

IMPACT OF DIGITAL LITERACY ON SECONDARY SCHOOL STUDENTS' ONLINE BEHAVIOUR AND WELL-BEING IN RIVERS EAST SENATORIAL DISTRICT, RIVERS STATE

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Abstract

This study examined the impact of digital literacy on the online behaviour and well being of secondary school students in Rivers East Senatorial District, Rivers State, Nigeria. Digital literacy's impact on students' online activity, including their capacity to utilise digital platforms securely and responsibly, and their psychological well-being is the key focus. Out of the eight (8) Local Government Areas in Rivers East Senatorial District, Rivers State, Nigeria, a multi-stage sampling technique was used to select four (4) L.G.As and 450 secondary school students from six (6) schools in the L.G.As. The Impact Of Digital Literacy On Secondary School Students' Online Behaviour And Well-Being In Rivers East Senatorial District, Rivers State Questionnaire"was used for data collection. This questionnaire measured digital literacy, online behavioural patterns, and indices of digital well being such as stress, self-esteem, and social interaction. The Cronbach Alpha method yielded 0.84 reliability. Correlation analysis examined digital literacy and interest components. The study demonstrated an association between higher levels of digital literacy and more positive online behaviours, such as responsible internet use and critical online information assessment. Higher digital literate students reported reduced stress from online activities and more self-esteem. However, the research found that excessive digital gadget use, especially among students, can harm social bonds and welfare. This indicates the significant impact of digital literacy on secondary students' online behaviour and well being. Thus, schools and governments must prioritise digital literacy initiatives that increase technical skills and promote positive online habits and well-being.

Keywords: Digital literacy, Online behaviour, Well-being, Online stress, Self-esteem

Introduction

Digital literacy is the skilful use of technology for communication, information generation, evaluation, and retrieval which is crucial nowadays. Technology, ethics, and analysis help people navigate the digital world. It includes online safety and privacy, problem-solving using digital tools, and ethical and constructive digital behaviour (Rivadeneira et al.,

2023). Online behaviour is part of digital literacy and includes how people access, interact with, and use digital material and manage their online identity. However, online well-being is the mental, emotional, and social well-being of those who utilise technology. Quality of online interaction, information, and offline-to-online activities all affect it (Akingbade et al., 2023).

Digital literacy is important, yet some secondary school children struggle in acquiring it. The concerns are limited technological access, lack of formal digital skills training, and rapid expansion of digital technologies that exceed their capabilities. Socioeconomic gaps hinder students' digital resource utilisation and generate a digital gap that worsens social and educational inequalities (Oluwole et al., 2021). Poor digital literacy has serious effects for children. Limited digital technology and application knowledge puts students at risk of cyberbullying, improper content, and inability to tell fact from fiction. These behaviours can worsen sadness, online anxiety, and loneliness (Bibire, 2020). In a technology-dependent society, those without proper digital literacy may struggle to use digital resources for education, research, and collaboration. It will also impede academic advancement. Digital literacy teaching is needed because children are more technology-dependent (Porat et al., 2018). Giving students the tools they need to safely navigate the internet can help them develop good online habits and improve their well-being. This helps students succeed academically and personally. This study seeks to evaluate the influence of digital literacy on the online behaviour of secondary school students in Rivers East Senatorial District, Rivers State, Nigeria, assess the impact of digital literacy on the psychological well-being of secondary school students in Rivers East Senatorial District, and explore the potential negative effects of excessive digital device use on the social connectedness and overall well-being of digitally literate secondary school students

Statement of the Problem

Digital technology's fast adoption has changed education and social interaction, especially for secondary school children. This move has put students in danger owing to poor digital literacy. Secondary school students in Rivers East Senatorial District, Rivers State, have suffered from poor digital literacy, which has affected their online behaviour and well-being (Tang & Chaw, 2016). Students without adequate digital literacy skills are prone to cyberbullying, online predators, and dangerous information, which is capable of causing anxiety and sadness. Students who cannot critically evaluate internet material becomes vulnerable to disinformation, which can impact their views and decisions, resulting in low academic performance and incorrect ideas. The high use of digital devices without sufficient direction has led to excessive screen time, which disrupts sleep, reduces social contacts, and weakens family relationships (Prior et al., 2016). Also, lack of balance between digital and real-world activities increases isolation and lowers self-esteem, affecting students' mental health. Thus, this study examines how digital literacy affects these factors and emphasises the need for comprehensive digital literacy programs in secondary schools in Rivers East Senatorial District to protect students' mental and emotional health. The study seeks to answer these questions:

1. What is the influence of digital literacy on the online behaviour of secondary school students in Rivers East Senatorial District, Rivers State, Nigeria?
2. What is the impact of digital literacy on the psychological well-being of secondary school students in Rivers East Senatorial District?
3. What are the potential negative effects of excessive digital device use on the social connectedness and overall well-being of digitally literate secondary school students?

