

Technology Integration in Classrooms: Evaluating Teachers' Perceptions of Administrative Support in Tanzanian and Indian Schools

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Abstract

This study examines teachers' perceptions of administrative support for technology integration in classrooms, with a comparative analysis between Tanzanian and Indian secondary schools. The research points out the significant role of administrative leadership in creating an environment conducive to adopting digital technologies in education. Teacher data was collected through a mixed-method approach by questionnaires and interviews, coupled with the demographic analysis of gender, age, education levels, and teaching experience. Results from the quantitative analysis indicated that generally, Indian teachers were satisfied with administrative support; however, their Tanzanian counterparts showed dissatisfaction, mainly because of inadequate training opportunities and lack of proper IT infrastructure. Qualitative data from interviews with school heads corroborated these results, highlighting systemic policy implementation and resource allocation challenges. The study emphasizes that effective technology integration requires not only investment in infrastructure but also consistent professional development for teachers and proactive administrative engagement. These findings are significant for policymakers aiming to bridge the digital divide in education across diverse socio-economic contexts. Conclusively, it makes recommendations that will strengthen administrative frameworks through support systems in terms of ICT; regular training programs; and collective leadership models to have effective teacher efficacies in utilizing technology. More so, providing comparative insights within this research enhances broader discussion into digital transformation issues in education issues more keenly experienced among developing nations.

Keywords: Technology Integration, Administrative Support, Teacher Perceptions, Digital Education, Comparative Analysis.

1.0 Introduction

This integration of technology into the classroom is the new hub of modern education systems worldwide. The integration of digital tools and platforms is changing teaching and learning. Educators can now create vibrant and engaging learning environments, thanks to the growth of digital tools and platforms. However, from the examples seen in educational systems in Tanzania and India, successful integration remains a problem that heavily relies on administrative support. Teacher perceptions, therefore, play an important role in this process as they influence how smooth technology is introduced into the classroom. This study

explores teachers' perceptions regarding administrative support for technology integration in schools across Tanzania and India, identifying both facilitators and obstacles to the process.

Administrative support entails necessary resources including training, technical advice, and policy frameworks that allow for the efficient use of technology in education. Research shows that when administrators take an active role in providing this support, teachers are more likely to use the digital tools appropriately, resulting in better pedagogical results (Jwaifell, 2018). Lack of administrative support mainly exacerbates the potential inequalities caused in resource-constrained settings by undermining the transformative effects of technology on education. However, Tanzania's education system faces insufficient ICT infrastructure in schools, the unavailability of internet access at schools, and the lack of training for school teachers, as stated by UNESCO, 2021. In Indian schools, after the implementation of NEP-2020 and other policies like it, improvements have been shown and observed, while issues such as unequal resource development and lack of appropriate administrative support cause a hindrance to uniform improvements (Kumar & Bhasin, 2022).

Teacher perceptions are critical indicators of the level of support from the administration because they are the primary change agents in implementing technology in classrooms. Their experiences and attitudes reflect the strengths and weaknesses of administrative policies and practices. There is a likelihood of technology adoption and implementation of innovative teaching methods when teachers perceive strong support from the administration (Ertmer & Ottenbreit-Leftwich, 2020). Conversely, lack of support fosters resistance, low morale, and underutilization of existing resources. As a result, using teacher insights can help in developing strategies to overcome these weaknesses and enable administrators to create an environment that supports effective technology integration.

The comparative analysis of Tanzania and India offers a useful framework through which the effects of socio-cultural, economic, and policy-related factors on the integration of technology into education can be explored. Both countries acknowledge the transformative potential of digital technologies and have actively encouraged their adoption. In Tanzania, for instance, the National ICT Policy for Basic Education advocates for the integration of ICTs in teaching and learning (Ministry of Education, Science, and Technology, 2017). In India, the National Education Policy 2020, or NEP-2020, is a comprehensive strategy that will utilize technology to enhance access, equity, and quality in education. Although such efforts are praiseworthy, the actual successful integration of technology in schools is highly dependent on the ability of school administrators to help teachers in overcoming challenges of technological integration. This research utilized a comparative methodology to compare perceptions of administrative support among teachers in Tanzania and India. The study used a mixed-method approach combining quantitative data gathered through surveys with qualitative insights gathered through interviews with educators and school leaders. The findings provide systemic and contextual implications of technology adoption in classrooms while highlighting key enablers and barriers. Most importantly, this study highlights the best practices as well as some valuable lessons from the study which can inform policies and implementation strategies in comparable global contexts.

