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Assessment of utilization of smart phones for Pictorial communication among undergraduate students of Coal City University, Enugu state

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Abstract

The trend in this digital age is to be abreast with information technology to improve and enhance learning and essential communication between students and students, students and lecturer. It was on this premise that this study centered on the Assessment of Utilization of Smartphones for Pictorial Communication among Undergraduate Students of Coal City University, Enugu. Four objectives and four research questions guided this study. Two null hypotheses were tested. The conceptual review gave an appraisal of the usefulness of smartphone technology in learning activities. The theoretical review studied two theories; the Guided Noticing theory and Gestalt psychology. The study was under pinned from the perception that smartphones are popular among teens and other categories of learners, and could easily be adopted for learning activities which formed the major theoretical focal point of this study. The survey research design was used with questionnaire as its instrument of data collection. A sample size of 255 was studied. The number of questionnaires to be distributed was calculated using Calculator. Net, and 232 were retrieved. Demographic data were analyzed using the simple percentage, mean and Chi-square methods. The study found out a significant gender disparity with females constituting 67% of the sample compared to 33% of the male

respondents. The Chi-square value of 26.85 greater than 7.815, which is the value of alpha (0.05) showed that smartphones influence pictorial communication among undergraduates of Coal City University Enugu. Therefore, smartphones are integral to the daily communication practices at Coal City University. It is recommended that workshops and interventions should be implemented to enhance digital literacy among undergraduate students of Coal City University Enugu.

Keywords: Smartphones, Pictorial Communication, Undergraduate Students, Social Interaction, Technology Utilization

Introduction

The usage of smartphones by undergraduates promotes further studies and easier means of accessing educative ideas and information that can be used to facilitate learning. According to Masiu and Chukwuere[1], smartphones are deployed by students for various academic reasons. Principally smartphones aid students' electronic learning (e- learning) and mobile learning (m-learning) experience. Smartphones can become helpful to students when they are on sick leave or legitimately out of the school to follow academic activities including taking lecture notes [2]. Moreover smartphones communicate pictorially, which involves use of motion pictures to pass a message, inspire change and evoke an emotion, enabling smart phone users in this context; i.e. students, to be able to communicate properly what they see and hear as well, which is similar to the idea behind smartphones, to be able to make visual communication either to inform, entertain or educate.

According to Peters and Allan [3], there are four key factors underlying the moments privileged when using smartphones cameras, namely: they deviate from the mundane, are related to 'positive' emotions, evince strong social bonds, and encompass a future-oriented perspective. Relatedly, in terms of photographic composition, visual content tends to circulate around the social presence of others, boundedness of event, perceived aesthetic value and intended shareability. The first real smartphones were launched in 2000, the Black Berry 5810.This had feature such as calendar, music, standard keyboard, advanced security and internet access. Black Berry was the beloved of business professionals and kept launching more advanced versions of their products but could not sustain the advancement leaving the gap that iPhone came to fill [4-5].

Smartphones are in different models, such as- Samsung, Infinix, Oppo, Techno, Xiaomi, Apple and others. Undergraduates make preferences to get smartphones with maximum storage capacity, high resolution and Megapixels to make it possible for them to take quality pictures, make videos and calls and also retain enough information. It also promotes better leverage for students to get better visual learning materials, take original and quality pictures for primary researches and various other needs required of the smartphones to meet.Mobile phones are equipped with different applications with various features and capabilities that can easily be applied to create useful innovations. For instance, recently a group of young teenagers in Nigeria shot some sci-fi movies produced with the aid of their smashed mobile phones. The movies went viral, and have now brought the teenagers to limelight. Many students are very close to their mobile phones, and can easily manipulate it to perform different functions. This makes it a valuable tool for innovations and creativity [6].

Methodology

Design

This study adopted the survey research design. This type of research design involves conducting a survey to gather information about the use of smartphones for pictorial communication among the undergraduates. This can involve

questionnaires to collect data on their usage patterns, preferences, and challenges of smartphones usage for pictorial communication among undergraduates of Coal City University, Enugu State.

Population of the Study

The population of the study is 750, comprising 300 male and 450 female undergraduate students of Coal City University, Enugu State, (CCU Student Affairs, 2024).

Sample Size

The sample size of this study was derived through the sample size calculator, Calculator.net.

Hence, the sample size is 255.

Sampling Techniques

Random sampling was used as the sampling technique in this study to generalize about a specific population and leave out any bias. With the sample size, the faculties (Arts, Social & Management Sciences, Education and Health Sciences) and levels of study of the respondents were put into measurable consideration to ensure all respondents have similar outcomes, not minding their academic differences.

