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HIEROGLYPHICAL FRAMEWORK OF ICT FOR NIGERIA HIGHER EDUCATION

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INTRODUCTION

All around the world today, higher education scenarios are experiencing rapid shift in paradigm, transformation occurs with great expansion and expectations. Information and Communication Technology (ICT) has been the only apparatus fulfilling such expectations, to speed up higher education expansions. ICT serve as catalyst for transformation of traditional teaching and learning techniques, research and collaboration as well as office work into dynamic, interactive, and globally interconnected higher educational experiences (Akbari & Pratomo, 2022).

Figure 1: *ICT as hieroglyphical tool (Google)*

Abstract

Globally higher education scenarios are rapidly transforming with great expansion and expectations. Information and Communication Technology, ICT is the framework for such expectations and

Keywords: ICT, Nexus, Hieroglyphics, islands, Framework.

responsible for the speed up in higher education expansions. ICT in higher education, particularly as a tool for many "islands" such as teaching, learning,

collaboration and research, administrative chores, and to curb indiscipline on campus. This work critically reviewed the way or manner at which ICT is remodeling our higher institutions of education's modular operandis, connecting isolated phenomenon to propel the system. A case study design approach with a qualitative research paradigm approach to obtain in-depth information was adopted with review of related works in different areas where ICT was been applied to solve problem. The result shed more lights on ICT as a nexus, a powerful tool in connecting and transforming isolated islands in higher education; it improves information access, storage and protection, dissemination, availability and usability to enhance education while reshaping the future of our next generations while it doesn't destroy the current generation. Finally, recommendations were made for authorities handling ICT related issues to wake up from their slumber and to everyone regarding the use of ICT (under-utilize and misuse) in our higher institutions of learning to revisit Information Technology outsourcing culture in order to give ample room to individual and to focused on the core usage of these tools.

ICT in higher education, particularly as a tool for bridging many "islands" such as teaching, learning, administrative tasks, research and collaboration, and to curb indiscipline on campus, to mention few. ICT can be a powerful tool in transforming the way education, communication, transportation, agriculture, tourism, even healthcare is accessed and delivered.

Nowadays, ICT has become the major scaffolds to enhance the manner at which we can meet-up with the future demands of our next generations, if only we all wants to sail through the formal slave trade we are into, as a nation. Education has been essential bedrock for development, technological drive educational system is the pristine increasing the combustion while ICT keep accelerating the movement steadily through distinct gear selections.

Concept of Computing and ICT
ICT as a Computing Tool
According to (Odejobi, 2022), Computing can be described as systematic manipulation of symbols in the concept or process of designing, modeling, creating, constructing a solution to a well-defined problem. For any problem to be well-defined must possess the under-listed characteristic:

- It must have an effectively computable operations
- It must be well-order
- It must have unambiguous operations
- It must halt in a finite amount of time (i.e., must begin and end)

- It must produce a result (i.e., must be solvable)

Traditional teaching and learning approaches are being transformed into dynamic, interactive, and globally connected educational experiences by the use of ICT (Akbari & Pratomo, 2022). ICT involves computing and telecommunication technologies, systems, and tools that facilitate the creation, collection, processing, transmission and storage of information.

ICT comprised of software, hardware, networks, and media, which are primarily utilized to gather, present, process, store, and transmit information via voice, data, text, and images, as well as providing other services (Al-Rahmi *et al.*, 2022). It is also within the capabilities of ICT garget to the control movement and access to data and information, we can always use ICT in higher educational for numerous chores while the article sighted some of the aspects it has been applied, from previous research, it then discourage misuse of the technology and advised proper use.

The main goal of ICT
The main goal of ICT is to improve access to information and make human-to-human, human–to-machine and machine-to-machine (M2M) communication easier and more efficient (Shittu, 2024). Hence, the importance of ICT in modern society cannot be overstated, as it underpins innovation, enhances productivity and fosters global connectivity.

