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Analysis of Open Educational Resources [OERS] Availability and Accessibility for Learning Activities among Students at Kaduna State University: Implications for Institutional Policy

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Abstract

This study examines the availability and accessibility of Open Educational Resources (OERs) for learning among undergraduate students at Kaduna State University (KASU), Nigeria. Employing a cross-sectional design, data were collected from 434 students using a validated questionnaire assessing OER types and access methods. Developed on a four-point Likert scale and validated through expert review, the instrument demonstrated high reliability with Cronbach's Alpha indices of 0.89 (availability) and 0.92 (accessibility), confirmed through pilot testing at Ahmadu Bello University. Descriptive and inferential statistical analyses revealed no significant gender differences in the types of OERs available (t = 0.717, p = 0.866) or methods of access (t = -0.673, p = 0.863), aligning with global trends of narrowing gender gaps in digital resource utilization. However, Male students reported marginally higher access to technical and multimedia resources (for example: lab manuals, podcasts; mean difference = 0.04–0.16), while female students demonstrated slightly greater reliance on academic writing guides (M = 2.72 vs. 2.64) and mobile-based educational apps (M = 2.60 vs. 2.47). Both genders predominantly used search engines (male M = 2.59; female M = 2.77) and peer networks (M ≈ 2.60–2.62) over institutional platforms like KASU's digital library (M ≈ 2.41–2.44), underscoring systemic gaps in university-led OER promotion. Institutional policy implications emphasize revitalizing digital infrastructure, integrating gender-responsive OER curation in STEM disciplines, and addressing structural barriers (erratic electricity, high data costs) through partnerships with international OER platforms and subsidized offline access points. The study contributes to the discourse on intersectional approaches to open education in sub-Saharan Africa, advocating for policies that transcend equal provision to foster equitable utilization across gendered academic trajectories.

Keywords: Availability, Accessibility, Gender-based analysis, Open Educational Resources (OERs), Learning

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Introduction

Open Educational Resources (OERs) have emerged as transformative tools in global higher education, offering unrestricted access to knowledge and reducing financial, geographic, and institutional barriers to learning. In Nigeria, the National Policy on Open Educational Resources for Higher Education (National Universities Commission, 2017) positions OERs as critical instruments for achieving equitable access to quality education, particularly in regions plagued by systemic disparities. Despite this policy framework, pervasive gender gaps in digital literacy, resource access, and educational attainment persist, especially in Northern Nigeria, where sociocultural norms and infrastructural limitations disproportionately disadvantage female learners (Remi-Aworemi, 2024). The William and Flora Hewlett Foundation (2019) defines OERs as teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others. This definition underscores the financial benefits for students, who can avoid expensive traditional textbooks (Dabbagh, 2018). Another definition emphasizes the legal framework that enables open access. Wiley (2020) defines OERs as educational materials (including multimedia content) that, while residing in the public domain, are released under an open license that permits their free use and adaptation by others. This definition highlights the reusability aspect of OERs, allowing educators to adapt and modify resources to fit their specific teaching needs (McCarthy, 2021).

Empirical studies established that gender-based digital resource access is narrowing in tertiary education contexts (Atenas & Havemann, 2015; Mishra, 2020). This reflects a positive shift toward digital equity, potentially driven by institutional policies promoting inclusive access to open content (Nkuyubwatsi, 2016). Studies highlight male dominance in science, technology, engineering, and mathematics (STEM) fields where such materials are more heavily used (Trotter et al., 2020). According to Olufunke and Bamidele's (2021) study, male students, compared to female students, report higher access and utilization of technical content and audio-visual learning aids. Conversely, research by Afolabi and Yusuf (2022) and Okonkwo (2019) found that female students in northern Nigerian universities often rely on peer-sharing mechanisms due to limited access to formal academic planning documents, which they attributed to subtle biases in departmental communication and access structures. Adetimirin and Akinlade (2021) found that female students in Nigerian universities were more likely to use OERs for essay and report writing, while their male counterparts leaned towards STEM-oriented materials.

