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TEACHERS' PEDAGOGICAL SKILLS AND STUDENTS' ATTITUDES TOWARDS TECHNOLOGY-ENHANCED TEACHING AND LEARNING IN MOROGORO SECONDARY SCHOOLS, TANZANIA

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ABSTRACT

Technology provides pedagogically enhanced tools and facilities, allowing teachers to more effectively replace traditional methods of instruction. Technology in teaching and learning is essential for Tanzania's development. The Ministry of Education, Science, and Technology encourages technology-based learning in national curricula through a wide range of initiatives. This study examined teachers pedagogical skills and students' attitudes towards the use of technology to improve teaching and learning in Morogoro Municipal Secondary Schools. The study employed a survey design involving a sample of 140 municipal secondary school students and 40 teachers. The Statistical Package for Social Sciences (SPSS) was used for analysing descriptive statistics. The findings indicate that smart phones are the most widely used technologically advanced tool among teachers. While teachers use the internet to find instructional materials, LCD projectors for lesson delivery, and online platforms for flipped classrooms, the study found that the majority of them lack the technologically enhanced pedagogical skills needed to deliver lessons online, such as the use of digital technologies to promote inclusive education, the use of learning management systems (LMS), and the selection and use of appropriate software tools for instruction. The majority of respondents felt positive about technology-enhanced teaching and learning, despite concerns about bullying when using social media for learning purposes. Based on these findings, the study suggests teacher training programmes to enable successful technology-enhanced teaching and learning. The study also suggests that school administrators adopt safety measures and educate students on how to protect themselves when engaging in online learning platforms.

Keywords: Technology-enhanced Teaching And Learning; Teachers Pedagogical Skills; Students Attitudes; Technology-enhanced Pedagogical Tool.

1. INTRODUCTION

1.1. Background Information

Education plays an important role in both social and economic development (Burchi, 2006). To achieve global education goals, providing quality education and training is critical (Boeren, 2019). Education reform efforts in less industrialised countries have aimed at making education an effective tool for national development (Al-Ansi, 2017). As technology advances, education systems around the world have undergone various reforms. Among them, the use of technology-enhanced teaching and learning has become the centre of these reforms. the The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2008) recognises the application of technology in the collection, storage, editing, retrieval, and transfer of information in diverse

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forms. Similarly, Spence and Smith (2009) assert that technology enables communications to build human capabilities and freedoms, offering students' tools to access information, develop tools to access information, and develop research skills in solving problems. Trucano (2016) acknowledges that technology in teaching and learning can increase students' access to education networks, train teachers, and broaden the availability of high-quality educational materials for emerging global economies.

Barnes (2006) noted that, globally, the USA took the first initiative to integrate technology into mainstream affairs, including education and government. In Tanzania's education, among the determinants of quality in education are the availability of a conducive environment for teaching and learning, including the curriculum, facilities, resources available for their provision, and the use of modern techniques in teaching and learning (Alex and Manang, 2022). This entails integrating technology-enabled pedagogy in education. Tanzanian secondary schools have used facilities like computers, computer laboratories, and internet connections, along with traditional telecommunication methods, to promote technology-enhanced teaching and learning (Karimi, 2012). Technology-enhanced teaching and learning employs a variety of strategies and methods to improve teaching and learning. It also adds value to the learners' experience (Kirkwood and Price, 2014).

COVID-19 showed that technology is important in ensuring different ways of learning through technology and with technology, apart from the traditional face-to-face. Prior to that, Mtebe et al., (2021) noted that only 40% of academicians were using technology-enabled pedagogical tools in Tanzania. Heacox (2002) emphasises that the use of various pedagogical tools has to reflect instructional differentiation and meet students learning needs, such as visual, auditory, and kinesthetic. The Tanzanian government's commitment to the integration of technology-enhanced teaching and learning in education has been indicated through various strategies, including the prioritisation of ICTs in education and the national development plan (2002–2008); the development of the Tanzania Education Support Sector Support Programme (TESSP) (United Republic of Tanzania (URT), 2008), in which ICT features as one of the prioritised areas to integrate technology into the teaching and learning process; and the national policy for information and communication technology (URT, 2003). Also, the Ministry of Education, Science, and Technology (MOEST) introduced a national information and communication technology strategy for education and training (Karimi, 2012).

1.2 Problem Statement

Ghavifekr et al., (2014) acknowledge that technology-enabled infrastructure, the level of teachers' technological knowledge and skills, students' attitudes towards the integration of technology in teaching and learning, and school administrative practices that support the use of technology in teaching and learning are important elements of the effective use of technology in teaching and learning. Understanding these elements is critical to developing appropriate interventions and increasing investment in the use of technology in teaching and learning (Purcell et al.,2013; Bice & Tang, 2022). Despite the efforts by the Tanzanian government to promote the use of technology in teaching and learning, the use of technology is inconsistent and lacks a strategic overview in many secondary schools in Tanzania. Various studies (Zelesa, 2005; Mtebe et al., 2021) noted that there is inadequate usage of technology in teaching and learning among schools in Tanzania. Due to this discrepancy, this study was carried out to examine teachers' pedagogical skills and students

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attitudes towards the use of technology-enhanced teaching and learning in secondary schools in Morogoro Municipal.

