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Awareness in Application of Assistive Technology in Educational Instruction: A Psychological Perspective for Basic Education Learners with Visual Impairments

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Abstract: *The National Association of School Psychologists (NASP) 2010 posited that between 2-27% of learners in basic education schools in the world suffer from anxiety and self-esteem. This is much higher for the visually impaired learners, of which Assistive Technology is a contributor. It is on this premise that the study assessed the awareness of the application of Assistive Technology in educational instruction among learners with visual impairments in learning institutions within Nairobi Metropolitan. The study was guided by Bandura's theory of self-efficacy and Michael Diamond's Model. The study employed a mixed-method convergent parallel research design with a target population of 733 visually impaired learners and 70 staff members from 13 Visually Impaired learning institutions in the Nairobi metropolitan. Using a sample size of 320 respondents, stratified random sampling was used to select 5 principals, 23 teachers, and 292 learners. Data collection entailed questionnaires, interviews, and focus group discussions. Data obtained was analyzed quantitatively using descriptive and inferential statistics. Qualitative data were analyzed using thematic content analysis. The study found that the majority of the visually impaired learners (25.3%) were at least somewhat aware of AT use for instructional reasons. The study revealed that a significant portion of 82(32.9%) were "extremely aware" of the application of the policy. The findings show that there were disparities in the awareness of the need to approve AT devices for use in a classroom context with the majority 86(34.5%) of the respondents being "not at all aware".*

Keywords*: Awareness, Assistive Technology, Educational Instruction, Learners, Visual Impairment*

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1. Introduction

Efforts that target the provision of quality education for visually impaired learners is globally embraced. This follows policies and legislative international agreements on human rights for all including the latest Sustainable Development Goals (SDGs) on quality education for all (SDG 4) that focus on education for all. The visually impaired learners are a group of learners experiencing challenges with their eyesight either totally or partially blind. It is evident that the fruits of the efforts for the right to education for the people living with disability (PWD) are the innovation, embrace and use of Assistive Technologies (AT). AT is a technologically engineered tool or equipment that enables people living with various difficulties to live and undertake activities like regular persons. Jackson (2015) opines that the use of technology can change the perception of educational instruction, especially among the PLwDs. As such, technology plays a role in classroom instruction through various ways, including creating independence, giving room for creativity, and empowerment of the learners living with special needs, and more especially the visually impaired.

According to Dikusar (2018), various forms of technology help in strengthening the opportunities for the learner living with disabilities in classroom contexts. He adds that technology facilitates their classroom participation, enhances their instructional methods while harnessing the abilities of the teachers to effectively deliver. As the whole world appreciates the prowess of technology in a visually impaired learners' classroom, the use of Assistive Technology creates a new environment for the learners. This consequently causes psychological implications attributed to their knowledge on the awareness of the application of the AT for instructional purposes. Such challenges include anxiety over AT which has been associated with low academic achievement among visually impaired learners (Huberty, 2012). Ader and Erktin (2010) associate low performance to the introduction and use of AT for instructional reasons, especially when the visually impaired learners are novices to the technology.

According to Ojie (2018), brazing of the international community for adherence to the observation of human rights, the access to quality education for the visually impaired learners emerge. Based on their lack of sightedness, this group of learners is more likely to miss out on educational opportunities compared to their mainstream peers. This is the rationale behind the utilization of innovations in technology that would give them similar opportunities to participate in education. Notwithstanding, the challenges of making the learners are of the application of the AT for educational instruction form psychological disputations associated with anxiety and even affected self-esteem.

In a United States survey by Mulloy (2014), the use of AT among the visually impaired learners showed a nationwide embrace of some AT including the text-to-speech devices and screen reading software. The author attributed the use and application of the two devices to the context of the learners. The study revealed that the available AT was underutilized due to the diversity and nature of the disabilities among the PLwDs. The study also associated the less embrace of the AT to inadequate awareness about the technology among the PLwDs. The American Foundation for the Blind (AFB) (2012) attributed less consumption of the available AT to limited teacher skills in the use of the AT. This creates a gap that exists in the use and application for AT not in the classroom context for the visually impaired learners but also in life contexts for all the PLwDs.

In an Australian study, Nyagah, et al., (2017) reported that quite a significant proportion of the visually impaired learners failed to utilize AT due to intellectual disability. However, the introduction of the latest version of AT in the Australian public schools doubled the enrollment of visually impaired learners. While the study fails to note any further reaction among the enrolled learners, Ezrin (2017) points out that such change in environment is likely to spark anxiety related to AT awareness among learners. A Nepal study showed that due to common goals between the visually impaired learners and the mainstream groups, the VI learners must be made aware of the modification possibilities of the existing AT to enrich their learning environment.

