



Original Article

## Assessing the Access to Assistive Devices by Special Education Need Students in Morogoro Municipality

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### Keywords:

Assistive Devices,  
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The main aim of this study was to find out the access to assistive devices by special education need students in Morogoro municipality. Simple random sampling was used to select respondents in the research and the questionnaires were used and administered to selected respondents, while purposive sampling was used to select schools. The results of the research support the conceptual analysis of Assessing the access to assistive devices by special education needs students in Morogoro municipality, education quality through expansion of student access to schooling, delivering education to low-income families, financing of school inputs and building school infrastructures and higher academic achievement. The introduction explained the following background of the study, statement of the problem, main objective, specific objectives, research questions, the scope of the study, the significance of the study, definition of key variables disability special needs, special education, assistive devices access availability utilisation, factors determining the utilisation.

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## INTRODUCTION

The world of education is currently undergoing a massive transformation as a result of the digital revolution (Collins & Halverson, 2009). Because of this “digital revolution”, it is both vital and practical to make use of the availability and accessibility of technology in designing educational or training programs. Technology has the potential to contribute to an improved quality of life for students with intellectual disabilities, which is more than just a matter of convenience (Wehmeyer, Palmer, Smith, Davies, & Stock, 2008).

Erickson *et al* 2012, Students with disabilities face academic, psychological and social challenges within the higher education environment. Assistive technology use can enable academic engagement and social participation and be transformative from a psychological perspective. Disability support staff in higher education should ensure that the Assistive technology needs of students with disabilities are met in order to enhance the educational experience. Harnessing the potential of mainstream devices as Assistive technology for all students will facilitate inclusion and reduce stigma.

Millions of students with learning disabilities are not able to access the technology and information available, while in the same school the rest of the students can access the information they need with the click of a mouse (Bausch & Hasselbring, 2006). Through the use of assistive technology and digital technologies, students with learning disabilities are able to gain the same benefits as their peers in the classroom (Bausch & Hasselbring, 2006). Additionally, using software and assistive technology in the home, students with learning disabilities can learn alongside their typically developing peers in the classroom (Bausch & Hasselbring).

Globally, it is estimated that about 1 billion of its population are persons with disabilities, where 80% are from developing countries (World Bank, 2020).

According to the national census of 2012, the population of Tanzania was about 45 million of which 3.6 million equivalents to 8% were people with disability (URT, 2012). The types of disabilities that have been identified in Tanzania are on the following grounds; seeing, hearing, walking, remembering and self-care (NBS, 2016); while SIDA (2014) after conducting a study in Tanzania found that common disabilities in Tanzania include albinism, blindness, physical handicap, deafness, mentally handicap and deaf-blind.

The training of special education teachers is directed toward establishing valuable learning experiences for students with disabilities. The proper preparation of special education teachers familiarizes them with the embedded features of AT (Erdem, 2017), allowing them to meet the needs of all children in the classroom setting with proper training. As special education is a delicate issue that requires the maximum involvement of trained special education teachers in the active learning process (Holstein *et al.*, 2017), education programs must prepare special education teachers to meet the challenges involved in teaching students with disabilities in the classroom through highly demanding courses in special education to increase teachers' skills.

In addition, as having the right kind of resources and trainers helps teachers familiarize themselves with the functioning of the technology (De Witte *et al.*, 2015), special education teachers should have access to AT devices when they are trained to use them so as to be comfortable and confident in using AT to instruct students appropriately. As the well-targeted and formulated instruction of teachers during the training process imparts sufficient skills in using technology, good training should make it possible and even automatic for pre-service teachers to develop proficiency in AT to help students with disabilities (Saleem *et al.*, 2019).

Teachers' attitudes and beliefs are crucial factors in determining the role and effectiveness of

technology in classrooms. Attitudes and beliefs about both educational technology and pedagogy in general will ultimately influence how teachers implement technology. In the following sections, we discuss these issues and ways to promote positive attitudes that can optimize technology use. Now that technology is being widely used in schools, perhaps the most important question is how to best implement technology, rather than whether technology will be used (Ertmer et al., 2012; Keengwe, Onchwari, & Wachira, 2008).