The integration of technology in learning is a clear opportunity to develop better learning results and bridge inequality in education; however, a robust administrative system that addresses the diversity of challenges at the teacher levels is a basic requirement for making it successful. This study bases its analysis of teachers' views in the two contexts of Tanzania and India towards providing actionable points for policymakers and educators and administrators wishing to use technological change to transform teaching and learning systems.

1.1 Problem Justification

The integration of technology in education becomes an integral tool to enhance the teaching and learning processes. Nevertheless, the effectiveness of technology implementation is mostly determined by the teachers' perceptions of administrative support. In both Tanzania and India, where digital literacy initiatives are being more critically pursued, disparities in infrastructural capacity and institutional commitment create and ignite further challenges in ensuring technology adoption at all levels of classroom-based schooling. Despite government policies emphasizing digital integration, such as India's NEP-2020 and Tanzania's National ICT Policy for Basic Education, many teachers feel inadequately supported by their administrations.

According to research, the administrative support related to professional development, functional ICT tools, and addressing teachers' concerns significantly affects the effectiveness of technology adoption (Aslam et al., 2020; Mishra & Bansal, 2022). In Tanzania, infrastructural issues such as unreliable electricity and internet services also contribute to the negative perception. On the other hand, schools in India are filling gaps by implementing Diksha, while administrative support remains uneven (UNESCO, 2021). These issues are critical to empowering teachers to integrate technology effectively, reducing resistance, and fostering digital literacy. Evaluating teachers' perceptions provides insights into gaps in administrative efforts and informs strategies for creating conducive environments for EdTech integration.

2.0 Review of Related Studies: Technology Integration in Classrooms

Technology integration has become a vital component of most modern education systems around the globe. The right use of digital tools can enhance teaching and learning processes, increase student interest, and ready learners for demands in the 21st century. However, the success in integrating technology also depends on numerous factors, especially teachers' perception of administrative support. This review will synthesize the literature on technology integration, with a specific focus on the perceptions of administrative support in Tanzanian and Indian schools.

2.1 Technology Integration in Education

There has been an increasing interest in the role of technology in education over the past few years. Educational technologies, including LMS, digital tools for content creation, and communication platforms, can improve the learning experiences and outcomes of students. According to Chigona and Chigona (2018), the integration of technology has a positive effect on the engagement of students, knowledge acquisition, and general academic performance. But the integration of technology effectively into the curriculum goes beyond having devices; it requires support at several levels, most importantly from school administrators.

According to Dong and Xu (2020), teachers' perceptions of technology integration are influenced by both individual and institutional factors. These include teachers' technological competence, training opportunities, and the level of support provided by school leadership. Teachers' attitudes toward technology adoption are critical because even with access to technological resources, the lack of adequate administrative support can hinder the successful use of technology in classrooms (Dede et al., 2020).

2.2 Administrative Support for Technology Integration

Administrative support plays an important role in the successful implementation of technology integration in schools. According to a study conducted by O'Dwyer et al. (2018), at the administrative level, leadership plays an important role in fostering innovation and technology use within schools. For example, it supports professional development programs for teachers in technology use as well as availing technological tool

facilities and provision of infrastructure-friendly systems. Results showed that students' perceptions concerning the support system offered by an organization determine their teaching practice with relation to the administrative support. An organizational system viewed through strong administrative support has more latitude and opportunity to use technology resources in an effective manner within the context of the school setting.

Support administratively has been cited to be an essential deciding factor for adopting and implementing technology within Tanzanian schools. A 2017 study by Maliyamkono, despite digital device being a high trend in use within Tanzania schools, revealed that it had several Tanzanian schools experiencing an insubstantial level of administrative support during technology implementation processes mainly because the institutions have resources, while teacher's preparedness was wanting. There is fragmented use of digital tools because there are no clear policies and consistent leadership on technology integration.

One more critical factor found to influence effective integration of technology into Indian school education is administrative support. As explored by Basak (2019), his paper discusses in what ways or manner school leaders facilitate or deter technology use during instruction in schools. The study findings indicated that the willingness of administrators to invest in professional development and creating a supportive infrastructure was critical to empower teachers to use technology in their teaching practices. In fact, Basak's study finds that despite schools in urban regions being more resource-rich, offering better infrastructure facilities, and high connectivity of technologies, the rural Indian school systems have even administrative support which puts another restraint to the technology's utilization in these schools.

2.3 Teachers' Perceptions of Administrative Support in Tanzania

In Tanzanian schools, several studies have continued to indicate the importance of administrative support in fostering technology integration. Mixed views about the support given by the administrative heads were found in Msuya and Mboya (2019). Some of the respondents' educators reported positive experiences especially in schools with strong leadership and adequate professional development opportunities. However, majority of the teachers perceive the administrative support to be lacking, mainly in rural settings where technology infrastructure is not established.