In East Africa, a pilot program by Sight Savers in Tanzania in 2009 to support the educational instruction among the visually impaired learners with AT led to improved use. While the program traced its roots in Kenya, the use of "Dolphin Pens" was highly adopted in Tanzania due to the created awareness (SST Annual Review Report, 2010). In Kenya, there exist some policies and legislative approaches that guide the introduction and application of AT for the VI. Some of the areas of focus include The Constitution of Kenya (2010), Persons with Disabilities Act (2003), The United Nations on the Rights of Persons with Disabilities (UNCRPD) of (2006), and the Millennium Development Goals (MDGs) guidelines. These policies are in tandem with the spirit of the international Education for All (EFA) treaty of 2015. Regardless of such policies, the embrace of the AT among visually impaired learners is highly determined by the awareness of the use of AT, especially for educational instruction purposes. For instance, Flood (2013) reported that despite a variety of AT devices introduced at the Kenya Institute of Special Education (KISE) learning resource center, the learners were still more interested in the use of braille machines.

Against the backdrop of this literature, the National Association of School Psychologists (NASP) 2010 posited that between 2-27% of learners in basic education schools across the world suffer from anxiety and self-esteem. This is much higher for visually impaired learners, which is attributed to the use of AT. In Kenya, Ndetei et al., (2008) posit that children portray as much as 50-100% anxiety with the unique one being obsessive-compulsive disorder at 99.3%. The embracing of technological innovation comes with the need to learn more to be able to understand and use it. The learners find themselves in situations with no option but to learn the use the technology. Today, educational institutions are increasingly buying into technology for instructional purposes. Combined with conflicting empirical studies on the uptake and usage of Assistive Technologies among visually impaired learners, a gap in the awareness in the application of Assistive Technology in Educational Instruction emerges. It is on this premise that the study assessed the awareness of the application of Assistive Technology in educational instruction among learners with visual impairments in learning institutions within Nairobi Metropolitan.

Research questions

This paper sought to answer the following research questions:

1) 1. What is the level of awareness about the application of AT Policy and for instructional reasons among learners with visual impairment?
2) 2. To what extent of awareness do learners with visual impairment understand the application of Disability Policy and Approval to acquire AT?
3) How is the awareness of AT Introduction requirements among the learners with visual impairment?
4) What is the level of awareness of Assistive Technology accompaniment by a Manual among the learners with visual impairment?

2. Literature Review

Assistive technology is a term used to denote technology-developed tools that support the livelihood of people living with disabilities. As such there they exit in different classifications including purpose (UNESCO, 2015), instructional usage among others. In 2007 Sight Savers International (SSI) launched an AT for visually impaired learners' pilot project in Kenya. This is a project working towards the advancement of AT for blind and low vision learners in secondary and tertiary institutions. Sight Savers is committed to the integration of children with visual disabilities into mainstream education and supports the Special Education Division (SpED) in the area of capacity building to enhance its ability to monitor reports and promote the integration of this disability group (Seale, 2020). The Kilimani Primary school in Kenya and the Mwereni School in Tanzania were provided with a specific assistive technology called Sight Savers Dolphin Pen, which is a cooperative effort between Sight Savers International and Dolphin. The main concerns here included the extent to which the assistive device impacted teaching and learning. The objective included finding out the specific psychological dispositions exhibited by learners with visual impairment towards these technologies and the way they are managed.

Assistive technology opens access to activities not available or possible for the disabled learner and will allow a child to persevere at tasks that would otherwise be too frustrating and time-consuming. The Integrated Education Project (IEP) set up by Sight Savers Ghana (Country Plan 2001 – 2003) in collaboration with the SpED and the GSB successfully integrated some totally blind learners into a mainstream school in Hohoe District (Volta region). Sue (2014) identified six barriers to effective use of assistive technology devices among learners with multiple disabilities, including lack of appropriate staff training and support, negative staff attitudes, inadequate assessment and planning processes, insufficient funding, difficulties procuring and managing equipment, and time constraints.

Through examination of existing literature about the use of assistive technology among visually impaired learners, and for the period 1965 to 2009, Kelly and Smith (2011) perused 256 articles. The scope of the literature was pegged on the evidence of assistive technology positively impacting educational performance. From a total of 256 studies reviewed, only 2 were found to provide evidence-based practices in AT impacting academic outcomes. The study opines that technology promotes the acquisition of literacy, provides more equal access to information required for employment, and for access to information, in general, and facilitates social and community networks (Kelly & Smith, 2011).