Currently children with disabilities in Tanzania receive education mainly through integration in mainstream classes. The term 'integrated' instead of included implies that while children with disability attend ordinary classes, their special needs are not catered for. Inclusive education is rarely covered in the teacher training colleges so teachers typically do not have the skills to cope with education for the children with disability outside of the mainstream curriculum (Mmari et al., 2008; Mboya et al., 2008). Patandi Practising School, provides children with Braille materials and has rooms equipped for education of children with disabilities (Mboya et al., 2008; Zanzibar MoEVT, 2006). The Tanzanian government does not have the capacity to analyze the needs or to develop technologies that are appropriate for children with disability; however, there is an ICT for Basic Education Policy (Mmari et al., 2008) which specifies that MoEVT should ensure ATs are provided to children with disability (MoEVT, 2007).

In Tanzania, MOEVT (2016) further reveals that the country has been running educational services for learners with special educational needs through special schools, integrated units and inclusive schools for the following categories of learners with disabilities deaf or children with impaired hearing who have 49 special schools/units (that is, 11 special schools, 38 units); the visually impaired have 37 special schools/units (3 special schools, 34 units); intellectually impaired have 160 special schools/units (5 special schools, 155 units); those

with deafness-blindness have 8 special schools; those with physical impairment have 8 special schools/units (2 special schools, 6 units); and finally, those with autism have 8 units. It should be noted that the data on schools/units provided above are for pre-primary and primary levels. Secondary schools which enrol children with disabilities are not included.

According to Kisanga (2017), there were nine (9) primary schools with special education needs students in Morogoro Municipality in 2014. The schools had a total of 786 students with disability challenges, i.e., 432 males and 354 females. However, to date, there is scanty knowledge with regard to access to assistive devices by students with special educational needs (Kisanga and Kisanga, 2020).

### Specific Objectives

- To investigate the availability of assistive devices by students with special educational needs in Morogoro Municipality schools.
- To examine the utilisation of assistive devices by students with special educational needs in Morogoro Municipality schools.
- To explore factors determining the utilisation of assistive devices by students with special educational needs in Morogoro Municipality schools.

### Research Questions

- What types and quantity of assistive devices are available to students with special educational needs in Morogoro Municipality schools?
- What is the level of utilisation of assistive devices by students with special educational needs in Morogoro Municipality schools?
- What are the factors determining the utilisation of assistive devices by students with special

education needs in Morogoro municipality schools?

## METHODOLOGY

The study employed mixed research. The study adopted the triangulation method (i.e., the combination of both primary and secondary data collection). The study adopted a case study research design. In this study, the sample size of 60 respondents was selected from five primary schools based on Morgan's table for sample size in which 20 were teachers with special education and 40 were students with disabilities, particularly those with physical disabilities and blind. The two groups of respondents were selected because other kinds of disabilities were not supportive of the interview or filling the questionnaires. Primary data are data that are collected directly from respondents in the study area through interviews and questionnaires. The qualitative data were analysed by using content analysis and thematic analysis. Quantitative data were analysed by using statistical techniques which involve the use of the SPSS program to find frequencies, percentages, pie charts and histograms and finally presented. Hence, descriptive statistics were used in the analysis.

## FINDINGS AND DISCUSSION

### Assistive Devices Availability to Students with Special Educational Needs

The first objective of the current study sought to assess the availability of assistive devices for

students with special educational needs in Morogoro Municipality schools. Since the first objective aimed to assess the availability of assistive devices in the selected primary schools in Morogoro Municipality, the researcher wanted to know the kind of assistive devices available at the selected primary schools based on different categories and the extent to which the devices are used. The extent was expressed in terms of high, moderate, and low meaning that the school can have all the devices but the level of utilisation is very low. *Table 1-5* provides the summary of the findings;

### *Assistive devices Availability at Primary School A*

Primary School A is a school in Tanzania that allows all children to have access to education. The school is located in Morogoro Municipal Council, Morogoro region, Tanzania. The school is registered and has all classes that are from Standard one class to Standard Seven class. Primary School A provides an education that focuses on enabling pupils to have a self-reliant mind. Primary School A follows a normal curriculum which in the end prepares a student to work in Tanzania. The pupils who sit for the Standard seven national examination at Primary School A perform well every year. The school has a mixture of students with special needs and students with no special needs. *Table 1* shows the availability of assistive devices to students with special devices.

