

EVALUATING TECHNOLOGY ETHICAL PRACTICES IN THE UTILIZATION OF DIGITAL RESOURCES AMONG UNDERGRADUATE STUDENTS OF NNAMDI AZIKIWE UNIVERSITY, AWKA

By

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Abstract

The research evaluated technology ethical practices in the utilization of digital resources by undergraduates at Nnamdi Azikiwe University, Awka. Four research questions guided the study. Survey research design was adopted for the study. The population comprised of 25,000 undergraduates in UNIZIK. A sample of 400 undergraduates was selected using convenience sampling technique. The observation checklist and questionnaire was used for data collection. The instrument was validated by 3 experts. The Crombach Alpha reliability method was used and a reliability coefficient of 0.87 was gotten. Data collected was analyzed using descriptive statistics of mean scores. The study found that the undergraduates are not aware of the technology ethics in using digital resources. To a low extent, majority of the undergraduates do not adhere to technology ethical guidelines when using digital resources. The factors that influence ethical or unethical behaviors in the use of digital resources were lack of awareness of technology ethics principles, and pressure to prioritize convenience when using digital resources, among others. The strategies to promote the ethical use of digital resources were incorporating technology ethics education into the curriculum to help students develop a deeper understanding of ethical principles related to electronic library resource, and establishing clear policies for the ethical use of digital resources, among others. In conclusion, the study reveals a concerning lack of awareness and adherence to technology ethics among the students. The study recommended the need for the university to integrate digital ethics as part of general education or ICT courses for undergraduates.

Introduction

Technology has provided a new way for accessing information and learning. The need for the optimization of technology for teaching and learning has given birth to the evolution of digital technology (Agim, Ninyio, Abubakar & Rabi'u, 2021). Adopting technology has profoundly influenced higher education, with digital resources (DRs) playing a pivotal role in supporting academic research and learning. Digital libraries offer students convenient access to a vast array of digital materials, including e-books, academic journals, and multimedia content, which enhance their academic experience and enable deeper engagement with scholarly materials (Adepoju & Alabi, 2020). The increasing reliance on DRs necessitates the integration of technology ethics to ensure responsible usage among undergraduates, as misuse

or unethical behavior can compromise both academic integrity and data security (Ogbonna et al., 2018).

Technology ethics involves the principles and standards guiding users in the responsible and fair application of technology. This concept encompasses issues such as data privacy, intellectual property rights, and the ethical use of information (Floridi, 2015). In the context of digital resources, ethical considerations include proper citation, respect for copyright laws, and avoiding plagiarism (Eze, 2019). With the proliferation of digital technologies, the potential for academic dishonesty has expanded, highlighting the need for universities to promote a culture of ethical technology use (Akinwumi & Okafor, 2021). Ethical literacy ensures that students understand the implications of their actions and make informed decisions when accessing, using, or distributing digital resources.

At Nnamdi Azikiwe University, like many higher institutions, the adoption of media resources can facilitate a more dynamic and flexible learning environment (Agim, Irieguna, & Chivuzo, 2023). This learning environment can enhance students adoption of ethical conducts in their use of digital resources or when accessing online digital contents (Onuoha, 2022). DRs enable students to access academic content remotely, improving academic productivity and research outcomes (Adebayo & Nwosu, 2020). However, while the benefits of DRs are well-documented, challenges persist, particularly around students' awareness and adherence to ethical standards in their use. Undergraduates often encounter situations where ethical guidelines are blurred, such as improper use of shared passwords or accessing restricted content without authorization (Nwachukwu & Ezeokeke, 2017).

Despite the advantages of DRs, a gap exists in the enforcement and practice of technology ethics within educational contexts (Ogunlana & Ajayi, 2018). The ease of accessing information can sometimes lead to unethical practices, such as unauthorized sharing or downloading of materials, which undermines copyright protections and institutional policies. Researchers have noted that undergraduates, in particular, may lack comprehensive training in technology ethics, leading to inadvertent violations (Ikenna, 2021). The absence of structured ethical guidelines or awareness programs contributes to this gap, suggesting a need for enhanced ethical instruction within academic institutions. Therefore,

this study will evaluate the ethical practices in the utilization of digital resources by undergraduates at Nnamdi Azikiwe University, Awka