The 1990s saw a continuous growth in the integration of visually impaired learners and the piloting of Community Based Rehabilitation (CBR) programs for persons with disabilities through the mobilization of resources at the community level and the assistance of NGOs (Cramer et al., 2011). Assistive technologies are hardware and software products such as screen readers and voice recognition products that provide essential accessibility to computers for those with significant vision, hearing, learning, and physical impairments.

The following are a few examples of the types of assistive technologies that provide reasonable accommodations for various types of disabilities (Kelly & Smith, 2011). Text-to-speech (TTS) applications, such as JAWS, BookWise, and Kurzweil 3000 (Stewart & Newman, 2017) are screen readers that read aloud everything on computer screens including text, pull-down menus, icons, dialog boxes, and web pages.

Braille translation programs convert text scanned in or generated via standard word processing programs into Braille, which can be printed on the embosser. Refreshable Braille displays provide the tactile output of information represented on the computer screen, Microsoft (2012). Colour Overlays work by changing the background colour of the text from white to another colour, which causes readers with visual stress to report less difficulty with sustaining reading and fewer incidences of headaches and eye strain.

Also, the optimal colour for an overlay differs across from person to person, requiring the need to carefully select an appropriate colour per person (Smith & Anderson, 2010). The optical character recognition (OCR) system allows users to scan printed documents, convert them into digital text, and also serve as tool for correcting translation errors. However, the scanning process can be time-consuming since this is typically done one page at a time (Davis et al., 2010), and OCR is highly sensitive to the resolution and background colour of the text being recognized (Stewart & Newman, 2017).

Studies suggest that the use of dictionaries may improve reading comprehension among learners with learning disabilities and are also included in some TTS systems

like Kurzweil 3000 thereby obscuring the actual effect of the dictionary alone (Stewart & Newman, 2017). The window size can range to show only one or two words at a time to one line of text or more. This approach is believed to help decrease interference levels from the immediate words and therefore improve the reading speed and accuracy.

TeleTYpewriter Telecommunications (TTYs) are the telephones that people with hearing impairments use to communicate with others on the telephone. TTYs and Test-Driven Development (TDD) conversion modems are connected between computers and telephones to allow an individual to type a message on a computer and send it to a TTY/TDD telephone or other Baudot equipped device Microsoft (2012).

Alternative input devices allow individuals to control their computers through means other than a standard keyboard or pointing device. Examples include alternative keyboards, electronic pointing devices. Light signaler alerts and monitors computer sounds to alert the computer user with light signals. This is useful when a computer user cannot hear computer sounds or is not directly in front of the computer screen. As an example, a light can flash alerting the user when a new e-mail message has arrived or a computer command has completed Microsoft 2012 (Dell et al., 2016).

Theoretical Perspective

The study was guided by Bandura's theory of self-efficacy and Michael Diamond's Model. Bandura's theory catered for the self-esteem feelings among the visually impaired learners while Michael Diamond's Model guided on psychotherapy process. As a model for counseling, Michael Diamond's Model integrates the interaction of five key aspects, that is thoughts, feelings, actions, interpersonal patterns, and social systems, which relate to visual impairment during transitional processes (Thurston et al., 2010). This creates the scenario of transiting to the use of assistive technologies in educational instruction, in which the emotional and other support needs for visually impaired learners are not only articulated but widely addressed. The emotional aspects are subjected to changes over time due to the awareness raised over the AT, and the visually impaired learners' reaction to these changes takes different directions depending on the implementation strategies (Linda et al., 2020; Ueda, 2017). This makes Michael Diamond's Model suitable as an intervention tool in addressing psychological dispositions of visually impaired learners towards assistive technology as it canvasses and offers possible counseling solutions to the visually impaired.