As stated above, this research intends to leverage on the goal if ICT in achieving similar goal which using the modern technology (ICT) to bridge the gaps between isolated islands previously mentioned and many more in various higher institutions of learning in Nigeria. Improving human skills to enhance connectivity, human- to-machine as they are even bad at each other language, also machine-to-machine communication can be better regardless of the differences in the architectural designs.

REVIEW OF LITERATURE
In reference to Choudhury, K. R, 2017, higher education contributes to social and economic development through four (4) major channels:
- The formation of human capital,
- The building of knowledge base,
- The dissemination of information and use of knowledge,
- The maintenance of knowledge. (ChhayaMitter, 2018)

Thus, the research emphasized on how to form human capital with best practice, via knowledge acquisition through higher educational system to ensure

dissemination and use of knowledge to better our societies and maintain a worthy life for everyone. The tremendous shift experienced in the global education today, will have nothing rather than creating a vacuum in that system which are the isolated problems to bridge in this work. This show that for our higher institutions to meet the world class standard we really not to harness the use of ICT as a nexus or link to bridge the vacuum identified.

According to (Bosu, 2019), an exploratory approach was used to find out the perceptions of administrators in higher education institutions (HEIs).The role and importance attach to the use of ICT in higher education administration, discipline inculcations, and academics and research collaborations are too enormous that the two must go on parry-parsue. The study revealed that the use of ICT has significantly changed the basics of administrative practices and procedures.

The administrators concluded that technology has become an integral part of their day-to-day activities in every higher institution, because it played a critical role in positive transformation of higher educational system and the quality of their services. The research recommended that Higher Education Institutions need to continually create the awareness of the benefits of ICT usage, adopt strategic plans committed to ICT integration, provide adequate training based on identified needs as well as provide the needed ICT tools and facilities (Bosu, 2019).

METHODOLOGY

Being a qualitative research, the aim was to review some of those works where ICT has been adopted to connect or resolve isolated problems in higher educational institutions. Coupled with the method used (case study design approach with a qualitative research paradigm approach) and related research works, some websites were visited, books and articles consulted, to obtain in-depth information and highlight some of issues and show how they were solved through the use of ICT framework.

Why ICT in Higher Education

UNESCO 2005 has reported that institutions of teacher education play a vital role in global education community and have the potential to shape the knowledge and skill of future generations if these institutions are aided by recent information and communication technologies.

Every open learning system should provide their own virtual learning environment as a single entrance gateway for public information as well as regulated access for all students, teachers and other personnel (Lone et al., 2022).

Adopting technology-enhanced learning and effective management techniques would improve the current method of providing higher education programmes. This can be made technologically inclusive by supporting a variety of methods for carrying out daily activities, reaching and engaging learners, including internet, television, mobile phones, community radio, IP-TV and many others. It is necessary to be concerned, comprehend and appreciate the types of technology-mediated processes that learners will get in a high-quality education system.

According to (Lone et al., (2022), the three domains of knowledge in techno-pedagogy are: Content, Technology and Pedagogy.

1. Content (C) is the subject matter that is to be taught.
2. Technology (T) includes current technologies like computers, internet, digital video and overhead projectors etc.
3. Pedagogy (P) is the study of teaching and learning techniques, processes, strategies, procedures and approaches. It also includes understanding of the goals of instruction, evaluation and student learning.

The most essential one is the technology integration which means comprehending and negotiating the relationships between the three components listed above. Hence ICT as the technology mediate, create and maintain synergy among all components or elements of a system.

QUEST FOR QUALITY EDUCATION
Framework/Scaffold for Quality Education
Anticipations for good quality knowledge bring about the plan for genuine learning process. Today, ICT has become the building blocks of higher education, due to it influences in executing innovative ideas that confront with world developmental policy. ICT tools have got teachers, students, government and private sectors, businessman, likewise common man on the same platform.

