

# Unlocking Potential: The Positive Impact of In-Service Training on Science and Mathematics Teachers Teaching Strategies

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## Abstract

This study aimed to investigate the impact of in-service training on teaching strategies among secondary school teachers who teach science and mathematics in Mwanza, Tanzania. The study utilized a quantitative and quantitative research design and collected data through an online questionnaire from a sample of 68 teachers selected through simple random sampling and interview for few selcted teachers. Thematic analysis was conducted for qualitative finding and quantitative data was analyzed using SPSS software, and the findings indicated that in-service training had a significant positive impact on the teaching strategies of the participating teachers. The study's implications highlight the importance of investing in teacher training programs to improve the quality of education in Tanzania. Teachers who participate in in-service training can benefit from increased confidence, knowledge, and skills, which can translate into more effective and engaging teaching practices. Suggestions for further research include investigating the long-term effects of in-service training on teachers and students and exploring the most effective types of in-service training programs for different subjects and contexts. Overall, this study emphasises the importance of continuous professional development for teachers in improving the quality of education in Tanzania.

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## 1.0 Introduction

Teacher training and professional development are vital aspects of any education system. In order to provide quality education, teachers must be equipped with the knowledge and skills required to deliver effective instruction. Teacher training programs provide teachers with the knowledge and skills required to deliver high-quality instruction, while in-service training provides teachers with ongoing professional development opportunities. This article will provide a comprehensive background on the importance of teacher training and in-service training.

### 1.1 Importance of Teacher Training

Teacher training is critical to the success of any education system. The quality of instruction provided by teachers has a direct impact on the academic achievement of students. Teachers who receive quality training are better equipped to deliver effective instruction, which, in turn, leads to improved student outcomes(Selvaraj et al., 2021).

Effective teacher training programs focus on developing the knowledge, skills, and competencies required for effective teaching. These programs are designed to provide teachers with the tools required to deliver instruction that is student-centered, culturally responsive, and aligned with curriculum standards(Brandt et al., 2019).

One of the primary goals of teacher training is to improve the quality of instruction. Effective teacher training programs help teachers to understand the needs of their students and design instruction that meets these needs. These programs also help teachers to develop instructional strategies that are based on sound pedagogical principles(Sanusi et al., 2022).

Another important goal of teacher training is to promote teacher self-efficacy. Teacher self-efficacy refers to the belief that one can effectively teach a particular subject or skill. Teachers who have high levels of self-efficacy are more likely to be engaged in their work, have positive attitudes towards teaching, and be more effective in the classroom(van Rooij et al., 2019).

Effective teacher training programs also promote teacher collaboration. Collaborative professional development activities, such as peer observation and coaching, can help teachers to share best practices and improve their instructional skills(Hargreaves, 2019).

Finally, effective teacher training programs help to build a culture of continuous improvement. Teachers who are engaged in ongoing professional development are more likely to be reflective practitioners who are committed to improving their instructional practice.

### 1.2 Importance of In-Service Training

In-service training is another important aspect of teacher professional development. In-service training provides

teachers with ongoing opportunities to enhance their knowledge, skills, and competencies. These programs are designed to support teachers in their ongoing efforts to improve their instructional practice (Kimm et al., 2020). Effective in-service training programs focus on developing the knowledge and skills required for effective teaching. These programs are designed to provide teachers with the tools required to deliver instruction that is student-centered, culturally responsive, and aligned with curriculum standards (Nzarirwehi & Atuhumuze, 2019).

One of the primary goals of in-service training is to improve the quality of instruction. Effective in-service training programs help teachers to understand the needs of their students and design instruction that meets these needs. These programs also help teachers to develop instructional strategies that are based on sound pedagogical principles.

Another important goal of in-service training is to promote teacher self-efficacy. In-service training can help teachers to develop a deeper understanding of their subject matter and the skills required to teach it effectively. This deeper understanding can help teachers to develop a greater sense of confidence in their ability to teach their subject.

Effective in-service training programs also promote teacher collaboration. Collaborative professional development activities, such as peer observation and coaching, can help teachers to share best practices and improve their instructional skills.

Finally, effective in-service training programs help to build a culture of continuous improvement. Teachers who are engaged in ongoing professional development are more likely to be reflective practitioners who are committed to improving their instructional practice.

In Tanzania, teacher training and in-service training have been recognized as essential components of the education system since the country gained independence in 1961. Over the years, the government has made efforts to improve the quality of education through various policies, strategies, and programs aimed at strengthening the capacity of teachers to deliver quality instruction.