**Table 1: Assistive Devices Availability at Primary School A**

Type of Assistive Devices Available	Availability	
	Available	Not available
Written language assistive devices	✓	
Optical and non-optical devices	✓	
Hearing devices	✓	
Stimulation and Physical devices		✓
Mobile devices		Available but very limited

Source: Field Data (2022)

The findings in *Table 1* show the types of assistive devices and the availability status at Primary school A. Based on the findings from the field, primary school A has only written language assistive devices, optical and non-optical devices, and hearing devices. Stimulation and physical devices and mobile devices are not available at primary school A. The devices' availability at primary school A was witnessed by the researcher live after visiting the school during data collection. During an interview with the respondents, one of the respondents said that;

*In our school, we do not have Stimulation devices because we have no such pupils who need stimulation devices, but for mobile devices, they are available but very limited and we face some difficulties*

**Assistive Devices Availability at Primary School B**

Primary School B is a school which is found in Morogoro Municipal Council. Primary School B has all classes for primary school education following the National Education Curriculum. This Primary School B follows the normal curriculum designed under the supervision of the Ministry of Education and Vocational Training. Primary School B is registered as a school but also has the National Examination Council's Centre. Therefore, Primary School B allows pupils to sit for Standard Four National Assessment (SFNA) and Primary School Leaving Examination (PSLE).

The school accommodates even students with disabilities who are more than 30 students. *Table 2* below shows the availability of assistive devices

**Table 2: Assistive Devices availability at Primary School B**

Type of Assistive Devices Available	Status of Availability	
	available	Not available
Written language assistive technology	✓	
Optical and non-optical devices	✓	
Hearing devices	✓	
Stimulation and Physical devices		✓
Mobile devices	✓	

**Source:** Survey Data (2022)

The findings in *Table 2* show the types of assistive devices and the availability status at Primary School B. Based on the findings from the field, primary school B has written language assistive devices, optical and non-optical devices, hearing devices and mobile devices. The respondents said that mobile devices are available, but they cannot afford the available number of students. Stimulation and physical devices are not available at primary school B. During an interview with some of the respondents, one of them said that;

*“For the case of assistive devices, we thank the government because they have facilitated us with these devices to help students with disabilities to get an education without any limitation”.*

Another respondent said that;

*“The government and other stakeholders promised to add more assistive devices in our school, we request them to fulfil their promise so that to make primary school B do the best in helping students with special needs.”*

**Assistive Devices Availability at Primary School C**

Primary school C is a primary school found in Morogoro municipality, it is registered by the ministry of education, science, and technology. The school accommodates a multi-cultural combination of pupils from various villages and religious and ethnic backgrounds in the Morogoro Municipal

Council. The school aims to provide quality education and promote the improvement of academic standards, development, and welfare of the school.

Among the targets of the government under the ministry of education is to ensure that children with disabilities are accommodated to the fullest by

ensuring that all the assistive devices are available at Primary School C.

Primary School C has 12 pupils with special needs. *Table 3* shows the availability of assistive devices based on the nature of the disabilities available at primary school C

**Table 3: Assistive Devices Availability at Primary School C**

Type of Assistive Devices Available	Status of Availability	
	Available	Not available
Written language assistive technology	✓	
Optical and non-optical devices	✓	
Hearing devices	✓	
Stimulation and Physical devices	✓	
Mobile devices	✓	

**Source:** Field data (2022)

The findings in *Table 3* show the types of assistive devices and the availability status at Primary school C. Based on the findings from the field, primary school C has written language assistive devices, optical and non-optical devices, hearing devices and stimulation and physical devices and mobile devices. The devices' availability at primary school C was witnessed by the researcher live after visiting the school during data collection.

