that all adverse events are reported promptly to the UERC. No changes are allowed in the research without prior approval by the UERC. Please note that the UERC reserves the right to conduct monitoring/oversight visit to your research site without prior notification.


Ismaila Isah

For: University Ethical Review Committee



"...if it's not ethical, it's not scientific, if it's not scientific, it's not ethical"

APPENDIX VIII

APPROVAL OF DOCTORAL RESEARCH PROTOCOL

UNIVERSITY OF ILORIN, ILORIN, NIGERIA POSTGRADUATE SCHOOL

Zahra Ishowo-Jaji House

Vice-Chancellor:

Prof. A. G. Ambali (OON)
(DVM, ABU; M.V.Sc. Ph.D, L-Pool, UK
MVCN, MCVSN, MNVMA, FCVSN)



P.M.B 1515, Ilorin, Nigeria.
website: www.unilorin.edu.ng
Tel: +234 903 092 4197,
+234 811 114 1632
E-mail: pgschool@unilorin.edu.ng

Dean:

Prof. Badmas O. Yusuf
B. A. (Hons), M.A., Ph.D (Ilorin),
PGD TAFL (Riyadh)

UIL/PGS/27

25th August, 2016

ALIMI, Adebayo Emmanuel

Matric No. 91/029935
C/o Department of Educational Technology,
Faculty of Education,
University of Ilorin,
Ilorin.

Dear Alimi,

Approval of Doctoral Research Protocol

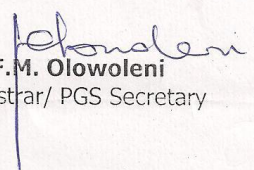
I am pleased to inform you that at the 246th meeting of the Board of Postgraduate School held on Tuesday, 17th August, 2016, your Doctoral Research Protocol titled:

**Lecturers' Awareness, Access and Competence in the Use
of Google Apps for Education in Nigerian Universities**

was considered and approved.

You are therefore to proceed with your Ph.D. programme.

Thank you.


Dr. (Mrs.) F.M. Olowoleni
Deputy Registrar/ PGS Secretary

FOM/AJ

APPENDIX IX

INSTRUCTION VALIDATION FORM


UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

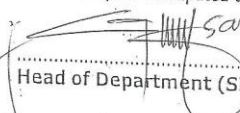
Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.

 **Head of Department (Signature, Date and Stamp)**

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/02 9935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

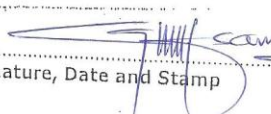
I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: I have checked and validated the instrument. Corrections were suggested and I hope the researcher will further work on the instrument.

Names of Attester Prof. S.A. Okeanu Designation: Professor

Name and Address of Institution: Educational Technology Dept., Unilorin

Phone No: 08035071475 E-Mail Address: _____

 **Signature, Date and Stamp** 4/8/2016



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

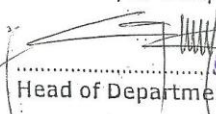
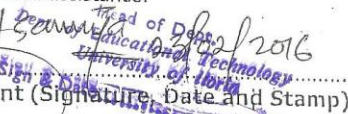
Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.

 
Head of Department (Signature, Date and Stamp)

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/029935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: The instrument is okay and considered valid for data collection for the study.

Names of Attester: Dr. A. Tellu Designation: Senior Lecturer

Name and Address of Institution: Univ. of Ilorin

Phone No: 07038641278 E-Mail Address: tellayinkaedu@yahoo.com

 16/03/16
Signature, Date and Stamp



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

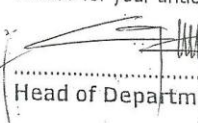
Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.

 
Head of Department (Signature, Date and Stamp)

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/02 9935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: A good instrument. Necessary suggestions offered for improvement.

Names of Attester: Mudasiru O. Yusuf Designation: Professor

Name and Address of Institution: University of Ilorin, Ilorin

Phone No: 08033950774 E-Mail Address: moyusuf@unilorin.edu.ng

 09/03/2016
Signature, Date and Stamp



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

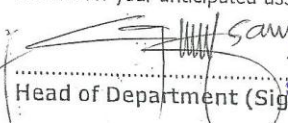
Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.


Head of Department (Signature, Date and Stamp)
Head of Dept.
Dept. of Educational Technology
University of Ilorin

Student's (Researcher) Surname: ALIMI Other Names: Adebayo Emmanuel
Matriculation Number: 91/02 9935 Programme (Degree, Masters or PhD): Ph.D.

Title of the Instrument: Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: Some statements are double barreled. May need to break each of such to more sentences. Items on section D could be ~~reduced~~ reduced.

Names of Attester: Dr. M. A. Fakomogbon Designation: SL

Name and Address of Institution: Dept. of Educ. Technology, Unilorin

Phone No: 09076230002 E-Mail Address: fakomogbon@gmail.com


Signature, Date and Stamp



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

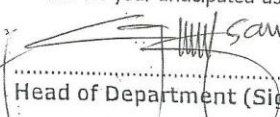
Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.