1.3 Objectives of the Study

The main aim of this study was to examine teachers' use of technology-enhanced pedagogical tools in teaching and learning in Morogoro Municipal Secondary Schools. Specifically, the study sought to assess teachers pedagogical skills and explore students' attitudes about the use of technology enhanced teaching and learning in secondary schools.

2. METHODOLOGY

This study was conducted in Morogoro district, which is one of seven districts in the Morogoro region of Tanzania. According to the 2022 Census (URT, 2022), the population of the Morogoro district was 471,409. The study employed a survey design. Both primary and secondary data were collected, where primary data were collected through a questionnaire while secondary data were collected from various sources, including journals and various online reports. The region, district, and schools were purposefully chosen, whereby Kihonda and Mgulasi secondary schools were selected for the study. A random sampling procedure was used, in which 180 respondents were selected for the study to form a sample size. Among them, 140 were students and 40 were teachers. A 5-point Likert scale was used to gauge teachers pedagogical skills and students' attitudes towards the use of technology in teaching and learning. The obtained data were further collapsed into three categories of rating, namely agree, undecided, and disagree. Data were analysed using the Statistical Package for Social Science (SPSS), in which descriptive analyses were conducted to determine the proportions of responses.

3.RESULTS

3.1. The use of technology-enhanced pedagogical tools for teaching and learning

In the study area teachers in both secondary schools used various technology-enhanced pedagogical tools including audio equipment, LCD projector, smart phone and personal computer/laptop. Results are in Table 1.

Table 1: The use of technology-enhanced pedagogical tools

Variable (N=40)	Proportion (%)
Audio equipment	7.5
LCD Projector	5.0
Smart phones	65.0
Personal computers/Laptops	22.5

The majority of respondents (65%) in the study area used smart phones as their primary pedagogical tool, while the smallest proportions used audio equipment, LCD projectors, and personal computers.

3.2.Teachers' pedagogical skills for technology-enhanced teaching and learning

In the study area, the teachers' possession of various pedagogical skills for technology-enhanced teaching and learning was assessed. Results are in table 2.

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Table 2: Teachers' Pedagogical skills for technology-enhanced teaching and learning

SN	Variables (N=40)	Proportion (%)		
		Low	Average	High
1	Operating computer systems and programmes	45	40	15
2	Using online platforms for delivery of lessons	60	25	15
3	Using internets to secure teaching and learning materials	20	25	55
4	Using Learning Management Systems for assessments	55	25	20
5	Using digital tools for inclusive teaching and learning	60	25	15
6	Using social media for collaborative learning	35	30	25
7	Using LCD projectors for delivery of lessons	5	35	60
8	Using online platforms for flipped lessons	15	35	50
9	**Select and use appropriate software for teaching and learning**	**75**	**15**	**15**

Table 2 shows the different levels of pedagogical skills that respondents possess for integrating technology-enhanced teaching and learning. In the study area, the majority of respondents expressed that they possess skills in using the internet to secure teaching and learning materials (55%), skills in using LCD projectors for lesson delivery (60%), and about 50% of respondents possess skills in using online platforms for flipped lessons. However, most of the respondents lack skills in the use of online platforms for lesson delivery (60%), learning management systems (55%), digital tools for inclusive teaching and learning (60%), and selecting and using appropriate software tools for teaching and learning (75%).

3.3. Students' attitudes on the use of technology enhanced-teaching and learning

In the study area, the attitudes of students towards the use of technology in teaching and learning were gauged using various items. Results are Table 3.

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Table 3: Students attitudes on the use of technology-enhanced pedagogy

SN	Statements (N=140)	Proportion (%)		
		Agree	Undecided	Disagree
1	Less engaged when using social medial for collaborative learning	35	30	35
2	Not confident when using computers in learning	30	25	45
3	Unsafe from bullying when using social media for learning	55	20	25
4	Technology-enabled pedagogy improves learning experience	75	5	20
5	Technology-enhanced instructions ensure inclusive learning	50	15	35
6	Using LCD projector to deliver the lesson helps me enjoy learning	55	5	40
7	Technology-enhanced learning increases flexibility	40	25	35
8	Technology-enhanced pedagogy makes group learning difficult	25	30	45
9	Technology-enabled pedagogy provides access to vast resources	45	15	40
10	Using internet would hinder production of original learning activities	35	10	55
11	Technology-enhanced pedagogy encourages students creativity	40	15	45

Table 3 shows that about (55%) of respondents agree that they are unsafe from bullying when using social media for learning. Over 70% of respondents agree that teachers' use of technology-enabled pedagogy helps them improve the learning experience. About 50% of respondents agree that technology-enhanced instructions ensure inclusive learning. In the study area, more than 50% of respondents express satisfaction with the use of the LCD project for lesson delivery. However, most respondents (55%) disagree that using the internet would hinder them from producing original learning activities.

