

Educational Management and Emerging Technologies for Achieving Sustainable Development Goals Implication for Secondary School Teacher's Job Performance in Misungwi District, Mwanza-Tanzania

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Abstract

This study was conducted to examine the impacts of educational management and emerging technologies for achieving sustainable developing goal simplification on secondary school teachers' job performance in Misungwi District, Mwanza Tanzania. The study used a mixed method approach which is quantitative and qualitative. The survey research design was adopted for the study since a questionnaire was used. The Population of the study comprised 679 teachers chosen from 37 government secondary schools in Misungwi District, Mwanza Tanzania. The sample of the study was made up of 204 secondary school teachers in Misungwi District. This constitutes 30% of the respondents. The instrument used for data collection was tagged 'Educational management and emerging technologies for achieving sustainable development and teachers' job performance questionnaire (EMETTJPQ)'. The reliability of the instrument was carried out using Cronbach Alpha which ranges from 0.71 and 0.73 respectively. An Independent t-test statistical tool was used to analyze the data using SPSS at a 0.05 level of significance. The findings revealed that there was a significant influence of accessibility and utilization of ICT facilities on teachers' job performance in the study area. In line with the findings, it was recommended that secondary schools teachers in Misungwi District should be given access and allowed to utilize ICT facilities to arouse their interest as well as enhance their job performance; efforts should be made by educationists and managements of secondary schools to provide adequate emerging technologies in schools to aid learning. (**Word count** = 234).

Keywords: Educational management, Emerging technologies, Sustainable development goals, ICT.

Introduction

It has become increasingly necessary for education management to attain quality, efficiency, effectiveness, equity, and inclusion according to the conditions of each institution. Processes that assist in directing pedagogical and pedagogical practices toward compliance with contemporary social demands have been developed as a result of the increased significance and relevance of educational management in recent years, particularly with the use of technology. For this reason, it is frequently asserted that one of the essential strategies for

enhancing education is educational management (Roberto & Vivian, 2018). To effectively manage education in the twenty-first century, educational institutions must not only encourage the use of information and communication technologies (ICT) but also oversee organizational changes that make it easier to adapt to the demands of modern education. Studies on the state of educational management in Nigeria, and specifically in the setting where the proposed network is developed. The circumstances of the participating institutions, the prevailing ideas about the functions of networks in education, and internationally developed best practices are all taken into consideration. The network is often built to improve the quality of educational management in particular centers in the institution of learning. It is widely believed that the main reason nations fail to achieve inclusive education is that they lack the resources to build schools and businesses. Poverty keeps communities in a vicious cycle where they never have enough money to pay for sustainable services like health care, education, or other essential community infrastructure. This is necessary to have healthy workers and business development that would generate capital (United Nations, 2009; Sachs & McArthur, 2004; Sachs & McArthur, 2004), 2005).

Since the world's poorest countries failed to meet most of the Millennium Development Goals (MDGs), the Sustainable Development Goals (SDGs) were approved as a post-2015 developmental agenda. It takes more than just establishing objectives, targets, and resources to attain the expected and desired results. Recent developments indicate that attaining the SDGs requires more than merely establishing goals; rather, key challenges continue to be stakeholders' capacity to understand, identify, and address the SDGs' foundation in both school and non-school contexts, as well as their cooperative participation. Because of this, managing, coordinating, and administering education has become essential to achieving the SDGs in general and SDG4 in particular.