Method of Data Collection

This study adopted primary source. The primary source comprises the questionnaire which were distributed to the respondents.

Method of Data Presentation and Analysis

This study made use of the descriptive analysis. A conclusion was drawn with the sorted results to describe the study qualitatively. The statistical tools such as frequency table and mean method were used to present and analyze data while the Chi square was used to test hypothese.

Results

Table 1: Analysis of Personal Data of Respondents from Sampled Population

Case	Item	Frequency	Percentage
Sex	Male	76	33%
	Female	156	67%
	Total	**232**	**100%**
Department	Accounting	12	5%
	Business Admin	37	16%
	Computer	5	2%
	Economics	27	12%
	International relations	3	1%
	Medical laboratory	12	5%
	Microbiology	2	1%
	Mass communication	36	16%
	Nursing	73	31%
	Physiotherapy	10	4%
	Psychology	2	1%
	Political science	1	1%
	Radiography	12	5%

	Total	**232**	**100%**
Level	100	127	55%
	200	47	20%
	300	44	19%
	400	14	6%
	Total	**232**	**100%**
Age	16	2	1.1%
	17	26	11.1%
	18	39	17.1%
	19	38	16.1%
	20	35	15.1%
	21	22	9.1%
	22	24	10.1%
	23	18	8.1%
	24	9	4.1%
	25	10	4.1%
	26	5	2.1%
	27	4	2.1%
	Total	**232**	**100%**

Table one, shows that there are more female respondents than males. Also, 13 departments out of the several faculties at Coal City University were used to derive the data for this research. Levels 100- 400 were used for this research and this implies that there would not be any bias in results derived as all departments were captured in data collection. The age ranges also are representative of the population that is very active in the use of smartphones for pictorial communication.

Table 2: Mean Responses of Undergraduate Students of Coal City University on Assessing the Extent Smartphones has been utilized for Pictorial Communication

S/N	ITEM	SA	A	D	SD	FX	$\bar{x}$	DECISION
1	Smartphones are used for pictorial communication on a daily basis	130	76	18	8	792	3.41	Accepted
2	Smartphones are used to take pictures related to coursework and study materials	98	105	16	13	752	3.24	Accepted
3	Smartphones are used to share pictures with course mates, lecturers and instructors for academic purposes	126	69	19	18	767	3.31	Accepted
4								

	Lecturers and instructors encourage the use of smartphones for taking and sharing pictures related to coursework	89	98	35	10	730	3.15	Accepted
	Grand Mean						**13.11**	

Data from the table above suggest that smartphones are used on daily basis for pictorial communication; it is therefore an asset for communication as well as a tool for studying. It also implies that smartphones are used to analyze study materials from students to lecturers and vice versa. Hence, the use of smartphone builds an academic relationship among the students, lecturers and instructors.

Table 3: Mean Responses of Undergraduate Students of Coal City University on assessing the types of Pictorial Communication used on their smartphones

S/N	ITEM	SA	A	D	SD	FX	$\bar{x}$	DECISION
5	Emojis are used as pictorial communication tools during social media interactions among peers	105	87	20	20	741	3.19	Accepted
6	Videos or visual presentation have been explored for academic or social purposes within the university	87	110	25	13	741	3.19	Accepted
7	Stickers and GIFS are also used for online social interactions among peers within the university	82	91	40	19	700	3.01	Accepted
8	Smart phones are used to take pictures of physical models, prototypes, hand-on work done in classes and incidents that occur within the university	91	86	24	18	701	3.02	Accepted
	Grand Mean						**12.41**	

Data from the table above show that emojis, stickers and GIFS are used as pictorial communication tools during social media interactions among the students. Visual presentations are also utilized for both academic and social purposes within the university. Again, hand-on works in classes, practical assignments as well as events are captured pictorially on smartphones within the university.

Table 4: Mean Responses of Undergraduate Students of Coal City University on discovering the possible for the use of smartphones for pictorial communication among students of Coal City University, Enugu State

S/N	ITEM	SA	A	D	SD	FX	$\bar{X}$	DECISION
9	Pictorial communication is found more effective than text-based communication in the university	61	82	66	23	645	2.78	Accepted
10	Smartphones are primarily used for pictorial communication due to the convenience of accessing social media platforms and the internet for sharing visual content	76	93	49	14	695	3.00	Accepted
11	Smartphones are preferred tools for pictorial communication because they offer wide range of applications and features for creating and sharing visual content	95	88	22	27	715	3.08	Accepted
12	The ease of capturing, editing and sharing images and videos on a smartphone is a significant factor influencing their utilization for pictorial communication among students at Coal City University	76	109	31	16	709	3.06	Accepted
	Grand Mean						**11.92**	

The implication of the data from the table above is that pictorial communication has been found to be more effective than text-based communication in the university. And also, due to the convenience of accessing social media platforms and internet, the wide range of application and features they offer, smartphones are preferred tools for sharing visual contents. The ease of capturing, editing and sharing images and videos are what makes smartphone a significant factor influencing their utilization for pictorial communication among students at Coal City University.

