

FOSTERING GOOGLE APPS FOR EDUCATION (GAfE): THE CONCEPTUAL FRAMEWORK

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Abstract. Google App for Education is a technological tool built on web 2.0 ideologies predominantly for coaching, collaborating and mentoring for social contacts and sharing of ideas. However, regardless of its use and value to learning by the lecturers it has not been considerably established. Therefore, the study sought to; identify the GAfE tools utilised by the lecturers; investigate how often the lectures used GAfE; examined difference between lecturers use of GAfE and for instruction and investigates lecturers understand the usefulness of GAfE. Study was a descriptive of cross-sectional employing survey method with purposive sampling of 153 lecturers across the tertiary institution in Oyo State, Nigeria. Stratified sampling technique is used to choose lecturers along institution and gender. Researchers designed structured questionnaire was administered to 153 lecturers (76 males and 77 females). Mean scores was used to answer research questions, while the two hypothesis are tested with: t-test and Analysis of Variance (ANOVA). The findings revealed that lectures usefulness of GAfE is positive, no significant amid male and female and their institution on the use of GAfE. It must be stated that lecturers' confidence, boldness, and

interaction involvement in using GAfE for learning should be encouraged.

Keywords: cloud-based, gender, learning, lecturers, perception. web 2.0

Introduction

In recent times, education has modified from teacher-centre to learner-centred. This is due to the teachers expanded roles of integration of classic technological innovative method of delivering instruction that enables the teachers to achieve the stated learning goal. Google Apps for Education (GAfE) is a novel in the field of educational delivering system globally.

Adopting Google Apps for Education (GAfE) in academics is now advancing and at positive stage due to the lecturers' perceptions and attitude towards it usage. The study of Montrieux et al. (2015) acquiesced that the integrating of information technology in research has greatly show case a significant transformation of learning. Also, Amali (2017) explained that Google is a search engine, which allows individual users to obtain handy information needed. It is also structured in hypertext. The study of Wang & Jin (2010) stressed that Google assists educators in teaching process for perfect delivery of learning content. Google is otherwise known and named as Google Apps Engine (GAE) which provides prospect for apps to run on Google's infrastructure. Ferreira (2014) explained that Apps and Services have also prepared a significant improvement on collaboration, exchange of idea and information between instructors and students, particularly via the usefulness of digital learning tools (Oishi, 2007).

History has it that Google Apps for Education first commenced in 2006, since then, higher institution of learning has begun to use it for instruction and researching. Recently, many scholars' have focused on the use of GAfE in institutions. Researchers have also expressed Google Apps for Education (GAfE) as a supportive digital devices use for educational purposes. Scholars have described Google Apps for Education (GAfE) in diverse ways. For example, the

study by Lindh & Nolin (2016) submitted that Google Apps for Education is a great informative and dynamic tool of Google for delivery of instruction. The study by Vissa (2014) described Google Apps for Education as an evocative way of handling content and instructional delivery, it also a collaboratively technological device in the classroom setting. Toscano (2012) classified Google Apps for Education as a socio-technological tool and invented artefact with inherent social values. Likewise, Amali (2017) stressed that Google Apps for Education is built on the ideology and technology of Web 2.0 that provides easy collaboration in terms of communication, contact and management. It also offers benefits for constant usage of the digital devices anytime and anywhere. Similarly, Milkova et al. (2016) expressed that the advancement of Google Apps for Education by lecturers is a global trend, which fused in with the use of ICT for delivery of instruction and collaboration. Although, Google classified Google Apps for Education as a freelance educative tool for functional usage of both the teachers and students. The study of Brown & Hocutt (2015) revealed that Google Apps for Education is a cloud-based, that provides and produced online collaboration. In essence GAfE can be grouped among the application and programs for communication and collaborations which is built on web 2.0 that allows design and substitute of ideas.

Empirical studies on Google Apps for Education remained controversial among scholars; studies have perceived Google Apps for Education GAfE as purposeful and of significance in instructional and content delivery. For example, the study by Owayid & Uden (2014) mentioned that Google Apps for Education such as Mail, Docs, Drive, Calendar, and Sites are for content delivery in academic arena. In this same vein, Ferreira (2014) researched on the implemented of Google Apps for Education as LMS in the context of flipped classroom model, the study revealed that GAfE offers and promotes exchange of information and collaboration easily. The study concluded that Flipping classroom becomes simpler and significant with GAfE. Also, Widodo (2017)