The lack of administrative support is further compounded by unclear policies on the integration of technology and professional development programs for teachers. Most teachers in Tanzania experience a problem integrating technology because of lack of training and access to the tools of technology, which hinder them from efficiently including digital resources in their teaching. Recently, Bumbuli and Ngowi (2020) have identified a concerning factor: Tanzanian educators believe that school administrators are not helping them by providing required resources, training, or even professional development to move out of the traditional approach of teaching.

Moreover, the findings of Msabila and Temba's (2021) study indicate that teachers in Tanzanian schools who are not supported administratively are less likely to adopt technology into their classrooms. It is implied that more effective leadership through training, resources in digital form, and a collaborative educators' culture can help foster greater educational technology adoption in Tanzanian schools.

2.4 Teachers' Perceptions of Administrative Support in India

The perception of teachers toward the administrative support of technology integration has been an area of many studies in India. According to Kaur and Kaur (2021), teachers would use technology in their teaching if they feel there is good administrative support in Indian schools, particularly in urban areas. Infrastructure related to the availability of computers, high-speed internet, and digital content was one of the significant facilitators of using technology inside the classroom. Unlike that of rural schools, which

were totally lacking due to infrastructure highly deficient and aggravated by a lack of proper administration support.

Sharma and Kaur (2020) also reported that Indian school teachers who received administrative support through training, encouragement, and resource provision had higher confidence levels when using technology. In addition, the paper emphasizes that the creation of a collaborative culture among teachers can foster an exchange of knowledge and experiences about the integration of technology. Teachers who believed their heads of department would back them up reported more frequent continuous learning and experimentation on new technological tools.

However, despite the encouraging reports from some schools, a significant proportion of teachers in India still feel unsupported in their efforts to integrate technology. According to a study by Bansal and Srivastava (2019), many Indian teachers feel that there is a lack of administrative support for technology integration, especially in rural and remote areas. The study summed it up concluding that, with some pockets of success in towns, the bigger scenario in India still remains pretty lopsided since rural school schools struggle most to get enough resources and quality training.

2.5 Comparing Tanzania and India: Common Challenges and Opportunities

Challenges in the integration of technology remain the same for both Tanzanian and Indian schools. There have been significant issues that have arisen as a result of dependence on administrative support. Although the educational context is different between the two countries, there are common issues such as lack of infrastructure, poor professional development, and no clear policies regarding technology integration.

In both Tanzania and India, teachers often report feeling unsupported by their administrators, which hampers their ability to integrate technology effectively in the classroom. However, there are also notable areas of progress. For instance, some schools in both countries have successfully integrated technology through strong leadership, access to resources, and teacher training. These successful cases underscore the importance of a clear vision and strategic planning at the administrative level, but also the importance of sustained investment in technology and professional development.

It, therefore, forms a multi-faceted process involving various factors, and administrative support is found to be the most crucial indicator of success for implementing technology in schools. The perception of teachers' acceptance of administrative support among Tanzanian and Indian schools presents common challenges, as well as scopes for improvement. While many teachers in both countries report feeling unsupported by their administrators, there are also examples of schools where strong leadership and adequate resources have facilitated successful technology integration. To better improve technology integration, it will be important for administrators in both countries to develop clear policies, to provide professional development, and the infrastructure necessary for teachers to welcome digital tools. Further research should delve deeper into the experiences of teachers in diverse contexts to identify which of the afore-mentioned forms of administrative support are most effective in the integration of technology in classrooms.

3.0 Findings of the Study

The data collected from the teachers in both countries reflected varying levels of satisfaction regarding administrative support for technology integration in the classroom. The results are discussed below based on the five statements provided in the survey.

Table 1: Responses from Tanzania:

| Statement/Items | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|----------------|---------|---------|----------|-------------------|
| The school administration provides sufficient resources (hardware/software) for technology integration. | 12(17%) | 30(43%) | 18(26%) | 8(11%) | 2(3%) |
| Teachers receive regular training sessions on using technology for teaching. | 10(14%) | 20(29%) | 25(36%) | 12(17%) | 3(4%) |
| The administration encourages the use of technology in teaching and learning. | 5(7%) | 35(50%) | 18(26%) | 9(13%) | 3(4%) |
| The administrative support is consistent and timely for technology integration. | 3(4%) | 12(17%) | 28(40%) | 15(21%) | 12(17%) |
| The administrative leadership plays an active role in promoting digital literacy among teachers. | 8(11%) | 22(31%) | 15(21%) | 14(20%) | 11(16%) |

