Digital Transformation: The Advancement for Digital Literacy in Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria

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Abstract

The emergence of digital technologies at a growing pace has made digital transformation one of the most phenomenal trends in this contemporary time. Digital transformation is the integration and use of digital technologies to improve an organizational processes, products, and services. Therefore, digital literacy is a critical factor that is needed for the success of this transformation, in IBB University Lapai, Niger state, Nigeria. This is significantly influenced by their level of digital competences. In this paper, the digital transformation and digital literacy were conceptualised. Also, the paper discussed the need for digital literacy as the element of digital transformation. The study provided a conceptual frame work for pragmatic understanding of digital literacy skills in Ibb University, for their effective utilisation of the digital resources. The Benefits of Digital Literacy skills in IBB University, the Consequences of the poor digital literacy Skills were also discussed as well as the approach for advancing digital literacy in IBB university. The study also recommended that IBB University Lapai, should provide training, organise workshops, online courses, and tutorials on the topic of how to use digital resources effectively and efficiently. Also, digital literacy should be encouraged among the IBB University, which will in turn help to boost their academic achievement, research output, and technological competitiveness in this digital era.

Keywords: Digital, Transformation, Digital Literacy, University

Introduction

The emergence of digital technologies at a growing pace has made digital transformation one of the most phenomenal trends in this contemporary time. This is because digital transformation involves the integration and use of digital technologies to improve an organizational processes, products, and services. In a more pragmatic way, digital transformation can be defined a transition process from traditional system of operation to the modern system of operation. This means that digital transformation focuses on increased efficiency and greater agility, and as the ultimate goal is aimed at creating new value for employees, users and shareholders (Accenture, 2023). Also, it includes the use of new technologies such as artificial intelligence and cloud computing to drive growth, streamline operations and increase competitive edge (Marr 2023). Unlike previous generations, learning in the digital age is marked by the use of rapidly evolving technology, a deluge of information and a highly networked global community (Dede, 2010). Basically, digital transformation entails extensive changes to people, processes, strategies, structures and

competitive motivations in order to be relevant in the digital era (Rodrigues, 2017). This shows that digital transformation is essential for enhancing the quality of education. Emphatically, digital transformation is more than just the utilization of existing technology, but it is a concept that aims to transform teaching and the learning systems in Nigerian higher institutions. A recent study revealed that the processes involved in digital transformation leads to the creation of a more effective learning environment for the learners (Yildiz, 2022).

Conceptually, digital transformation can be viewed as adopting different forms of technology to improve processes and skills. In most cases, the goal of digital transformation is to improve efficiency and value through innovative practices (Matriano, 2023). On the other hands, Gartner's Information Technology Glossary, describes digitalization as the process of transforming information and processes from traditional forms into digital forms. It involves the use of digital technologies such as computers, the internet, artificial intelligence and other emerging technologies to create, store, process and transmit information (Gartner, 2021). The goal of digital transformation is to provide technology-based solutions to both current and upcoming problems (Schenk & Dolata, 2020). Thus, digital transformation encompasses all aspects of digital technology, necessitating adjustments in technology, culture and operational frameworks within organizations (Cerdá, *et al*, 2021). However, the development of Information Technology and Communications (ICT) has been driving the transformation process. Recently, the research community has also shown interest in the field of ICT research (Luong, 2023). Due to the fact that the essence of digital transformation in education lies in the integration of digital technologies, replacing traditional teaching methods and transitioning towards data-driven decision-making models (Bosova, et al, 2021). This transformation is comprehensively guided and supported by technological infrastructure, human resources, organizational aspects and pedagogical strategies (Oliveira & De Souza, 2022).

The importance of digital transformation in education has been acknowledged, yet there are considerable implementation obstacles. Emilio, Mariana-Daniela, Juan, and Infante-Moro (2020) argue that a digital learning environment should align with the school's strategy. A crucial component for developing a sustainable digital learning environment is selecting appropriate digital learning strategies and giving the staff of the educational institution training in digital literacy (Emilio *et al.*, 2020). According to Bogdandy, et al. (2020), the major obstacles to traditional teaching methods are those of space and time for teachers and learners. A digital learning environment makes it easier to overcome these obstacles. Aditya, *et al.* (2021) identified various barriers and challenges such as the need for a clear vision, supportive policies and regulations, adequate resources, capable leadership, digital literacy and skills, technological readiness, adaptability, change management, government support and economic considerations. According to Lund *et al.* (2019), the concept of expanding and integrating digital literacy as a means of transformative agency in education. They discuss the challenges and opportunities associated with expanding digital literacy and provide insights into how educators can foster transformative agency through the integration of digital technologies in teaching and learning. The

authors support a comprehensive approach to digital literacy that promotes critical thinking, creativity and active engagement with digital tools and platforms in addition to technical skills (Lund *et al*., 2019).