Statement of the Problem

While digital resources have become integral to academic learning, the responsible and ethical use of these resources among undergraduates at Nnamdi Azikiwe University remains a concern. Reports indicate that although students regularly engage with DRs, there is a noticeable deficiency in their understanding and application of ethical standards, leading to practices such as plagiarism, unauthorized access, and non-compliance with copyright laws (Adebanjo & Umeh, 2018). This issue poses significant challenges to academic integrity and may impact the university's reputation and the quality of scholarly output. Similarly, there is a paucity of research specifically examining if undergraduates of Nnamdi Azikiwe University, Awka actually adopts or applies ethics in their use of technology to access and use digital resources. Therefore, this study aims to address this gap by evaluating technological ethical practices in the utilization of digital resources by undergraduates at Nnamdi Azikiwe University, Awka

Research Questions

The following research questions guided the study:

1. What is the level of awareness of technology ethics among undergraduates at Nnamdi Azikiwe University?
2. What is the extent to which undergraduates adhere to ethical guidelines when using digital resources?
3. What are the factors influencing ethical or unethical behaviors in the use of DRs?
4. What are the strategies for promoting the ethical use of digital resources within the university?

Review of Related Literature

Technology ethics refers to the principles and moral guidelines governing the responsible use of technology in various fields, including academia and professional practices. It emphasizes balancing innovation with ethical standards to ensure the protection of data, intellectual property, and human dignity (Floridi, 2015). The rapid integration of

digital technologies in education necessitates a deeper focus on technology ethics to prevent issues such as plagiarism, data breaches, and misuse of digital tools (Ogunlana & Ajayi, 2018). In higher education, these ethical principles are crucial for maintaining academic integrity and fostering trust among students and educators most especially in the use of digital resources

Digital resources (DRs) are electronic assets provided by libraries that enable access to a variety of academic materials, including e-books, journal articles, databases, and multimedia resources (Adepoju & Alabi, 2020). These resources are designed to facilitate remote learning and improve research productivity by offering extensive and immediate access to scholarly content. The widespread adoption of DRs has revolutionized how students and researchers interact with information, making it an essential component of modern educational institutions (Onuoha, 2022). Despite their benefits, challenges such as digital literacy and equitable access remain significant

The use of digital resources encompasses the practices and methods through which students and researchers engage with digital academic content for learning, assignments, and research purposes (Nwachukwu & Ezeokeke, 2017). Effective use involves not only accessing these resources but also adhering to ethical guidelines that ensure proper citation, respect for intellectual property, and avoidance of academic misconduct (Ogbonna et al., 2018). Studies show that undergraduates often require training to use DRs effectively and ethically, as a lack of awareness can lead to misuse or underutilization (Adebanjo & Umeh, 2018). Ensuring that undergraduate students understand the scope and responsible use of these resources is pivotal for academic success.

Undergraduate students are individuals enrolled in a higher education institution pursuing a bachelor's degree or its equivalent. They form a significant part of the academic community, characterized by their active engagement in coursework, research projects, and extracurricular activities aimed at building foundational knowledge and skills (Nwachukwu & Ezeokeke, 2017). In the digital era, undergraduates face unique challenges related to technology use, including navigating digital resources and understanding the ethical implications of digital interactions (Ogunlana & Ajayi, 2018). Enhancing their digital literacy and ethical awareness is critical for academic development and future professional

competence which creates a viable essence for applying ethical practices in the utilization of digital resources by undergraduates

The application of ethical practices in the utilization of digital resources (DRs) by undergraduates is essential for maintaining academic integrity and fostering a culture of responsible research. Ethical guidelines ensure that students engage in practices such as proper citation, respect for intellectual property, and adherence to copyright regulations (Eze, 2019). These practices are crucial in preventing plagiarism, which undermines the credibility of academic work and negatively impacts students' academic records (Ogbonna et al., 2018). Ensuring ethical use of DRs helps build a foundation of honesty and trust within educational institutions, promoting a culture where knowledge is valued and appropriately credited .

Moreover, incorporating ethical practices when using DRs enhances students' understanding of information literacy, a vital skill for academic and professional success. Undergraduates who are trained to follow ethical guidelines are better equipped to navigate the complexities of digital resources, making informed decisions on how to collect, use, and share information responsibly (Ogunlana & Ajayi, 2018). This not only aids in their immediate academic pursuits but also prepares them for future scenarios where the ethical handling of information is paramount, such as in the workplace or during advanced research. Studies highlight that students with strong ethical foundations demonstrate greater research competence and produce more original and impactful academic contributions (Akinwumi & Okafor, 2021; Nwachukwu & Ezeokeke, 2017).).

