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Exploring Student Utilization of Google Workspace for Education using Technology Acceptance Model at Nueva Ecija University of Science and Technology Santo Domingo Off-Campus

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Abstract. Google Workspace for Education, formerly GSuite for Education, is the term used for cloud-based services tailored by Google to educational institutions. Many higher education institutions take advantage of its free subscription in aid of improving the teaching-learning process. While many studies have found Google tools very useful for teachers, research on the utilization and acceptance of the students towards the use of Google Workspace for Education has not been examined yet. Hence, the attempt for this research. This study utilized the Technology Acceptance Model as its framework. Using 18 four-point Likert scales, the data were collected through an online questionnaire with 175 respondents. Pearson's Correlation was used to assess the relationship among the variables in the TAM's framework. The results showed a strong positive correlation in the students perceived ease of use and perceived usefulness to behavioral intention to use which also correlates to its actual use. The results of the study support various colleges and universities in leveraging the integration of Google Workspace for Education due to the high level of students' acceptance in this technological infrastructure.

Keywords: GSuite, Google Workspace for Education, Higher Education Institutions Google, TAM

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1. Introduction

Many higher educational institutions worldwide use Google Workspace for Education (GWFE), formerly known as G-Suite for Education. There are over 150 million learners and teachers who use Google Workspace for Education [1] as of this writing. GWFE is the term used for cloud-based services tailored by Google to educational institutions. The services and applications in GWFE include but are not limited to Google Classroom, Google Docs, Google Sheets, Google Slides, Google Forms, Google Meet, Gmail and Google Chat. Other Google applications are offered depending on the needs of the students and educators like YouTube, Google Earth, and Google Map among others. GWFE claims that it enhances class instruction, boosts productivity, elevates student work and protects school data [2]. These claims have been proven by numerous research like the Tanjung (2023) study that revealed GWFE to help increase learning effectiveness, collaboration with teachers and interaction with students [3]. Also, Smith (2017) mentioned that GWFE improved students' collaborative skills and enhanced their overall learning experience [4]. Similarly, Turner (2018) highlighted that the use of GWFE led to increased student motivation and participation in a blended learning environment [5]. GWFE enhances communication and leads to better feedback mechanisms among students and teachers [6] and can foster a more student-centered learning environment when integrated in curriculum [7]. However, little is known on the students' utilization of GWFE in higher education institutions as a supplementary tool to aid in the teaching-learning process.

The success of the utilization of any technological platform depends heavily on the acceptance of its users. Translating to this research, GWFE is categorized as effectively utilized if students accept it. Student acceptance is the gateway to student utilization. There are many tools in order to measure the student's acceptance to technology such as Diffusion of Innovations (DOI) [8], Social Cognitive Theory [9], Motivational Model [10], Theory of Planned Behavior (TPB) [11] and Unified Theory of Acceptance and Use of Technology (UTAUT) [12]. Another tool is the Technology Acceptance Model (TAM) [12] by David (1989). TAM, see Figure number 1, is one of the widely recognized frameworks to understand user acceptance of technology due to its given empirical support and widespread application. TAM, see figure 1, is established to analyze and forecast the elements that influence users' decisions to accept or reject a specific technology. Davis stated that an individual's desire, referred to as "Behavioral

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Intention (BI)", to use a technology – known as "Actual Use (AU)", is mostly determined by two perceptions: how valuable the technology is perceived to be (Perceived Ease of Use (PE)) and how simple it is to use (Perceived Usefulness (PU)). Since the purpose of the research is to determine the utilization of the students in accepting technology, the researcher adopted TAM as its framework.

