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FUTURE TRENDS IN DIGITAL AND TRADITIONAL LIBRARIES FOR HIGHER EDUCATION: ANALYZING TECHNOLOGICAL IMPACT AND EVOLVING SERVICES TO MEET CHANGING EDUCATIONAL NEEDS AT CHUKA UNIVERSITY

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ABSTRACT
This paper explores the future trends in digital and traditional libraries for higher education and analyzes their technological impact on evolving services to meet changing educational needs. The study comprises three main objectives: Identifying emerging technologies with the potential to impact libraries; Investigating changing educational needs of students; Exploring innovative approaches to integrate technology for an enhanced user experience. This research adopts a mixed-methods approach to evaluate the effectiveness of evolving library services. It encompasses a comprehensive literature review, surveys targeting changing educational needs of students at Chuka university, and case studies highlighting innovative library approaches. The literature review identifies several emerging technologies that have the potential to revolutionize academic libraries especially Chuka university, including artificial intelligence, virtual reality, and personalized learning platforms. Implementing these technologies will empower libraries to enhance services, improve information access, and support innovative teaching methods. Survey results emphasize the evolving needs of students in higher education, indicating increased demand for digital resources, and personalized learning experiences. Libraries must adapt by offering seamless access to electronic resources, robust support for online research, and collaborative spaces for group projects and discussions. Case studies of innovative libraries showcase successful technology integration, such as AI-powered chatbots assisting users in navigating resources and virtual reality spaces for interactive learning experiences. These approaches have resulted in improved user engagement and satisfaction. The convenience of digital resources leads to increased satisfaction with library services, while tailored resources enhance learning outcomes for students. Therefore, the future of academic libraries hinges on leveraging emerging technologies and evolving services to meet changing educational needs. Embracing cutting-edge technologies will enable libraries to transform into vibrant, user-centric spaces, supporting diverse learning styles and research requirements.
Keywords: *Future trends, digital and traditional libraries, technological impact, changing educational needs, emerging technologies, evolving library services*

INTRODUCTION
Over the next ten years, academic libraries are predicted to undergo significant changes due to the digitization and globalization of information (Aduba et al., 2020). While developing countries might take time to adopt to these trends,

they are expected to gradually embrace advanced technology as well as employing skilled library professionals (Aduba et al., 2020). A noticeable shift is the increasing implementation of change management practices in university libraries (Williams & Zald, 1997). In addition to information sharing, librarians are now assuming the role of educators, teaching information literacy skills so that patrons can effectively navigate the information landscape (Williams & Zald, 1997). Given the advancements in technology, academic libraries offer a nice environment for tech-savvy librarians to explore innovative approaches to librarianship (Musangi et al., 2019). Effective leadership is crucial in harnessing these skills, with top-level management looking to explore this niche (Musangi et al., 2019). The Kenya Commission of University Education emphasizes higher education levels for library staff, necessitating advanced degrees (Musangi et al., 2019). While traditional academic libraries used to rely on allocated budgets, they are now forced to seek alternate funding sources and resource-efficient strategies due to financial constraints (Aduba et al., 2020). As libraries evolve into information hubs with digital capabilities, the debate between digital and traditional libraries becomes more prominent (Hussain, 2022). Amid concerns about the diminishing value of physical libraries and potential job losses, patrons are likely to embrace both digital and traditional formats, leading libraries to offer a variety of services (Hussain, 2022; Owusu-Ansah, 2020). Libraries are striving to transform into dynamic spaces that foster research and provide diverse resources for faculty and students (American Library Association, 2016). The incorporation of artificial intelligence (AI) chatbots into academic libraries is revolutionizing user interactions and enhancing library services (Rodriguez & Mune, 2022). These chatbots are computer programs designed to simulate human-like conversations, using natural language processing to engage with users (Bagchi, 2020). There are distinct categories of AI chatbots, each with its own advantages. Rule-based chatbots operate based on predefined rules to provide structured responses to frequently asked questions, streamlining user interactions (Leah, 2022). Self-learning chatbots, on the other hand, continuously improve their responses through interactions with users, enhancing user engagement and satisfaction (Adetayo, 2021). Hybrid chatbots combine both rule-based and self-learning strategies, offering efficient assistance while remaining adaptable (Weetech, 2023). Virtual Reality (VR) immerses users in computer-generated environments, blurring the boundaries between reality and simulation (Hudson County Community College, 2023). In the academic context, VR provides immersive learning experiences by transporting students to historical events and complex subjects, thereby enhancing comprehension (Banks, 2022). Libraries are embracing VR to offer patrons virtual travel experiences and interactive learning opportunities (Banks, 2022). Personalized learning platforms are reshaping traditional education by tailoring instruction to the individual needs, strengths, and preferences of students (Morin, 2023). Through collaboration with educators, students develop personalized learning plans, empowering them to take control of their education (Morin, 2023). Various models, such as learner profiles, personalized learning paths, and flexible learning environments, offer diverse approaches to implementation. These platforms offer potential benefits like reducing stigma associated with special education, promoting inclusivity, and enhancing student engagement (Morin, 2023).