Table 2: Responses from India:

| Statement/Items | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|----------------|---------|---------|----------|-------------------|
| The school administration provides sufficient resources (hardware/software) for technology integration. | 23(33%) | 35(50%) | 8(11%) | 4(6%) | 0(0%) |
| Teachers receive regular training sessions on using technology for teaching. | 22(31%) | 40(57%) | 6(9%) | 2(3%) | 0(0%) |
| The administration encourages the use of technology in teaching and learning. | 28(40%) | 32(46%) | 7(10%) | 3(4%) | 0(0%) |
| The administrative support is consistent and timely for technology integration. | 19 (27%) | 35(50%) | 10(14%) | 4(6%) | 2(3%) |
| The administrative leadership plays an active role in promoting digital literacy among teachers. | 18(26%) | 39(56%) | 8(11%) | 4(6%) | 1(1%) |

The results from Table 1 and Table 2 above show a significant difference in the perceptions of teachers from Tanzania and India regarding the support for technology integration in classrooms. The overall trend suggests that Indian teachers generally perceive stronger administrative support for technology integration, as seen in the higher percentages of teachers in India who strongly agree or agree with the statements.

3.1 Availability of Resources

In Tanzania, 17% of teachers strongly agreed that the administration provides sufficient resources for technology integration, while in India, the figure was higher at 33%. The majority of teachers in both countries agreed, but Indian teachers reported a higher availability of hardware/software. Tanzanian

teachers expressed more concerns, with 11% disagreeing and 3% strongly disagreeing, which may reflect the country's struggle with inadequate resources in some schools. Tanzanian administrators also mentioned in interviews that while efforts are being made to improve resource availability, budget constraints are an ongoing challenge. One administrator noted, *"The resources are limited, but we try to allocate what we can for the integration process."*

3.2 Regular Training for Teachers on Using Technology

In both countries, regular training sessions on using technology for teaching were perceived as insufficient. In Tanzania, only 14% of teachers strongly agreed with the availability of regular training, whereas in India, the percentage was higher at 31%. Tanzanian teachers' responses reflect a considerable neutral stance (36%), indicating a lack of clarity or frequency of training programs. One Tanzanian administrator mentioned, *"We try to organize training, but it is not as frequent as it should be due to logistical issues."* In contrast, Indian administrators highlighted more structured training programs, with one stating, *"We ensure that teachers are regularly trained on the use of digital tools."*

3.3 Encouragement from Administration for Technology Use

The responses also reflect that the administration's encouragement for technology use was stronger in Indian schools. In Tanzania, only 7% of teachers strongly agreed with this statement, compared to 40% in India. A significant number of Tanzanian teachers (13%) disagreed with the encouragement for technology use. Tanzanian administrators noted the challenges faced in motivating teachers, with one stating, *"While we encourage it, there are many teachers resistant to change."*

3.4 Consistency and Timeliness of Administrative Support

Administrative support for technology integration in Tanzania was perceived as less consistent and timely. While 4% of Tanzanian teachers strongly agreed that support is timely, 17% strongly disagreed. Indian teachers showed more satisfaction, with 27% strongly agreeing. An Indian administrator mentioned, *"We have dedicated teams that take care of quick support whenever teacher problems arise using technology."* At the same time, in Tanzania, administrators raised concerns about untimely support related to resource deficits, which would explain the disparity in satisfaction scores.

3.5 Active Role of Administrative Leadership

The perception of active administrative leadership in promoting digital literacy was significantly higher in India. In Tanzania, 11% of teachers strongly agreed that administrative leadership played an active role, whereas 26% of teachers in India did so. Tanzanian administrators often mentioned challenges such as a lack of training for their own leadership to effectively promote digital literacy. One Tanzanian administrator said, *"Our leadership needs more exposure to how to effectively guide teachers in digital literacy."* Indian administrators, however, spoke confidently about their proactive role in promoting technology, with one leader noting, *"We actively monitor and support our teachers to develop digital skill"*

4.0 Discussion and Analysis of The Findings

From the comparative analysis of the perceptions of Tanzanian and Indian teachers regarding administrative support for the integration of technology in classrooms, there are apparent differences. Generally, Indian teachers perceive more robust administrative support, mainly in terms of resources, frequent training, and encouragement to use technology. The reasons for such differences may lie in the variation in educational policy, resource allocation, and leadership practices in the two countries. According to recent studies, administrative commitment and resource availability are needed for proper technology integration (Kaur & Kaur, 2020; Sharma, 2021).