In the early years after independence, Tanzania's education system was based on the British model, which emphasized the development of cognitive skills through the delivery of subject content. However, in the 1970s, the government adopted a new policy that emphasized the development of practical skills and competencies to meet the needs of the country's growing economy (Nyerere, 1967). This policy shift led to the introduction of the competence-based curriculum (CBC) in 2005, which focused on the development of practical skills and competencies that were relevant to the needs of the society (TIE, 2013).

Teacher training and in-service training have been crucial in supporting the implementation of the CBC. The government has established various institutions, such as the Institute of Adult Education and the Tanzania Institute of Education, to provide pre-service and in-service training to teachers. The Ministry of Education also collaborates with other stakeholders, including development partners and non-governmental organizations, to support teacher training and professional development.

Teacher training and in-service training have been recognized as essential components of the education system in Tanzania. Despite the challenges, the government has made efforts to improve the quality of teacher training and professional development through various policies, strategies, and programs. However, there is a need for continued investment in teacher training and professional development to ensure that teachers have the necessary skills and competencies to deliver quality instruction that meets the changing needs of the society.

### **1.3 Research question**

*1. How does in-service training impact the professional development of science and mathematics teachers?*

### **1.4 Research objective**

*To determine the impact of in-service training on the professional development of science and mathematics teachers*

## **2. LITERATURE REVIEW**

In-service training is a critical component of teacher professional development, as it aims to provide teachers with the necessary skills, knowledge, and tools to improve their teaching practices. The effectiveness of in-service training programs on teachers' teaching strategies has been a topic of interest in educational research for many years. In this literature review, we will explore previous research on the impact of in-service training on teaching strategies, specifically in the context of secondary school teachers who teach science and mathematics in Mwanza, Tanzania.

**Importance of in-service training:** In-service training programs have been identified as a key factor in improving the quality of education in developing countries. According to UNESCO (2010), teacher professional development is essential in addressing the challenges of low student achievement, insufficient teacher preparation, and inadequate teaching resources. In-service training provides teachers with opportunities to acquire new knowledge and skills, reflect on their teaching practices, and share experiences with other teachers.

This can lead to more effective teaching practices, increased student engagement, and improved student outcomes.

**Impact of in-service training on teaching strategies:** Numerous studies have investigated the impact of in-service training on teaching strategies. For example, a study by (Essien et al., 2016) examined the effectiveness of in-service training on the teaching strategies of secondary school teachers in Nigeria. The study found that in-service training improved teachers' knowledge of subject matter, teaching strategies, and classroom management. The study also found that teachers who participated in in-service training were more likely to use active learning strategies in their classrooms.

Another study by (Kariuki et al., 2020) investigated the impact of in-service training on the teaching strategies of primary school teachers in Kenya. The study found that in-service training improved teachers' knowledge of subject matter, teaching methods, and assessment strategies. The study also found that in-service training had a positive impact on teacher attitudes and motivation, which led to improved student outcomes.

In a similar study, (Msamba et al., 2023) examined the impact of in-service training on the teaching strategies of secondary school teachers in Tanzania. The study found that in-service training improved teachers' knowledge of subject matter, pedagogy, and assessment strategies. The study also found that teachers who participated in in-service training were more likely to use student-centered teaching methods, which led to improved student outcomes.

**In-service training in the context of science and mathematics teaching:** Science and mathematics education is an area of focus for in-service training programs, as it has been identified as a subject area where teachers often lack confidence and subject knowledge (UNESCO, 2010). A study by (Dahri et al., 2023) investigated the impact of in-service training on the teaching strategies of science teachers in Nigeria. The study found that in-service training improved teachers' knowledge of subject matter and teaching strategies. The study also found that teachers who participated in in-service training were more likely to use student-centered teaching methods in their science classes.

In-service training has been found to have a positive impact on the teaching strategies of teachers in various subject areas and contexts. The studies reviewed in this literature review suggest that in-service training improves teachers' knowledge of subject matter, teaching strategies, and assessment methods, which leads to improved student outcomes. The literature also suggests that in-service training can improve teacher attitudes and skills of implementing the curriculum effectively.

Teacher professional development has been identified as an important factor in improving teaching practices and ultimately student achievement (Essien et al., 2016; Kilag & Sasan, 2023). In-service training is one form of teacher professional development that aims to provide teachers with the knowledge, skills, and strategies to improve their teaching practices. This literature review examines the existing research on the impact of in-service training on teacher teaching strategies (Ayvaz-Tuncel & Çobanoğlu, 2018).