The study by Adebowale Jeremy Adetayo (2023) investigates the applications and risks of AI chatbots as traditional libraries transition to digital spaces. The study employs a thorough literature review from credible sources to highlight ChatGPT's potential in enhancing academic library services. Concerns related to accuracy, comprehension, and misuse are addressed, leading to a recommendation for a balanced approach. The insights from the study provide valuable guidance to Chuka University for achieving a technologically balanced educational environment (Adetayo, 2023). Within the dynamic landscape of higher education, libraries have a crucial role in enhancing experiences through technological advancements (Massis, 2018). Bruce E. Massis's (2018) paper explores the potential of VR within libraries, aligning with the evolving digital and traditional libraries at Chuka University. Through informed commentary and a comprehensive literature review, Massis's insights serve as a foundation for practical implications, positioning VR as a tool to engage learners and elevate learning experiences (Massis, 2015). The shift towards personalized learning in higher education requires moving away from conventional e-Learning environments (Benhamdi et al., 2017). The paper by Soulef Benhamdi, Abdesselam Babouri, and Raja Chiky (2017) highlights the importance of personalized recommendations, emphasizing the contemporary relevance of personalized learning in the convergence of digital and traditional library services (Benhamdi et al., 2017). In the rapidly advancing digital era, libraries are becoming innovative hubs by integrating cutting-edge technologies (Gul & Bano, 2019). The Internet of Things (IoT) connects devices to enhance user experiences, while data analytics and artificial intelligence (AI) facilitate proactive learning environments (Li, Xu, & Zhao, 2015; Oyelude, 2017). Smart libraries are even using virtual reality (VR) for immersive experiences (Pohreliuk, Rusyn, & Kowalik, 2017). The COVID-19 pandemic expedited the shift to online learning, highlighting disparities in technology access and raising concerns about student mental health (Aguilera-Hermida, 2020; Bao, 2020; European University Association, 2020). As a result, reimagining assessment methods has become crucial (Govindarajan & Srivastava, 2020). Amidst these transformations, the effectiveness of library information services holds paramount importance (Chemulwo & Sirorei, 2020). Adopting a

user-centric approach, integrating technology, personalizing services, conducting continuous assessments, and fostering collaboration are key factors in enhancing library effectiveness (Chemulwo & Sirorei, 2020).

METHODOLOGY

The research adopted a mixed-methods approach, combining qualitative and quantitative data. A literature review was developed to gather qualitative data. Additionally, case studies of innovative library approaches were analyzed. A survey was carried out to collect quantitative data.

Research Population

The research population for this study comprises the students of Chuka University, which consists of a total of 14,169 students (Commission for University Education, 2017/18).

Sample Technique and Sample Size

A non-probability sampling technique, specifically convenience sampling, was employed to select the participants for the survey. Convenience sampling was chosen due to its practicality and ease of data collection, as well as the accessibility of potential respondents within the university campus (Nikolopoulou, 2022). Out of the total population of 14,169 Chuka University students (Commission for University Education, 2017/18), a sample size of 491 students was selected to participate in the survey. This sample size was chosen to achieve a balance between gathering sufficient data for analysis while also ensuring the practicality of administering the survey within a reasonable time frame (Nikolopoulou, 2022). The sample size of 491 represents approximately 3.47% of the total student population.