The essence of applying ethical practices extends beyond compliance with institutional policies; it promotes a deeper respect for the work of others and an appreciation for the collective nature of academic growth (Floridi, 2015). For undergraduates, ethical behavior in the use of DRs also safeguards their own academic reputation and prevents potential sanctions or academic penalties related to misconduct. Nigerian researchers have stressed that the integration of ethical education into university curricula can significantly mitigate the risks of unethical behavior (Eze, 2019). By instilling these values early on, universities foster a scholarly environment that upholds the integrity of academic pursuits and contributes to the overall quality and credibility of educational achievements.

Methodology

Descriptive survey research design was adopted for the study. The population of the study comprised of 25,000 undergraduates in Nnamdi Azikiwe University, Awka, Anambra State. A sample of 400 undergraduates was selected using convenience sampling technique. The observation checklist and questionnaire was the research instrument used for data collection. The instrument was validated by 3 experts. The Crombach Alpha a reliability method was used to test the internal consistency of the instrument. A reliability coefficient of 0.87 was gotten. Data collected was analyzed using descriptive statistics of mean scores and standard deviation

Results

Research Question 1: What is the level of awareness of technology ethics among undergraduates at Nnamdi Azikiwe University?

Table 1: Observation checklist on awareness of technology ethics in using digital resources

S/N	Items	Aware	Not Aware
1	Guidelines to ethics education		x
2	Disciplinary background on technology ethics		x
3	Personal experiences with technology	√	
4	Ethical information on digital resources		x
5	Programs that incorporate technology ethics education		x
6	Courses that focus on digital ethics		x
7	Modules on privacy		x
8	Ethics on cyber security		x
9	Rules guiding intellectual property		x
10	How to use technology in the right way	√	

The data in Table 1 revealed that undergraduates at Nnamdi Azikiwe University, Awka generally lack awareness of technology ethics related to the use of digital resources. Specifically, most students were unfamiliar with aspects such as ethics education guidelines, disciplinary context for technology ethics, ethical information regarding digital resources, educational programs including technology ethics, courses on digital ethics, privacy modules, cybersecurity ethics, and rules regarding intellectual property. Conversely, only a small number of students indicated awareness of technology ethics through personal experiences with technology and proper usage practices. This suggests that the majority of undergraduates at Nnamdi Azikiwe University, Awka are not knowledgeable about technology ethics in the context of using digital resources

Section 2: To what extent do undergraduates adhere to ethical guidelines when using electronic library resources?

Table 2: Mean responses on the extent undergraduates adhere to ethical guidelines when using digital resources

S/N	Items	Mean	Remarks
1	Undergraduates stick to copyright laws when using digital resources	1.87	Low extent
2	Undergraduates adhere to licensing agreements when using digital resources	1.13	Low extent
3	Undergraduates protect their privacy when accessing digital resources	2.67	High extent
4	Undergraduates protect their personal data when accessing digital resources	2.79	High extent
5	Undergraduates use digital resources ethically and responsibly	1.10	Low extent
6	Undergraduates practice good digital citizenship when using digital resources	1.92	Low extent
7	Undergraduates apply rules related to technology use and digital resources	1.12	Low extent
Grand Mean		1.80	Low extent

The data in Table 2 indicated that undergraduates at Nnamdi Azikiwe University, Awka generally do not apply technology ethics when using digital resources which was represented on a low extent. Most students disagreed with statements suggesting that they follow copyright laws, respect licensing agreements, use digital resources responsibly and ethically, or practice good digital citizenship. However, a small portion of the undergraduates reported applying technology ethics, such as protecting their privacy and personal data when accessing digital resources and following rules related to technology use. The grand mean score of 1.80 suggests that the majority of undergraduates at the university to a low extent, practice technology ethics in their use of digital resources.

Research Question 3: What factors influence ethical or unethical behaviors in the Undergraduates' use of digital resources in Nnamdi Azikiwe University?