**The Importance of In-Service Training:** In-service training programs are an important component of teacher professional development. In-service training programs are designed to help teachers acquire new skills, knowledge, and strategies to improve their teaching practices (OECD, 2013). In-service training programs can take various forms, such as workshops, seminars, conferences, and mentoring (Wardoyo & Herdiani, 2017). The goal of in-service training programs is to improve the quality of education by enhancing the knowledge and skills of teachers

**Impact of In-Service Training on Teacher Teaching Strategies:** In-service training has been found to have a positive impact on teacher teaching strategies. In-service training provides teachers with new knowledge, skills, and strategies that can be used to improve their teaching practices (Hervie & Winful, 2018). Teachers who participate in in-service training programs are better equipped to implement new teaching strategies that can lead to improved student learning outcomes. Another study found that teachers who participated in in-service training programs showed improvements in their teaching practices, such as increased student engagement, more effective use of teaching resources, and increased use of technology in the classroom (Juuti et al., 2021).

In addition, in-service training has been found to have a positive impact on teacher self-efficacy and confidence. Teachers who participate in in-service training programs report feeling more confident in their teaching abilities and more willing to try new teaching strategies (Wang et al., 2023). Another study found that in-service training programs improved teachers' self-efficacy in using different teaching strategies and technology in the classroom (Saienko et al., 2020).

Furthermore, in-service training has been found to have a positive impact on teacher attitudes towards teaching and professional development. Teachers who participate in in-service training programs report feeling more motivated and enthusiastic about teaching and more committed to their professional development (McLaughlin & Marsh, 1978).

**In conclusion** In-service training is an important form of teacher professional development that can have a positive impact on teacher teaching strategies. In-service training programs provide teachers with new knowledge, skills, and strategies that can improve their teaching practices, increase their self-efficacy.

### 3. Methodology

The research design and methodology employed in this study encompassed both quantitative and qualitative approaches to comprehensively investigate the impact of in-service training on the teaching strategies of secondary school teachers who teach science and mathematics in Mwanza.

For the quantitative aspect, a cross-sectional survey approach was utilized to collect data from a sample of secondary school teachers in Mwanza who teach science and mathematics. The sample size was determined to be 68 participants, and the selection process involved simple random sampling. Inclusion criteria required participants to be secondary school teachers instructing science and mathematics in Mwanza, while there were no exclusion criteria.

To gather quantitative data, an online self-administered questionnaire was developed and distributed to the participants via email. The questionnaire was thoughtfully designed to elicit information on the teachers' demographic characteristics, their experiences with in-service training, and the teaching strategies they employed after training. Before distribution, the questionnaire underwent rigorous testing for validity and reliability, ensuring the credibility of the gathered data.

To analyze the collected quantitative data, the researchers employed SPSS software. Descriptive statistics, such as percentages, were utilized to summarize the quantitative findings. The study's outcomes were presented using charts, aiding in the clear and visual interpretation of the results.

In addition to the quantitative approach, a qualitative component was incorporated to gain deeper insights into the teachers' experiences with in-service training and its impact on their teaching strategies. Through in-depth interviews with a selected subset of participants, the researchers explored the teachers' perspectives, reflections, and perceptions regarding the training's influence on their professional practices. The qualitative interviews allowed for a more nuanced understanding of the underlying factors contributing to the observed quantitative findings.

Thematic analysis was employed to analyze the qualitative data obtained from the interviews. This process involved identifying patterns, themes, and recurring ideas in the teachers' responses, offering valuable qualitative insights that complemented and enriched the quantitative results.

The combined use of quantitative and qualitative methods enabled a comprehensive exploration of the research questions, providing a holistic view of the impact of in-service training on the teaching strategies of secondary school teachers in Mwanza. The triangulation of data from both approaches ensured the robustness and validity of the study's findings, enhancing the credibility and applicability of the research outcomes.

### 4. Results

Based on the survey responses of 68 secondary school teachers who teach science and mathematics in Mwanza, it was found that in-service training had a positive impact on their teaching strategies. The study aimed to investigate the impact of in-service training on the teaching strategies of secondary school teachers in Mwanza.

#### 4.1 Improved Confidence as a Teacher

This research also aimed to find out if there is an increase in confidence for teachers after attending the in-service training. Several teachers expressed that the in-service training played a pivotal role in transforming their teaching practices and professional identity. One teacher stated, *"The training provided a fresh perspective on classroom strategies and pedagogy. It gave me a chance to reflect on my teaching methods and identify areas for improvement."* This suggests that the training not only enhanced their classroom skills but also fostered a sense of self-awareness and a commitment to continuous professional growth.