At Ibrahim Babangida Badamosi University, Lapai, in Niger State, Nigeria, the ongoing commitment to digital transformation focuses on advancing digital literacy among students and staff, aligning with the broader national and global goals of fostering digital competency for sustainable socio-economic development. In a world that increasingly values digital skills, digital literacy has become essential for educational institutions. Defined as the ability to use digital tools to find, evaluate, and communicate information, digital literacy also includes understanding digital ethics and data management (Jones & McCoy, 2023). For Nigerian institutions like Ibrahim Babangida Badamosi University, promoting digital literacy is critical as the demand for digitally proficient graduates grows in various sectors, including technology, business, and healthcare (Adeyemi & Musa, 2023). Recognizing this trend, the university has embarked on a digital transformation journey, integrating technology into its curriculum, teaching practices, and administrative functions, to cultivate a digitally literate academic community. The drive for digital transformation in Nigerian universities faces unique challenges, including limited infrastructure, inconsistent internet connectivity, and resource constraints. However, institutions are increasingly addressing these obstacles by investing in high-speed internet access, digital devices, and e-learning platforms to ensure that digital tools are accessible to students and faculty (Aliyu & Bello, 2023). IBB University has also introduced workshops and training programs aimed at building digital competencies, thus ensuring that students and staff can effectively use these new tools to enhance learning, research, and productivity (Ibrahim, 2022).

In addition to bridging the digital divide, digital transformation efforts at IBB University are essential for fostering critical digital skills, including cybersecurity awareness, information management, and digital collaboration. Studies indicate that institutions adopting such transformative approaches are better equipped to meet the expectations of students and employers alike (Dighe et al., 2022). Through initiatives that advance digital literacy, the university aims to produce graduates who are not only proficient in digital tools but are also equipped with the critical thinking skills needed to navigate an increasingly digital world. Thus, IBB University's focus on digital transformation as a means of advancing digital literacy aligns with the national vision of creating a digitally skilled population capable of competing in the global economy. With a well-rounded approach encompassing infrastructure improvements, curriculum enhancement, and targeted training programs, the university is contributing to the digital preparedness of Nigeria's youth. A key factor in the success of digital transformation in the education sector among these obstacles is the availability of human resources, especially trained individuals. It is essential to overcome these obstacles and promote digital innovation. Various fields such as education require learners and teachers to have certain ICT competencies (Nguyen & Pascal, 2018). In looking at this proliferation, this study was therefore, set out to investigate the advancement for digital literacy in IBB University in this digital era.

Objectives of the Paper

The broad objective of this study is to discuss the needs for digital literacy in Nigerian higher institution due to digital transformation. Specifically, the paper will:

i. highlight the need for the advancement of digital literacy in IBB university;
ii. identify the benefits of digital literacy for bridging digital divides in IBB university;
iii. discuss the consequences of the poor digital literacy skills in IBB university; and
iv. frame out the approach

Methodology

For this systematic literature review, a comprehensive search was conducted across databases, including JSTOR, ProQuest, and ScienceDirect, using keywords such as "digital transformation in education," "digital literacy in Nigerian universities," and "technology integration in higher education." Articles from 2015 to 2023 were prioritized to capture recent advancements and insights. The review process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, ensuring a rigorous selection and synthesis of studies relevant to the topic.

1. The Need for the Advancement of Digital Literacy in IBB University The term literacy can be defined as one's ability to lead one's life, ability of reading and writing good enough for communicating with society and carrying out basic arithmetical operations (Karunaratne, 2000). UNESCO (2004, p. 13) defines literacy as:

"The ability to identify, understands, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning is enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in community and wider society."

