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Gender Differences in Students' Mobile Phone Utilization in Rural and Urban Location in Delta State

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Abstract

The study examined gender differences in students' mobile phone utilization in rural and urban location in Delta State. 130 three hundred level (300L) undergraduates in the Department of Science Education, Faculty of Education, Delta State University (DELSU), Abraka and University of Delta (UNIDEL), Agbor, comprised the study's population. Krejcie and Morgan's (1970) sample determination table was used to select 97 samples for the study. Data were collected using a questionnaire titled "Students' Utilization of Mobile Phones (SUMP)". The instrument was validated by three experts to enhance the quality and credibility of the instrument by reducing bias, identifying errors or omissions and ensuring consistency. The reliability coefficient (0.74) of the questionnaire was ascertained using Cronbach Alpha. Data obtained with the aid of the instrument was analysed using t-test at 0.05 level of significant. The results revealed that that there is a significant difference between mobile phone utilization of male and female students from rural location, as well as urban location, in favour of male students. The results, again, revealed that there is a significant difference between mobile phone utilization of male students, as well as female students, from rural and urban location, in favour of male and female students from urban location. It was concluded that gender differences exist in the utilization of mobile phones among students residing in rural and urban locations in Delta State. It was thus, recommended among others, that to bridge the gender gap in mobile phone utilization, educational institutions and policymakers should design gender-sensitive initiatives focused on promoting equitable access and usage of mobile phones among students in both rural and urban locations.

Keywords: Gender Differences, Mobile Phone, Utilization of Mobile Phone, Rural and Urban Location.

Introduction

Mobile phones, as ubiquitous communication devices, have become an essential part of our everyday lives. With the rapid advancement of technology, mobile phones have evolved into multifunctional tools that can enhance various aspects of education. Mobile phones allow students and educators to access vast amounts of information using the internet. The availability of educational apps, e-books, and online resources empowers learners with unlimited access to educational content anytime and anywhere (Hemsley-Brown & Foskett, 2013). Mobile phones provide opportunities for interactive learning through diverse multimedia features. Educational apps and platforms offer engaging and interactive content, including quizzes, simulations, and real-life scenarios, which can enhance comprehension and retention (Ching, 2017). Mobile phones enable personalized learning experiences based on students' individual needs and preferences. Adaptive learning apps leverage artificial intelligence (AI) algorithms to analyze students' performance and provide personalized feedback and recommendations (Brown et al., 2016). Mobile phones facilitate collaboration among students and educators through social media apps, discussion forums, and video conferencing tools. This enhances communication, promotes peer-to-peer learning, and enables distance learning opportunities (Kim &Seo, 2013; Lawrence &Egbule, 2021).

Mobile phones provide flexibility in learning, allowing students to learn at their own pace and convenience. The anytime, anywhere availability of educational resources promotes self-directed learning and caters to diverse learning styles. The interactive and multimedia nature of mobile phone apps increases student engagement and motivation. Gamification elements, such as rewards and badges, make learning enjoyable and foster a positive learning experience. Mobile phones serve as cost-effective alternatives to traditional educational tools. By utilizing existing devices, institutions can reduce the need for expensive textbooks and other materials, making education more accessible and affordable.

The rapid advancement of mobile technology has revolutionized the field of education, providing learners with easy access to a wealth of information and resources through mobile phones. Mobile phones have become an essential tool for educational purposes, aiding in communication, collaboration, and content delivery. Nevertheless, not all students have access to mobile phones or reliable internet connections, creating a digital divide that may exacerbate educational inequalities (Brown et al., 2016). Gender differences as well as infrastructure limitations in underprivileged areas also hinder the seamless implementation of mobile learning initiatives. Research indicates that gender differences exist in mobile phone utilization in education, raising important implications for educators, policymakers, and researchers. Studies have shown that gender differences exist when it comes to mobile phone adoption and ownership. Research by Bulut et al. (2015) and Iroriteraye-Adjekpovu(2012) revealed that male students tend to have higher rates of ownership and adoption of smartphones compared to their female counterparts. This indicates that males may have greater access to mobile phones as educational tools, potentially leading to variations in educational outcomes. Gender disparities in the patterns of mobile phone usage for educational purposes have also been observed. According to Wara-Udaya and Priyanthi (2018), males tend to use their mobile phones more frequently and for longer periods than females in educational settings.