Nevertheless, some studies contradict these findings. Omoike and Edet (2018) found significant gender gaps in OER access in South-South Nigeria, where female students experienced lower digital literacy and restricted access to online platforms. Similarly, Zawacki-Richter et al. (2020) highlighted that although OERs are theoretically open, sociocultural and technological barriers may inhibit equal usage, particularly for female students in less digitally developed contexts. Several empirical studies also indicate equal access to digital resources when infrastructural constraints are shared (Abubakar & Idris, 2021; Oke & Oladokun, 2020). Also,

students across African universities often use search engines due to their simplicity, accessibility, and lack of restriction (Gakio *et al*., 2022; Yusuf & Balogun, 2019).

The social constructivist view of learning emphasizes the role of peer collaboration in navigating educational challenges (Adebayo & Ahmed, 2023). In environments where institutional support for OERs is limited, students' social networks often fill the gap through informal sharing and collaborative discovery of resources (Okonkwo et al., 2021). Hence, the findings of Olumide and Bello (2020) reported that female students often use mobile-based learning tools more frequently due to their convenience and lower technical barriers. This may also reflect efforts by female students to overcome gendered disparities in access to physical ICT infrastructure, which remain a concern in many Nigerian tertiary institutions (Aina *et al.*, 2018). These include poor promotion of institutional resources, minimal digital literacy training, and limited organizational investment in user experience design (Salami & Jibrin, 2022). Also, prior studies have identified a lack of faculty involvement as a barrier to successful OER integration in African universities (Agbo *et al*., 2021). This supports the importance of such training in fostering the skills needed to evaluate, adapt, and use OERs effectively (Tella *et al*., 2019).

Furthermore, the underutilization of dedicated open textbook platforms such as OpenStax and external university repositories reflects infrastructural challenges such as erratic electricity, high internet data costs, and limited awareness (Okebukola *et al*., 2023); female students may experience exacerbated difficulties due to lower device ownership rates and sociocultural constraints on technology access (Olojede *et al*., 2020). However, Eze *et al*. (2017) found that male students in Nigerian universities tend to dominate digital resource use, partly due to higher confidence and access to technological tools. Similarly, Onah and Adewuyi (2020) reported a significant gender gap in OER engagement, attributing it to gendered expectations and disparities in ICT training at the secondary education level. While existing research broadly examines OER access across Nigerian universities, no studies have specifically investigated gender-based OER accessibility at Kaduna State University, which operates in a unique northern Nigerian context with distinct gender dynamics. This study fills the gap by exploring the following

Research Questions:

i. What types of Open Educational Resources [OERs] are available to male and female students for learning and research activities at KASU?
ii. What are the primary methods used by Male and Female students to access Open Educational Resources [OERs] for learning and research at Kaduna State University [KASU], Nigeria?

Null Hypotheses

H_{O1}. There is no significant difference in the types of Open Educational Resources [OERs] available to male and female students for learning and research at KASU, Nigeria.

H_{O2}. There is no significant difference in the primary methods male and female students use to access Open Educational Resources [OERs] for learning and research at Kaduna State University [KASU], Nigeria.

Methodology

The researchers adopted a cross-sectional research design. Cross-sectional studies collect data from participants simultaneously and are useful for examining the prevalence of outcomes at a certain moment Creswell and Creswell, 2018). The target population encompassed all registered undergraduate students in Kaduna State University, Kaduna, totaling fourteen thousand three hundred and ninety (14,390) as of the 2023/2024 academic session. Out of this, a sample of four hundred and fifty (450) was drawn based on the Research Advisors sample size table recommendations (Research Advisors, 2010). This approach helps ensure an appropriate sample size given the population size, desired confidence level, and margin of error.

The researchers employed simple and stratified sampling techniques to select the respondents for this study (Kumar, 2019), from three Kaduna State University campuses: Ang Rimi (Main), Kafanchan and Kakuri campus respectively. The instrument "Availability, Accessibility and Utilisation of Open Educational Resources (OERs) Questionnaire" was used for data collection. The instrument was developed based on a four-point modified Likert scale and contained three sections (Joshi *et al.*, 2015). The first section focused on the bio-data of the respondents. In contrast, the second and third sections contained item statements used to collect data from the respondents on the availability and accessibility of OERs.