Table 3: Mean responses on the factors that influence ethical or unethical behaviors in the Undergraduates' use of digital resources

SN	Items	Mean	Remarks
1	Lack of awareness of technology ethics principles	2.87	Agreed
2	Undergraduates may face pressure to prioritize convenience when using digital resources	3.13	Agreed
3	Undergraduates may face pressure to prioritize efficiency over	2.97	Agreed

	ethical considerations when using digital resources		
4	Universities may not always provide adequate guidance to help undergraduates navigate technology ethics issues.	3.09	Agreed
5	Technical limitations may impede undergraduates' ability to adhere to technology ethics when accessing digital resources	3.10	Agreed
6	Peer influence can influence undergraduates' adherence to technology ethics	2.92	Agreed
7	Ethical issues related to technology use may sometimes be ambiguous	3.12	Agreed
8	Social norms within academic communities influence undergraduates' adherence to technology ethics	3.19	Agreed
9	Ethical issues related to use of digital resources may sometimes be unclear	3.01	Agreed
	Grand Mean	3.04	Agreed

The data in Table 3 indicated that undergraduates at Nnamdi Azikiwe University, Awka acknowledged key factors that influence ethical or unethical behaviors in the use of digital resources. These factors included a lack of awareness of technology ethics principles, the tendency to prioritize convenience, and the pressure to value efficiency over ethical considerations. Additionally, students noted insufficient guidance for navigating technology ethics, technical limitations that hinder adherence, peer influence, ambiguity in ethical issues related to technology use, and social norms within academic communities impacting adherence to ethical practices. The grand mean score of 3.04 suggests an overall agreement, implying that factors that influence ethical or unethical behaviors in the Undergraduates' use of digital resources by undergraduates include a lack of awareness of technology ethics and the pressure to prioritize convenience, among other factors.

Research Question 4: What strategies can be recommended to promote the ethical use of digital resources by Undergraduates within the university?

Table 4: Mean responses on strategies to promote the ethical use of digital resources by Undergraduates within the university

SN	Items	Mean	Remarks
1	Incorporating technology ethics education into the curriculum helps students develop a deeper understanding of ethical principles related to electronic library resource	2.82	Agreed
2	Establishing clear policies and guidelines for the ethical use of digital resources helps set expectations for users	3.10	Agreed
3	Launching awareness campaigns and outreach initiatives can help raise awareness among users about technology ethics issues	2.93	Agreed
4	Establishing ethics committees or review boards within academic institutions can provide oversight and guidance on technology ethics issues	3.01	Agreed

5	Incorporating ethical design principles into the development of digital resources promotes user privacy	3.09	Agreed
6	Incorporating ethical design principles into the implementation of digital resources promotes user security	2.92	Agreed
7	Incorporating ethical design standards into the development and implementation of digital resources promotes user autonomy	3.15	Agreed
8	Collaborating with technology vendors and service providers can help ensure that digital resources adhere to ethical standards and best practices	3.20	Agreed
9	Ongoing assessment and evaluation of technology ethics initiatives can identify gaps and address challenges	3.07	Agreed
Grand Mean		3.11	Agreed

The data in Table 4 revealed that undergraduates at Nnamdi Azikiwe University, Awka agreed on several strategies to enhance the ethical use of electronic library resources within the university. These strategies included incorporating technology ethics education into the curriculum to help students gain a deeper understanding of ethical principles related to electronic library use and establishing clear policies and guidelines to set user expectations. Other effective strategies identified were launching awareness campaigns and outreach programs to raise user awareness of technology ethics, forming ethics committees or review boards to provide oversight, and incorporating ethical design principles into digital resources to support user privacy, security, and autonomy. Additionally, collaborating with technology vendors to ensure adherence to ethical standards and conducting ongoing assessments to identify and address gaps were seen as beneficial. The grand mean score of 3.11 suggests overall acceptance, indicating that key strategies such as curriculum integration and policy development are vital for promoting the ethical use of electronic library resources, among others.