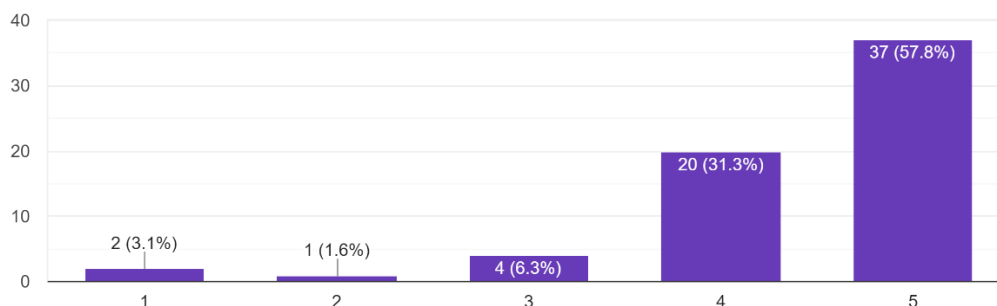
Another teacher shared, *"I used to doubt my abilities as a teacher, but the training boosted my confidence. I realized that I am capable of making a positive impact on my students' lives."* This finding highlights that the in-service training had a profound psychological impact, bolstering their self-esteem and belief in their abilities as educators.

Furthermore, in the interviews, teachers consistently mentioned how the training program provided a supportive and collaborative environment. One teacher commented, *"The group activities and discussions during the training allowed us to exchange ideas and experiences with colleagues. It made me feel part of a community of educators striving for excellence."* This finding suggests that the training not only improved individual teacher performance but also fostered a sense of belonging and camaraderie among the participants.

Overall, the interviews revealed that the positive effects of the in-service training extended beyond mere classroom improvements. It acted as a catalyst for personal and professional development, influencing teachers' self-concept, job satisfaction, and confidence in their role as educators. The qualitative data further complements the quantitative finding that 57.8% of teachers reported improved self-perception and a sense of accomplishment after undergoing the training.

I have a better self-concept, satisfaction and confidence in my ability as teacher

64 responses



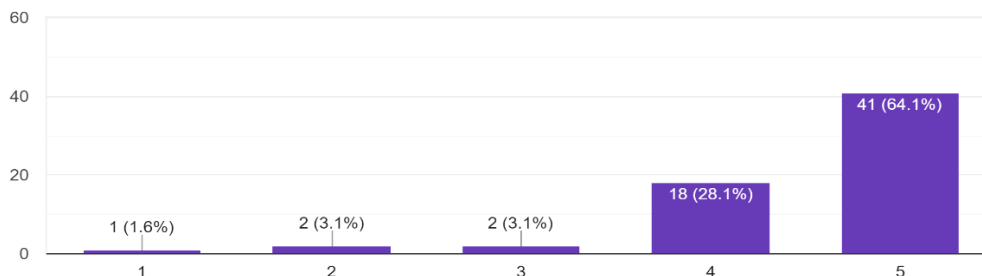
#### 4.2 Desire to Try Out New Knowledge

It became evident that the in-service training had a profound impact on their curiosity and professional motivation. Several teachers shared their experiences, and one of them stated, "After the training, I found myself more eager to experiment with innovative teaching methods and incorporate new ideas into my lessons. It rekindled my passion for teaching." This finding indicates that the training not only provided teachers with specific strategies but also reignited their enthusiasm for the profession.

Another teacher expressed, "The training exposed me to a broader perspective of my field. I became more curious about the latest research and advancements in education. I started attending conferences and seeking out relevant literature to deepen my understanding." This suggests that the training served as a catalyst for self-directed learning, encouraging teachers to proactively seek knowledge beyond the immediate scope of the program. The qualitative data aligns with the quantitative finding that 64.1% of teachers reported an increased desire to try out new ideas

I have more desire to try out new ideas

64 responses



During the interviews with teachers, it became evident that the in-depth training sessions played a significant role in enhancing their understanding of the new curriculum goals. One teacher mentioned, "Before the training, I had some vague ideas about the new curriculum, but it was the training that provided a comprehensive overview. I now have a clear understanding of the objectives and the rationale behind the changes."

Another teacher shared, "The training sessions were very informative. They delved into the finer details of the new curriculum, breaking it down into manageable concepts. It was much easier to grasp the complexities with such detailed explanations." This suggests that the training not only disseminated information but also facilitated a deeper comprehension of the curriculum goals.