Education has changed into a global setting where teachers and students work together since the introduction of information and communication technology (ICT) into the classroom. To investigate how to manage this borderless region that joined the realm of education, African states had to be established. Despite early predictions, the benefits of ICT investments in education have not yet been fully realized. This is especially concerning given how rapidly so many aspects of schooling are becoming digital. Even though there are several methods for organizing education in general, very little was found in the literature on the administration of ICT in education. This has significantly contributed to the abundance of research on "ICT in education" that is currently available. Senior education administrators and policymakers must understand that without well-planned institutional managerial

guidance, conflict, and misunderstanding amongst role players with disparate expectations and attitudes are likely to arise. It is reasonable to wonder why the African educational system finds it so difficult to adopt, utilize, and maintain ICT in the classroom. Terwase, Ukume and Obiora (2018) assert that there is an urgent need to use ICT in teaching school subjects like writing. Ategwu, Kenn-Aklah, Adie, and Opoh (2022) opined that accessibility and utilization of ICT facilities can aid both teachers and students in actualizing educational goals and objectives, to achieve this, ICT facilities should make available for easy access and utilization. Teachers' job performance could only make possible if ICT facilities are integrated into the school curriculum. Sometimes teachers' lack of performance could be attributed to the following, lack of motivation, inadequate ICT facilities, poor numeration, uncondusive working environment, over-crowded classes for teachers control, and lack of cooperation between management of the school and teachers. For teachers to utilize instructional aid effectively, there should be a good numeration policy, and prompt payment of salaries to propel their job performance (Fanan, Ategwu & Ekpo, 2023; Ategwu & Fanan, 2023).

Mwamasso and Onyango (2020) investigated how easily students in higher education could use electronic resources, they found that they had to deal with issues such as a lack of computers, electricity, and network issues. It was also discovered that the majority of students lacked the computer knowledge base and financial resources necessary to safeguard electronic devices, which prevented them from using computers to access electronically stored content. As a result, it was discovered that the majority of students at higher education institutions are unable to access electronic resources because of inadequate infrastructure, a shortage of computers, network and electrical problems, a lack of computer skills. They also face budgetary limitations.

Owate (2018) also looked at undergraduate students' access to and use of e-learning resources in academic libraries: a prelude to academic objectives. The findings showed that the availability and utilization of e-learning resources are, in fact, related to academic achievement. Therefore, it was suggested that educators and higher education administrators work to provide appropriate e-learning resources to support learning.

A case study of University of Jos pharmaceutical science students was conducted by Abubakar et al. (2020) to examine the accessibility and availability of information resources in university libraries for students' academic use. The findings demonstrated that most information resources are available, however some are only partially accessible. The findings also revealed that almost all the library's stated information resources were deemed

useful by the respondents. As a result, it was recommended that the library preserve the information resources that are now accessible and available and acquire new ones to make available to students because of their importance.

Concept of Educational Management

The concept of educational management was clarified with the assistance of specialists such as Frederick W. Taylor and Henry Fayol. The scientific management movement was introduced by these writers. Educational management also affected their views. Taylor advocated for the implementation of performance standards, specifically the achievement of the targeted level of worker productivity. An organization's objective is something it hopes to achieve. Conversely, the standard is a performance metric that will result in the intended consequence if it is met. The other management expert is Fayol. He was the first to propose the philosophy of administrative administration in his work *Administration Industrielle et Generale*, which is translated as *General and Industrial Administration* in America. Fayol sought to improve management and recognized the distinction between managerial and operational tasks. Fayol thus concentrates more on operational concerns. Planning, organizing, commanding, coordinating, and controlling are the five concepts that Fayol outlined and which are now managerial functions. The word "administration" has been widely used to refer to management. The management of an organization is a broad manifestation of human behavior. The process of administration is how choices are made. The process of leading and managing life in any social organization, whether businesses or educational institutions, is known as administration. Conversely, one could argue that management is a science that studies how individuals collaborate to achieve an organization's objective (Kimani, 2011: 17).

Functions of Educational Management

Planning, organizing, and controlling are the three fundamental tasks that make up the educational management process. A manager uses these functions to achieve educational organization goals and objectives.

Planning

Planning is the initial stage in education management. Planning is a logical and methodical approach to predicting an organization's future, according to Kimani (2011:17). It involves laying out a future course of action to prepare for change. Planning is the process of getting ready to do the things that will be done. Determining the goals and the most effective means of achieving them can be aided by planning. (Djam'an, Satori, 2007: 155).