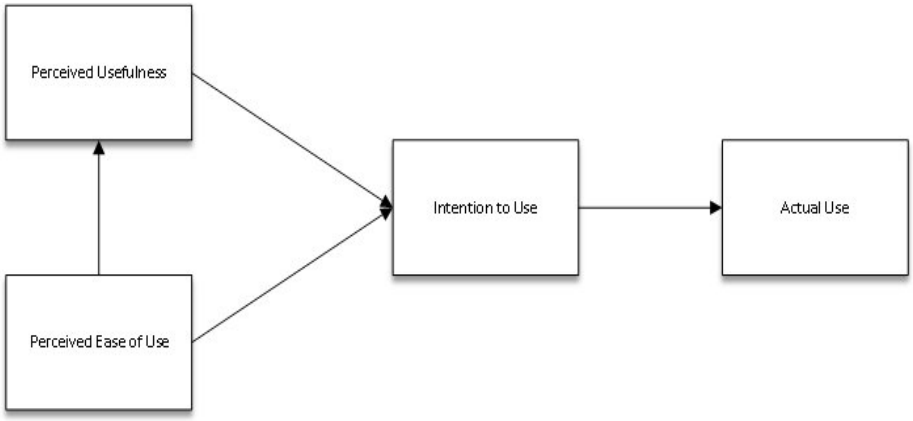

Figure 1 Technology Acceptance Model Conceptual Framework

2. Methodology

This section outlines the research methodology employed to investigate student utilization of Google Workspace for Education at Nueva Ecija University of Science and Technology Santo Domingo Off-Campus. The study was guided by the Technology Acceptance Model (TAM) to understand the factors influencing students' acceptance and usage of Google Workspace for Education.

2.1. Sampling Procedure

The sampling procedure is crucial for ensuring the representation of the target population. In this study, a stratified random sampling technique was employed. The population was stratified based on academic programs, ensuring that each major discipline is proportionally represented. From each stratum, a random sample of students was selected to participate in the study. This approach ensured a diverse representation of students across various academic disciplines.

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Stratified random sampling, a pivotal method in research methodology, is highlighted in recent work by Deville et al. (2018). Their study emphasizes the importance of considering diverse strata within a population to enhance sample representativeness. Stratified sampling ensures more accurate and nuanced findings, contributing to the robustness of contemporary research methodologies.

2.2. Respondents

The respondents in this study were first-year students for A.Y 2022-2023 of Nueva Ecija University of Science and Technology Santo Domingo Off-Campus.

2.2.1 Research Site

The research was held at Nueva Ecija University of Science and Technology Santo Domingo Off-Campus. This specific off-campus location has been chosen to provide a focused investigation into the student population's utilization of Google Workspace for Education in a distinct academic setting.

The selection of this site was based on its significance as an off campus of the university, serving a diverse group of students. This diversity provides a comprehensive understanding of how Google Workspace for Education is adopted across different academic disciplines and student demographics.

3. Results and Discussion

All the 175 students responded (100% response ratio) in the study. Table 1 shows the line statements and Likert results based on [14] construct items. It reveals that 90.7% (SA= 73.79; A=16.91) of the respondents are satisfied in GWFE (mean M=3.61; standard deviation, SD=0.76).

Table 1. TAM's Construct in Google Workspace for Education

Items	Responses (%)					
	SA	A	DA	SDA	Mean	SD
PU1: GWFE enhances my efficiency.	73.56	17.82	4.6	4.02	3.61	0.76
PU2: GWFE enhances my learning productivity.	77.59	13.79	5.17	3.45	3.66	0.73
PU3: GWFE enables me to accomplish tasks more quickly.	79.19	13.87	5.21	1.73	3.70	0.65
PU4: GWFE improves my academic performance.	73.56	17.24	5.75	3.45	3.61	0.75
PU5: GWFE saves my time.	77.01	13.22	6.9	2.87	3.64	0.74