Federal Government of Nigeria through the Federal Ministry of Education has established National University Commission (NUC), National Board for Technical Education (NBTE), e.t.c, to access and accredit institutions of higher education in our country. These agencies have come up with ideas to implement digitalized educational system like other nations of the world. Sequel to this, ICT is taking the lead in enhancement of learning processes, knowledge impacting, research and skills development, since it is capable of solving isolated puzzles and link them as one entity.

Thirst for Quality Education
In view of the above, use of ICT for quality teaching, learning and evaluation process has been given utmost importance. Institutions with higher education

must be geared up for proper implementation of ICT in their respective operations, thus, collaborations among higher institutions of learning should also be encouraged with some top and high scale digital skills and tech giants organizations like CISCO, HUAWEI, to enhance flexibility, maintainability and sustainability of policies, in order for these institutions to produce world class graduate which the employers needed.

Thirst for good, sound and quality education can be instrumental by the use of modern technology in higher education, while teaching and non-teaching staff should get proper training for teaching aids and administrative activities to deliver real time services. ICT tools (both hardware and software resources) such as internet services, availability of computer system (for both staff and students), interactive whiteboard, Google classroom, Microsoft Teams with which students these days are becoming smart. And smart students need even smarter ways when it comes to teaching. If you are a teacher and wants your students to be the best, you must include some of the above-listed ICT tools for teaching and learning.

ICT AS A NEXUS
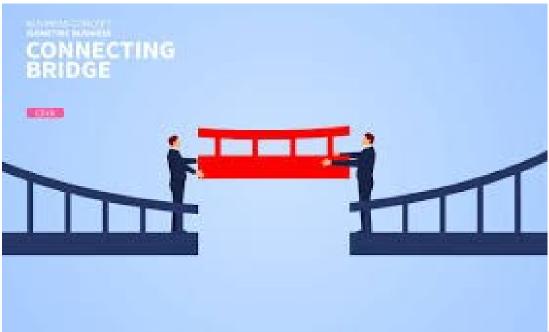
To where are we connecting the bridges

Figure 2: ICT Connecting Bridges (Google)

Facing problems as formidable as the "Pharaonic" challenge, Moses used distinct methods to overcome the immense obstacles before him. Similarly, our higher

institutions of learning could harness ICT as a tool in diverse ways to provide practical solutions to human and social vices. Over a decade ago, I was privileged to attend a seminar titled: "Embracing ICT as a pedagogical tool to enhance education in Nigeria".

The question posed at the time was "To where are we connecting the bridges" built between ICT and education. Well, the answer became more clear overtime as ICT is not only capable of constructing bridges but also serves as a nexus. In contemporary era, higher education is seen as a continuous process, beginning with a phase of initial training and continues throughout one's professional life.

For every identified isolated "islands", while struggling to help humanity by tackling more complex seemingly insurmountable chores. Yet, the inability of these islands to interconnect remains a hindrance, their collective potential constrained until emergence of ICT as a solution. ICT as a consistent tool in diagnosing, treating and maintaining solutions to various issues, becomes the link for many isolated islands in higher education to interconnect firmly.

ICT in Administrative Chores

There are lots of ICT tools that have vastly been in use for education administration and management. Available ICT applications for education administrative purposes are internet, websites, software and hardware such as printers, scanners, photocopy machines and computer system (Simin Ghavifekr et al., 2013). This shows that, ICT applications also can be used by administrative staff of higher institution of learning for doing their daily responsibilities such as enrollment, course registration, balance sheet, pay slip, audit reports, non-salary grant, student evaluation report and overall students records, faster and more accurately. Administrative staff uses different types of tools to handle financial work, maintain communication, keeps records, process documents and to collect data (Simin Ghavifekr et al., 2013).

ICT as a Pedagogy

In modern era, schools and colleges are transforming from traditional education to smart schools and colleges where role of ICT has become sky rocketing. ICT has given wings to empower the use of e-education related activities in the world of education. In most of the developed countries, the utility of ICT in educational institution and teaching institutions has become a priority in last two to three decades (Daniels, 2002). Worldwide, information has become a major economic commodity. In 21st century, ICT plays an important part in revitalizing education system in Nigeria and it is an ongoing journey. The ICTs have the potential to accelerate, enrich and deepen the skills in the teaching and learning process.