3. Methodology

The study employed a mixed-method convergent parallel research design as a way of obtaining both qualitative and quantitative data while simultaneously analyzing them. The study was carried out in Nairobi metropolitan as it hosts the greatest number of educational institutions of visually impaired learners. The target population was 733 visually impaired learners and 70 staff members from the 13 Visually Impaired learning institutions in the metropolitan. The sample size was determined by Slovin's formula (1960). The formula assumes a degree of variability (proportion) of 0.05 and a confidence level of 95%. Using n = N/ (1+Ne2), where: n = sample size; N = population size; e = the level of precision, the study used 320 respondents. They consisted of 5 principals, 23 teachers, and 292 learners, and were selected through stratified random sampling. Data collection entailed questionnaires, interviews, and focus group discussions which were piloted at St Lucy's School for The Blind in Meru County. From the Nairobi Metropolitan, Meru is the closest County hosting a well-established and run school for visually impaired learners. The researcher used 2 research assistants to administer questionnaires while personally conducted the interviews. Validity was determined using expert judgment while reliability was examined using split-half. A Pearson correlation analysis found uncorrelated reliability of .3372 with correlated reliability of 0.8686 which was satisfactory for the study. Data obtained was analyzed quantitatively with descriptive statistics including means, frequencies, and percentages and inferential including correlation analysis with help of SPSS version 24.0. Qualitative data were analyzed using thematic content analysis. Perception aspects of AT are associated with the ability to use Assistive Technology among learners with visual impairments. These include feelings about the ability to use a new AT, the complexity of a new AT, and the effectiveness of the teaching approach.

4. Results and Discussion

4.1 Demographics of the Questionnaire respondents (VI learners)

The study collected primary data from the VI learners through a questionnaire modified from Generalized Anxiety Disorder (GAD) by Spitzer et al., 2006 and Rosenberg Self-Esteem Scale (1965)). The respondents' demographics were as shown in Figure 1.