**Availability of Assistive Devices at Primary School D**

Primary School D is a school which is found in Morogoro Municipal Council. This district council

is in the Morogoro region, Tanzania. Mazimbu Primary School has all classes for primary school education following the National Education Curriculum. This Primary School (Primary School D) follows the normal curriculum designed under the supervision of the Ministry of Education and Vocational Training. Primary School D is registered as a school but also has the National Examination Council's Centre. Therefore, Primary School D allows pupils to sit for Standard Four National Assessment (SFNA) and Primary School Leaving Examination (PSLE). Primary School D is among schools with 17 students with special needs, the current study aimed to assess the availability of assistive devices at Primary School D.

**Table 4: The Availability of Assistive Devices at Primary School D**

Type of Assistive Devices Available	Status of Availability	
	Available	Not Available
Written language assistive technology	✓	
Optical and non-optical devices		✓
Hearing devices	✓	
Stimulation and Physical devices		✓
Mobile devices		✓

**Source:** Field Data (2022)

The findings show that primary school D has written language assistive devices and hearing devices while other devices are not available. Primary school D has 10 written language devices and 7 hearing devices. This number is very limited because they cannot accommodate all 17 students available at Primary School D. As a justification from the respondents during an interview, the respondent said that;

*“At primary school D, we have seventeen students with special needs, we face a shortage of assistive devices for our students. We have students who cannot see clearly, and there are also students with physical disabilities. They need enough assistive devices to simplify studying when they are at primary school D.”*

**Table 5: The Availability of Assistive Devices at Primary School E**

Type of Assistive Devices Available	Status of Availability	
	Available	Not available
Written language assistive technology	✓	
Optical and non-optical devices	✓	
Hearing devices	✓	
Stimulation and Physical devices		✓
Mobile devices	✓	

**Source:** Field Data (2022)

Klingner, et al (2010), Assistive technology (AT) is available to help individuals with many types of disabilities from cognitive problems to physical impairment. The use of technology to enhance learning is an effective approach for many children. Students with learning disability often experience greater success when they are allowed to use their abilities (strengths) to work around their disabilities (challenges).

**Utilisation of Assistive Devices by Students with Special Education Needs and in Teaching.**

The second objective of the current study sought to assess the utilisation of assistive devices for students with special educational needs in Morogoro Municipality schools. Since the second objective aimed to assess the utilisation of assistive devices in the selected primary schools in Morogoro Municipality, the researcher wanted to know the degree or the extent of utilisation of assistive

devices available at the selected primary schools based on the types of the devices available in the selected primary schools.

Since the devices facilitate the learning process, particularly for the students with special needs, the researcher involved teachers with special education and students with special needs (blind and physical disabilities) in participating in an interview. The extent was defined in the context of high, moderate, and low, meaning how frequently these devices are used by the students with special needs when they are at school compounds. For example, when the students are at school, they tend to participate in academic discussions, are they using these devices even in those class discussions, particularly when teachers are not there? The respondents were required to indicate according to their understanding. *Table 6* provides the summary of the findings;

**Table 6: Extent of Utilisation of Assistive Devices Available at Schools with Children with Disability**

Type of Assistive Devices Available	Extent of Utilisation of assistive devices for students with special needs			Frequency and Percentage					
				f	%	f	%	f	%
Written language assistive technology	High	Moderate	Low	20	42	15	31	13	27
Optical and non-optical devices	High	Moderate	Low	38	79	7	15	3	6
Hearing devices	High	Moderate	Low	25	52	15	31	8	17
Stimulation and Physical devices	High	Moderate	Low	3	6	6	13	39	81
Mobile devices	High	Moderate	Low	34	71	10	21	4	8

**Source:** Survey Data (2022)

The availability of assistive devices in primary schools under study is according to the kind of students' disabilities available in a particular school, so all the devices indicated in the table were categorised according to their availability and the nature of students' disabilities.

Table 6 shows the extent of utilisation of assistive devices available at schools for children with disability in Morogoro Municipality. The findings show that 42 % (20 respondents) rated the written language assistive devices with high utilisation status, 15 respondents equivalent to 31% said that written language supportive devices are moderately utilised in schools with children with a disability, while 13 respondents are equivalent to 27% said that written language supportive devices are utilised at a low rate.