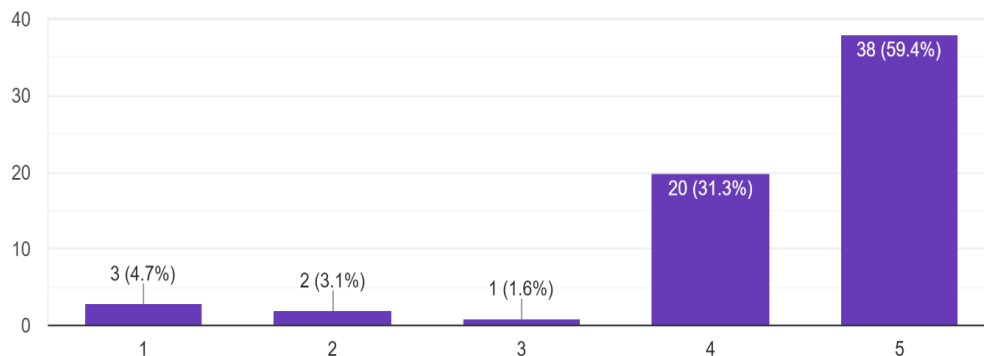
#### 4.3 Improved Knowledge on the New Curriculum Goals

Teachers highlighted the interactive nature of the training, which contributed to their knowledge acquisition. One teacher commented, "The trainers encouraged us to actively participate in discussions and group activities. It allowed us to share our perspectives and clarify doubts. I learned a lot from my fellow teachers during these interactions." This finding indicates that the collaborative learning environment of the training program positively influenced teachers' knowledge acquisition process. The qualitative data from the interviews supports the quantitative finding that 59.4% of teachers felt better informed and knowledgeable about the new curriculum goals.



I feel better informed and knowledgeable about the new curriculum goals now

64 responses



#### 4.4 Understanding Teacher and Students Roles in the Classroom

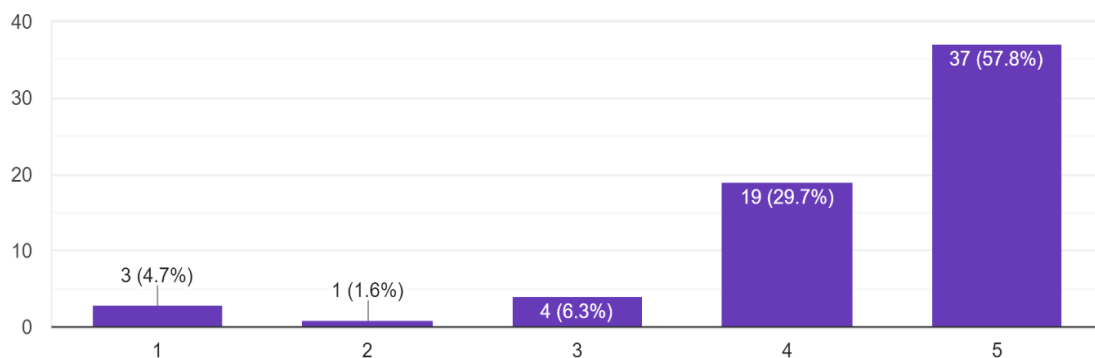
When assessing on the improvement on understanding the teachers and students role in the classroom after training one teacher during interview had this to say , *"I used to be uncertain about how to encourage student participation effectively. The training provided practical strategies and examples that helped me understand the importance of student engagement in the learning process."* This finding highlights that the training equipped teachers with concrete methods to facilitate student involvement and foster a more dynamic classroom atmosphere.

Moreover, the interviews revealed that the training also emphasized the importance of individualized instruction. One teacher remarked, *"I learned that students have diverse learning needs, and it's essential to tailor my teaching approach accordingly. The training encouraged us to be flexible and responsive to the unique strengths and challenges of each student."* This suggests that the training encouraged a student-centered perspective, where teachers adapt their methods to accommodate the diverse needs of their learners.

Additionally, teachers expressed how the training provided insights into classroom management techniques. One teacher stated, *"The training covered strategies for maintaining discipline without resorting to punitive measures. It helped me create a positive and respectful classroom atmosphere where students feel valued and motivated to learn."* This finding indicates that the training not only clarified teacher roles but also provided guidance on establishing a conducive learning environment. The qualitative data from the interviews provides valuable insights that complement the quantitative finding of 57.8% of teachers reporting a better understanding of teacher and student roles in the class.