stressed the effectiveness of Google Apps for Education in improving mathematical context of the pre-service teacher of the primary school axis, the study revealed that learning was positive and there was a significant improvement in learning mathematics skill among the students. Similarly, Faraj (2015) worked on Google Apps for Education in writing and studied English Language, the study revealed that GAfE offers easy way for tutor to assist student on individual pace. Also, Crane (2016) submitted that there is flexibility in the power of GAfE as regards knowledge; because it promotes accessible to learning of ecosystem globally, the author further stressed that there is great potentials and benefits of sharing information, manage assignment and improved communication. Equally, Heggart & Yoo (2018) examined the effectiveness of utilising Google in the context of final year primary school teachers, the study concluded with the report that pace, collaboration, ease of access, and student voice/agency are helpfulness of each other for online learning platforms and instructive usage. Despite the study of Owayid & Uden (2014) that stressed the utilization of Google Apps for Education and for instructions has been greatly significance and positive. In essence, the aforementioned researches proved the supremacy of GAfE in handling diverse school curriculum content based on the lecturer's perception.

Perception emitted from nervous system, which enthuse other sense organs and originated from the Latin expression 'perceptio'. Olasedidun (2014) explained perception as facilitating individual to launch, be familiar with and understanding the sensory given information in the environments, the authors further submitted that individual perception are varied. Although, perception is orderly of stages that start within the environment, action and stimulus in order for the acquiring of experience. The study of Falade (2013) articulated that the radical behavioural vision on perception as a logical, utilising in transmitting information from the physical world into the individual brain and mind for forwards processing in relating to other useful information. Odewumi (2017) sub-

mitted that the development and acquisition of skills, knowledge, social practices and dispositions should be considered on the platform of perception in an existing society. In essence, perception, in this context, can be regarded and understood as the interpretation of the way things are. However, the significance of GAfE lies on the perception of the individual instructor.

Studies have perceived the benefits of GAfE in different ways and studies have argued that GAfE are of more benefits to academics than any other sectors. For example, Google stressed that GAfE creates a favourable and digitalized learning environment that makes the assignments easier and teachers' task reduced. Google expressed that GAfE is powerful tools for both academics and administrative works. Also, Sviridova et al. (2011) expressed that inclusion of GAfE tools in the administration in the higher institutions have solve issues on communication gaps between the staffs and students. In the same way, Lindh & Nolin (2016) argued that GAfE is a dynamic tool for facilitating and overseers' learners while handling technologies appliances. Williamson (2015) equate GAfE with other emerging applications like Facebook for instruction, making surfing easier and learning easy for students. It also, promotes teachers and pupils socially alike.

Google further stressed the usefulness of GAfE through series of its researches for example Google presented GAfE as an essential as well as an effective applications suite for schools and organizations, it was concluded that GAfE is special device for giving cooperation between the students and lecturers. Also, Google (2014) expressed that GAfE is more important in terms of collaborations, record keeping and easy accessible with iPad, Android tablets, personal computer, Mac book etc. The usefulness of GAfE has been extended to other area of human endeavour. For example, Couldry & Van Dijck (2015) revealed that GAfE serves as a means of reaching the adolescence globally on digital needs. In essence, there is no doubt; the benefit of GAfE is for all round sector globally.

The theoretical study fostering usefulness of GfE: the conceptual framework was based on the study of Venkatesh et al. (2003) that emphasised utilising of technology to display an input. Technological usage and acceptance have received a number of attentions. Many models have been put in shape to address the issue. The study of Odewumi (2017) listed Diffusion of Innovation (DOI), Theory of reasoned action (TRA), The Motivational Model (TMM), Technology Acceptance Model (TAM), The Theory of Planned Behaviour, The Social Cognitive Theory, and The Unified Theory of Acceptance and Use of Technology (UTAUT) as common model common in the study of technology.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is widely engaged based on the Theory of Reasoned Action (TRA) and Technological Acceptance Model (TAM). Researchers confirmed that the use of UTAUT as imperative to sort out the relationship and development, of expectation and use of information innovation. The study of Odewumi et al. (2018) revealed that theoretical structure together with the theory acknowledged the use of innovation theory is clarified by the selection of individuals and use of a specific information innovation. Abayomi et al (2016) studied shows that male and female clients' acknowledgment the innovation and demonstration of the consistency of UTAUT that may fluctuate in various conditions.

On gender and GfE, Awuah (2015) stressed the efficacy of GfE as an efficient cloud-computing for easy collaborations among both male and students and academic staff. Also, Al-Emran & Malik (2016) study revealed that there is no significant difference among the staff of male and female, while their mean scores were relatively high. This indicated that both male and female are highly interested in the use of Google Apps.