The instrument was validated by experts in education, Library and Information Sciences, and language experts. A pilot study was conducted at Ahmadu Bello University, Zaria, Nigeria, with thirty (30) undergraduate students using a single-spot distribution method. The instrument's reliability was established using Cronbach's Alpha, a measure of internal consistency that indicates how reliably a questionnaire measures a construct or latent variable (Taber, 2018). Cronbach's Alpha values range from zero to one, with higher values indicating better reliability (Taber, 2018). For this study, reliability indices of 0.89 and 0.92 were obtained, indicating high internal consistency of the instrument. The data collected were analysed using descriptive and inferential statistics. (Field, 2018).

Results

The researchers distributed four hundred and fifty [450], while four hundred and forty-one [441] was successfully retrieved. After data cleansing, four hundred and thirty-four [434] were adjudged as valid for the analysis. The four hundred and thirty-four [434] respondents comprised two hundred and seventeen [217] male students and two hundred and seventeen [217] female students, respectively. Thus, the analysis was based on this.

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Research Question 1: What types of OERs are available to male and female students for learning and research activities at KASU?

Table 1: Types of OERs Available to Male and Female Students

S/N	Item Statement	Male Respondent			Female Respondent		
		Mean	**S.D**	**Decision**	**Mean**	**S.D**	**Decision**
1.	Free digital textbooks and lecture notes are available.	3.22	0.90	Agree	3.28	0.89	Agree
2.	There are open-access journal articles for research needs.	2.86	0.85	Agree	2.83	0.86	Agree
3.	Can easily find open-access podcasts relevant to course of study.	2.72	1.03	Agree	2.57	1.05	Agree
4.	There are open-source images, infographics and diagrams on various courses.	2.74	0.99	Agree	2.58	1.01	Agree
5.	There are open-access lab manuals for practical courses.	2.70	1.04	Agree	2.65	1.08	Agree
6.	Can find free, comprehensive lecture slides on some of the courses.	2.53	1.02	Agree	2.52	1.05	Agree
7.	There are free academic writing guides and resources on various course.	2.64	0.97	Agree	2.72	0.97	Agree
8.	Entire course outlines with learning objectives are available.	2.55	1.07	Agree	2.43	1.06	Disagree
9.	Open-source software tools related to field of study are readily available.	2.65	1.04	Agree	2.61	1.02	Agree
10	Free tutorials, YouTube videos, and webinars are available in field of study.	2.67	0.90	Agree	2.66	0.96	Agree
	Cumulative Mean and SD	**2.73**	**0.98**		**2.69**	**0.99**	

Source: Field Survey, 2025

This table analyzes the types of OERs available to male and female students for learning and research activities at KASU, Nigeria. Both male and female students at KASU report moderate agreement regarding the availability of free digital textbooks and lecture notes, with male respondents averaging a mean score of 3.22 (SD=0.90) and female respondents 3.28 (SD = 0.89). This near-parity suggests institutional efforts to digitize core academic materials, aligning with global trends in open-access education.

The data also revealed that male students report slightly higher agreement (M= 2.86, SD = 0.85) than females (M= 2.83, SD= 0.86) regarding access to open-access journal articles. Gender gaps widen in access to multimedia OERs. Male students report higher agreement on the availability of podcasts (male M= 2.72; female M=2.57), open-source images (male, M= 2.74; female, M=2.58), and lab manuals (male, M= 2.70; female, M=2.65).

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Furthermore, a critical divergence emerges in Item 8, where female students disagree (M=2.43) on the availability of comprehensive course outlines, contrasting with male agreement (M= 2.55). Conversely, female students report marginally better access to academic writing guides (M = 2.72 versus M=2.64), suggesting targeted support in areas culturally deemed "appropriate" for women, such as communication-focused disciplines. Thus, the cumulative means (Male = 2.73, Female = 2.69) mask underlying socio-cultural dynamics.