I have a better understanding of teacher and student roles in the class now

64 responses



#### 4.5 Increased Awareness of the of the learners with special need

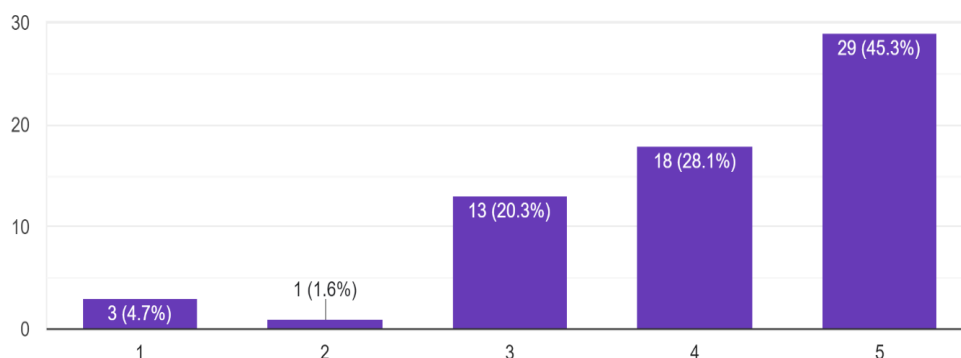
Another item which was assessed was the teachers awareness on the learners with special need. During the interviews many teachers expressed how the in-service training had a significant impact on their understanding of learners with special needs and different learning styles. One teacher shared, *"The training sessions included discussions on inclusive education, and we learned about various types of learning disabilities and how to provide appropriate support to students with special needs."* This finding suggests that the training contributed to a heightened awareness of the diverse characteristics and requirements of learners with disabilities.

Another teacher mentioned, *"Before the training, I struggled to identify and address the unique learning styles of my students. The training exposed me to different learning preferences and techniques, allowing me to tailor my teaching to better suit individual needs."* This indicates that the training equipped teachers with practical strategies to cater to the diverse learning styles present in their classrooms.

In the interviews, teachers emphasized that the training fostered a more empathetic and inclusive approach to teaching. One teacher remarked, *"The training emphasized the importance of creating a supportive and accepting classroom environment. It made me realize the significance of recognizing and valuing each student's strengths, regardless of their learning differences."* This finding suggests that the training promoted a positive attitude towards diverse learners and encouraged teachers to be advocates for inclusion. The qualitative data from the interviews aligns with the quantitative finding of 45.3% of teachers reporting a better understanding of learners with special needs and different learning styles.

I have an increased awareness of the characteristics and needs of learners with special need

64 responses

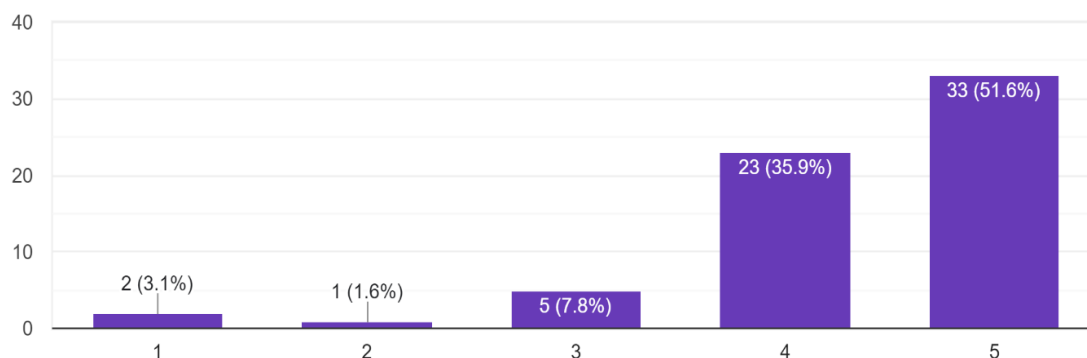


#### 4.6 Awareness on Different Learning Styles

Teachers' awareness on different learning styles was also measured after training to see if there is any improvement. Qualitative finding from the interviews with teachers, it was evident that the in-service training had a profound impact on their understanding of diversity and inclusion in the classroom. Many teachers shared how the training sessions prompted self-reflection and increased their awareness of the diverse backgrounds and experiences of their students. One teacher stated, *"The training challenged my assumptions and biases, making me more conscious of the cultural and social differences among my students. It motivated me to create a more inclusive learning environment."* Also teachers expressed how the training encouraged them to create a safe and respectful classroom climate. Another teacher remarked, *"We had open discussions about the importance of fostering a sense of belonging for all students. It made me rethink my classroom rules and policies to ensure they are fair and inclusive."* This indicates that the training promoted a proactive approach to building an inclusive classroom culture. This finding from interview can be triangulated by quantitative finding which indicated that 51.6% of teachers had developed a better understanding of diversity and inclusion in the classroom.