Obliviously, GfE is progressively become known and employing in education worldwide. Lecturers support and exploit of Google Apps for Education, research and administrative task. Precisely, Google Apps for Education, learning and instruction is lagging and underused. The need for Google Apps

for Education and its thoughtful integration for knowledge acquisition by promoting learning is regarded as imperative. Although, Google Apps for Education have the ability to capture information and integrating its connectivity into learning and research activities, few research has been done on usefulness of Google Apps for Education in particular on learning among the lecturers of tertiary institution globally. The extent to which the lecturers perceived the usefulness of Google Apps for Education and for both learning and researching in Nigeria is still unknown. Therefore, it is on this platform that this study critically examined the use of Google Apps for Education by the lecturers for learning and researching in Oyo State Tertiary institution, Nigeria. The studied aimed at filling the gaps created by the researchers, especially in investigating the usefulness of Google Apps for Education: the conceptual framework.

Research questions

What are the Google Apps for Education tools utilised by the lecturers?

How frequent do the lectures use Google Apps for Education tools?

Does the Lecturers perceived interest in using Google Apps for Education?

How did the lecturers perceive usefulness of Google Apps for Education for learning?

Research hypotheses

H0₁: There is no difference between the lecturers in their interest in Google Apps for Education.

H0₂: There is no difference between the female and male lecturers in their usefulness of Google Apps for Education in learning.

H0₃: There is no difference in the usefulness of GAfE by the lecturers of the three institutions.

Methodology

The study employed a descriptive investigative survey method. The population were all the lecturers in tertiary institution in Oyo State. But for the purpose of this study, Sample was taken from two Universities (a federal and a state). Three Colleges of Education (two from the state and a federal) and two campuses of the State polytechnic. Therefore, 60 copies of the structured questionnaire were attended to by the respondent in each institution, but only 153 of these were found to be valid out of those retrieved were used for the study. The structured questionnaire was developed and designed made up of three section namely, A, B and C. 'A' requested from the respondent demography data; such as institution name, gender, and age. Section 'B' is used to collect information on the GAfE used. Section C was sub-divided and group to three; (i, ii, and iii). These sub-divisions are as follows: (i) the GAfE frequency utilised for learning, with lecturers responding as Not Interested (NI). Low level Interested (LLI). Average Interested (AI), and Highly Interested (HI). (ii) The influence of GAfE with lecturers responding with frequently Used (FU) and Frequently Not Used (FNU). And lastly, the structural questionnaire on Google Apps for Education and as well for learning (i) sub-divided to 10 items from 1 to 10 and was patterned on five point Likert type of rating scale format which was Undecided (UD) - 1 point. Strongly Disagree (SD) - 2 points, Disagree (D) - 3 points, Agree (A) - 4 points and Strongly Agree (SA) - 5 points. To ensure the perfection of the structured questionnaire was subjected to both face and content validity through the specialist of three University lecturers of the Educational Technology, Department of Test Measurement and Evaluation, and Department of Library and Information Technology of a University in the nearby State. The constructive comments, suggestions and corrections were gladly taken into cognizance to modify the structural instrument. For the reliability, value of 0.72 was realised with Cronbach Alpha, data got from pilot sampled. The data gathered were analyzed with the frequency counts, mean and simple percentage inferen-

tial statistics. Also, percentages were used to determine the degree of significance and frequency of GAfE.

Results and discussion

Research question 1: What are the GAfE tools utilised by the lecturers?

Table 1. Percentage of GAfE used by the lectures

S/N	GAfE tools	Respondents	%
1	Email	125	60
2	Drive	61	40
3	Sheets	63	40
4	Calendar	65	43
5	Slides	34	22
6	Google sites	41	27
7	Docs	18	12
8	Form	18	12
	Mean	23.1	32.0

Table 1 revealed that email, was used by 125 respondents (60%), Drive by 61 (40%), sheet, 63 (40%), Calendar, 65 (43%), Slides, 34 (22%), google sites, 41 (27%), Doc, 18 (12%) and also Form with 18 and (12%).

Research question 2: How frequent do the lectures use GAfE?

Table 2. Lectures frequent use of GAfE

S/N	GAfE	Frequently Used (FU)	%	Frequently Not Used (FNU)	%
1.	Email	84	55	69	45
2.	Drive	71	46	82	54
3.	Sheets	63	41	90	59
4.	Calendar	68	44	68	44
5.	Slides	76	50	77	50
6.	Google sites	41	27	112	74
7.	Docs	14	09	139	91
8.	Form	36	24	36	24
	Mean	56.0	36	63.0	55

In Table 2, email with frequently counts used of 84 responses, with 55%,

the highest frequently type of GAfE tool used and Doc with 139 respondents, corresponding to 91% was not frequently used. Thus, the lecturers used mail than any other GAfE tools.