Organizing

Organizing is similar to staffing, which is the educational management function of acquiring resources, systematically allocating them, and planning assignments to achieve organizational goals. It entails determining which activities must be finished, how they should be grouped, who is responsible for completing them, and who will make the final decision. Organizing is the process of bringing together material and human resources to achieve organizational goals. To guarantee that students learn effectively, a school setting may require assembling teachers, non-teaching staff, and instructional and learning resources. For activities to be as successful as possible, they must be well organized (Kimani, 2011: 41).

Directing

Directing entails integrating people with the educational institution to win their cooperation to achieve its goal, much like motivating, leading, and coordinating do. Educational staff members are motivated to make effective and efficient contributions to the accomplishment of organizational goals through the guiding process. Directing requires a certain amount of organizational commitment. The objectives of the organization must be blended with those of the individual and the group. It only deals with the human factor. Managers must therefore be extremely careful in this delicate and sensitive function.

Controlling

Why is control required? It results from the objectives of people or organizations that occasionally conflict with those of the organization. The other factor is the variations caused by the time that has passed between the objectives' creation and execution. Controlling is a managerial role that keeps an eye on how well things are doing. The activities must fit into the planning, as we all know. If something is not proper, everything must be changed. To enable the goals and objectives to be carried out per the original plan, controlling includes determining what is completed, evaluating performance, and implementing corrective measures. As a result, controlling entails evaluating performance about predetermined objectives and making the required modifications (Kimani, 2011:45).

Information and Communication Technology as an Actor in Educational Management

The function that the technology itself plays, if any, is a crucial consideration when examining the application of any technical innovation in an organization, claim Arthur and Allan (2002). Organizations like the Education Department and the software provider, as well as individual people like the school principal, are appropriately regarded as important actors. However, what about the actual technology? How should the impact of the information system be taken into account?

When studying the implementation of information systems in organizations, a frequent research strategy is to concentrate on the technical aspects of the change and treat "the social" as the context in which it is developed and implemented (Tatnall and Gilding 2000). According to this method, the "technological" rather than the "social" is to blame for the outcomes of technological progress (Grint & Woolgar 2000). However, Bromley (2000) contends that the question "Does technology affect society or not?" will always need to be asked as long as "technology" is viewed as a unique kind of thing that exists independently of "society." The idea that it does gives rise to the technological determinist viewpoint, which views technology as autonomous and possessing some inherent characteristics that function outside of society. The claim that it doesn't imply that technology must be impartial and that each person must choose how to utilize it; is a viewpoint that is similar to social determinism. Bromley opposes such an either/or position, arguing that neither response offers a helpful explanation of how technological innovation functions. He contends that the notion that technology and society are distinct should be abandoned.

The Use of ICT in Educational Management

Information and Communication Technology (ICT) applications have been used in education management and administration in recent years to promote sustainable development. Computer programs that perform useful educational functions including word processing, desktop publishing, database administration, presentation design, and email are known as software-based tools and applications (Higgins & Packard, 2004). The three main administration groups that employ ICT in various tasks and activities linked to their daily management and administration at schools are the administration head, administration teachers, and administrative personnel.

Administration Head

Afshari et al. (2012) state that school principals should possess the essential abilities to use ICT in their day-to-day administrative and management work as administration heads. Principals are role models when it comes to employing computer technology for management and administrative responsibilities. As instructional leaders, principals help teachers incorporate computers into their classrooms (Singh & Muniandi, 2012). Teachers have a more positive attitude toward instruction when in-house training is made more engaging (Chen, 2012). Typically, administrators use PowerPoint presentations to conduct instruction. They generate circumstances and events that foster a favorable atmosphere for the adoption of technology and encourage creativity and open-mindedness as transformational leaders (Afshari et al., 2012).

To generate school announcements, reports, letters for parent meetings, student registration, and teacher and staff employment, administrators utilize ICT apps, according to Mwalongo (2011). According to Webb (2011), instructional leaders have a direct and indirect influence on the success or failure of teacher competencies in instructional technology. Administrators use online apps, store information, and make decisions using ICT applications (Selwood, 2004; Af7aal, 2011). These leaders are also crucial in integrating technology into the curriculum through the instructors they employ. Administrators are crucial in creating effective learning environments, and they should enable their teachers to use technology to change the world (Afzaal, 2012).