Objectives of the Study

The primary objectives of this study are:

1. To evaluate the influence of digital literacy on the online behaviour of secondary school students in Rivers East Senatorial District, Rivers State, Nigeria.
2. To assess the impact of digital literacy on the psychological well-being of secondary school students in Rivers East Senatorial District.
3. To explore the potential negative effects of excessive digital device use on the social connectedness and overall well-being of digitally literate secondary school students.

Research Hypotheses

1. Higher levels of digital literacy are positively correlated with more responsible and safe online behaviour among secondary school students.
2. Higher levels of digital literacy are associated with lower levels of online-related stress and higher self-esteem among secondary school students.
3. Excessive use of digital devices negatively impacts the social connectedness and overall well-being of secondary school students, even if they possess high levels of digital literacy.

Concept of Digital Literacy

Digital literacy involves navigating, understanding, and creating information utilising digital platforms and technologies. Beyond technological abilities, it requires critical thinking, problem-solving, and ethical digital resource use (Yu et al., 2017). As people navigate increasingly digital surroundings, digital literacy is essential to 21st-century schooling. Digital literacy encompasses media, information, and communication skills. These skills are essential for effective digital engagement, whether for work, school, or pleasure (Nwufo and Nwoke, 2018). Digital literacy expands with technology, emphasising the need for ongoing learning and adaptability. Social, economic, and cultural variables affect digital literacy. An increasingly linked world requires understanding the varied nature of digital literacy to develop a technologically competent and responsible society.

Digital Literacy and Online Behaviour

People's interactions with digital content, social media, and online communities are

greatly influenced by their level of digital literacy. Higher digital literacy levels have been linked to beneficial online behaviours including fact-checking, protecting privacy, and polite communication (Spante et al., 2018). On the other hand, those with low levels of digital literacy are more prone to false information, online scams, and unethical behaviour (Oluwole et al., 2021). Through the ability to distinguish legitimate information from untrustworthy sources and navigate the complicated online environment, persons with digital literacy are better prepared (Okika & Blessing, 2017). It also promotes responsible online citizenship by motivating users to uphold ethical norms, engage in civil conversation, and safeguard their digital identities (Akingbade et al., 2023). While previous studies have established a general link between digital literacy and responsible online behaviour, most focus on adult populations or urban youth in developed regions, with limited attention to Nigerian secondary school students, particularly in semi-urban areas like Rivers East Senatorial District. Additionally, there is insufficient localized research that captures the nuanced behaviours of students in response to cultural, educational, and infrastructural differences. This study fills that gap by evaluating how varying levels of digital literacy influence online conduct among secondary school students in Rivers East, providing context-specific insights that can guide local educational and digital policy interventions.

Digital Literacy and Psychological Well-being

Digital literacy and psychological well-being are increasingly studied as digital gadgets become part of daily life. Effective digital literacy can improve psychological well-being by giving users a sense of control and competence in the digital realm (Akingbade et al., 2023). High digital literacy helps people manage their online presence, create limits, and avoid negative digital habits like social media overconsumption, which can cause anxiety and sadness (Akeusola, 2023). Poor digital literacy may lead to dissatisfaction, alienation, and inadequacy in a world where continual connectedness can overwhelm people who cannot handle it (Oluwole et al., 2021). Digitally educated people are better at balancing their online and offline lives, improving mental health (Okoh et al., 2025). Therefore, improving digital literacy is crucial for technological navigation and psychological resilience and well-being in the digital age. Existing literature acknowledges that digital literacy can foster psychological resilience by enabling individuals to manage digital stressors. However, most studies have not explored this dynamic in adolescent populations in sub-Saharan Africa, where digital exposure is rapidly growing but digital education is often lacking. Moreover, there is a scarcity of empirical studies that examine how digital literacy directly impacts mental health outcomes like anxiety, self-worth, and emotional regulation among secondary school students. The current study addresses this gap by assessing how digital literacy influences psychological well-being within the specific socio-educational setting of Rivers East Senatorial District, contributing much-needed data to this emerging field.