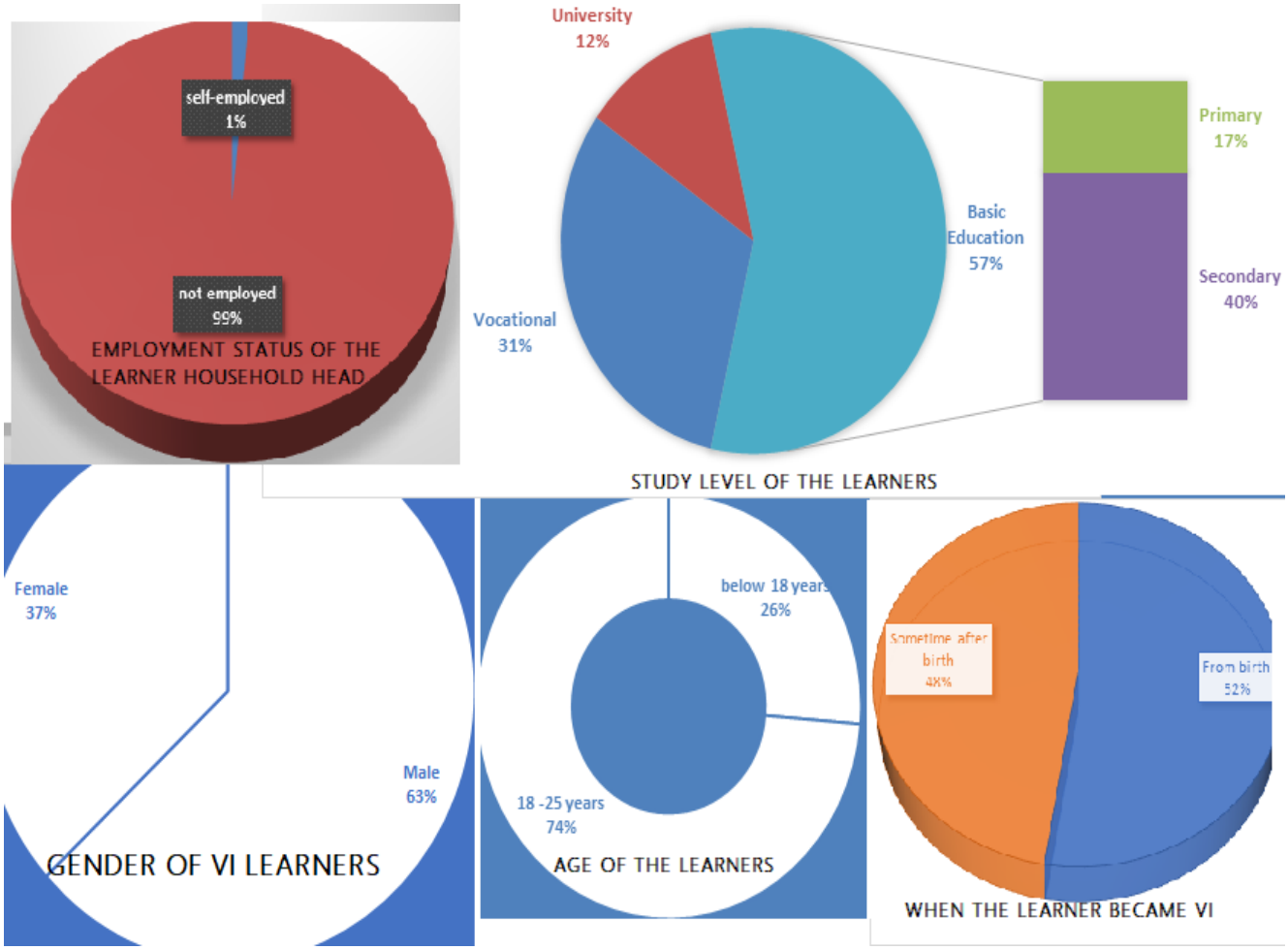

Figure 1: Demographics of the VI learners

4.2 Descriptive Statistics on Awareness of AT Application

The study investigated the level of awareness of the application of AT in educational instruction. The focus on awareness of AT application was guided by its association with incidences, frequencies, and occurrence of anxiety among the VI learners. Using the theme, the research instruments contained various items linked to anxiety and self-esteem. The questionnaire respondents (VI learners) were asked to respond to various items on awareness and psychological dispositions. The measurement of the responses was put on a Likert scale including 1 – not at all aware, 2 - slightly aware, 3 – somewhat aware, 4 – moderately aware, and 5- extremely aware. The collected data was analyzed and presented in descriptive statistics as shown in Table 1.

Table 1: Descriptive Statistics on Awareness of AT Application

	N	Minimum	Maximum	Mean	Std. Deviation
I am aware about application of some policy on AT	244	1	5	2.84	1.462
I am aware of AT use for instructional reasons	242	1	5	3.19	1.556
I am aware that my learning institution applies disability policy to acquire AT	243	1	5	2.88	1.766
I am aware that no unapproved AT device can be used in my class	231	1	5	2.81	1.655
All AT should be introduced to class before use	235	1	5	3.80	1.387
All AT devices are accompanied by a manual	230	1	5	2.49	1.663
Valid N (listwise)	224				

Table 1 shows a valid N (listwise) of 224 from the 259 returned questionnaires. The Table also indicates all the six (6) items had responses with a minimum of 1 and a maximum of 5 implying variance in the responses on awareness about AT application in educational instructions. The statement that had the largest mean (3.19) was "I am aware of AT use for instructional reasons". At this mean, it implies that the majority of the VI learners were at least somewhat aware of AT use for instructional reasons. This conforms to the existing experience in literature where Sight Savers aims at the integration of children with visual disabilities into mainstream education. This is based on the recognition of the capacity building of AT to enhance its ability to monitor reports and promote the integration of this disability group (Seale, 2020). Moreover, the analysis of the individual items was carried out and presented in the subsections below.

4.3 Awareness about Application of AT Policy and for Instructional reasons

The learners were asked to indicate their level of awareness on the application of some policy on utilization of AT. The item was measured on a Likert scale of 1 – not at all aware, 2 -slightly aware, 3 – somewhat aware, 4 – moderately aware, and 5- extremely aware. The collected data was analyzed and presented using Table 2.

Table 2: Awareness about Application of some Policy on Assistive Technology

Level of Awareness	n	%
Not At All Aware	63	25.3
Slightly Aware	53	21.3
Somewhat Aware	30	12.0
Moderately Aware	57	22.9
Extremely Aware	41	16.5
Non-response	5	2.0
Total	249	100.0

Table 2 shows that the majority of the respondents (learners) 63(25.3%) were not at all aware of the application of some policy on AT. However, this was closely followed by 57(22.9%) who felt that they were moderately aware of the application of some policy on AT use. The policy that applies to AT use is critical in determining not only utilization but also the adoption of AT devices. The results depict a variation in awareness of the application of policies in the use of AT. Awareness plays a role in stabilizing anxiety among users. Compared to the descriptive statistic in Table 2, the findings reflect that the learners were between not aware and somewhat aware about the application of policies on the use of AT. According to Nyagah, et al., (2017), the introduction of AT policy on maintenance and monitoring, led to a great migration of VI learners from private schools to public schools and a high level of enrolment of VI learners. This illustrates consistency in the study findings which depict a low awareness and existence of anxiety among the VI learners.

In another perspective, the learners were asked to rate their level of awareness on AT use for instruction reasons. The collected data was analyzed and presented using Figure 2.