Administration Teachers

Teachers who have administrative duties in addition to their teaching duties are known as administration teachers. The directors and leaders of every office and department are the front-line administration teachers (Lin et al., 2011). The curriculum head, student affairs head, and co-curriculum head are the three types of administrative teachers in Malaysia. The head instructors of the curriculum are responsible for managing the overall student record. Under this curriculum head, teachers are required to keep all records about the students in a certain way. Students' cumulative records and formative and summative assessments are included in this computer file, which can be printed out of the software program for hard copy documentation. However, according to Mwalongo (2011), the most often mentioned applications of ICT in education include note-taking, teaching-learning materials, and exam preparation. According to the findings of earlier research by Selwood (2004), all three administration teachers used ICT tools for a variety of functions while creating their lesson plans, timetables, work schemes, and school reports. The amount of time required for marking and correction is significantly decreased when administrators develop online assignments and tests that are automatically graded. They can generate the outcomes by using ICT applications as well. They occasionally use ICT tools to create online portals and web pages where students can access their homework (Kawade, 2012).

Administration Staff

Administrative employees can also use information and communication technology (ICT) apps to complete their regular tasks more quickly and accurately. To manage financial tasks, remain in touch, process paperwork, keep records, and gather information, administrative staff employ a variety of tools. They may carry out their duties more successfully and efficiently if they use ICT technologies. Additionally, they would be able to record school financial documentation like balance sheets, pay stubs, and audit reports more easily if they

used ICT apps. This also includes non-salary grants, stock management, and the compilation of all student records and evaluation reports for future use (Kawade, 2012: Kazi, 2012).

Importance of SDGS to Classroom Management

The SDGs can be essential to teaching and learning in every classroom for the four (of many) reasons listed below:

1. The world must be taught to students.

Today's school-age children will become adults in a society that is becoming more interconnected and diverse. To prosper and flourish, students must understand cultural norms and variances around the world. The SDGs are fundamentally global in scope and have universal objectives for all people. Students gain a better understanding of global concerns like gender equality and the lack of access to clean water by learning about these programs. Culture is inextricably linked to these challenges, and students must study about the globe to fully comprehend the SDGs.

2. Students need to be engaged members of their community.

Encouraging students to be engaged members of their local and global communities is essential to addressing the world's most pressing issues. For them to be a part of our society, we must cultivate global citizens who are enthusiastic about taking care of others and the environment. The SDGs encourage pupils to solve problems and set realistic goals.

3. Students gain compassion and empathy.

Students start to grasp the particular difficulties that communities around the world face, which they may not have previously been aware of when they are taught about SDGs like those pertaining to poverty, hunger, and high-quality education. For students to build wholesome relationships throughout their lives, empathy is essential. Developing empathy in kids results in enthusiastic, involved adults.

4. Teachers and students are motivated to act.

To teach the SDGs, educators don't have to be authorities on subjects like renewable energy or responsible consumption. Together with their pupils, they can study and investigate these problems and devise strategies for action. Students will be motivated to make positive changes in both big and little ways once they have a better grasp of the SDGs and their necessity. Through our engagement with teachers, we have witnessed this in various ways, from first graders saving water by turning off their classroom taps more regularly to high school students spreading awareness about human trafficking.

Strategies for Managing SDG/ESD

Helen (2021) asserts that meeting the specific requirements of a community is a prerequisite for providing high-quality education. This logic also holds for ESD, and a community's political leadership must completely support it for its administration to be successful (Pablo, 2020). In addition to the specific needs of a labor market or student body, this complexity also includes higher-order connections like funding distribution and ministry coordination. In actuality, political leadership will have to take charge during the ESD implementation process (Dweck, 2009).