I have better understanding of different learning styles

64 responses



#### 4.7 Enhanced Instructional Strategies and Resource Improvisation

It became evident that the in-service training had a transformative effect on their instructional design and

delivery. Many teachers shared how the training sessions encouraged them to think creatively and innovatively when developing teaching and learning resources. One teacher stated, *"The training inspired me to explore new teaching materials and methods. I started incorporating interactive multimedia, hands-on activities, and real-world examples to make the lessons more engaging for my students."* This finding suggests that the training empowered teachers to experiment with diverse resources and instructional techniques.

Furthermore, teachers discussed how the training provided them with a broader repertoire of teaching strategies. One teacher mentioned, *"I learned various instructional approaches to accommodate different learning styles and preferences. The training emphasized the importance of differentiation, and I now feel more confident in catering to the individual needs of my students."* This indicates that the training enriched teachers' instructional toolkit, making them more adaptable and versatile educators.

Also teachers expressed how the training sessions inspired them to be more proactive in designing and supervising different kinds of activities during the teaching and learning process. One teacher remarked, *"The training encouraged us to move beyond traditional lecture-style teaching. I began incorporating group projects, discussions, and problem-solving tasks to foster critical thinking and collaboration among my students."* This suggests that the training promoted a shift from passive learning to active engagement, enhancing the overall learning experience.

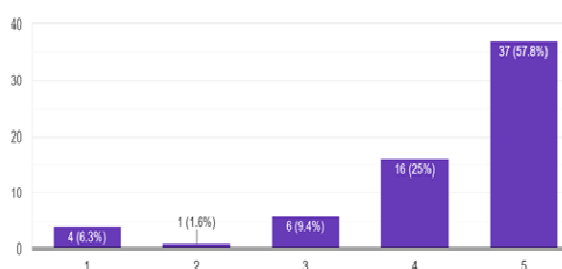
Moreover, teachers shared how the training facilitated a collaborative learning environment where educators exchanged innovative ideas. Another teacher stated, *"During the training, we were encouraged to share successful activities and classroom experiences. It was inspiring to learn from my peers and discover new ways to enhance my lessons."* This finding indicates that the training not only provided individual teachers with creative insights but also fostered a culture of shared learning and continuous improvement.

Additionally, in the interviews, teachers mentioned how the training instilled a sense of excitement and enthusiasm in their teaching practices. Another teacher commented, *"The training reignited my passion for teaching. It reminded me of the joy of exploration and discovery in the learning process. Now, I constantly seek new ways to make my lessons more enjoyable and meaningful for my students."* This suggests that the training had a positive emotional impact, influencing teachers to approach their work with renewed energy and dedication.

Overall, the qualitative data from the interviews aligns with the quantitative finding that 45.3% of teachers reported a positive impact on their ability to improvise teaching and learning resources, and 57.8% mentioned improvement in designing and supervising different kinds of activities during the teaching and learning process. The interviews reveal that the in-service training sparked teachers' creativity and innovation in instructional design and delivery, fostering a dynamic and student-centered approach to teaching. These qualitative findings complement and enrich the quantitative data, providing a deeper understanding of the training's influence on teachers' pedagogical practices.

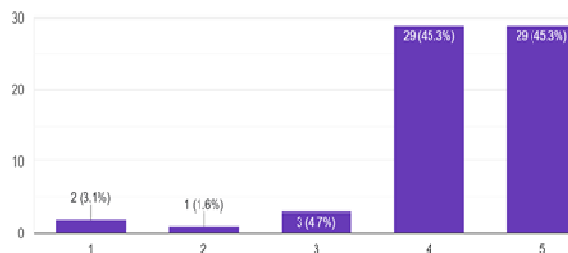
I am equipped with variety of instructional strategies to promote students engagement

64 responses



I feel more knowledgeable on improvisation of teaching/learning resources

64 responses



## 5. Discussion of the finding

The education sector has recognized the importance of continuous professional development for teachers to enhance their skills and knowledge. One approach to achieving this is through in-service training programs. This discussion delves into the findings of a study that investigated the effects of an in-service training program on teachers' confidence, understanding of various aspects of teaching, and instructional strategies. The study involved qualitative interviews with teachers, complemented by quantitative data. The results shed light on the multifaceted impact of in-service training on teacher development.