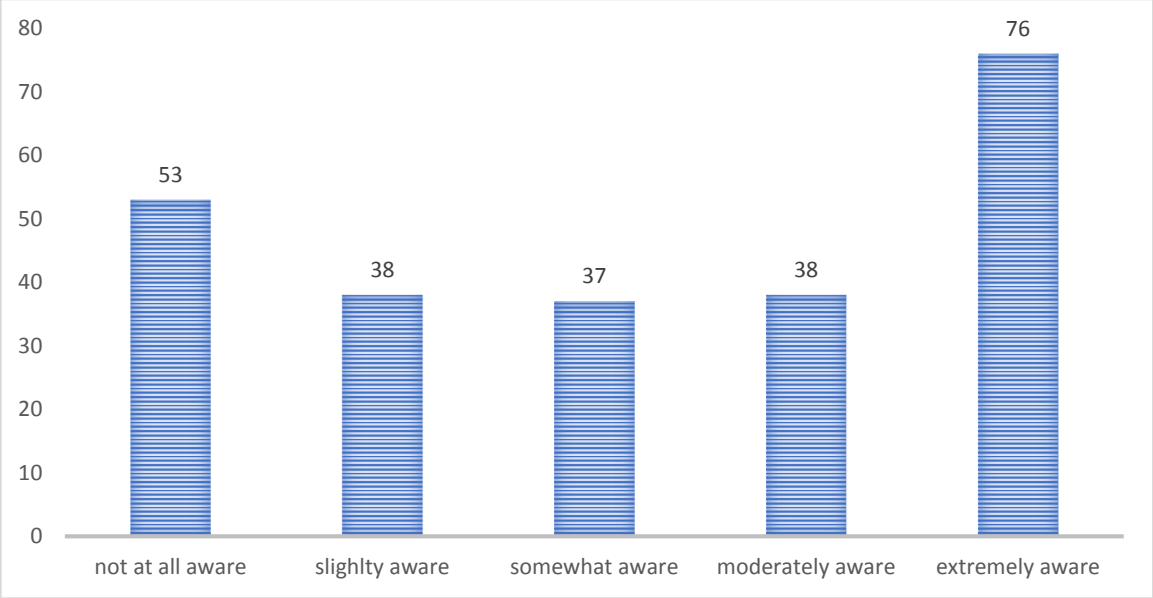

Figure 2: Level of Awareness of AT use for Instructional purposes

Figure 2 shows that the majority of the respondents (76) were "extremely aware" of AT use for instructional use. Conversely, a significantly large portion (53) indicated that they were "not at all aware" of the AT use for instructional purposes. The reason was that they knew it as part of their lives. The awareness that the AT use is for instructional reasons is expected to impart stability in anxiety among the VI learners through a pre-determined focus on the usefulness of AT. Being aware of a phenomenon and the rationale behind its existence is more likely to settle anxiety scores among the learners (Roy et al., 2020). However, the results conflict with the findings in Figure 2 which showed that the average learners were only somewhat aware of the use of AT for instructional reasons.

4.4 Awareness on the application of Disability Policy and Approval to acquire AT

The questionnaire respondents (learners) were asked to rate their level of awareness about the application of disability policy to acquire AT devices in their learning institutions. Using a Likert scale, the responses were recorded, and the collected data was analyzed. The output of the analysis is presented in Table 3.

Table 3: Level of awareness about Application of Disability Policy in AT Acquisition

Level of Awareness	**n**	**%**
Not At All Aware	95	38.2
Slightly Aware	26	10.4
Somewhat Aware	16	6.4
Moderately Aware	24	9.6
Extremely Aware	82	32.9
Non-response	6	2.4
Total	**249**	**100.0**

Table 3 shows that the majority of the respondents 95(38.2%) were "not at all aware" about the application of the disability policy on institutional acquisition of AT devices. However, a significant portion of 82(32.9%) were "extremely aware" of the application of the policy. This relates to the challenge of psychological

dispositions among the VI learners. Being aware of the application of the disability policy in the acquisition of the AT devices would trigger stability of anxiety among the learners. Roy et al., (2020) found an association between knowledge and mental stability among Indians. The psychological preparedness through being aware of a concept makes one feel settled hence possible to mitigate anxiety towards AT among the VI learners through making them aware of the applied disability policy in AT acquisition in learning institutions.

In awareness and level of stress-related study among university students in the United Arab Emirates, Coumaravelou, Ibrahim, Wiam, and Mohamed (2020) opine those levels of anxiety were attributed to awareness levels. The psychological determinants of human mental stability include making people aware of an upcoming phenomenon. The anxiety among the VI learners is regulated by making the students aware that the AT devices used in learning institutions are guided by a disability policy.

The current study further investigated the VI learners' level of awareness that all the AT devices used in a classroom must be approved. The responses were analyzed and presented using Figure 3.