Although any sustainable development strategy must identify and target the requirements of a local community, resources, and accountability for their implementation are essential to ensuring that these strategies translate from presentations to people's actions. This calls for the creation of networks of organizations to test preliminary learning and measurement, as well as the coordination and accountability of pertinent administrative entities for the development and application of an ESD framework. The idea that people will be free if they have the capacity (in the form of skills, rights, information, etc.) to accomplish objectives that meet their needs forms the basis of this concept of human capability (Sen, 2013).

Additional strategies include assessing the nation's current educational policies, boosting education spending, supplying enough learning resources, encouraging teacher capacity building, modernizing instructional supervision, promoting quality assurance in schools, and promoting public-private partnerships in education, according to Florence and Oyewole (2016). Another management strategy is to decide how an ESD will be evaluated. Given the initiative's position as a cross-administration project and its role within a larger sustainability framework, it is important to understand the program's success and resource requirements. This is so that it can be modified as needed and avoid becoming the focus of political infighting. Instead, it should balance the interests of various groups of people (Soubbotina, 2004).

Emerging technologies, an actor of educational management in achieving sustainable development goal

It is evident in today's society that the incorporation of new technologies has significantly changed and is now a key factor in determining sustainable development goals (SDGs). As Biglari et al. (2022) pointed out, the role of emerging technologies has taken center stage, offering better opportunities and changes in the attainment of these global developmental objectives (Gunawan et al., 2020). However, integrating emerging technologies into the pursuit of sustainable development introduces a duality that requires careful examination.

According to Qadri et al. (2020), new technologies such as telecommunication and other devices help to improve the healthcare and educational management sectors. Additionally, the use of new technology has shown promise in addressing environmental sustainability goals. Orekan (2023) claims that eight goals were established as part of the global links for development to address significant issues like sickness, poverty, hunger, and gender inequality. It can revolutionize ethical thinking and offer previously unheard-of chances to salvage sustainable development goals through active innovation and economic development, especially when combined with emerging technologies that support educational management.

Objectives of the study

The general objective of the study is to examine the impacts of educational management and emerging technologies for achieving sustainable development goal simplification on secondary school teachers' job performance in Misungwi District, Mwanza Tanzania. Specifically, the study seeks to examine the influence of:

1. Accessibility of ICT facility on teacher's job performance
2. Utilization of ICT facility and teacher's job performance

Hypotheses

Two null hypotheses were used to guide the study

1. There is no significant influence of accessibility of ICT facilities on teachers' job performance in Misungwi District
2. There is no significant influence of the utilization of ICT facilities on teachers' job performance Misungwi District

Methodology of the study

The study used a mixed method approach which is quantitative and qualitative. The survey research design was adopted for the study since a questionnaire was used. The Population of the study comprised 679 teachers chosen from 37 government secondary schools in Misungwi District, Mwanza Tanzania. The sample of the study was made up of 204 secondary school teachers in Misungwi District. This constitutes 30% of the respondents. The instrument used for data collection was tagged "Educational Management and Emerging Technologies for Achieving Sustainable Development and Teachers' Job Performance Questionnaire (EMETTJQ). The reliability of the instrument was carried out using Cronbach Alpha which ranges from 0.71 and 0.73 respectively. Independent t-test statistical tool was used to analyze the data using SPSS at a 0.05 level of significance.

Results

This section focused on the presentation, interpretation, and discussion of the results that were obtained from the analysis of the data collected for the study. This was done hypothesis by hypothesis with each hypothesis tested at a 0.05 level of significance.

Hypothesis one

There is no significant influence of accessibility of ICT facilities on teachers' job performance in Misungwi District. Independent t-test analysis was employed to test data collected concerning this hypothesis. This is because the accessibility of online resources was measured categorically (as accessible and inaccessible). The hypothesis was tested at a 0.05 level of significance. The summary of the result is presented in Table 1.