Negative Effects of Excessive Digital Device Use

Digital gadget abuse can harm physical and mental health. Screen use may cause eye strain, headaches, and bad posture, as well as sedentary lifestyles that raise obesity risk (Adegbola, 2023). Excessive computer use can cause anxiety, despair, and social isolation, especially in children (Porat et al., 2018). Digital platforms' rapid pleasure and continual connectedness may cause addiction, making it hard to unplug and communicate in person (Nwosu, 2023). Screens' blue light alters circadian cycles, affecting sleep quality (Dawodu et al., 2023). Spending too much time on social media, especially comparing yourself to crafted online personas, may also lower self-esteem (Nwufo and Nwoke, 2018). Digital gadgets are essential to modern life, but abuse poses serious problems, emphasising the need for balance and digital wellbeing. Research has documented the adverse physical and mental effects of excessive digital device use, but much of it is global or generalized, with minimal focus on digitally literate youth in Nigeria. Specifically, there is limited insight into how digital literacy may paradoxically expose students to new forms of digital overuse or addiction under the guise of competence. Furthermore, few studies explore how this overuse impacts social connectedness and well-being in school-aged adolescents. This study fills these critical gaps by exploring the unintended consequences of high digital literacy, especially its correlation with social detachment and digital fatigue among secondary school students in Rivers East.

Theoretical Framework

This study is based on Davis' 1989 Technology Acceptance Model (TAM). A well-known idea explains how individuals adopt and use technology. Davis (1989) identified perceived utility (PU) and perceived ease of use as the key TAM factors affecting technology adoption. Venkatesh and Davis (2000) define perceived usefulness as the amount to which a technology improves performance, whereas perceived ease of use is the extent to which the system requires no effort. These two principles affect a person's technological attitude, which affects their behavioural intention and actual use. The approach is based on the Theory of Reasoned Action (TRA), which claims that behavioural intentions best predict actual conduct (Ajzen & Fishbein, 1980). Technology Acceptance Model is useful for studying how secondary school students' view of digital tools impact their online conduct and well-being in digital literacy. If students believe digital literacy is beneficial and easy to acquire, they are more likely to behave well online and feel better about themselves (Venkatesh, Thong, & Xu, 2016). However, youngsters who struggle with technology may engage in harmful online habits that harm their health. Technology Acceptance Model shows how digital literacy may effect academic achievement, mental health, and cyber safety by linking students' online conduct to digital literacy (Teo, 2011). By understanding why students utilise digital literacy, Rivers East Senatorial District teachers and legislators may develop targeted interventions to build digital competence, promote good online behaviour, and boost well-being (Venkatesh et al., 2016).

Methodology

This study employed a descriptive survey. Descriptive survey designs allow the collection of quantitative data from a large sample of respondents, making population trends and patterns easier to study. This design was useful for studying how digital literacy influences students' online behaviour, mental health, and social connections.

The survey includes all Rivers State, Nigeria's East Senatorial District secondary school students. This region has multiple secondary schools in eight LGAs. Students with access to digital devices and the internet both necessary for online activities are included in the demographic of interest due to the emphasis on digital literacy. The research focused on junior and senior secondary school children since they engage most online and are in a developmental stage where digital literacy is crucial.

A representative population sample was selected using multi-stage procedures. First, four of the eight Rivers East Senatorial District LGAs were randomly selected. Six secondary schools in each LGA were selected using stratified random sampling to ensure public and private school representation. Systematic random sampling selected 450 students from each school. A proportionate number of students from each grade level represented the school's student population.

The major data collection instrument is a structured questionnaire named "The Impact of Digital Literacy on Secondary School Students' Online Behaviour and Well-Being in Rivers East Senatorial District, Rivers State Questionnaire." The questionnaire has 3 sections: The first part collects age, gender, and grade data. Section B tests students' digital literacy by asking them questions on utilising digital tools, accessing websites, and employing critical thinking when engaging online. Section C investigated online behaviour, psychological well-being, and social connection by assessing online safety, stress, self-esteem, and the impact of digital device use on social interactions.

Respondents rate their agreement with digital literacy and wellness items on a Likert scale. For this type of survey study, questionnaires are ideal since they collect data from many respondents.

Educational technology and psychology experts validated the questionnaire to ensure it assesses digital literacy, online behaviour, and well-being. A pilot study with a small sample of similar-demographic students increased the questionnaire's content validity. Based on pilot testing, the questionnaire was made more relevant and straightforward.

The Cronbach Alpha test found 0.84 dependability for the device. This shows that the questionnaire questions properly evaluate the desired dimensions due to their high internal consistency. Use of the instrument in primary research is usually recommended for reliability coefficients over 0.70.