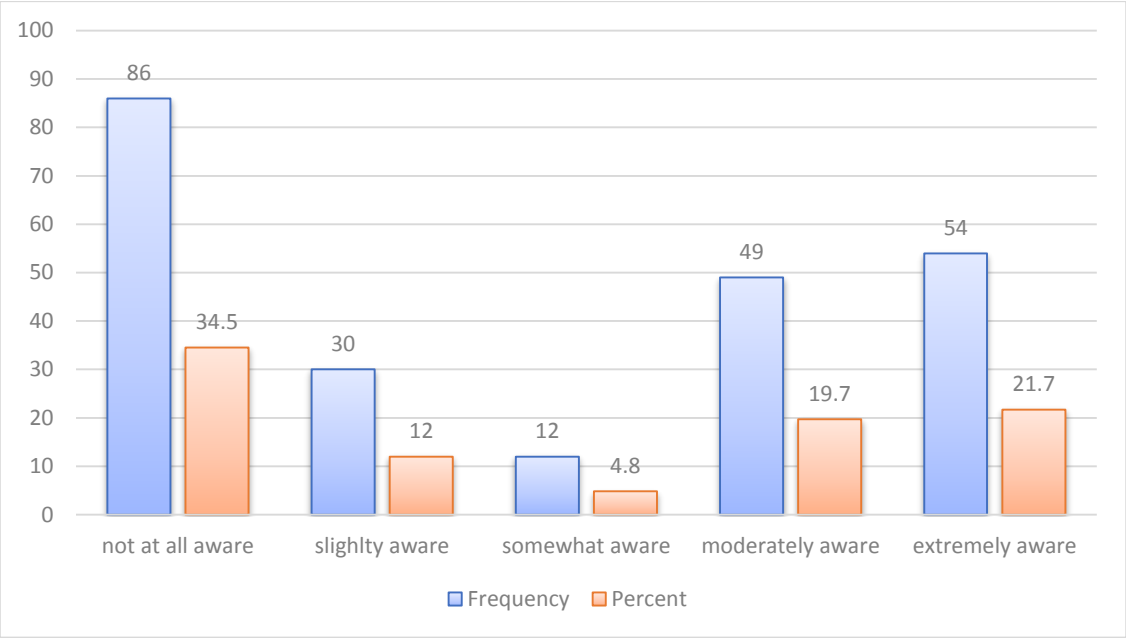

Figure 3: Awareness that all AT Devices used in a Classroom must be approved

Figure 3 shows that the majority 86(34.5%) of the learners were "not at all aware" that no unapproved AT device can be used in a classroom. Conversely, significantly large portions of the respondents 21.7% and 19.7% were extremely aware and moderately aware respectively. This implies disparities in the awareness of the need to approve AT devices for use in a classroom context. Awareness of the need for the approval of AT to be used in a classroom can significantly affect the anxiety level of the VI learners. Moreover, the context reflects the Kenyan government efforts in place through various legal frameworks in place including the special needs education policy framework in 2010 (the Republic of Kenya, 2010). These education policies and goals were geared towards achieving Education for All (EFA) by 2015.

In one of the interviews held with the institutions' administrators, the findings on the importance of awareness of the AT policy among the VI learners were acknowledged. One of the administrators noted that it is imperative to make the VI learners aware of the policy framework guiding the use of any AT devices not only in the classrooms but also within the institutions. Moreover, the FGD findings cemented the findings through revelation that some symposiums organized by the disability council have on some occasions informed the VI learners in the existence of a policy framework meant to protect them from harm and anxiety related to AT utilization.

4.5 Awareness of AT Introduction requirements

The study investigated the level of awareness of the need to introduce a given AT device in class before use. The item was measured on a Likert-scale ranging between 1 for not at all aware and 5 for extremely aware. The data collected from the learners through the questionnaires was analyzed using descriptive statistics and presented using Table 4.

Table 4: All AT should be introduced to Classroom before Use

Level of Awareness	n	%
Not At All Aware	27	10.8
Slightly Aware	20	8.0
Somewhat Aware	32	12.9
Moderately Aware	51	20.5
Extremely Aware	105	42.2
Non-response	14	5.6
Total	249	100.0

Table 4 shows that the majority of the respondents 105(42.2%) indicated that they were "extremely aware" of the need for all AT devices to be introduced in the classroom before use. Only a few of the respondents 27(10.8%) were "not at all aware" of the need to introduce the AT in the classroom before use. This implies that awareness on the need for introducing VI learners to new AT was a known phenomenon and that it was critical in the effectiveness of the AT utilization. This denotes the adoption needs associated with ensuring the least anxiety level among the learners. Introducing a new AT to learners would ignite not only adoption but also create room for suppressing any related anxiety.