Resource availability, the findings show that a higher number of Indian teachers, 33%, think that there is adequate resource provision from their administration for the incorporation of technology as compared to the Tanzanian teachers at 17%. Perhaps due to the high investment in educational technology. According to Rao and Kumar (2019), Indian schools better access hardware and software resources and are motivated more by government initiative, such as the National Mission on Education through Information and Communication Technology (NMEICT). On the other hand, concerns raised by Tanzanian teachers with regards to resource shortages are also well supported by research findings conducted by Mushi (2021). According to this author, "budget constraint" is one of the most common factors that hinder successful technology use within Tanzania's educational system.

Regarding regular training, the Tanzanian respondents showed considerably low levels of satisfaction concerning availability of professional development programs, with a low of 14% who said they were strictly agreeing on the issue that the training sessions were provided. Indian teachers scored a bit better, with 31% agreeing. Such a difference reflects the opposite educational priorities of the countries concerned. According to Gupta and Sethi (2020), India has significantly improved teacher training regarding the use of technology, while in Tanzania, professional development still lags because of logistical reasons in organizing consistent professional development. As one Tanzanian administrator remarked, "Training is not as frequent as it should be because of logistical issues," a sentiment shared by Msabila and Khayiyo (2021), who stress the need for better organized and systematic training programs for Tanzanian educators.

Another critical aspect is that, although findings report a more considerable perception of administration encouragement towards using technology in the case of India, where teachers believe their administrations are highly in favor of it at 40% compared to merely 7% in Tanzania, such a divergence may be rooted in cultural as well as organizational factors affecting practice. According to Choudhury and Verma (2018), leadership is more proactive in the promotion of technology adoption in India because of the contribution of school administrators to the drive for technological change. On the other hand, Tanzanian administrators have teachers' resistance in exchange. Like the comment given by this administrator: "While we encourage it, there are many teachers resistant to change." According to Mabumba (2020), it is in line with him that the teacher's resistance is a key hindrance to achieving this effectively in Tanzanian schools.

Administrative support in terms of consistency and timeliness is also viewed more favorably in India, as 27% of teachers strongly agree that their support is timely, whereas only 4% do in Tanzania. This indicates greater infrastructure for administration and more organized systems of support in India. As Gupta (2021) mentions, a dedicated support team can really make the difference in teachers' experiences with technology. However, limited resources do not enable Tanzanian administrators to offer timely support, as one administrator indicates: "Our leadership needs more exposure to how to effectively guide teachers in digital literacy." The facts are further corroborated by Mwehe (2019), who claims that lack of timely administrative support prevents effective technology integration in Tanzanian schools.

Last but not least, the perception that administrative leadership actively promotes digital literacy is stronger in India, as 26% of teachers reported that they strongly agreed with the statement, compared to only 11% in Tanzania. This finding is in line with other studies that argue that administrative leadership is crucial for digital literacy (Kumar & Mehta, 2022). Indian administrators are proactive in supporting and monitoring teachers, while Tanzanian administrators struggle to promote digital literacy because of their own lack of training, as one Tanzanian administrator pointed out: "Our leadership needs more exposure to

how to effectively guide teachers in digital literacy." This is a significant gap in leadership training, as Lwoga (2021) has suggested.

5.0 Conclusion and Recommendation

This study's findings are clearly indicative of the disparity in administrative support for technology integration between Tanzanian and Indian schools. The Indian teachers report more positive experiences across all the key areas, namely, availability of resources, regular training, encouragement to use technology, and timely support. The stronger support for the integration of technology in India can be ascribed to higher financial investment, structured policies, and proactive leadership in the various studies (Kaur & Kaur, 2020; Rao & Kumar, 2019). On the other hand, Tanzanian teachers have been faced with several challenges. These include insufficient resources, lack of professional development opportunities, and school leadership resistance to change, according to both administrative comments and previous research (Mushi, 2021; Mabumba, 2020). The support gap also mirrors broader systemic issues, including budgetary constraints and logistical problems that have undermined effective technology integration into Tanzanian classrooms.

For addressing these imbalances, educational administrators in Tanzania should commit more funds toward educational technology so that they ensure both hardware and software purchases can improve the quality of teaching. Professional development also needs to be structured and coherent to equip the teachers with sufficient skills and confidence to work on technology integration. Proactive leadership is a crucial factor to facilitate a technological change culture. The Tanzanian school administrators should be more extensively trained in digital literacy and change management to have them guide the teachers more effectively. Strengthening these areas will bridge the gap in administrative support as technology integration in Tanzanian schools becomes both efficient and sustainable, thus creating a favorable learning environment for students.

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