In general terms, literacy means one's ability to read and write in a language shared within a culture. Digital literacy consists of sourcing information using the digital technologies, organizing information, analyzing, interpreting, evaluating, transferring and also reading and writing digital texts through the information production process (Akkoyunlu & Soylu, 2010). The Digital Literacy High-Level Expert Group (2008) defines the concept of digital literacy, which is the skill acquisition process, as:

"Digital literacy is essential for achieving digital competence, the confident and critical use of information and communication technology for work, leisure, learning and communication."

However, the need for digital literacy given that people around the world have the same human potential and needs for every job and career, every field of study and even social and personal lives

are increasingly impacted by technology. Therefore, digital literacy is a critical factor that is needed for the success of this transformation. Because digital literacy would enables employees and the students of Nigeria higher institutions to understand how to use the technologies and their applications, evaluate and select the most appropriate digital tools for each task, and be prepared to deal with challenges that arise in the digital environment effectively and safely (Cetindamar *et al* 2021).According to Yo (2021), digital literacy is the availability of the knowledge and abilities required for students to use digital technologies and Internet resources in a secure and efficient manner. It includes a broad range of abilities, such as the capacity to use digital tools and resources, explore the Internet, assess the accuracy of online information, and successfully interact via digital media.

With the development of digital devices, employees and students of Nigerian higher institutions must be on deck in utilizing the information and communication technology, in order to have access to a wide range of online tools that can improve their academic experience, such as online learning platforms, libraries, e-books, e-journals, and other digital resources. Digital literacy according to European commission (2017), is the capacity to use a variety of digital devices to effectively and critically navigate, assess, and produce information. An important element of digital literacy concerns what skills must be mastered in utilizing information and communication technology. Ng (2012) proposes a three-part schema for discussing the overlapping functional characteristics of a digitally competent person, namely: technical, cognitive, and social.

1. Technical literacy, this referred to as operational literacy, which is the mastery of technical skills and tasks required to access and work with digital technology such as how to operate a computer; use a mouse and keyboard; open software; cut, copy and paste data and files, acquire an internet connection (Lankshear & Knobel, 2008).
2. Cognitive literacy, this area of digital literacy focuses on activities such as critical thinking, problem solving and decision making (Williamson, 2011) and includes the ability to "evaluate and apply new knowledge gained from digital environments" (Jones-Kavalier & Flannigan, 2006, p. 5).
3. Social literacy, This covers a wide range of activities which together constitute the ability to communicate in a digital environment both socially and professionally, understand cyber security, follow "netiquette" protocols, and navigate discussions with care so as not to misrepresent or create misunderstandings (Ng, 2012). Of particular note, he captures the essence of digital literacy by showing how digital literacy exists at the intersection of the technical, cognitive and social aspects of literacy which are referred to as dimensions. Ng's framework is not, however, a digital literacy framework itself. Instead it provides a vehicle for exploring the various components of digital literacy at a conceptual level while remaining clear that the individual skills are at all times connected to and dependent upon each other.