A selected sample of students from each of the four LGAs received the questionnaire to collect data. Trained research assistants distributed and collected the questionnaires to ensure

students understood and responded accurately. Data was collected by study assistants visiting each school for two weeks to administer questionnaires during school hours. Everything was done to minimise disruptions to students' academic timetables. To encourage honest answers, students were told participation was voluntary and their answers would be kept confidential. Students who needed help completing the questionnaire were helped to collect correct and complete data.

Data was analysed using inferential and descriptive statistics. Descriptive statistics including frequency distributions, percentages, and mean scores were used to analyse participant demographics and digital literacy and online activity patterns. Inferential correlation analysis was used to test hypotheses and examine the relationships between digital literacy and outcomes including social connectedness, psychological well-being, and online behaviour. The direction and intensity of these relationships were determined by Pearson's correlation coefficient. This is because the hypotheses are correlational and predictive in nature, warranting the use of Pearson's correlation analysis. These techniques are well-suited for quantitative survey data, where variables are continuous or ordinal (treated as interval), such as scores from Likert-scale items measuring digital literacy, well-being, and online behaviour. The use of Pearson's correlation assumes:

Linearity: The relationship between digital literacy and each outcome variable (e.g., online behaviour, self-esteem) is linear.

Normality: Both variables should ideally follow a normal distribution.

Results

Analysis of Digital Literacy Levels

Table 1: Mean Scores of Students' Digital Literacy Levels

Digital Literacy Component	Mean Score	Standard Deviation
Basic Digital Skills	3.45	0.68
Critical Online Thinking	3.22	0.74
Responsible Online Behaviour	3.67	0.64

According to the results, students' levels of digital literacy range from moderate to high. The mean score for responsible online behaviour is the highest, at 3.67, suggesting that students are at least somewhat skilled at using the internet in a safe and responsible manner. Still, there is potential for development, especially in critical online thinking (mean score = 3.22), which is the lowest.

Correlation Analysis of Digital Literacy and Online Behaviour

Table 2: Correlation Between Digital Literacy and Online Behaviour

Variable	Pearson's r	p-value
Digital Literacy vs. Online Behaviour	0.62	<0.001

Table 2 indicates a statistically significant connection ($p < 0.001$) of 0.62 between digital literacy and internet behaviour. The notion that students who possess greater levels of digital literacy are more likely to participate in responsible and safe online behaviour is supported by the substantial positive connection indicated by this.

Impact of Digital Literacy on Psychological Well-Being

According to the second hypothesis, secondary school students who possess better levels of digital literacy also tend to have lower levels of stress connected to their online experiences and higher self-esteem. The findings of the correlation study between measures of psychological well-being and digital literacy are shown in Table 4.

Table 3: Correlation Between Digital Literacy and Psychological Well-Being

Variable	Pearson's r	p-value
Digital Literacy vs. Online-Related Stress	-0.45	<0.001
Digital Literacy vs. Self-Esteem	0.54	<0.001

Table 3's findings show a negative correlation (-0.45) between the two variables, suggesting that students who are more digitally literate are less stressed out by online activities. Furthermore, there is a positive association (0.54) between self-esteem and digital literacy, indicating that students who are more technologically literate also have greater self-esteem. The second hypothesis is supported by the statistical significance of both relationships ($p < 0.001$).

Analysis of Excessive Digital Device Use and Its Effects on Social Connectedness and Well-Being

Table 4: Impact of Excessive Digital Device Use on Social Connectedness and Well-Being

Variable	Pearson's r	p-value
Excessive Device Use vs. Social Connectedness	-0.38	<0.001
Excessive Device Use vs. Overall Well-Being	-0.42	<0.001

Table 4 presents statistically substantial ($p < 0.001$) unfavourable correlations between excessive digital device usage and social connectivity (-0.38) and overall well-being (-0.42). These findings support the third hypothesis by indicating that students who use digital devices excessively may experience a decline in social connectivity and general well-being even when they possess high levels of digital literacy.

Discussion of Findings

Digital literacy was strongly linked to appropriate online behaviour in secondary school students. This shows that children with better digital literacy are more likely to engage in safe and responsible online activities including critical information evaluation and online safety. This was supported by the study of Tang and Chaw (2016) who found that digital literacy is essential for blended learning. They found that children with higher digital literacy can navigate and connect with digital platforms meaningfully, which can extend to online behaviour. Students who are more proficient at using digital resources for learning are likely to behave more responsibly and informedly online. Porat, Blau and Barak (2018) also distinguished between junior high students perceived and real digital literacy. Their study demonstrates that students' digital abilities differ from what they think they know, which affects their online behaviour. They stated that students with better digital abilities are more likely to behave responsibly online. These findings support the idea that better digital literacy leads to responsible online behaviour because digitally literate people can identify and minimise online dangers.