Data Collection

For this research, data was collected through a Google Form survey and distributed via WhatsApp groups ensuring a diverse participant pool of 491 Chuka University students. The survey, was accessed through the provided link and these questions were designed to enable comprehensive analysis of participants' viewpoints. Subsequently, collected responses were exported from Google Forms and imported into SPSS Version 27 software for analysis. Quantitative data from the survey was examined using descriptive statistics to summarize and interpret participants' perspectives

SURVEY RESULTS AND DISCUSSIONS

Demographic Distribution

The survey garnered responses from a diverse set of 491 responses from students at Chuka University The results provide a comprehensive view of the diverse opinions and preferences among the population.

Gender

The gender distribution was almost equal, with 46% of respondents identifying as male and 54% as female as shown in Figure 1.

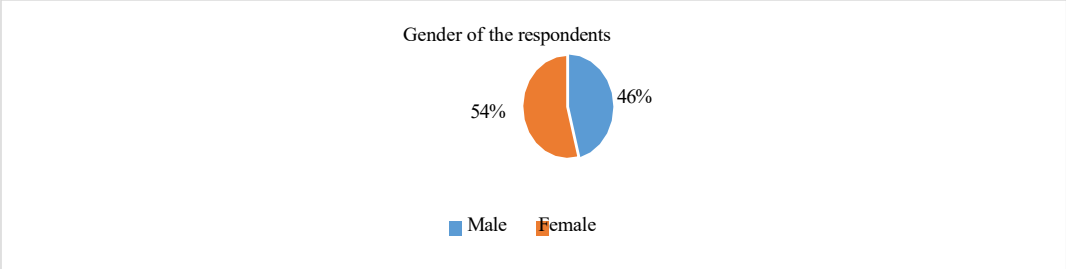


Figure 9: Gender of the respondents

Age Groups

The age distribution of the participants was quite varied, spanning from 18 to above 30. The largest group was within the 22-25 age range, constituting 42.2% (207 respondents). The 18-21 age group accounted for 32% (157 respondents), while the 26-30 and 31 and above age groups constituted 13.2% (65 respondents) and 12.6% (62 respondents) respectively shown in Table 1

Age	Frequency	Percentage
18-21 years	157	32

22-25 years	207	42.2
26-30 years	65	13.2
Above 31 years	62	12.6
Total	491	100

Table 90: Age of the respondents

Academic Year

The respondents covered a broad spectrum of academic stages. Among them, 59.9% (294 respondents) were undergraduates, indicating a predominant presence of students pursuing their bachelor's degrees. Meanwhile, 20% (98 respondents) were postgraduates, showcasing engagement from higher academic levels. The remaining 20.1% (99 respondents) belonged to various other academic years, potentially encompassing professionals seeking continuous learning as shown in Figure 2.

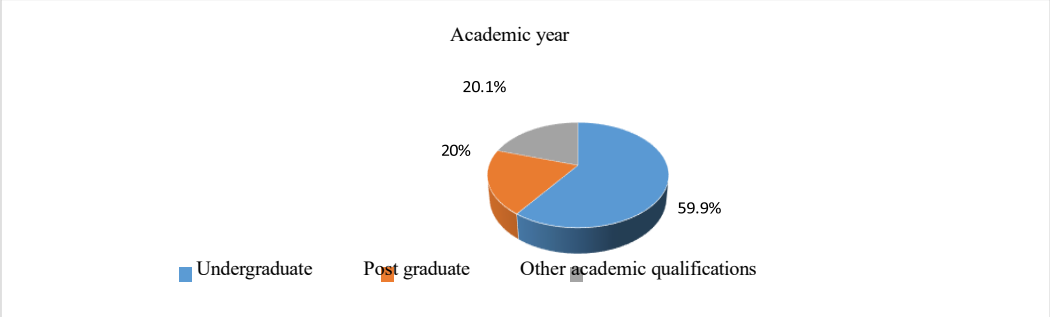


Figure 10:Academic year of the respondents

Digital Resource Usage

This set of findings entails the digital resource usage among the surveyed respondents. A significant portion of respondents (38%) reported using digital resources such as online libraries, e-books, and e-journals very often for their studies. Another substantial group (30%) mentioned using digital resources often. A notable portion of respondents (20%) reported using digital resources occasionally. A smaller proportion of respondents (12%) indicated rare usage of digital resources as shown in Figure 3.