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PU6: GWFE does have distinctive useful features.	69.36	18.5	6.94	5.2	3.51	0.84
PU7: GWFE applies to all academic courses.	79.89	12.07	2.87	5.17	3.67	0.77
PE1: GWFE is easy to use.	77.59	13.79	4.6	4.02	3.65	0.75
PE2: GWFE enables me to access the course material.	67.82	24.14	5.17	2.87	3.57	0.72
PE3: GWFE is convenient and user-friendly.	75.86	11.49	8.05	4.6	3.59	0.83
PE4: GWFE allows me to submit my assignments.	77.59	11.49	5.75	5.17	3.61	0.82
PE5: GWFE requires no training.	72.25	16.76	6.36	4.63	3.56	0.82
PE6: GWFE makes it easier to avoid future academic difficulties.	76.44	15.52	5.74	2.3	3.66	0.69
BI1: I intend to increase my use of the GWFE .	67.24	25.29	3.45	4.02	3.56	0.75
BI2: It is worth recommending the GWFE for other students.	76.44	16.09	4.02	3.45	3.66	0.72
BI3: I'm interested in using GWFE more frequently in the future.	78.74	14.37	5.17	1.72	3.70	0.65
AU1: I use GWFE on a daily basis.	60.92	25.86	8.62	4.6	3.43	0.84
AU2: I use GWFE frequently.	67.24	22.99	5.17	4.6	3.53	0.80
Overall Satisfaction	73.79	16.91	5.53	3.77	3.61	0.76

Table 2 shows the result of the Pearson (r) Correlation of TAM in GWFE. The value of r ranges between −1 and +1. A value of zero shows that there is no relationship. A value larger than zero denotes a positive correlation; as one variable increases in value, the other increases as well, while a value less than 0 implies a negative relationship; as one variable increases, the other decreases.

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Table 2. Pearson (r) Correlation of TAM in GWFE

		Perceived Ease (PE)
Perceived Usefulness (PU)	Pearson Correlation	.886**
	Sig. (2-tailed)	.000
	n	175
		Behavioral Intentions (BI)
Perceived Ease (PE)	Pearson Correlation	.792**
	Sig. (2-tailed)	.000
	n	175
		Behavioral Intentions (BI)
Perceived Usefulness (PU)	Pearson Correlation	.909**
	Sig. (2-tailed)	.000
	n	175
		Actual Use (AU)
Behavioral Intention (BI)	Pearson Correlation	.679**
	Sig. (2-tailed)	.000
	n	175
**Correlation is significant at the 0.01 level (2-tailed).		

The relationship between Perceived ease of use [PE] and the Perceived Usefulness [PU] of Google Workspace for Education.

In the study, Perceived Usefulness (PU) is defined as the degree to which a student believes that using GWFE would enhance his or her academic

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performance, while Perceived Ease of Use (PE) is the level to which the student believes that using a particular system would be free of effort [14]. PE and PU have a Pearson correlation coefficient of .886**, which is significant at the 0.01 level. This .886** translates to a high positive correlation ($0.7 \leq r < 1$) that confirms Hypothesis 1, implying that students who find Google Workspace for Education simple to use (PE) also see it as being useful (PU) to their academic undertakings. This finding suggests that perceived ease of use (PE) correlates positively with perceived utility (PU) in Google Workspace for Education.

The relationship between Perceived ease of use [PE] and the Behavioral Intention [BI] to use Google Workspace for Education.

Behavioral Intentions means that a person intends to use the GWFE. PE and BI show a high positive correlation of.792**. This finding supports Hypothesis 2, indicating that students' behavioral intentions (BI) to use Google Workspace for Education are positively correlate with their perceived ease of use (PE). This further reinforces the significance of user-friendly interfaces and intuitive design in encouraging positive behavioral intentions toward educational technologies.

The relationship between Perceived usefulness [PU] and the Behavioral Intention [BI] to use Google Workspace for Education.

PU and BI have a very high positive relationship, with a Pearson correlation coefficient of .909**. This lends proof to Hypothesis 3. Google Workspace for Education's perceived usefulness corresponds positively with students' behavioral intentions to use it. This implies that when students find a tool useful, they are more likely to want to utilize it.

The relationship between Behavioral intention [BI] and the Actual Use [AU] of Google Workspace for Education.

BI and AU have a correlation of.679**, which is significant at the 0.01 level. This supports the final hypothesis, which states that students' behavioral intentions to use Google Workspace for Education correspond positively with their actual platform use. However, while the relationship is substantial, it is slightly weaker than the prior relationships. This may impose some external issues beyond the study (e.g., limited access, time constraints, or other technological impediments) that hinder students from using GWFE even if they intend to.