Table 5: Mean Responses of Undergraduate Students of Coal City University on ascertaining the influence of smartphones for pictorial communication on the academic performance of students at Coal City University, Enugu State

1	ITEM	SA	A	D	SD	FX	$\bar{x}$	DECISION
13	Smartphones enable students to generate and use clear illustrative pictures in their academic assignments	98	77	35	22	715	3.08	Accepted
14	Sharing pictures from your smartphone has helped you better in understanding course concepts and facilitated learning experience	90	96	30	16	724	3.12	Accepted
15	Smartphones are sources of distractions to students	63	86	55	28	648	2.79	Accepted
16	Smartphones have become a learning tool with great potential in both outdoor learning and within the university	98	93	23	18	735	3.17	Accepted
	Grand Mean						**12.16**	

From the table above, it could be summarized that smartphones enable students to generate and use clear illustrative pictures in their academic assignments. Likewise, sharing and sending pictures has helped students better in understanding course concepts and facilitated learning experience, which implies that most course work and study materials are in pictorial, and hence give students a clearer means of understanding topics within an area of study. Also, data reveal that smartphones are not distractions to students; instead they are learning tools with great potentials, both outdoor learning and within the university, which explains how it could provide not only academic value but also vast knowledge to what happens outside the school.

Table 6: Samples Collected

Response	Sample 1	Sample 2	Sample 3	Sample 4	Totals
Agreement	192	194	173	177	736
Disagreement	40	38	59	55	192
Totals	**232**	**232**	**232**	**232**	**928**

Source: 2023 field survey

Total in the first row = 736

Total in the second row = 192

Total in each column = 928

Thus, expected frequency (f_e) in the first row =

232x736/ 928 = 184

And expected frequency (f_e) in the second column =

= 232x192/928= 48

From table six above, we can now set up the chi-square (X^2) table.

Table 7: Chi-Square (X^2) Table

Observed (f_o)	**Expected (f_e)**	**($f_o - f_e$)**	**$(f_o - f_e)^2$**	**$(f_o - f_e)^2/f_e$**
192	184.75	7.25	52.5	60.28
197	184.75	12.25	150.06	0.81
173	184.75	-11.75	138.06	0.75
177	184.75	--67.75	4590.06	24.84
40	48	-8	64	1.33
38	48	-10	100	5.56
59	48	11	111	2.31
55	48	7	49	1.02

Chi-Square (X^2) = summation of $\mathbf{(f_o - f_e)^2/f_e}$

= 36.9

To calculate the degree of freedom (df):

(Row – 1) (Column – 1)

i.e. (4 – 1) (2 – 1) = 3 x 1 = 3

Since 36.9>7.815 which is the value of alpha (0.05) in the probability level, it is therefore empirically supported and the null hypothesis (H_0) rejected. Hence, there is significant relationship between smartphones and the type pictorial communication among undergraduates at Coal City University, Enugu.

Table 8: Samples Collected

Response	Sample 1	Sample 2	Sample 3	Sample 4	Totals
Agreement	143	169	183	185	**680**
Disagreement	89	63	49	47	**248**
Totals	**232**	**232**	**232**	**232**	**928**

Source: 2023 field survey

Total in the first row = 680
Total in the second row = 248
Total in each column = 928
Thus, expected frequency (f_e) in the first row =
232x680 / 928 = 170
And expected frequency (f_e) in the second column =

= 232x248/928= 62

From table six above, we can now set up the chi-square (X^2) table.

Table 9: Chi-Square (X^2) Table

Observed (f_o)	Expected (f_e)	($f_o - f_e$)	$(f_o - f_e)^2$	$(f_o - f_e)^2/f_e$
143	170-2	77	29	4.35
169	170-1	10.01		
183	170-1	31	69	0.99
185	170	15	225	1.32
89	62	27	729	11.76
63	62	1	10.02	
49	62-1	31	69	2.73
47	62-1	52	25	3.63

Chi-Square (X^2) = summation of $\mathbf{(f_o - f_e)^2/f_e}$

= 26.83

To calculate the degree of freedom (df):

(Row – 1) (Column – 1)

i.e. (4 – 1) (2 – 1) = 3 x 1 = 3

Since 26.83>7.815 which is the value of alpha (0.05) in the probability level, it is therefore empirically supported and the null hypothesis (H_0) rejected. Hence, the use of smartphones is likely an influence on pictorial communication among undergraduates at Coal City University, Enugu.