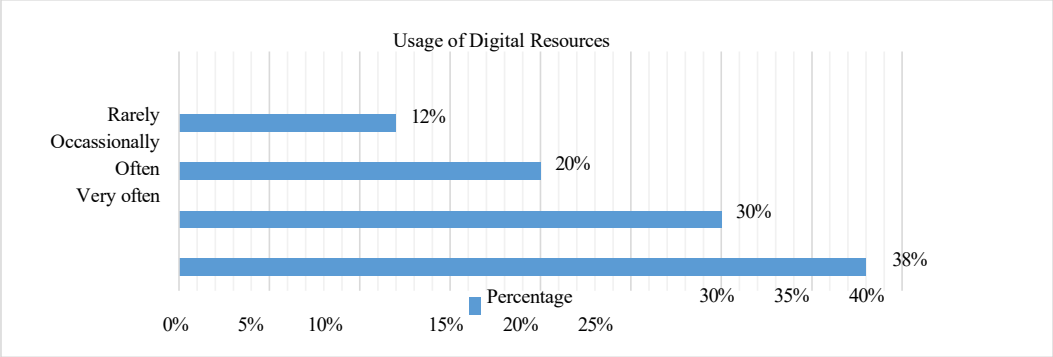


Figure 11: Digital resource usage

Usage of AI technology for educational purposes

This set of findings entails the usage of AI technology for educational purposes among the surveyed respondents. The majority of respondents (56%) reported using AI technology, such as ChatGPT, for educational purposes. A notable percentage (29%) indicated that they have not used AI technology for educational purposes. A smaller group (15%) expressed uncertainty about their usage of AI technology for learning as shown in Figure 4.

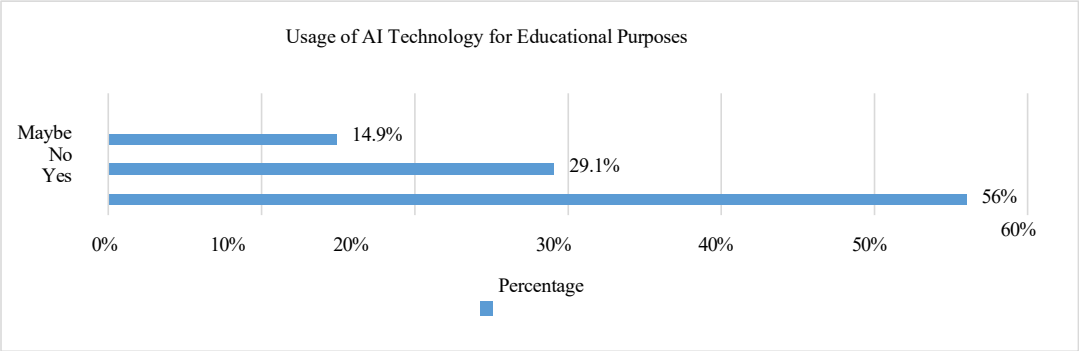


Figure 12: Usage of AI technology for educational purposes

Usage of VR technology for educational purposes

This set of findings entails the usage of VR technology for educational purposes among the surveyed respondents. A quarter of respondents (25%) reported using virtual reality (VR) technology for educational purposes. A significant majority (63%) indicated that they have not used VR technology for educational purposes. A smaller segment (12%) expressed uncertainty about their usage of VR technology as shown in Figure 5.