4. DISCUSSION

In the teaching and learning context, successfully integrating technology-enhanced pedagogy in schools entails three important stakeholders, as Gordon (2014) mentions: the pedagogical (teachers), ontological relationship (students), and system (institutional structure and process). Each stakeholder has interrelated needs and wants during learning interactions, which ensures learning outcomes are achieved. In the study area, teachers' pedagogical skills were assessed in aspects that included the use of technology-enhanced pedagogical tools and the use of technology-enhanced pedagogical skills in teaching and learning. Teachers in both schools have indicated the highest use of smart phones as a technology-enhanced pedagogical tool. Otto and Kruikemeier (2023) show that smart phones have become essential mobile devices for communication, access to information, and a wide range of daily activities. Similarly, the majority's use of smart phones

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creates a huge opportunity for secondary schools to integrate mobile technologies into their teaching strategies.

Teachers' pedagogical skills have effects on the use of technology in teaching and learning. However, in the study area, the majority of teachers lack essential skills, including using online platforms to deliver lessons, using digital tools for inclusive teaching and learning, and selecting and using software tools for teaching and learning. Switching from traditional face-to-face to online platforms offers both teachers and learners more interactive tools that encourage students' engagement. This interactive and engaging environment provides students with a new immersive experience (Guilbaud and Whitney, 2017). As technology changes, the role of the teacher also changes from that of subject expert to facilitator, which helps in building trust and respect in the classroom setting (Jangeldinova, 2023). Digital technology is useful in ensuring inclusive learning, as Blok et al., (2020) noted that while technology is gaining popularity in education, it is necessary for teachers to be prepared to work with 'typical' children but require additional information and training to work with children with special education needs.

Similarly, Murayama (2020) shows that inclusive classes help students improve their performances. Every learner experiences a sense of belonging to the class community, receives a voice, and engages with their classmates through inclusion. This skill is important for a teacher to develop competencies that can help children with special education needs integrate better into society. On this note, digital tools can play a crucial role in creating effective and affordable ways of adapting to the educational environment in inclusive classrooms. Digital technology can develop soft social skills such as teamwork, communication, adaptability, emotional intelligence, and negotiation skills. Also, by using digital technology in teaching, teachers get access to assistive tools that can be useful learning supports for students with and without disabilities (Daniela, 2022).

The highest proportion of respondents lack digital and inclusive learning skills, making the integration of technology-enhanced learning inefficient. Lack of these skills can hinder progress towards inclusive learning, as Drushlyak (2023) confirmed that the use of digital technologies in working with children with special educational needs carries certain risks. In addition, the ability to select and use software tools provides the teacher with the opportunity to select appropriate software tools that reflect students' affordances. Online platforms are embedded with open software tools that can be accessed by all students without any cost. Instead of using paper and pen, students can use various software tools to present their study projects and assignments (Haleem et al., 2022).

While technology-enhanced teaching and learning improved the learning experience, the majority of respondents expressed concerns about the risk of bullying when using social media during teaching and learning activities. Bleam (2018) supports this by demonstrating that the use of social media exposes students to various forms of bullying. Cyber bullying includes gossip, ridicule, or coercion, as well as bullying or violence from friends through electronic media (Kaloeti et al., 2021). The acts of cyber bullying disrupt inclusive learning, as Chatzakou et al. (2017) showed that bullying causes emotional difficulties for learners if they are not controlled, as students experience violence, threats, coercion, or attempts to aggressively harass, humiliate, intimidate, or dominate another person using electronic media. In order to optimize the use of social media for technology-enhanced learning, it's crucial to remain vigilant for technological advancements that heighten the risk of bullying students outside of school settings, specifically in the cyber world or virtual space (Olweus and Limber, 2018).

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5. CONCLUSION

The study concludes that in the study area, the highest proportions of respondents rely on smartphones to integrate technology-enhanced teaching and learning. The frequent use of smart phones as the main technology-enhanced pedagogical tool provides schools with an opportunity to integrate technology-enhanced pedagogical strategies. However, most teachers lack the necessary skills for the efficient and effective integration of technology in teaching and learning. Using online platforms is a fundamental skill in enforcing technology use in teaching, as it offers flexibility for learning and is cost-efficient. Effective use of digital tools is important for ensuring inclusive learning. Without this skill, it is difficult to appropriately integrate technology and meet learners' individual needs. Additionally, by carefully choosing open software tools that all students can easily access, the ability to select and use appropriate software tools for teaching and learning can significantly reduce costs. While the majority of teachers are proficient in using the internet to secure teaching materials, using LCD projectors for lesson delivery, and using online platforms for flipped lessons, It is worth noting that in the study area, students expressed overall positive attitudes towards the use of technology-enhanced teaching and learning. On the contrary, respondents expressed concerns about the risk of bullying when engaging in learning activities using online platforms. Based on these findings, this study recommends that schools should provide professional development training programmes for teachers if the use of technology-enhanced teaching and learning is to be successful. Also, in regard to the risk of bullying when using social media during students' learning activities, the school administration should develop policies to ensure students safety and educate them on how to navigate through online platforms by protecting themselves from various forms of cyber bullying.

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