Optical and non-optical assistive devices were another category of devices that were assessed for their status of utilisation. The results show that 79% (38) of the total respondents said that they are highly utilised, and students use them effectively. 15% (7) of the total respondents said that they are moderately used by the students, while the remaining percent of the total respondents, 3(6%) said that the utilisation is low.

Another group of devices was the group of hearing assistive devices; the results show that 52% (25) of the respondents said that these devices are highly utilised, while 31% (15) of the respondents said that the devices are moderately used by the students. On

the other hand, 17 % (8) of the respondents said that the utilisation of listening assistive devices is low in their schools.

Stimulation and physical assistive devices were also among the devices under assessment for their utilisation in schools with children with disabilities in Morogoro. The findings show that 6% (3) of the total respondents said that the devices are highly utilised in their schools, 13% (6) said that stimulation and physical assistive devices are moderately utilised in their schools, while 81% (39) of the total respondents said that they are not utilised.

The last group of devices was mobile assistive devices; the results show that 71% (34) of the respondents said that mobile assistive devices are highly utilised in their schools for students with movement problems caused by leg problems. 21% (10) of the respondents said that the devices are moderately used in their schools, while 8% (4) of the respondents said that their utilisation is poor or low.

These findings are in line with what Fichten *et al.* (2012) who noted in their study that although assistive devices are available in primary schools, there is still a large number of students with mental health-related disabilities (e.g., anxiety disorders, mood disorders), many of whom have comorbid disabilities; binary (male, female) gender designations are outdated; and exam and classroom



accommodations without technologies are still the most popular.

**Factors Determining the Utilisation of Assistive Device by Students with special education Needs in Morogoro Municipality schools.**

The third objective of the current study sought to explore the factors determining the utilisation of

**Table 7: Factors Determining the Utilisation of Assistive Devices**

Factors	F	(%)
Inadequate time for syllabus coverage	13	27.1
High cost of assistive devices	10	21
Inadequate teacher training in the use of assistive devices	20	42
Negative attitude of the learners	5	9.9
TOTAL	48	100

Source: Survey Data (2022)

Table 6 shows the findings on the factors determining the utilisation of assistive devices in the selected primary schools in Morogoro municipality. The respondents mentioned the factors that influence utilisation. The findings show that 20(42%) respondents listed inadequate teacher training in the use of assistive devices as among the factors influencing the utilisation of assistive devices in primary schools. 13(27.1%) respondents mentioned inadequate time for syllabus coverage as a factor that influences the utilisation of assistive devices, 10(21%) respondents said that the high cost of assistive devices hinders the utilisation of assistive devices in primary schools with children with disabilities. In connection to this, 5(9.9%) of the respondents said that the negative attitude of learners also affects the utilisation of assistive devices in primary schools with children with disabilities.

**Inadequate Time for Syllabus Coverage**

During an interview with the respondents, it was noted that the unavailability of assistive devices tends to affect the time for syllabus coverage. When Assistive devices are available at the school, no student with a disability can be left behind, but when

assistive devices by students with special needs in Morogoro Municipality schools. Table 7 shows the summary of the findings;

they are not available in a number that caters to all the students, it becomes difficult for teachers to proceed with teaching other students who do not experience any difficulties in learning due to their condition. The respondent was quoted saying;

*“The availability of assistive devices has a crucial role in time for syllabus coverage, teachers face difficulties in ensuring that they cover the syllabus. I encourage the authorities responsible for making sure that my school has all needed assistive devices”.*

**High Cost of Assistive Devices**

The high cost of the assistive devices was mentioned by the respondents as among the factors that determine the utilisation of the assistive devices. The respondents said that utilisation depends on the availability of assistive devices, and the availability of these devices depends on the costs involved in buying them. In that case, the price of assistive devices will always determine the level of utilisation at school. One of the respondents said;

*Families with students with disability face the problem of poverty, and sometimes they fail to buy for their children; therefore, the government and*

*other stakeholders should be responsible for ensuring that the students with disability are able to study comfortably.*

Many parents have been difficult on collaborating with professionals on the issues related on assessment for identification and involvement for their children with special needs education. One of the head of school said he has not called a meeting of parents at his school for 2 years to discuss issues concerning students with special needs.