4.6 Awareness of Assistive Technology Devices accompanied by a Manual

The VI learners were asked to indicate their level of awareness about all AT devices being accompanied by respective manuals. The collected data from the learners were analyzed and presented using Figure 4.

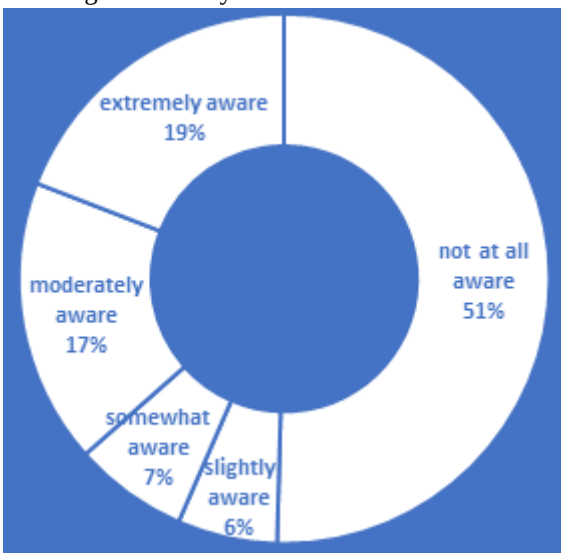

Figure 4: Awareness of Assistive Technology Devices accompanied by a Manual

Figure 4 indicates that the majority of the learners (51%) were "at all not aware" that all AT devices are accompanied by a manual. It is also shown that only 19% of the respondents were "extremely aware" of the AT devices being accompanied by a manual. This implies that the sampled VI learners had anxiety challenges associated with awareness of requirements on production, sale, and distribution of AT devices. Lack of information on a manual accompanying a given AT device has an influence on both utilization and adoption. The findings are in tandem with Sue's (2014) identification of barriers to effective use of assistive technology devices among learners with multiple disabilities. The researcher pointed out the informational barriers including the provision of a manual for AT devices to help in use guidance.

Related study findings through interviews revealed that the institution's AT technical staff were responsible for the custody of the AT devices and their receptive manuals. A close probe indicated that sometimes, the manuals are never given to the VI learners, and they rely on verbal information from the teachers or the technical staff. On the other hand, the FGD findings showed that

the learners hardly used, even accessed the AT devices manuals. They posited that they relied on their teachers for guidance on the utilization, adoption, and maintenance of AT devices. FGD 4 reported:

> *It is difficult for us to use the manuals. This is attributed to various reasons including some of them being in non-compatible form (paper printouts) which cannot be read by the VI learners. Other challenges in the use of the manuals are the access, vulnerability to tearing, and perceived inadequate manual use time. However, the non-use of the manuals sometimes create anxiety as we are left to depend on our teachers for explanations on every aspect of the AT device* (FGD 4).

The findings from FGD 4 show the consistency of the results where the qualitative positing supports the quantitative analysis findings. The awareness and use of the manuals can make the VI learners be informed of the circumstances of use, consequences, and remedies for all AT devices accessed. This denotes the challenges of psychological dispositions attributed to a lack of awareness about AT in VI learning institutions.

5. Conclusion and Recommendations

The study found that the majority of the visually impaired learners (25.3%) were at least somewhat aware of AT use for instructional reasons. The study revealed that a significant portion of 82(32.9%) were "extremely aware" of the application of the policy. The findings show that there were disparities in the awareness of the need to approve AT devices for use in a classroom context with the majority 86(34.5%) of the respondents being "not at all aware". The study showed that awareness of the need for introducing VI learners to new AT was a known phenomenon and that it was critical in the effectiveness of AT utilization. The research findings show that a lack of information on a manual accompanying a given AT device has an influence on both utilization and adoption. The study concludes that there exist different levels of awareness of the application of Assistive Technology in educational instruction among learners with visual impairments. The differences in awareness levels are attributed to the level of exposure, institutional factors, among others.

The study recommends that the educational institutions of the visual impairment administrators design, form, and roll out AT awareness programs in visually impaired institutions of learning. The study reported that awareness of the need for the approval of AT to be used in a classroom can significantly affect the anxiety level of the VI learners. This creates room for exploring and manifesting the therapy for AT anxiety in awareness programs. The study found that some civil society groups were important in sensitizing the VI learners on policies governing the utilization of AT in the country. Individual educational institutions can run annual programs aimed at raising awareness about AT among VI learners.

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