Proposed Conceptual Fame Work

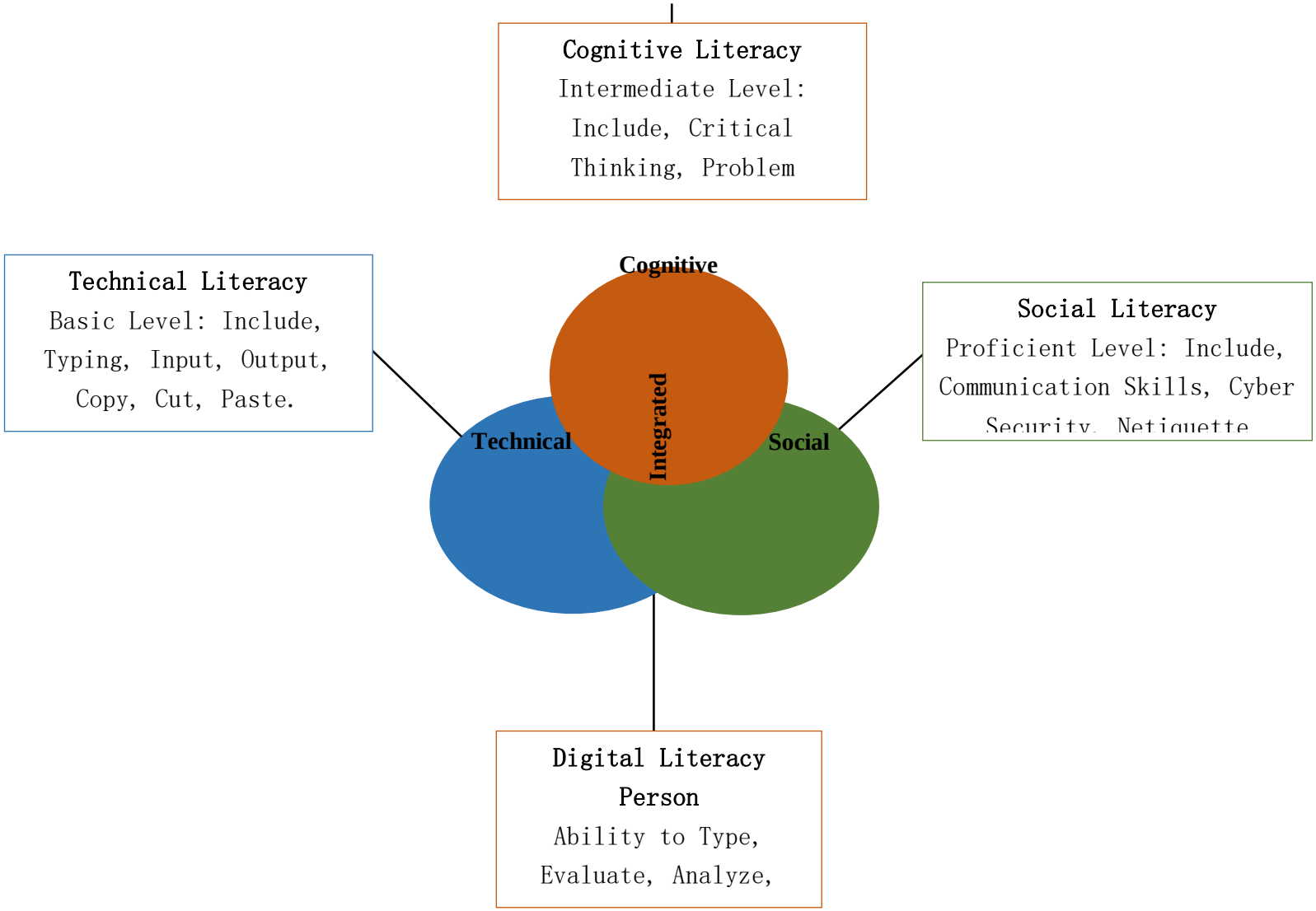

Figure 1. Understanding foundation of digital literacy includes: technical, cognitive and social skills (Ng, 2012).

Technical literacy, also referred to as operational literacy, refers to the mastery of technical skills and tasks required to access and work with digital technology such as how to operate a computer; use a mouse and keyboard; open software; cut, copy and paste data and files, acquire an internet connection and so on (Lankshear & Knobel, 2008). The cognitive area of digital literacy focuses on activities such as critical thinking, problem solving and decision making (Williamson, 2011) and includes the ability to "evaluate and apply new knowledge gained from digital environments"(Jones-Kavalier & Flannigan, 2006, p. 5). The third of Ng's three categories – social literacies – covers a wide range of activities which together constitute the ability to communicate in a digital environment both socially and professionally, understand cyber security, follow "netiquette" protocols, and navigate discussions with care so as not to misrepresent or create misunderstandings (Ng, 2012

The above conceptual framework provides practical explanation on overlapping functional characteristics of a digitally competent person in Nigerian higher institutions namely: technical, cognitive, and socials. The proposed model, signifies the degree to which an individual agreed that digital literacy would make them to operate the technology efficiently. Thus, referred to as the extent to which an individual believes that digital literacy skills would enhance job performance and also improve their academic experience, such as online learning platforms, e-libraries, e-books, e-journals, and other digital resources.