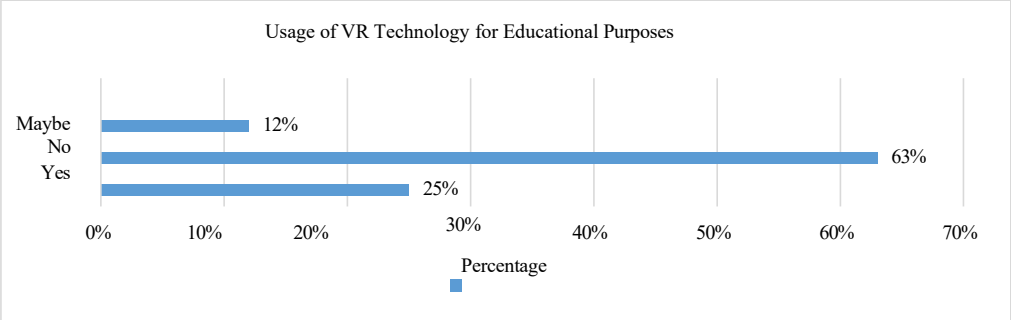


Figure 13: Usage of VR technology for educational purposes

Belief in AI and VR enhancing learning experience

This set of findings entails the belief in AI and VR enhancing learning experience among the surveyed respondents. More than half of the respondents (52%) believe that both AI and VR technologies can enhance their learning experience and contribute positively to their academic journey. A notable percentage (22%) expressed skepticism and do not believe that AI and VR technologies can enhance their learning experience. A quarter of respondents (26%) hold an uncertain stance regarding the impact of AI and VR on their learning experience as shown in Figure 6.

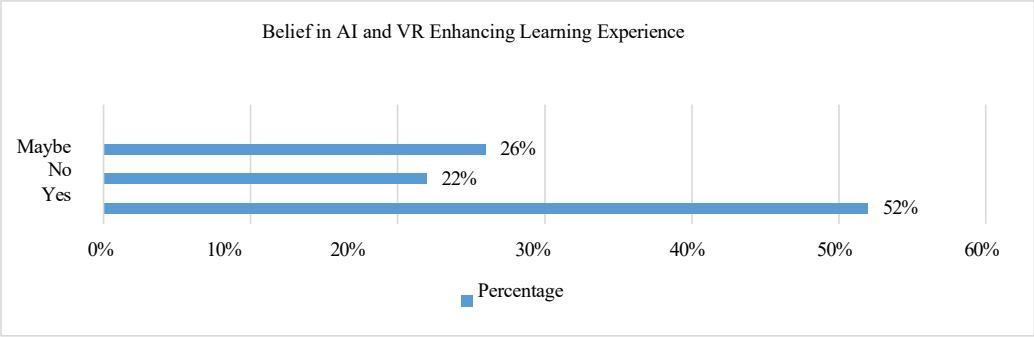


Figure 14: Belief in AI and VR enhancing learning experience

Usage of personalized learning platforms

This set of findings entails the usage of personalized learning platforms among the surveyed respondents. A notable portion of respondents (35%) indicated that they are not currently using any personalized learning platforms. Another significant group (30%) reported using personalized learning platforms for one of their courses. An equal percentage of respondents (35%) mentioned using personalized learning platforms for multiple courses as shown in Figure 7.

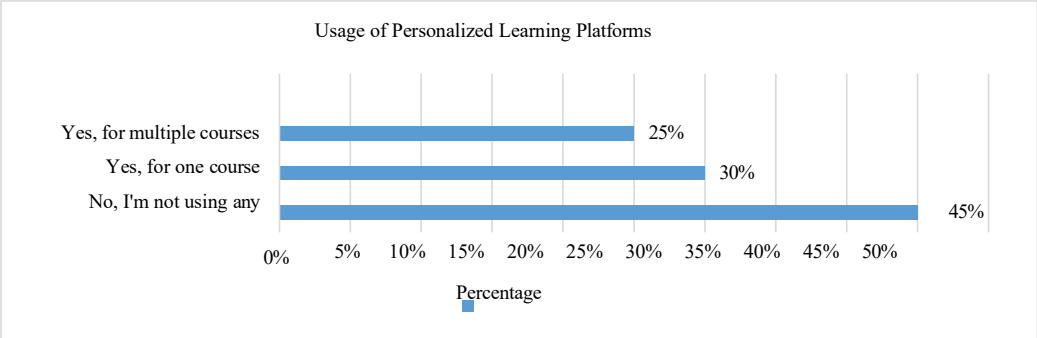


Figure 15: Usage of personalized learning platforms

Demand for digital resources

This set of findings entails the demand for digital resources among the surveyed respondents. A quarter of respondents strongly agree that there is a significant demand for digital resources in higher education. A larger portion, 42%, agrees that there is a demand for digital resources. Nearly one-fifth of respondents expressed a neutral stance. A smaller segment (10%) disagreed that there is a demand for digital resources. A minority (5%) strongly disagreed with the notion of a demand for digital resources as shown in Figure 8.