Gender Differences in Mobile Phone Utilization

Additionally, gender differences emerge in the types of educational activities performed on mobile phones. A study conducted by Misra and Mondal (2019) found that female students were more inclined towards collaborative activities, such as using messaging apps for academic discussions, while male students were more likely to engage in individual activities, such as watching educational videos. Perceptions and attitudes toward mobile phone utilization in education also vary between genders. Research by Liu and Chen (2018) indicated that female students had more positive attitudes towards mobile phone use in the classroom than male students. Females exhibited higher acceptance and perceived usefulness of mobile phones as educational tools, leading to more favourable attitudes and outcomes.

Aside gender differences, access to mobile phones and internet connectivity varies across different locations. Remote or disadvantaged areas often face challenges such as poor network coverage, limited access to electricity, and lack of affordable devices (UNESCO, 2015). Inadequate infrastructure hinders the widespread utilization of mobile phones for educational purposes. Bennett et al. (2018) conducted a study in rural schools in Tanzania and found that limited infrastructure affected the availability and usage of mobile technology for educational purposes. Socio-economic factors play a crucial role in determining mobile phone utilization in education. Low-income communities may prioritize basic needs over technology access, while affluent areas may have greater resources to invest in mobile devices and internet connectivity. Fairlie et al. (2014) emphasize that socio-economic factors, including income and parental education, influence mobile phone access among students in the United States. Cultural norms and practices can also influence mobile phone utilization in education. Factors such as attitudes towards technology, perceptions of privacy, and gender-related issues can vary across different locations, affecting the acceptability and usage patterns of mobile phones in educational settings. Ling (2012) conducted a cross-cultural study in Norway, Mexico, Japan, and the United States, highlighting the influence of cultural values on mobile phone use, indicating that cultural contexts impact educational mobile phone use as well.

Furthermore, it is pertinent to understand the interaction of gender and location differences on students' utilization of mobile phones. Mobile phones have become an integral part of people's lives, including students, influencing various aspects of their daily activities, social interactions and academic pursuits. It is crucial to understand gender differences in mobile phone utilization patterns among students, especially in contrasting rural and urban locations. Gender disparities in mobile phone ownership have been observed globally. Research by Mittelbrun and Moline (2018) indicated that gender differences in mobile phone ownership tend to be more pronounced in rural areas compared to urban areas. This could be attributed to varying socioeconomic conditions and accessibility to technology. Females in rural settings are likely to have lower access to mobile phones compared to their male counterparts. With the rapid expansion of internet connectivity, mobile phones have become gateways for students to access online resources. Research by Lenhart (2015) revealed that in urban locations, males tend to utilize mobile internet services, such as browsing, online gaming, and accessing educational resources, more frequently than females. However, in rural areas where internet access is limited, the gender gap in mobile internet usage tends to diminish.

Engagement with social media platforms is a prominent activity among students, facilitated by mobile phone usage. A study by Awan (2017) found that in urban settings, females spend more time on social media platforms, engaging in activities like posting, sharing, and connecting with peers. In contrast, males utilize social media for information gathering, entertainment, and engaging in online communities. Mobile phones have increasingly become tools for educational purposes. Research by Lee and Abdel-Wahab (2019) and Egbule (2020) highlights the potential gender differences in utilizing mobile phones for educational activities. Females in both rural and urban areas tend to use mobile phones for academic purposes, such as accessing educational apps and online study resources, more frequently than males. This suggests the need to leverage mobile technology for promoting gender equity in educational opportunities. Empirical evidences have shown that studies have been carried out on gender differences on students' utilization of mobile phone in rural and urban areas. However, these studies were carried out outside Delta State. This created a gap in knowledge this study sought to fill. It is in light of this the study investigated gender differences in students' mobile phone utilization in rural and urban location in Delta State.