A class teacher of school C commented:

*“Some parents are persistent because they don’t want to follow teacher professional advice about taking their children in appropriate school that have perfect environment and equipment to help their children to study effectively. Some complain to government education officer because they think their children are discriminated. Some does not believe school is the right place for their children but you see their children at class”*

Furthermore, the researcher found that scarcity of fund is one of big cause for school to involve parents in education of their children who had special needs. One of Head of school of special education comment that:

*“ The amount we get is small compared to the school's needs, so as a school we have to look at the basics need first to help our students. During the holidays we have to pick up and return the students because of the lack of money we have to leave that issue to the parents of these students with special needs.”*

The above quotations suggest that there was poor involvement of parents in issues concerned with the services that were being provided to their children with special educational needs. Furthermore, schools were seen to underrate the value and ability of parents’ contribution to information that could help them in the assessment for identification and

development of intervention programs for children with special needs.

For instance, a study by Mukuria and Obiakor (2004) in Nigeria and that by Alquraini (2010) in Saudi Arabia found that many parents were excluded from their children’s education.

### ***Inadequate Teacher Training in the Use of Assistive Devices***

This was another factor identified by the respondents that teachers with special education receive inadequate training to update the special education they received for the benefit of students with disabilities. Primary school teachers with special education stay for a long period of time without receiving in-service training to upgrade their knowledge. Therefore, it becomes very difficult for them to help students effectively with the use of assistive devices. One of the respondents said;

*“Utilisation of the assistive devices will always need the availability of highly trained teachers who can motivate students with disability to use the available assistive devices effectively during the learning process”.*

UNESCO. (2011) A lack of the necessary knowledge is a key barrier in whether a teacher has the capacity to address uncomfortable questions coming from learners. At another level, unless it is clear they have parental and community support, they may also fear being criticized or censured for openly discussing topics which parents consider a family responsibility. This may be especially so where religious or cultural norms support sex segregated education.

### ***Negative Attitude of Learners***

A learner’s altitude can influence the utilisation of assistive devices. Some students with disabilities tend to perceive that when they use for example, optical and non-optical assistive devices their fellow

students who have no disability will consider them in a negative way. For example, one student with a disability during interview said;

*“Sometimes I feel embarrassed when I use these assistive devices in front of my fellow students, this is because our school is mixed, we study with our fellows who have no any disability so I feel bad when they see me using these devices in the classroom”.*

This means that if students with special needs are not well trained psychologically on how to accept these assistive devices as their helpers during learning, then the utilisation of the devices will be poor.

Felicia *et al* (2014) Technologies can influence the development of children with specific learning disabilities and how technology can develop these children’s independent learning, active participation in classroom discussions and recreational activities. However, since every student with a learning disability is unique, educators need to successfully determine the needs of the student and provide the corresponding assistive technology device. In order to implement assistive technologies as learning tools to support children with special needs, teachers’ views and perspectives on the effective use of assistive technology are important. The school and administrative authorities should address their needs of professional development and minimize their challenges to making AT as a part of the learning process. This systematic review provided clear evidence on teacher perspectives that are vital for developing effective approaches for the integration of AT in the mainstream classrooms.

## CONCLUSION

The success and applicability of an assistive technology device are measured by its actual usage, ease in accessibility by its users and in their satisfaction in interaction with their environment. It is essential to ensure that the assistive devices are need-based, inexpensive to produce, purchase and

maintain, easy to use, and effective, which can be ensured by the direct involvement of the potential users at each stage of designing and development. 1. Suitability to Users and their Environment - The devices should be compatible with the user’s aspirations, emotional needs, and ways of life, and with their culture and local customs; unobtrusive by local standards and physically comfortable from users’ perspectives. 2. Inexpensive and Easy to Purchase - The devices should be low in the purchase price. Government and/or NGOs can also support the provision and purchase of the devices, free of charge or at subsidised rates.

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