Advancement of Digital Literacy

The advancement of digital literacy can be explained by three components whose synergy results in digital literacy (Ng, 2012a; Ng, 2012b). The first component is a cognitive dimension that includes the ability to use critical thinking while searching for, assessing and handling digital information and selecting software programs suitable for learning and mastering certain tasks. A cognitive dimension requires knowledge and a respect of ethical, moral and legal codes when using digital resources. The second, technological component, allows for an understanding of a file structure, use of digital storage space, finding and downloading applications and data, as well as a use of digital tools for social networking, e-mail, etc. The last component that speaks in favour of the possibilities provided by the use of digital tools is the socio-emotional component related to the use of the Internet for communication, socializing, learning, understanding digital symbols and their use in carrying out certain activities. Digital literacy relies on and derives from the use of modern digital technology that enables easy and simple creation, implementation of activities, data sharing, socializing, research, collaboration, communication and learning (Meyers, *et al.* 2013).

Digital "life" enables constant connection and communication with others: sharing photos, videos, virtual learning, practicing and perfecting an individual's creativity in various fields (Hobbs, 2010). All of the above activities allow the user/the student to enjoy their benefits in terms of efficiency, easy information access, as well as the unlimited access to information when needed. Digital literacy relies on aspects which we will explain to present a wide range of opportunities offered by digital literacy to everyone, especially our target group – students who pursue careers as teachers. Efficient, modern schooling includes innovative uses of technology, a much greater emphasis on collaborative work, with a view to address the shortcomings of the existing curricula,

and higher expectations for students (Ball & Forzani, 2009). Digital literacy is a precondition for expanding access to information and communications technology in order to ensure greater competitiveness of young people in the labour market (Shopova, 2014).

The way in which digital technology is put in the service of didactic, educational practice largely depends on the digital competence of subject teachers, but primarily of class teachers (Krumsvik & Jones, 2013). According to these authors (Meyers, Erickson & Small, 2013), digital literacy is often considered a school-based competence, but it is introduced and developed in informal. According to Federal Ministry of Communication and Digital Economy (2019) and Oyelakin, (2022) noted the growth and advancement of the digital technology sector over the past few years is an indication that the sector can serve as a catalyst for the rapid development of the economy of Nigeria as a country. In all sectors of the economy, digital tools are used to support various services, and operations. For instance, digital tools are used in banking, educational, entertainment, and government establishments. There are many economic benefits that youths and Nigerians as whole can gain from having good education on digital technologies. Once the necessary skills are acquired, the users will be able to maximally adopt digital solutions for various purposes across all sectors of the economy

1. Benefits of Digital Literacy in IBB University, Lapai, Niger State, Nigeria

1. Improved Access and Use of Digital Resources: High levels of digital literacy can help students access and utilize digital resources more efficiently for academic reasons, such as online databases and e-books (Nwafor-Orizu & Adeniji, 2021).
2. Enhanced Critical Thinking Skills: The ability to evaluate digital information sources, discriminate between reputable and inaccurate sources of information, and draw conclusions based on evidence all require critical thinking abilities, which high levels of digital literacy can help children achieve (Adeyinka *et al*., 2020).
3. Increased Engagement in Online Learning Activities: High levels of digital literacy can improve students' participation in online learning activities including collaborative learning and online conversations, which will improve their learning results (Oyelere *et al.,* 2021).
4. Improved Employability: Graduates with high levels of digital literacy may be more employable since they are equipped to use digital tools and technology in the workplace efficiently (Adebesin *et al.,* 2021).

2. Consequences of the Poor Digital Literacy Skills in IBB University

1. Inability to Evaluate the Credibility of Digital Sources: Students who lack the necessary digital literacy abilities may be unable to assess the reliability of online sources and evaluate them critically.
2. Their academic work may as a result contain erroneous information (Ugwuanyi & Ukwueze, 2018).
3. Limited Participation in Online Activities: Student participation in online activities like online debates and collaborative learning may be discouraged by a lack of digital literacy.

Their level of involvement and learning outcomes may suffer as a result (Oyelere *et al*., 2021).

4. Limited Career Opportunities: Lack of digital literacy might make students less competitive in the job market because most firms now demand it. Their earning potential and job options may be restricted as a result (Adebesin *et al.*, 2021).