Research Question 2: What are the primary methods used by Male and Female students to access Open Educational Resources [OERs] for learning and research at Kaduna State University [KASU], Nigeria?

Table 2: **Methods used by students to access Open Educational Resources (OERs)**

S/N	Item Statement	Male Respondent			Female Respondent		
		Mean	S.D	Decision	Mean	S.D	Decision
11.	Access OERs through KASU's official online learning platform.	2.40	1.23	Disagree	2.41	1.29	Disagree
12.	Use search engines like Google and Yahoo, among others, to find OERs.	2.59	1.15	Agree	2.77	1.13	Agree
13.	Lecturers provide direct links to OERs for their course materials.	2.37	0.99	Disagree	2.47	1.05	Disagree
14.	Access OERs through KASU's digital library.	2.44	1.04	Disagree	2.41	1.07	Disagree
15.	Social media platforms are primary source for accessing OERs.	2.48	0.89	Disagree	2.59	0.92	Agree
16.	Rely on peer recommendations to find relevant OERs for my studies.	2.60	0.89	Agree	2.62	0.83	Agree
17.	KASU organises workshops on how to access and use OERs effectively.	2.15	1.01	Disagree	2.11	1.04	Disagree
18.	Access OERs through institutional repositories of other universities.	2.42	0.92	Disagree	2.34	0.86	Disagree
19.	Use open textbook platforms like OpenStax to access course materials.	2.12	1.06	Disagree	2.14	1.10	Disagree
20.	Access OERs through educational apps on mobile devices.	2.47	0.96	Disagree	2.60	0.97	Agree
Cumulative Mean /Standard Deviation		**2.40**	**1.01**		**2.45**	**1.03**	

Source: Field Survey, 2025

Table 2 presents analysis on methods used by male and female students to access OERs. It could be observed that both male and female students predominantly rely on search engines like Google and Yahoo to locate OERs, with female students reporting slightly higher agreement (M=2.77) compared to males (M= 2.59). Peer recommendations emerged as another critical

method, with near-identical agreement levels between males (M= 2.60) and females (M= 2.62). This underscores the role of social networks in mitigating institutional gaps, as students often share resources to compensate for limited guidance from faculty or workshops. Female students exhibited stronger reliance on social media platforms (M=2.59) and educational mobile apps (M= 2.60) compared to males (M=2.48 and 2.47) respectively. Both genders reported low engagement with KASU's official online learning platform (M= 2.40 for males, 2.41 for females) and **d**igital library (M= 2.44 and 2.41). This reflects systemic issues such as inadequate promotion of institutional resources, technical barriers, or insufficient training. Similarly, workshops on OER utilization, critical for building digital literacy are rarely organized, as evidenced by low scores (M= 2.15 for males, 2.11 for females).

Added to this, neither gender reported significant guidance from lecturers in accessing OERs (means = 2.37 for males, 2.47 for females). This aligns with broader critiques of Nigerian higher education, where faculty members are often untrained in OER integration or resistant to adopting open-access materials. The under access of open textbook platforms (e.g., OpenStax) and external university repositories (M≈ 2.12–2.42) highlights systemic issues such as erratic electricity, high data costs, and limited awareness of OER repositories. Male and female students alike face these barriers, but gendered disparities in device ownership or internet access may exacerbate the challenges for female students.

Test of Hypotheses

Null Hypothesis 1: There is no significant difference in the types of OERs available to male and female students for learning and research at KASU, Nigeria.

Table 3: Independent t-test on types of OERs available to male and female students for learning and research

Variable	Mean	SD	N	Df	M.D	t	P-value
Male	2.73	0.98	434	432	0.04	.717	.866
Female	2.69	0.99					

t-crt=1.96 >P-Value=0.05

The statistical data reveals that male students reported a mean score of 2.73 with a standard deviation of 0.98, while female students had a slightly lower mean score of 2.69 and a standard deviation of 0.99. The mean difference between the two groups is minimal at just 0.04. The calculated t-value of 0.717 is significantly lower than the critical t-value of 1.96 at the 0.05 significance level, and the p-value of 0.866 greatly exceeds the standard threshold of 0.05. These results support accepting the null hypothesis, indicating no statistically significant difference in the types of Open Educational Resources (OERs) available to male and female students at KASU.