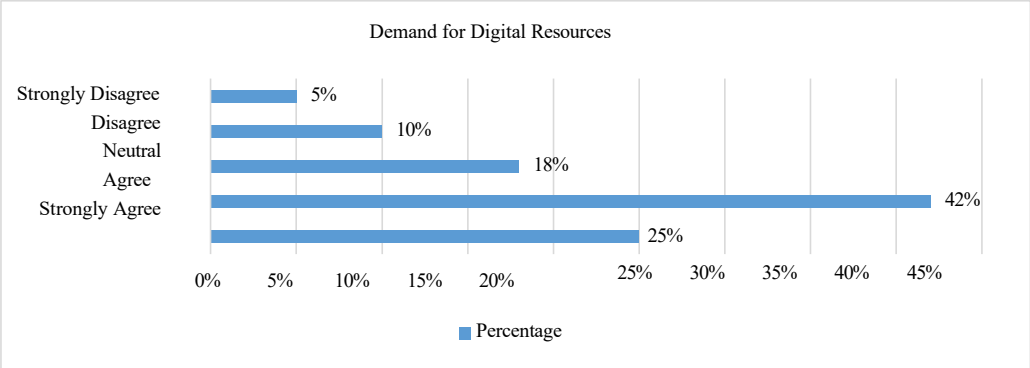


Figure 16: Demand for digital resources

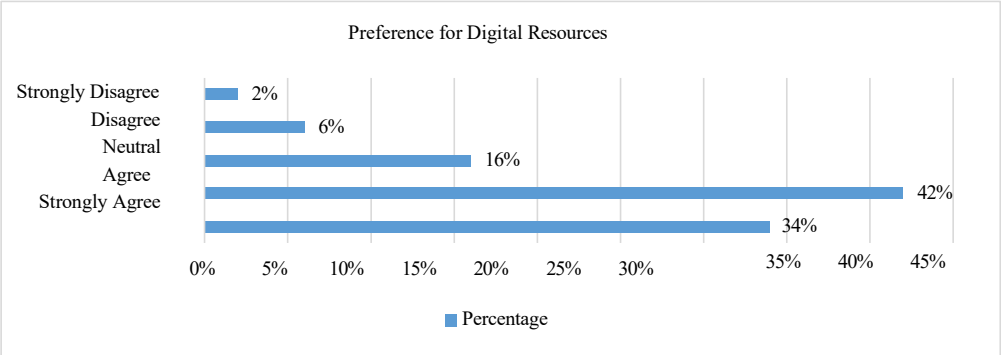
Preference for digital resources

This set of findings entails the preference for digital resources among the surveyed respondents. Over a third of respondents strongly agree that they often prefer using digital resources. This indicates a strong preference for digital formats. Another 42% agree with the preference for digital resources. A notable portion (16%) expressed a neutral stance. A smaller segment (6%) disagrees with the preference for digital resources. A very small percentage (2%) strongly disagrees with the preference for digital resources as shown in Figure 9.

Figure 17: Preference for digital resources

Importance of access to electronic resources

This set of findings entails the importance of access to electronic resources among the surveyed respondents. A



significant portion (41%) strongly agrees that access to electronic resources, is crucial for their academic success. Additionally, 38% agree with the importance of electronic resource access. A notable proportion (15%) holds a neutral stance. A small subset (4%) disagrees with the importance of electronic resource access. A very small percentage (2%) strongly disagrees with the importance of electronic resource access as shown in Figure 10.

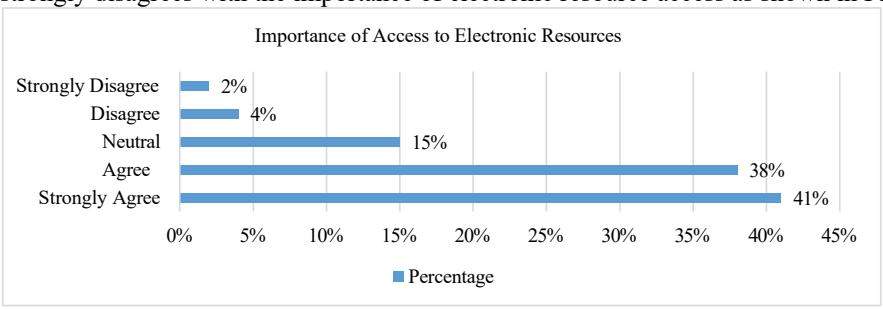


Figure 18: Importance of access to electronic resources

Library's role in providing information access

This set of findings entails the library's role in providing information access among the surveyed respondents. Nearly a third of respondents strongly agree that libraries should prioritize providing seamless access to electronic resources. A larger percentage (44%) agrees with the library's role in providing access to electronic resources. A notable proportion (18%) holds a neutral stance. A smaller percentage (7%) disagrees with the library's role in providing access. A very small minority (3%) strongly disagrees with the library's role in providing electronic resource access as shown in Figure 11.