Discussion

The analysis of personal data from the respondents reveals a significant gender disparity, with female students constituting 67% of the sample compared to 33% male respondents. This gender distribution may influence the findings related to smartphone usage and pictorial communication, as previous studies suggest that females tend to engage more with visual communication tools. Furthermore, the data encompasses 13 diverse departments within Coal City University, ensuring a comprehensive representation of the undergraduate population from various academic backgrounds. The inclusion of students from levels 100 to 400 minimizes potential biases, allowing for a more holistic understanding of smartphone usage across different stages of academic progression. The age distribution of respondents indicates a youthful demographic, which aligns with trends showing that younger individuals are more adept at utilizing smartphones for communication, particularly pictorial communication.

The findings also indicate that smartphones are integral to the daily communication practices of students at Coal City University, with a mean score of 3.41 for daily usage. In relation to this, Nwachukwu and Onyenankeya [7] suggest that smartphones are not only tools for social interaction but also serve as vital resources for academic purposes. Students reported using smartphones to capture and share images related to coursework, achieving a mean score of 3.24. This behavior fosters a collaborative academic environment where students and instructors can exchange visual content, thereby enhancing the learning experience. The data also suggest that instructors actively encourage the use of smartphones for academic communication, with a mean score of 3.15, further emphasizing the role of smartphones in bridging the gap between students and faculty.

The analysis of the types of pictorial communication employed by students reveals that emojis, videos, stickers, and GIFs are prevalent tools in their interactions. With a mean score of 3.19, emojis are particularly favored for social media interactions, highlighting their role in enhancing emotional expression in digital communication. Additionally, the use of visual presentations for both academic and social purposes is significant, as indicated by the same mean score of 3.19. The findings also show that students utilize smartphones to document hands-on work and practical assignments, with a mean score of 3.02, suggesting that smartphones facilitate a more interactive and engaging learning experience. This variety in pictorial communication tools reflects the adaptability of students in leveraging technology to meet their social and academic needs. Masiu and Chukwuere [1] pointed that out further by stating that “The smartphone has also made students’ lives easier, as they can access their school information on the gadget through electronic learning (e-learning) and mobile learning (m-learning)”.

The research identifies several key reasons for the preference of smartphones for pictorial communication among students. The data indicate that pictorial communication is perceived as more effective than text-based communication, with a mean score of 2.78. This preference is likely due to the inherent ability of images to convey complex ideas quickly and effectively. Additionally, the convenience of accessing social media platforms and the internet for sharing visual content is highlighted, with a mean score of 3.00. The wide range of applications and features available on smartphones further supports their use, as indicated by a mean score of 3.08. The ease of capturing, editing, and sharing images and videos is a significant factor influencing students' utilization of smartphones for pictorial communication, with a mean score of 3.06. These findings underscore the importance of visual communication in the academic environment and the role of technology in facilitating this process.

The data suggest that smartphones have a positive influence on students' academic performance, with a mean score of 3.08 indicating that they enable the generation of clear illustrative pictures for assignments. Sharing images has been shown

to enhance understanding of course concepts, as reflected in the mean score of 3.12. This implies that the integration of visual content into academic work not only aids comprehension but also enriches the overall learning experience. Ifeanyi and Chukwuere [8] explained that the use of smartphones on students has both a negative and positive effect depending on how it is used. But interestingly, the findings here reveal that smartphones are not perceived as distractions; rather, they are viewed as valuable learning tools with significant potential for both on-campus and outdoor learning, achieving a mean score of 3.17. The chi-square analysis supports these findings, indicating a significant relationship between smartphone usage and the type of pictorial communication among undergraduates. Overall, the results highlight the transformative impact of smartphones on academic engagement and communication among students at Coal City University.

Conclusion

The study concludes that smartphones significantly enhance academic engagement and communication among undergraduates at Coal City University, Enugu. By facilitating access to educational resources and enabling collaborative learning through pictorial communication, smartphones serve as vital tools for both social interaction and academic success. The findings reveal that students extensively utilize smartphones for capturing and sharing visual content related to their coursework, which fosters a collaborative academic environment. Moreover, the research highlights that pictorial communication is perceived as more effective than text-based communication, primarily due to the convenience and versatility smartphones offer. The use of visual tools such as emojis, videos, and GIFs enriches students' interactions and enhances their learning experiences. Importantly, the study suggests that smartphones are not merely distractions; rather, they are valuable learning aids that can positively influence students' academic performance when used appropriately.

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