The nearly identical mean scores suggest that both genders have similar access to educational resources.

Null Hypothesis 2: There is no significant difference in the primary methods male and female students use to access Open Educational Resources [OERs] for learning and research at Kaduna State University [KASU], Nigeria.

Table 4: Independent t-test On Primary Methods Male and Female Students Use To Access Open Educational Resources [OERs] for learning and research

Variable	Mean	SD	N	Df	M.D	t	P-value
Male	2.40	1.01	434	432	-0.05	-.673	.863
Female	2.45	1.03					

t-crt=1.96 >P-Value=0.05

The statistical analysis from Table 4 tests whether there are significant gender differences in how students access Open Educational Resources (OERs) at Kaduna State University, Nigeria. It could be observed that female students (Mean = 2.45, SD = 1.03) have a slightly higher mean score than male students (Mean = 2.40, SD = 1.01) in their primary methods of accessing OERs, with a mean difference of -0.05. However, this difference is not statistically significant (t = -.673, p = .863), as the p-value is considerably higher than the significance threshold of 0.05. The critical t-value (1.96) is also greater than the calculated t-value (-.673). This result suggests that at KASU, male and female students employ similar methods to access OERs, indicating that institutional efforts to provide equal access may be effective, despite broader trends of gender differences in digital resource utilization observed in other Nigerian higher education settings.

Discussion of Findings

The finding that there is no significant difference in the types of Open Educational Resources (OERs) available to male and female students at Kaduna State University (KASU), Nigeria, aligns with broader global trends suggesting that gender-based digital resource access is narrowing in tertiary education contexts (Atenas & Havemann, 2015; Mishra, 2020). Both genders at KASU report moderate agreement regarding access to core OERs, such as free digital textbooks, lecture notes, and open-access journal articles. This reflects a positive shift toward digital equity, potentially driven by institutional policies promoting inclusive access to open content (Nkuyubwatsi, 2016).

The observed descriptive differences, particularly the male students' higher agreement on the availability of podcasts, open-source images, and lab manuals, can be contextualized through studies highlighting male dominance in science, technology, engineering, and mathematics (STEM) fields where such materials are more heavily used (Trotter et al., 2020). For instance,

Olufunke and Bamidele (2021) noted a gendered pattern in OER use among Nigerian undergraduates, with male students reporting higher access and utilization of technical content and audio-visual learning aids. This may be influenced by course-related requirements and male students' greater presence in practical and lab-based disciplines.

Conversely, the critical divergence observed in perceptions of access to comprehensive course outlines, with female students disagreeing while males agree, indicates a potential structural or communicative gap in how certain departments disseminate materials. A similar finding was reported by Afolabi and Yusuf (2022), who found that female students in northern Nigerian universities often rely on peer-sharing mechanisms due to limited access to formal academic planning documents, which they attributed to subtle biases in departmental communication and access structures.

Interestingly, female students reported better access to academic writing guides, reflecting targeted institutional support in areas traditionally seen as aligned with female roles, such as communication and the humanities (Okonkwo, 2019). This resonates with the work of Adetimirin and Akinlade (2021), who found that female students in Nigerian universities were more likely to use OERs for essay and report writing, while their male counterparts leaned towards STEM-oriented materials.

Nevertheless, some studies contradict these findings. For example, Omoike and Edet (2018) found significant gender gaps in OER access in South-South Nigeria, where female students experienced lower digital literacy and restricted access to online platforms. Similarly, Zawacki-Richter et al. (2020) highlighted that although OERs are theoretically open, socio-cultural and technological barriers may inhibit equal usage, particularly for female students in less digitally developed contexts. These contradictions suggest that institutional context, digital infrastructure, and cultural norms remain critical variables in determining equitable OER access.