Approach For Advancing Digital Literacy Through Digital Transformation in IBB University

The advancement of digital literacy at IBB University in Lapai, Niger State, through digital transformation, requires a multi-faceted approach that targets infrastructure development, curriculum enhancement, training initiatives, and support systems. Here's a detailed outline of how this can be achieved:

i. Infrastructure Development

- Internet Access and Digital Resources: Expanding high-speed internet access across campus is fundamental for supporting digital literacy. Providing reliable Wi-Fi in libraries, classrooms, and common areas ensures students and faculty can access digital tools and resources seamlessly (Adeyemi & Musa, 2023).
- Digital Libraries and E-learning Platforms: Investing in digital libraries and creating an institutional e-learning platform where students can access learning materials, e-books, academic journals, and digital tools for research fosters an environment conducive to digital literacy. This infrastructure empowers students to independently access and interact with online resources (Olagoke, 2023).

ii. Curriculum Integration of Digital Literacy Skills

- Incorporating Digital Literacy in Core Curriculum: Embedding digital literacy as a core component of all undergraduate programs is essential. By integrating courses on information technology, data ethics, and online research skills, students' gain structured exposure to essential digital competencies.
- Interdisciplinary Digital Literacy Modules: Introducing interdisciplinary courses on digital literacy, such as "Digital Skills for Social Sciences" or "Tech for Business" provides specialized training relevant to each field, enhancing digital skill application across various disciplines (Jones & McCoy, 2023).

iii. Training and Capacity-Building Programs

- Workshops and Seminars: Hosting regular workshops on topics such as basic digital skills, information management, and cybersecurity ensures both students and staff remain informed and competent in using digital tools effectively. At IBB University, these programs could be offered through collaborations with tech companies or online learning platforms (Aliyu & Bello, 2023).
- Faculty Digital Literacy Programs: Faculty members play a crucial role in imparting digital skills, so it's essential to equip them with up-to-date training in instructional technology. Professional development programs, including training in e-learning tools and online

- Assessment methods, can help faculty seamlessly integrate digital tools into teaching (Dighe et al., 2022).

iv. Support and Collaboration with Stakeholders

- Collaboration with Tech Industry: Partnerships with technology firms allow IBB University access to resources such as digital devices, software licenses, and expert knowledge, facilitating hands-on experience for students and staff. This collaboration can include guest lectures, digital skill workshops, and internships that provide exposure to industry practices (Ibrahim, 2022).
- Government and NGO Support: Securing support from government initiatives and non-governmental organizations focused on digital literacy enables access to additional resources. Programs like Nigeria's Digital Literacy Framework can help the university obtain grants and participate in national digital literacy campaigns (Adeyemi & Musa, 2023).

iv. Monitoring and Evaluation

- Feedback Mechanisms: Regular surveys and feedback from students and faculty help assess the effectiveness of digital literacy initiatives. Gathering data on digital tool usage, engagement levels, and skill improvement provides actionable insights for program enhancement.
- Continuous Improvement Programs: Based on feedback and performance analytics, the university can refine its approach, offering new courses, updating training material, or expanding access to emerging digital tools to maintain relevance in the evolving digital landscape (Smith & Thompson, 2023).

Conclusion

The use of digital resources has become crucial to our daily lives, given that people around the world have the same human potential and needs for every job and career, every field of study and even social and personal lives are increasingly impacted by technology. Therefore, digital literacy is a critical factor that is needed for the success of this transformation, by Nigerian higher institution, which is significantly influenced by their level of digital competence. Technology has become a fundamental element of academic research and learning, the capacity to access, analyze, and use digital materials effectively. Finally, digital literacy shall be encouraged among the Nigerian higher institution that will boost their academic achievement, research output, and competitiveness in this digital era. Digital literacy is the capacity to find, assess, create, and convey information using digital technology effectively and efficiently. Digital literacy, according to the European Commission (2017), is the capacity to use a variety of digital devices to effectively and critically navigate, assess, and produce information.

Recommendations

Here are some of the recommendations for improving digital literacy skills in Nigerian higher institutions are as follows:

1. Provide Training and Resources on Digital Literacy: Nigerian higher institution should organise workshops, online courses, and tutorials on the topic how to use digital resources efficiently.
2. Integrate Digital Literacy into the Curriculum: All academic fields should include digital literacy in their curriculum.
3. Provide Access to Digital Resources: Management of Nigerian higher institution should also make technological devices, unlike laptops, tablets, and Wi-Fi available to the members of the institution, so they can have access to digital resources easily, if they are to become digitally literate.
4. Encourage Collaboration and Sharing of Digital Resources: The institutions should promote student collaboration and sharing of digital resources, will boost their knowledge and make them learn from one another.

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