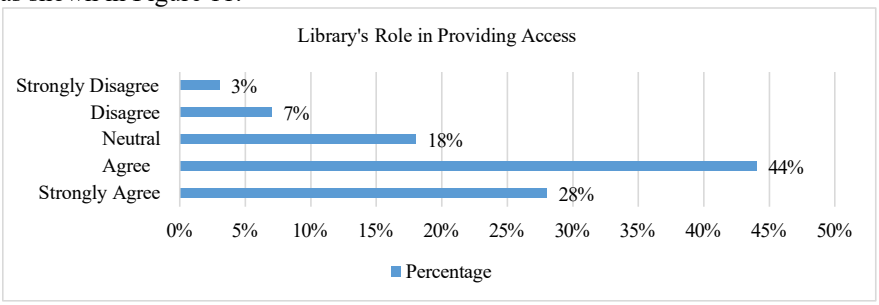


Figure 19: Library's role in providing information access

Library's role in supporting research

This set of findings entails the library's role in supporting research among the surveyed respondents. Just over a quarter of respondents strongly agree that libraries play a significant role in supporting online research activities. A substantial 43% agree with the library's role in supporting research. A significant proportion (19%) holds a neutral stance. A smaller segment (5%) disagrees with the library's role in supporting research. A very small percentage (2%) strongly disagrees with the library's role in supporting research as shown in Figure 12.

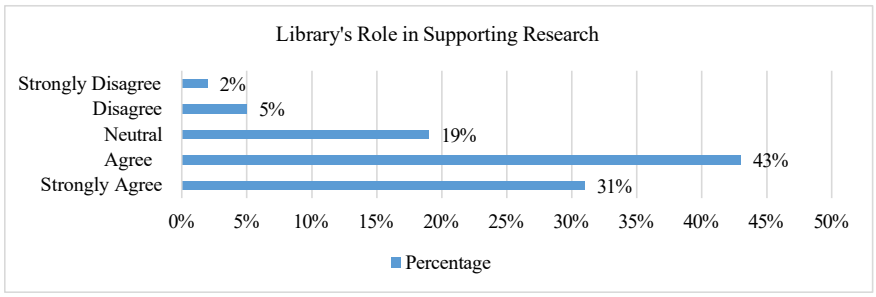


Figure 20: Library's role in supporting research

DISCUSSION

The survey results show what students at Chuka University like and need for their studies. They're using online resources a lot, which makes sense because everything is online now. Students also seem okay with using new technology like AI, but some are still unsure. The same goes for virtual reality – students are interested, but not fully convinced yet. Overall, students think AI and VR could make learning better because AI can help them learn in a personal way, and VR can make learning more fun. The survey also tells us that students really like using electronic resources and the library to do their research. So, digital stuff and libraries are really important for learning these days.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the research shows a lot about how education is changing. Technology is becoming a big part of learning, with things like AI Chabot's and VR making a difference. AI Chabot's in libraries are helping students and making things easier, and different types of Chabot's have their own benefits. VR is making learning more exciting, and personalized learning platforms are letting students learn in their own way. Adetayo's (2023), study on AI Chabot's tells us that we need to use them carefully, and Massis's (2015), work on VR fits with how libraries are changing. Benhamdi, Babouri, and Chiky's (2017), study on personalized learning shows us that education should be tailored to each student. So, Chuka University should do some things to keep up with these changes. The survey shows that students want digital resources and are open to new tech like AI and VR. The university should offer more digital resources, work with personalized learning platforms, and try out AI and VR tools. They should also train students to use these tools well. The university's library is also important for research, which matches what students think. Based on all this information, Chuka University should stay open to new ideas and keep up with the changes in education. By doing these things, the university can make sure it's ready for the future of learning, using technology in smart ways while keeping the main goals of education in mind.

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