The finding that there is no significant gender difference in the types of Open Educational Resources (OERs) available to male and female students at Kaduna State University (KASU), Nigeria, is consistent with several empirical studies indicating equal access to digital resources when infrastructural constraints are shared (Abubakar & Idris, 2021; Oke & Oladokun, 2020). The descriptive analysis further illustrates that male and female students rely heavily on general-purpose search engines such as Google and Yahoo to locate OERs rather than institutional platforms. This reliance aligns with previous research, which found that students across African universities often use search engines due to their simplicity, accessibility, and lack of restriction (Gakio *et al*., 2022; Yusuf & Balogun, 2019).

Peer recommendations were also noted as a critical method for discovering OERs, with nearly equal participation by both genders. This finding reinforces the social constructivist view of learning, which emphasizes the role of peer collaboration in navigating educational challenges (Adebayo & Ahmed, 2023). In environments where institutional support for OERs is limited,

students' social networks often fill the gap through informal sharing and collaborative discovery of resources (Okonkwo *et al*., 2021).

A gender-specific trend emerged, with female students more inclined to use social media platforms and educational mobile apps to access OERs. This aligns with the findings of Olumide and Bello (2020), who reported that female students often use mobile-based learning tools more frequently due to their convenience and lower technical barriers. This may also reflect efforts by female students to overcome gendered disparities in access to physical ICT infrastructure, which remain a concern in many Nigerian tertiary institutions (Aina *et al*., 2018).

The low engagement with KASU's digital library and official online platforms across both genders signals systemic shortcomings. These include poor promotion of institutional resources, minimal digital literacy training, and limited organizational investment in user experience design (Salami & Jibrin, 2022). The finding that neither gender receives significant guidance from lecturers in locating or using OERs echoes prior studies that identified a lack of faculty involvement as a barrier to successful OER integration in African universities (Agbo et al., 2021). Workshops on OER utilization remain rare, further compounding the issue. Empirical evidence supports the importance of such training in fostering the skills needed to evaluate, adapt, and use OERs effectively (Tella *et al*., 2019). Without such initiatives, students are left to navigate digital landscapes independently, which may limit the depth and quality of their learning.

Furthermore, the underutilization of dedicated open textbook platforms such as OpenStax and external university repositories reflects infrastructural challenges such as erratic electricity, high internet data costs, and limited awareness (Okebukola *et al*., 2023). While these challenges affect both genders, female students may experience exacerbated difficulties due to lower device ownership rates and sociocultural constraints on technology access (Olojede *et al*., 2020).

However, contradicting evidence exists. For example, Eze et al. (2017) found that male students in Nigerian universities tend to dominate digital resource use, partly due to higher confidence and access to technological tools. Similarly, Onah and Adewuyi (2020) reported a significant gender gap in OER engagement, attributing it to gendered expectations and disparities in ICT training at the secondary education level. These differences suggest that while KASU may exhibit gender parity in OER types accessed, this may not be the norm across other institutions in Nigeria.

Implications for Institutional Policy

The findings of this gender-based analysis directly affect institutional policy at Kaduna State University. Firstly, the absence of statistically significant differences in the availability and accessibility of Open Educational Resources (OERs) between male and female students suggests that KASU's current policy toward digital inclusion is yielding equitable outcomes regarding baseline access. This encouraging development should motivate the institution to sustain and further institutionalise inclusive OER practices. However, the subtle descriptive disparities observed, such

as male students reporting greater access to multimedia and technical OERs while female students reporting higher availability of academic writing resources indicate the presence of underlying gendered patterns in usage tied to course orientation and possibly sociocultural expectations. Institutional policies must, therefore, move beyond mere equal provision and adopt targeted strategies that account for the specific academic and digital resource needs of different gender groups. For example, expanding access to course outlines and technical materials for female students, especially in STEM-related fields, could help bridge latent gaps in practical learning support.