Statement of the Problem

The increasing prevalence of mobile phone usage among students in Delta State has raised questions about potential gender differences in how mobile phones are utilized. Although mobile phones have become indispensable tools for communication and information access, limited research has extensively explored potential gender disparities in mobile phone usage among students in rural and urban location in Delta State. The problem of study is to highlight the need for a better understanding of how gender influences mobile phone utilization patterns in both rural and urban areas. By identifying and elucidating this problem, the study aims to contribute to bridging the existing knowledge gap and inform stakeholders about the importance of addressing gender differences in mobile phone usage among students in rural and urban location in Delta State.

Purpose of the Study

The study primarily focused on gender differences in students' mobile phone utilization in rural and urban location in Delta State. Specifically, the study determined:

1. If there is a difference between mobile phone utilization of male and female students from rural location;
2. If there is a difference between mobile phone utilization of male and female students from urban location;
3. If there is a difference between mobile phone utilization of male students from rural and urban location;
4. If there is a difference between mobile phone utilization of female students from rural and urban location.

Hypotheses

Four null hypotheses tested at 0.05 level of significance guided this study.

HO_1: There is no significant difference between mobile phone utilization of male and female students from rural location.

HO_2: There is no significant difference between mobile phone utilization of male and female students from urban location.

HO_3: There is no significant difference between mobile phone utilization of male students from rural and urban location.

HO_4: There is no significant difference between mobile phone utilization of female students from rural and urban location.

Methodology

The study was carried out in Delta State. Delta State is located in South -South geo-political zone of Nigeria. The state has 25 Local Government Areas (LGAs). The study was conducted in two Universities namely; Delta State University Abraka (Ethiope-East LGA) and University of Delta Agbor (Ika South LGA. The study adopted descriptive survey design. Adescriptive survey is a systematic research method for gathering information from a sample of entities for the purposes of constructing quantitative descriptors of the attributes of the larger population of which the entities are members. Surveys are conducted to gather information that reflects population's attitudes, behaviours, opinions and beliefs that cannot be observed directly (Osuji, 2017). The study's population comprised three hundred level University Undergraduates in Delta State University Abraka and University of Delta Agbor. Specifically, 130 undergraduates in the Department of Science Education, Faculty of Education, comprised the study's population. Krejcie and Morgan's (1970) sample determination table was used to select 97 samples for the study. Data were collected using a questionnaire titled "Students' Utilization of Mobile Phones".

The instrument was carefully and specially designed by the researcher in order to obtain necessary information from the students. The questionnaire consists of twenty-five items on students' mobile phone utilization. The questionnaire consisted of two parts. Part 1 contained demographic data of the respondents such as students' name, university, faculty, department, socio-economic status, gender and location. Part 2 contained twenty-five items on students' mobile phone utilization framed on four-point likert scale of: Strong Agree (SA); Agree (A), Disagree (D) and Strongly Disagree (SD). The instrument was validated by three experts to enhance the quality and credibility of the instrument by reducing bias, identifying errors or omissions and ensuring consistency. The experts comprised two science education lecturers and one measurement and evaluation lecturer in University of Benin, Benin City.Each expert was given document containing a letter, the research topic and hypotheses, along with a copy of the questionnaire. They were asked to vet the questionnaire for clarity of sentences used, suitability of the rating scale, and the relevance of the items to the topic under investigation and write their comments and suggestions inside the questionnaire, which were later used for the final editing of the questionnaire that was used for data collection.The reliability of the questionnaire was ascertained using Cronbach Alpha. The choice of

Cronbach Alpha is predicated on its appropriateness for establishing the reliability coefficient of polytomous items. The instrument was administered to thirty 300level undergraduates in University of Benin, Benin City. The responses of the students were scored and subjected to analysis through Statistical Package for Social Sciences (SPSS) using Cronbach Alpha. On Analysis, a reliability coefficient of 0.74 was obtained.

Ninety-seven (97) copies of the questionnaire were administered to ninety-seven (97)300level students in Delta State University, Abraka and University of Delta, Agbor, with the help of two research assistants who were briefed on administration and retrieval of the copies of the questionnaires. One research assistant each were deployed to DELSU and UNIDEL. This was to ensure full coverage of the area of study.Ninety-seven copies of the questionnaire were retrieved (i.e, 100% response rate) and analysed.