The study also found a negative association between digital literacy and online stress and a good correlation with self-esteem. This suggests that digitally educated children have greater self-esteem and less online stress. This resonates with the study that was conducted during the COVID-19 epidemic in Nigeria by Akingbade et al. (2023) who discovered that e-Health literacy was linked to decreased anxiety and sadness. Their study showed that digital health resource literacy helps people handle health stresses and uncertainties, reducing anxiety and despair. Hence, higher general digital literacy may help secondary school students handle online challenges like cyber bullying, misinformation, and digital overload, reducing online stress and improving their sense of control and self-esteem. Also, Rivadeneira et al. (2023) examined how COVID-19 affected university students' subjective well-being and digital health literacy, proving that higher digital health literacy was associated with improved well-being and decreased stress among students. This shows that improved digital abilities enable people to find and analyse online material, improving their mental health. As secondary school students become more secure in digital surroundings, they experience less online stress and have stronger self-esteem and mental health.

Finally, the study showed that high digitally-literate students' excessive digital usage significantly affects their social connectivity and well-being. Noting that, despite their digital expertise, students who spend too much time on digital gadgets may feel alone and depressed. Oluwole et al. (2021)'s study supported this by examining internet addiction in medical students and its harmful impacts on mental health. Their study shows that irrespective of digital proficiency, highly educated students with great digital literacy have decreased well-being owing to excessive internet use. This suggests that digital literacy alone cannot protect children against overuse's negative impacts, such as social isolation, stress, and anxiety. The analogies suggested that overusing digital gadgets harms well-being of students regardless of digital

literacy. Similarly, Bibire (2020) study examined the harmful impact of excessive social media usage on the mental health of Nigerian university students. They proved that despite students' digital proficiency, regular usage of these platforms linked to lower social connectivity and mental health issues. This suggests that usage of digital networks might cause social isolation, despair, and anxiety, which harm well-being even in skilled users.

Conclusion

This study highlights the impact of digital literacy on the online behaviour and psychological well-being of secondary school students in Rivers East Senatorial District, Rivers State. Digital literacy is important for responsible and safe online activity because children with higher levels of digital literacy are better at navigating the internet. The study also highlights the importance of digital literacy to students' psychological well-being since it boosts self-esteem and reduces online stress. Even among technologically savvy students, excessive digital device use may reduce wellbeing and social connectedness, according to the study. According to these findings, digital literacy is vital, but it must be accompanied with good use practices to avoid harmful impacts. The report shows that educational institutions and lawmakers must prioritise digital literacy efforts that educate students technological skills and promote a responsible and balanced digital lifestyle. By promoting digital literacy, schools can help students use technology safely.

Counselling Implications of the Findings

The findings of this study have substantial significance for Counselling practice, particularly in the setting of secondary school. As students' lives become increasingly dependent on digital literacy, school counsellors must recognise its dual nature. Digital literacy helps children navigate the internet securely and responsibly, but excessive use of digital gadgets can harm mental health and social connections. Digital literacy should be integrated into counselling programs to address these challenges proactively. The relevance of digital well-being and technical components of digital literacy must be stressed. Online stress management, digital self-esteem, and good online practices should be covered in counselling programs. Counsellors should also collaborate with schools and parents to foster balanced digital use. This might include setting screen time limits, encouraging face-to-face social contacts, and encouraging digital awareness. Counsellors should also be able to recognise and handle student internet addiction and social isolation. Counsellors can assist students navigate the digital environment while preserving their mental and social health by offering individualised support and interventions. This study also suggests that counsellors require continual professional development to keep up with digital literacy and well-being trends and problems.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Schools should offer comprehensive digital literacy programs beyond basic abilities.

Critical thinking, appropriate online behaviour, and online stress management should be covered in these programs. Teachers should be taught to teach these programs so students may securely traverse the digital world.

2. Schools and parents should collaboratively encourage balanced digital usage among children. The dangers of excessive digital device usage and the significance of a good digital-life balance should be taught in schools.
3. School support systems should address the psychological effects of digital device use on students. This might include digital well-being counselling, peer support groups, and parent training on managing their children's digital life. These support tools should assist children build resilience against digital technology's possible negative impacts and promote a healthy school digital culture.

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