 23/02/2016
Head of Department (Signature, Date and Stamp)

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/029935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

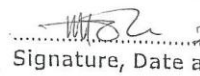
I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: The respondents may need to know the different GAFE. Generally the instrument is satisfactory

Names of Attester: Dr. (Mrs) M. V. Adegboye Designation:

Name and Address of Institution: Dept. of Educational Technology, Unilorin

Phone No: 08033581005 E-Mail Address: mosivic@gmail.com

 23/02/2016
Signature, Date and Stamp



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

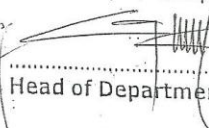
Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.


Head of Department (Signature, Date and Stamp)
Sign & Date, 09/03/2016
Dept. of Educational Technology
University of Ilorin

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/029935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

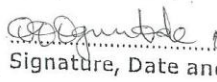
Summary of Remark on the Instrument: Attend to all observations made after which the instrument can be administered

Names of Attester: Dr. O. O. Ogunde Designation: Senior Lecturer

Name and Address of Institution: University of Ilorin

Phone No: 08032455690

E-Mail Address: ogunde.oo@unilorin.edu.ng


Signature, Date and Stamp
09/03/2016



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.

 Samuel
Head of Department (Signature, Date and Stamp)
Dept. of Educational Technology
University of Ilorin
14/02/2016

Student's (Researcher) Surname... ALIMI Other Names... Adebayo Emmanuel

Matriculation Number... 71/02 9935 Programme (Degree, Masters or PhD)... Ph.D.

Title of the Instrument... Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: The instrument is quite capturing and detailed.

Names of Attester: DR. N.A. ADEDEKUN-SHITTU Designation: SENIOR LECTURER

Name and Address of Institution: EDUCATIONAL TECHNOLOGY, UNILORIN

Phone No: 09029200901

E-Mail Address: gadedokun.sna@unilorin.edu.ng

 04/03/16
Signature, Date and Stamp



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance.


Head of Department (Signature, Date and Stamp)

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/02 9935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

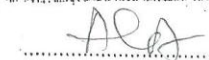
Summary of Remark on the Instrument: He needs to improve on the questionnaire

Names of Attester: D. A. K. Soster Designation: S. L.

Name and Address of Institution: University of Ilorin

Phone No: 08035010917

E-Mail Address: adkf2012@gmail.com


Signature, Date and Stamp



UNIVERSITY OF ILORIN
FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. He/she is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. In spite of your tight schedule, please assist in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument.

Thanks for your anticipated assistance. Head of Dept.

Samuwa
Dept. of Educational Technology
University of Ilorin
Sign & Date

Head of Department (Signature, Date and Stamp)

Student's (Researcher) Surname ALIMI Other Names Adebayo Emmanuel

Matriculation Number 91/029935 Programme (Degree, Masters or PhD) Ph.D.

Title of the Instrument Lecturers' Awareness of, Access to, and Competence in the Use of Google Apps for Education in Nigerian Universities

ATTESTATION SECTION

I hereby attest that the above named student brought his instrument for validation.

Summary of Remark on the Instrument: Relevant and Adequate

Names of Attester: Dr. A. A. Falade Designation: LII

Name and Address of Institution: Dept. of Educational Technology

Phone No: 08038566249 E-Mail Address: falade.aa@unilorin.edu.ng

Samuwa 16/03/2016
Signature, Date and Stamp

APPENDIX VIII

Ph.D. BUDGET

BUDGET ITEMS	COST(₦)
Postgraduate Form	25,000
First Year School Fees	101,300
Accommodation for Three Years	500,000
HP Laptop Core i7	205,000
Modem	7,000
HP LaserJet Printer	45,0000
Second Year School Fees	105,100
Computer Consumables	63,000
Third Year School Fees	105,100
Seminar Proposal	50,000
Pilot Study	25,000
Seminar Defense	44,000
Printing of Research Instruments	112,000
Research Assistants (4)	100,000
Fieldwork Transportation	120,000
Preliminary Defense	22,000
Data Analysis	50,000
Oral Defense	280,000
Dissertation and Instrument Production	110,000
Fourth Year School Fees	105,600
Dissemination of Findings and four (4) research assistants	206,000
Dissertation Grammar Vetting	20,000
Miscellaneous	140,000
TOTAL	2,946,100

(Two million, nine hundred and forty-six thousand, one hundred naira only)

Sponsor: Self

APPENDIX IX

Ph.D. Research Plan and Timeline Rescheduled

Time (October, 2013)	17/10/2013	21/11/2013	19/12/2013	16/01/2014	20/02/2014	13/03/2014	15/05/2014	17/07/2014	21/08/2014	18/09/2014	16/10/2014	18/12/2014	15/01/2015	19/02/2015	19/03/2015	16/04/2015	21/05/2015	18/06/2015	16/07/2015	20/08/2015	17/09/2015	15/10/2015	19/11/2015	17/12/2015	21/01/2016	18/02/2016	17/03/2016	21/04/2016	19/05/2016	16/06/2016
MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
TASK																														
Survey of Literature																														
Write Proposal/Programme without Course Work																														
Write Proposal/Programme with Course Work																														
Further Data (Programme without Course Work)																														
Further Data (Programme with Course Work)																														
Thesis Writing																														
Write Introduction																														
Revise Introduction																														
Write Methodology																														
Revise Methodology																														
Protocol Defence																														
Field Work																														
Results and Discussions																														
Revise Results and Discussions																														
Write Conclusions																														
Revise Conclusions																														
Acknowledgements, Appendices and so on																														
Revise First Draft																														
Proofreading																														
Printing and Binding																														