Results

HO$_1$: There is no significant difference between mobile phone utilization of male and female students from rural location.

Table 1

t-test Comparison of Mean Rating Scores of Male and Female Students from Rural Location

Gender	N	$\bar{x}$	SD	df	t-cal.	Sig. (2-tailed)	Decision
Male	30	71.20	7.69	57	4.784	0.000	Significant
Female	29	62.34	6.44				

Calculated t = 4.784, P(0.000 < 0.05), indicates that there is a significant difference between the mean ratings of male and female students from rural location on mobile phone utilization. Thus, HO$_1$ is rejected. Therefore, there is a significant difference between mobile phone utilization of male and female students from rural location, in favour of male students.

HO$_2$: There is no significant difference between mobile phone utilization of male and female students in urban location.

Table 2

t-test Comparison of Mean Rating Scores of Male and Female Students from Urban Location

Gender	N	$\bar{x}$	SD	df	t-cal.	Sig. (2-tailed)	Decision
Male	12	70.67	3.55	36	8.030	0.000	Significant
Female	26	58.81	4.50				

Calculated t = 8.030, P(0.000 < 0.05), indicates that there is a significant difference between the mean ratings of male and female students from urban location on mobile phone utilization. Thus, HO$_2$ is rejected. Therefore, there is a significant difference between mobile phone utilization of male and female students from urban location, in favour of male students.

HO$_3$: There is no significant difference between mobile phone utilization of male students from rural and urban location.

Table 3

t-test Comparison of Mean Rating Scores of Male Students from Rural and Urban Location

Location	N	$\bar{x}$	SD	df	t-cal.	Sig. (2-tailed)	Decision
Rural	30	71.20	7.694	40	3.253	0.002	Significant
Urban	12	79.92	8.229				

Calculated t = 3.253, P(0.002< 0.05), indicates that there is a significant difference between the mean ratings of male students from rural and urban location on mobile phone utilization. Thus, HO$_3$ is rejected. Therefore, there is a significant difference between mobile phone utilization of male students from rural and urban location, in favour of male students from urban location.

HO$_4$:   There is no significant difference between mobile phone utilization of female students in rural and urban location.

Table 4

t-test Comparison of Mean Rating Scores of Female Students from Rural and Urban Location

Location	N	$\bar{x}$	SD	df	t-cal.	Sig. (2-tailed)	Decision
Rural	29	62.34	6.44	53	7.320	0.000	Significant
Urban	26	75.08	6.44				

Calculated t = 7.320, P(0.000< 0.05), indicates that there is a significant difference between the mean ratings of female students from rural and urban location on mobile phone utilization. Thus, HO$_4$ is rejected. Therefore, there is a significant difference between mobile phone utilization of female students from rural and urban location, in favour of female students from urban location.

Discussion

The study revealed that there is a significant difference between mobile phone utilization of male and female students from rural location, in favour of male students. This lends credence to that of Carrison & Kim (2017), Karim, (2016), and Smith (2018). Explanation for this difference may be predicated on socio-cultural norms, access to educational opportunities, and economic factors. In many rural areas, traditional gender roles and expectations may influence how males and females use mobile phones differently. For instance, gender stereotypes may discourage female students from using mobile phones extensively due to concerns about privacy, safety, or cultural norms that prioritize male access to technology (Carrison & Kim, 2017). Similarly, unequal access to education in rural areas can contribute to the difference in mobile phone utilization between male and female students. Limited educational opportunities for girls may result in lower levels of digital literacy and fewer chances to use mobile phones for educational purposes (Karim, 2016). Again, economic disparities can affect access to mobile phones, with male students having

more financial resources to acquire and maintain mobile devices compared to their female counterparts. This economic gap can impact the frequency and functionality of mobile phone usage among male and female students (Smith, 2018).