Discussion of Findings

The lack of awareness regarding technology ethics among undergraduates is a significant concern. According to Tamsin and Misra (2018), many students exhibit a limited understanding of ethical standards related to digital resources, leading to potential misuse and misconduct in academic settings. They highlight that insufficient exposure to technology ethics during educational training often results in students being ill-equipped to navigate ethical dilemmas in digital contexts. Furthermore, a study by Griffiths and Davis (2019) also supports this finding, revealing that university students frequently lack knowledge of ethical

practices associated with the use of digital information. The authors emphasize the importance of integrating digital ethics education into the university curriculum to better prepare students for the ethical challenges they may face

The low adherence to ethical guidelines in utilizing digital resources is alarming. According to a study by Palmer and Nelson (2020), students often disregard ethical practices when accessing digital resources, primarily due to a lack of understanding and awareness of the existing guidelines. The authors argue that this non-compliance can lead to issues such as plagiarism and misuse of copyrighted materials, which can have serious academic consequences. In addition, research conducted by Zhao and Chen (2021) further illustrates this issue, indicating that many students fail to recognize the importance of adhering to ethical guidelines when utilizing digital resources, often prioritizing convenience over compliance. Their findings suggest that a lack of institutional support and clear guidelines exacerbates this problem, emphasizing the need for educational interventions.

The influence of various factors on ethical behavior in digital resource utilization is well-documented. A study by Smith and Johnson (2020) identifies a lack of awareness regarding technology ethics as a primary factor leading to unethical behavior among students. They argue that without proper education on ethical principles, students are more likely to make decisions based solely on convenience, often overlooking the ethical implications. Moreover, research by Chen and Roberts (2021) corroborates these findings by revealing that students often prioritize ease of access and convenience when utilizing digital resources, sometimes at the expense of ethical considerations. The authors suggest that addressing these pressures through educational initiatives is crucial to promoting ethical behavior.

Incorporating technology ethics education into the curriculum is essential for promoting ethical behavior among students. According to a study by Kuhlthau and Gibbons (2021), integrating ethical principles into academic programs fosters a deeper understanding of the implications of digital resource use. Their research suggests that a curriculum that includes discussions on ethics significantly enhances students' ethical decision-making skills. Additionally, a study by Anderson (2022) supports the need for clear policies and guidelines. He found that establishing comprehensive policies regarding the ethical use of digital

resources helps set clear expectations and provides students with the framework needed to navigate ethical challenges effectively

Conclusion

The study on evaluating ethical practices in the utilization of digital resources by undergraduates at Nnamdi Azikiwe University, Awka, reveals a concerning lack of awareness and adherence to technology ethics among the students. With a significant majority unaware of ethical guidelines and facing pressures that compromise their ethical behavior, it is evident that there is an urgent need for intervention. To foster a culture of ethical digital resource usage, it is crucial to incorporate technology ethics education into the academic curriculum and establish clear policies that set expectations for ethical conduct. These recommendations aim not only to enhance students' understanding of ethical principles but also to promote responsible use of digital resources, ultimately contributing to a more ethically conscious academic environment

Recommendations

Based on the findings of the study on the evaluating ethical practices in the utilization of digital resources by undergraduates at Nnamdi Azikiwe University, Awka, several recommendations were made to address the identified problems:

1. Develop and enforce a clear code of conduct regarding the use of digital resources, accompanied by accessible resources that outline ethical guidelines. This code should include specific examples of acceptable and unacceptable behaviors, along with corresponding consequences for violations.
2. Introduce peer-led ethical review committees within student organizations, where students can discuss and evaluate digital resource usage scenarios. These committees can foster an environment of shared responsibility and peer influence, helping students to navigate ethical dilemmas collectively.
3. The university should integrate digital ethics as part of general education or ICT courses for undergraduates. This will enhance students' understanding of intellectual property rights, plagiarism, and responsible use of digital resources.

4. Periodic seminars and workshops on digital resource ethics should be held to educate undergraduates about ethical considerations in using online materials. Such events can address practical issues like proper citation and avoiding academic dishonesty.
5. The university should develop and enforce comprehensive policies on ethical digital resource utilization. These policies should outline penalties for unethical practices such as plagiarism and unauthorized distribution of digital content.
6. The institution should make tools like plagiarism detection software and citation managers accessible to students. These tools can assist undergraduates in adhering to ethical research practices while utilizing digital resources.
7. The university library and ICT units should collaborate to launch awareness campaigns on the ethical use of digital resources. Strategies such as posters, online campaigns, and email newsletters can emphasize the importance of digital ethics.
8. A dedicated unit should be established to monitor and support ethical digital resource use. This unit can provide guidance to students on acceptable practices and resolve issues related to unintentional ethical breaches.

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