Table 1: Independent t-test analysis of accessibility of ICT facilities on teachers' job performance in Misungwi District (N = 204)

Accessibility of ICT facilities	n	(\bar{x})	SD	t-value
Accessible	104	43.15	1.64	5.62
Inaccessible	100	30.37	1.08	

Significant at 0.05 level; D/F = 2 and 202; critical t-value of 1.972

The summary of results presented in Table 1 shows that the calculated t-value of 5.62 is greater than the tabulated t-value of 1.972 at 0.05 level of significance with 2 and 202 degrees of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was upheld. This means that there was a significant influence of accessibility of ICT facilities on teachers' job performance in the study area.

Hypothesis two

There is no significant influence of the utilization of ICT facilities on teachers' job performance in Misungwi District. Independent t-test analysis was employed to test data collected concerning this hypothesis. This is because utilization of ICT facilities was measured categorically (as utilized and not utilized). The hypothesis was tested at a 0.05 level of significance. The summary of the result is presented in Table 2.

Table 2: Independent t-test analysis of influence of utilization of ICT facilities on teachers' job performance in Misungwi District (N = 204)

Utilization of ICT facilities	n	(x)	SD	t-value
Utilized	108	41.87	2.04	5.19
Not utilized	96	29.68	1.48	

Significant at 0.05 level; D/F = 2 and 202; critical t-value of 1.972

The summary of results presented in Table 2 shows that the calculated t-value of 5.19 is greater than the tabulated t-value of 1.972 at 0.05 level of significance with 2 and 204 degrees of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was upheld. This means that there was a significant influence of utilization of ICT facilities on teachers' job performance in the study area."

Discussion of findings

According to the first hypothesis, teachers' job performance in Misungwi District is not significantly impacted by the availability of ICT facilities. However, this null hypothesis was disproved because the computed r-values derived from the data analysis were statistically higher than the crucial r-value. This finding implies that instructors' job performance in the research area was significantly impacted by the accessibility of ICT facilities.

The results of hypothesis two are consistent with the findings of Mwamasso and Onyango (2020), who investigated how easily students in higher education could access electronic resources. The study found that students encountered obstacles like a lack of computers, electricity, and network issues when trying to access these resources. It was also discovered that the majority of students lacked the computer knowledge base and financial resources necessary to safeguard electronic devices, which prevented them from using computers to access electronically stored content.

The results also support the findings of Abubakar et al. (2020), who studied the accessibility and availability of information resources in university libraries for academic usage by students: a case study of University of Jos pharmaceutical science students. The findings demonstrated that most information resources are available, however some are only partially accessible. The findings also revealed that almost all the library's stated information resources were deemed useful by the respondents.

According to the second hypothesis, there is no discernible impact of ICT facility use on Misungwi District teachers' job performance. Because the computed t-value derived from

the data analysis was statistically higher than the crucial t-value, the alternative hypothesis was maintained and this null hypothesis was rejected. This finding implies that instructors' job performance in the research area was significantly impacted by their use of ICT resources.

The first hypothesis's result is consistent with Owate's (2018) prior analysis of undergraduate students' access to and use of e-learning resources in academic libraries as a prelude to academic objectives. The results demonstrated that there was, in fact, a connection between academic goal achievement and the availability and use of e-learning resources. In a similar vein, the results support the opinion of Ategwu, Kenn-Aklah, Adie, and Opoh (2022), who believed that ICT facilities should be made easily accessible and usable to help teachers and students realize educational goals and objectives.

Conclusion

Based on the findings of this study, the following conclusions were made: there was a significant influence of accessibility and utilization of ICT facilities on teachers' job performance in Misungwi District. It also shows that if educational managers provide and manage emerging technologies in schools, it will enhance teachers' job performance and thus aid in achieving sustainable development goals.

Recommendations

In line with the findings of this study and the conclusion made therein, the following recommendations were made: There should be accessibility of ICT facilities for teachers to enhance their job performance. Also, secondary school teachers in Misungwi District should be given access and allowed to utilize ICT facilities to arouse their interest as well as enhance their job performance; efforts should be made by educationists and managements of secondary schools to provide adequate emerging technologies in schools to aid learning.

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