The study again revealed that there is a significant difference between mobile phone utilization of male and female students from urban location, in favour of male students. This finding corroborates with that of Chen (2016), Smith (2017), and Ahmed and Qureshi (2015). The observed differences may be predicated on cultural norms and gender roles, access to resources, self-efficacy and digital skills. Cultural norms and gender roles can influence the way male and female students engage with technology. For example, some studies suggest that there may be more pressure on males to conform to traditional masculine ideals, which could result in greater adoption and utilization of mobile phones (Chen, 2016). On the other hand, females may be expected to prioritize other activities or face social stigma related to technology use (Smith, 2017, Iroriteraye-Adjekpovu, 2022). In the same vein, access to resources, including mobile phones and internet connectivity, can vary between male and female students in urban areas. Research indicates that males may have greater access to technology due to financial, educational, or cultural factors (Ahmed & Qureshi, 2015). This difference in access can impact the utilization of mobile phones among male and female students. Lastly, self-efficacy, or a person's belief in their ability to effectively use technology, can affect the utilization of mobile phones. Studies have found that female students may have lower self-efficacy and confidence in using technology compared to their male counterparts, which could contribute to the observed difference in mobile phone usage (Carrison & Kim, 2017). Additionally, male students may be more likely to possess digital skills, which further enhances their utilization of mobile phones.

The study further revealed that there is a significant difference between mobile phone utilization of male students from rural and urban location, in favour of male students from urban location. This finding aligns with the views of Afolayan et al. (2015), Dan (2012), and Zhang et al. (2014). The significant difference between male students' utilization of mobile phones in rural and urban areas may be attributed to various factors such as infrastructure disparity, economic constraints educational gap, among others. In rural areas, there is often a lack of proper mobile network coverage and access to reliable internet services. This limitation inhibits the utilization of mobile phones by male students. In contrast, urban areas usually have better network coverage and advanced communication facilities, which enhance mobile phone usage (Afolayan et al., 2015). Rural populations often face economic challenges that limit their ability to afford mobile phones and associated costs, such as data plans. In contrast, urban male students generally have higher household incomes and access to more financial resources, enabling them to utilize mobile phones more extensively (Dan, 2012). Educational gap is another factor that may account for the significant difference between male students in rural and urban locations. Rural areas commonly have limited educational resources and lower literacy rates compared to urban areas. This disparity contributes to a lower level of technology literacy among male students in rural settings, making them less likely to utilize mobile phones for educational purposes (Zhang et al., 2014, Iroriteraye-Adjekpovu, 2013).

Another finding of the study showed that there is a significant difference between mobile phone utilization of female students from rural and urban location, in favour of female

students from urban location. This finding confirms that of Liu et al. (2017), ITU (2020), UNESCO (2019) and Sultan (2018). In rural areas, access to mobile phones is limited due to factors such as infrastructure challenges, lower income levels, and inadequate network coverage (Liu et al., 2017). This lack of access hinders the utilization of mobile phones among female students, limiting their educational opportunities. Urban areas typically have better network coverage, higher income levels, and improved infrastructure, leading to higher mobile phone ownership rates (ITU, 2020). Consequently, female students in urban areas have greater access to mobile phones, which facilitates their usage for educational purposes. In addition, female students in rural areas often face economic constraints, with limited financial resources to purchase mobile phones or access mobile services (UNESCO, 2019). Economic disparities contribute to the lower rates of mobile phone utilization among female students in rural regions. In urban areas, female students may have better financial resources, allowing them to purchase mobile phones and avail suitable mobile services (Sultan, 2018). This relative economic advantage enhances mobile phone utilization among female students in urban regions.

Conclusion

The study concludes that gender differences exist in the utilization of mobile phones among students residing in rural and urban locations in Delta State. The findings revealed several noteworthy findings that shed light on the variations in mobile phone usage patterns between genders and locations. Overall, the study emphasizes the need for targeted interventions and policies to address the gender-based disparities in mobile phone utilization in educational settings.

Recommendations

1. To bridge the gender gap in mobile phone utilization, educational institutions and policymakers should design gender-sensitive initiatives focused on promoting equitable access and usage of mobile phones among students in both rural and urban locations.
2. Given the disparities observed between rural and urban areas, there is a need to invest in improving the mobile phone infrastructure and connectivity in rural locations.

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