Integrating ICT in education seems to be important for educational institutes. (Panchal, 2017)

ICT in Academics and Research Collaboration
The advent of ICT has increased research productivity by providing academics in different locations with the platform to collaborate for research projects. ICT can help students work together with teachers and other students, regardless of differences, such as location, educational level and so on. ICT can help with research work and publication of educational materials both in print and online. Teaching and research have experienced a paradigm shift from the traditional method that is anchored on chalk and talk, pen and paper, towards a new style of teaching and conducting researches occasioned by ICT.
To uphold this, ICT is now admitted to become a foundation for innovation and enhancement of efficiency for many professional practices and roles across the globe in research purpose (Olubıyo and Olubıyo, 2023).
Sequel to (Olubıyo and Olubıyo, 2023), relating to professional roles of lecturers, particularly, the application of ICT tools, has massively revitalized and reinforced lecturers' statutory roles through the effective delivery of education curriculum by creating multiple channels of interaction and enhancing research productivity. As a result, ICT turned out to be a dire necessity for lecturers to survive in this era when traditional pen, chalkboard and paper are gradually becoming forgotten subjects. This implies that ICT is now a superior option in handling all the academic activities lecturers embark upon, and research being an integral part.

ICT to curb indiscipline on Campus
As a standard practice, every school establishes a disciplinary scheme to promote disciplines among students, staffs, artisans and others involved in school operational system to reduce the re-occurrence of such indiscipline in the institution. Womıloju and Shittu (2022), developed a web-based information system for Students Punitory Scheme, to examine and executes cases related to students' violence, misconducts and associated factors on campus with need for disciplinary measures again such.

ICT and AI in Learning and Research Activities
(Shittu et. al., 2024), viewed adopting Artificial Intelligence in virtually all life facets as mixed feeling, so they divided AI users into two broad categories: those who see AI as the awaiting savior and embrace it with great optimism, while the other reject it, due to concerns about ethics and see it as an impending calamity.

Those who considered AI as the harbinger hinged this on several advantages that AI brings to revolutionalize both sciences and humanity.

On the other side, AI is seen as killing human intelligence. These two positions were thoroughly discussed in their work, exploring several case studies of extreme use and misuse of AI in teaching and learning, examining the benefits of AI while addressing key risks, such as algorithmic bias and digital divide, proposing strategies for educators and institutions to harness AI responsibly and effectively, without undermining human-centered teaching.

CONCLUSION

ICT cannot and will even not transform the future and fortune of faculty/college/school/ polytechnics/university or institution at large without complete adherence to established norms and best practices. ICT serves as a divine tool that can propel our institutions to enviable heights among the committee of higher institution of learning around the world.

We seek to globally communicate effectively without relying on any specific spoken language, but through the medium (hieroglyphics) made possible by ICT. Therefore, in present era, ICT has become a very crucial communication tool which can change the mindset of everyone. Moreover, ICT concept clearly illuminates its potential differences from traditional methods in higher institutions by various illustrations available via internet on how these technologies like internet itself, AI tool, smartphones, interactive screens and PDAs are used for numerous activities and ensuring smooth connections and running of isolated events.

RECOMMENDATIONS

Information Technology outsourcing culture should be revisited in order to give ample room to each organization to focus on their core mandates. Government agencies for Information and Communication Technology should move beyond rhetoric to project-based, thereby developing and customizing IT services and solutions for diverse industry and educational needs.

The 4Rs (**R**e-focus, **R**e-analyse, **R**e-engineer and **R**e-assess) approach should also be adopted and adapted in addressing ICT deployments and developments (Shittu, 2024).

In as much as ICT gadgets such as mobile phones are becoming major sources of distraction for students and young learners, Customized Learning Gadgets (CLG) should be introduced in order to capture the attention of the next generation beyond lecture or class hours.

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