**Improved Confidence as a Teacher:** The research findings highlight a significant enhancement in teacher confidence as a result of attending the in-service training program. Teachers reported experiencing a transformation in their teaching practices and professional identity. This transformation was linked to increased



self-awareness and a commitment to continuous growth. Teachers' testimonials indicated that the training not only improved their classroom skills but also bolstered their self-esteem and belief in their abilities as educators. One teacher mentioned that the training boosted their confidence and reinforced their potential to positively impact their students' lives.

This aligns with the study by Tschannen-Moran and Woolfolk Hoy (2007), which asserts that teacher self-efficacy plays a vital role in shaping instructional practices and student outcomes. The findings in this study suggest that in-service training can be a catalyst for improving self-concept, job satisfaction, and overall confidence among educators.

**Desire to Try Out New Knowledge:** The study reveals that the in-service training not only impacted teachers' confidence but also ignited their curiosity and professional motivation. Teachers reported being more eager to experiment with innovative teaching methods and incorporate new ideas into their lessons. This phenomenon resonates with research by Amabile (1996), who argued that intrinsic motivation and creative thinking are essential for sustaining enthusiasm and promoting innovation in professional contexts. The training's ability to reignite passion suggests that it serves as a source of inspiration for teachers to explore novel approaches in their classrooms.

**Improved Knowledge on the New Curriculum Goals:** Teachers' understanding of new curriculum goals was positively influenced by the interactive and collaborative learning environment of the training program. This aligns with the research of Vygotsky (1978), emphasizing the significance of social interaction in the process of learning. By engaging in discussions and group activities, teachers not only acquired new knowledge but also learned from their peers. The training's emphasis on collaborative learning facilitated a deeper understanding of the curriculum goals.

**Understanding Teacher and Students Roles in the Classroom:** The study indicates that the in-service training played a pivotal role in clarifying teachers' understanding of their roles and responsibilities in the classroom. Strategies for effective student engagement, individualized instruction, and classroom management were provided during the training. These findings align with the works of Marzano (2003) and Wong (2009), who stress the importance of clear roles and effective classroom management in promoting student learning and engagement.

**Increased Awareness of Learners with Special Needs:** The in-service training also significantly enhanced teachers' awareness of learners with special needs and different learning styles. The training equipped teachers with strategies to support these students effectively. This aligns with the principles of inclusive education and differentiated instruction, which emphasize adapting teaching methods to meet the diverse needs of all students (Tomlinson, 2003; Friend & Bursuck, 2018). The training's emphasis on inclusive practices promotes a more equitable and supportive learning environment.

**Awareness on Different Learning Styles:** The study indicates that the in-service training fostered teachers' awareness of diversity and inclusion in the classroom. This aligns with research that highlights the importance of recognizing and valuing diverse cultural and social backgrounds among students (Banks, 2004). The training's emphasis on creating an inclusive classroom climate aligns with principles that advocate for creating safe and respectful spaces for all learners (Gay, 2010).

**Enhanced Instructional Strategies and Resource Improvisation:** The study's findings underscore how the in-service training positively influenced teachers' instructional design and delivery. The training empowered teachers to experiment with diverse resources and instructional techniques, aligning with the principles of constructivist pedagogy (Dewey, 1938). The training's impact on teachers' instructional toolkit aligns with the concept of differentiated instruction, which emphasizes catering to various learning styles and preferences (Tomlinson, 1999).

## 6. Conclusion

The research findings underscore the significant improvement in teachers' confidence following their participation in the in-service training. The training not only enriched their pedagogical skills but also transformed their professional identities, fostering self-awareness and commitment to growth. The impact on self-esteem was pronounced, bolstering belief in their abilities to positively influence students' lives. The collaborative training environment further solidified this confidence boost, cultivating a sense of belonging and collective dedication to excellence among educators. By merging qualitative and quantitative data, the study highlights the training's role as a catalyst for comprehensive personal and professional development, affirming teachers' self-perceptions and reinforcing their efficacy as educators.

## 7. Suggestions for Further Research

Although this study provides valuable insights into the impact of in-service training on teaching strategies, there is still much to be explored in this area. Further research can investigate the long-term effects of in-service training on teachers and students. This can provide insight into whether the benefits of in-service training are

sustained over time and lead to improved student learning outcomes. Additionally, future research can investigate the most effective types of in-service training programs for different subjects and contexts. This can help policymakers and educators to design more effective and tailored training programs that meet the specific needs of teachers and schools. Finally, future research can also investigate the impact of in-service training on teacher retention and job satisfaction, as this can have significant implications for the quality of education in Tanzania.

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