Moreover, the finding that students rely more on external platforms like Google and social media rather than KASU's official digital infrastructure underscores the need for an urgent review of the university's OER dissemination and training strategies. Institutional policies should prioritise revitalising KASU's digital library and online learning platform, ensuring they are functional, widely promoted, and integrated into teaching and learning practices. Lecturers must be trained and incentivised to embed OERs into their course delivery and to provide direct, reliable links to OERs, thereby reducing overreliance on informal channels such as peer recommendations and social media. Equally, the near absence of institutional workshops on accessing and using OERs suggests a gap in digital literacy capacity-building, which policy must address by mandating regular training programs for staff and students. These workshops should incorporate gender-sensitive designs that empower all students, especially those facing digital or cultural barriers- to utilise various open resources effectively.

In addition, given that the cumulative means of access methods are relatively low across both genders, and platforms such as OpenStax and institutional repositories of other universities are underutilised, KASU policy should consider partnering with international OER platforms and integrating them into departmental resource portals. Policy frameworks should also consider the infrastructural challenges highlighted in the findings, such as erratic electricity and high data costs, which impede access across gender lines. Mitigating these through campus-based interventions, like offline OER access points, subsidised internet services, and improved ICT infrastructure, will ensure equitable and sustainable access to open resources. Finally, institutional policy must include mechanisms for continuous monitoring and gender-sensitive evaluation of OER use and impact, ensuring that efforts to promote openness reinforce educational equity and academic success for all students.

Conclusion

This study reveals critical insights into the gender dynamics of Open Educational Resources (OERs) at Kaduna State University (KASU), Nigeria. While statistical analyses demonstrate no significant differences between male and female students in the types of OERs available or the primary methods used to access them, nuanced disparities emerge in descriptive findings that warrant institutional attention. Male students report marginally greater access to technical and multimedia

resources such as lab manuals, podcasts, and open-source images, potentially reflecting gendered enrollment patterns in STEM disciplines or subtle biases in resource dissemination. Conversely, female students exhibit slightly better access to academic writing guides, aligning with sociocultural expectations prioritising communication skills in fields traditionally associated with women. These findings collectively suggest that while KASU's baseline policies ensure equitable provision of OERs, latent sociocultural and disciplinary factors continue to shape gendered engagement patterns with specific resource types. The study underscores students' heavy reliance on external platforms like search engines and social media rather than institutional systems such as KASU's digital library or online learning portal. This reliance highlights systemic gaps in promoting and optimising university-hosted resources, compounded by insufficient faculty guidance and near-absent training workshops on OER utilization. For KASU, these findings necessitate a multi-pronged policy overhaul. First, institutional efforts must transition from ensuring basic OER availability to fostering gender-responsive resource curation, particularly in expanding female students' access to technical materials and course outlines. Second, revitalising the university's digital infrastructure through improved platform usability, integrated OER repositories, and mandatory faculty training programs could reduce overreliance on informal peer networks and external tools. Third, addressing structural barriers requires partnerships with national and international OER initiatives to subsidise data costs, deploy offline access points, and embed digital literacy training within curricula.

Recommendations

Based on the findings from the study, the following are recommended for enhancing the availability and accessibility of OERs at Kaduna State University:

1. The university should enhance its institutional digital infrastructure by revitalizing its digital library and online learning platforms. These platforms should be more user-friendly, widely promoted, and integrated into teaching practices. Lecturers should be trained and incentivized to embed OERs into their course delivery and provide direct links to these resources. Additionally, the university should organize regular workshops on building digital literacy for students and staff. These workshops should include gender-sensitive components to ensure equitable participation and empower female students, particularly in overcoming sociocultural barriers to technology use.
2. The Kaduna State government in collaboration with development partners and tech companies should address infrastructural challenges that hinder OER accessibility for all students. This includes providing offline access points for OERs on campus, subsidizing internet services, and improving ICT infrastructure through reliable electricity and affordable data plans. Partnerships with international OER platforms like OpenStax should also be explored to expand resource availability. Continuous monitoring mechanisms should be established to evaluate the impact of these interventions, ensuring that they promote equitable access and academic success across gender lines.

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