Research question 3: Does the Lecturers perceive interest in using GAfE

Table 3. Lectures perceived interest in using of GAfE

S/N	GAfE	Not In- terested	%	Low level In- terested	%	Average Interested	%	Highly Interested	%
1.	Email	10	6.5	25	16.3	18	12.0	100	65.3
2.	Drive	31	20.3	13	8.5	30	20.0	79	52.0
3.	Sheets	50	33.0	51	33.3	27	18.0	25	16.3
4.	Calendar	44	29.0	21	13.7	32	21.0	57	43.1
5.	Slides	47	31.0	51	33.3	24	16.0	31	27.4
6.	Google sites	29	19.0	15	10.0	39	25.4	70	45.7
7.	Docs	26	17.0	26	17.0	35	23.0	66	43.1
8.	Form	20	13.1	24	16.0	39	25.4	70	46.0
	Mean	257	21.0	226	18.4	244	19.9	62.0	42.3

In Table 3, revealed that lecturers are highly interested in using GAfE with 103 responses (65.3%), while many fewer lecturers reported not interested with 10 (6.5%). Low level interested in 13 respondents (8.5%) and Average interested at 39(25.4%) respondents.

Hypotheses testing

The results on hypotheses were shown in below Tables. The hypotheses were tested at 0.05 level of significance.

H₀₁: There is no difference between male and female lecturers in their usefulness of GAfE.

Table 4 indicates that $t(151) = 159, p = .1.55$. This shows that the stated null hypothesis was accepted. This was as a result of the t-value 1.59 is equal to 1.55 equivalents to 0.05 alpha values. The implication was that, there was no significant difference between the usefulness of both female and male lecturers in using of GAfE. However, the mean score of male (20.80) was higher than

female lecturers (20.18). This means that the male perceived usefulness of GAfE is more than their female counterparts.

Table 4. Lecturers in their usefulness of GAfE based on gender

Gender	No	X	SD	Df	T	Sig. (2-tailed)
Female	77	20.18	2.49	151	1.585	1.55
Male	76	20.80	2.36			

H₀₂: There is no difference in the usefulness of GAfE by the lecturers of the institutions.

Table 5. Analysis of variance on the lecturers of the three institutions on the usefulness of GAfE.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2.683 ^a	9	.298	.430	.917
Intercept	378.950	1	378.202	646.202	.000
Factor	2.683	9	.298	.430	.917
Error	99.212	143	.694		
Total	730.000	153			
Corrected Total	101.895	152			

a. R Squared = .026 (Adjusted R Squared = -.035)

Table 5 reveals the ANOVA results of the lecturers in the three institutions on the usefulness of GAfE. From the table, $F = 430$, $p = .917$. This indicates that there is no significant difference between the lecturers of the three tertiary institutions in their usefulness of GAfE. Hence, the hypothesis two is not rejected.

Conclusion

In Hypothesis 1, there is no significant difference among the male and female lecturers in the usefulness of GAfE. Similarly, Hypothesis 2 reveals no significant in the lecturers of the three institutions on the usefulness of GAfE.

However, the outcome of the two results significantly show lectures usefulness of GAfE has been positive.

Moreover, the findings supported by the result of Widodo (2017) who submitted that integration of learning model and method promotes GAfE as a LMS that proved supremacy and potential in learning of mathematics and develop communication skills of the pre-service Primary School Teacher. The finding also in accord with the findings of Amali (2017) who finding confirmed that GAfE as significant information tools for students learning. It is also, agreed with that of Ebener (2017) who findings established that GAfE improves students' performances in written skills and widen students' horizon in the use of digital devices, hence, it also enhance collaboration and feedback. The findings conform to the conclusion of Brown & Hocutt (2015) who revealed that GAfE is a useful tool for achieving learning goal. More so, the finding is also support the finding of Widodo (2017) who finding revealed that GAfE is significantly improves communication skill among the experiment group. And also, the finding of Cummins-VanHerreweghe (2016) who confirmed that GAfE is a unique and basic tools for written instructions. More so, the findings also in line with the findings of Azhar&Iqbal (2018) whose finding confirmed that Google Classroom is having significant impact on the teaching methodologies.

On gender, the finding is in line with the findings of Awuah (2015) who stated that the male and female students were fully satisfied in using GAfE and significantly improve and efficient in teaching and learning. And that the males' students are using GAfE more than Female students. Also, the finding favoured the finding of Al-Emran & Malik (2016) who findings confirmed that both male and female are positive towards using Google Apps for Education because their mean scores was relatively high.

In conclusion, the findings have strong implication for teaching and learning. Since GAfE is a tool towards achieving the stated learning goals and

it should be encouraged. Also, it indicates that there would be great improvement in the teaching and learning if GAfE could invariably be integrated into teaching. Using GAfE among lecturers of the institution will advance and promote learning in Nigeria.

On the aforementioned result, the recommendation was given that Lecturers should be encouraged to have a proper useful medium for accessing GAfE and make judicious use of the Google App for Education and researching.

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