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4. Conclusion

In this research, The Technology Acceptance Model (TAM) was used to explore the student utilization of Google Workspace for Education in Nueva Ecija University of Science and Technology Santo Domingo Off-Campus. As shown in Table 3, All four hypotheses were supported in this study. Therefore, this research supports TAM as it provides the framework to understand the student's acceptance leading to the students' utilization of Google Workspace for Education. Students are more likely to embrace and make full use of the GWFE platform if they find it both useful (Perceived Usefulness) and easy to use (Perceived Ease of Use)

Table 3. Hypotheses Conclusion

Hypotheses		Conclusion
H1	Perceived ease of use [PE] positively correlates with the perceived usefulness [PU] of Google Workspace for Education.	Supported
H2	Perceived ease of use [PE] positively correlates with the behavioral intention [BI] to use Google Workspace for Education.	Supported
H3	Perceived usefulness [PU] positively correlates with the behavioral intention [BI] to use Google Workspace for Education.	Supported
H4	Behavioral intention [BI] to use positively correlates with the actual use [AU] of Google Workspace for Education.	Supported

5. Recommendation

These recommendations may help to bridge the gap between the possibilities offered by GWFE and its utilization by Higher Educational Institutions (HEIs):

1. Create GWFE Training Sessions: These directly address the two key components of the TAM: perceived usefulness (PU) and perceived ease of use (PE). Institutions can improve students' perceptions of a technology's usefulness by demonstrating its concrete benefits and applications during these sessions.
2. Create GWFE Feedback & Update Mechanisms: This improves Perceived Usefulness (PU) and Perceived Ease of Use (PE). Institutions can improve the platform's usability by swiftly responding to students' concerns and issues while introducing enhanced features that aid learning may also emphasize its perceived utility.
3. Integration of GWFE to Curriculum: Integrating GWFE tools directly into academic curricula might increase Perceived Usefulness (PU). When students perceive how important the platform is for their academic work and assignments, they acknowledge its worth and importance to their studies, which may also impact their behavioral intention (BI) to utilize it.

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References

Ajzen, I. (1991). *The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2)*, 179-211.

Al-Maroof, R. A. S., & Al-Emran, M. (2018). *Students acceptance of Google Classroom: An exploratory study using the PLS-SEM approach. International Journal of Emerging Technologies in Learning (Online)*, 13(6), 112.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Prentice-Hall, Inc.

Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly*, 319-340

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). *Extrinsic and intrinsic motivation to use computers in the workplace*. Journal of Applied Social Psychology, 22(14), 1111-1132.

Garcia, P. L. (2016). *Enhancing student-teacher communication through Google Workspace for Education. Interactive Learning Environments*, 24(6), 1302-1314.

Google for Education. (2022). *Workspace for Education Editions Overview*. Retrieved July 2023, from https://edu.google.com/intl/ALL_ph/workspace-for-education/editions/overview/

Harrison, L., & Lee, R. (2019). *Exploring the role of Google Workspace for Education in shaping teaching and learning practices*. Computers & Education, 128, 273-289.

MarketSplash. (2022). *Google Workspace Statistics.* Retrieved July 2023, from https://marketsplash.com/google-workspace-statistics/

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Smith, J. A. (2017). *The impact of Google Workspace for Education on academic achievement and student engagement*. Journal of Educational Technology Systems, 45(4), 490-511.

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https://neust.journalintellect.com/quest

Tanjung, R. (2023). P*eningkatan Kompetensi Guru melalui Pemanfaatan Google Workspace for Education di SMPN 4 Tanah Merah*. Instructional Development Journal, 6(1), 53-60.

Turner, A. (2018). *Blended learning with Google Workspace for Education: Strategies for technology integration*. Journal of e-Learning and Knowledge Society, 14(3), 15-27.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). *User acceptance of information technology*: Toward a unified view. MIS Quarterly, 425-478.