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University Leaders' Understanding and Practices of Creating Inclusive Learning Environment through Technology Integration for Students with Disabilities: Bonga University in Focus

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Abstract

The main purpose of this study is to investigate university leaders' understanding and practices of creating inclusive learning environment through technological integration for SWDs in Bonga University. The study employed a mixed research design (QUAN→qual) with an explanatory sequential design. Comprehensive and purposive sampling techniques were used to select 71 study participants such as 33 department heads, 5 team leaders, 6 coordinators, 6 college deans, and 21 directors. Both data were collected through questionnaires, interviews and observation to make triangulation. Quantitative data was analyzed using descriptive statistics (i.e. percentage, frequency, mean & Standard deviation) and Pearson correlation and Regression, whereas, qualitative data was analyzed by grouping it in terms of meaningful categories or themes. The key findings revealed that there is a low level of understanding of leaders and less extent of practices as well. The correlation result among leaders' understanding and practices was (0.740**), leaders' understanding and creating inclusive learning environment was (0.838**) and leaders' practices and creating inclusive learning environment was (0.864**). This result suggested that there is a strong positive correlation. The p-value is <0.01, which means a statistically significant. Moreover, the result of multiple regression (p=.00) proved that the predictor and residence variable had strong relationship. Furthermore, training, sharing experience, collaboration with SWD services, evaluation, and improvement of accessibility are the strategies which adopt to enhance leaders understanding and practices. Finally, it is recommended that all university leaders work in collaborate with disability support services to create an inclusive learning environment for SWDs by integrating technology.

Keywords: *University Leaders', Leaders' Understanding, Leaders' Practices, Creating Inclusive Learning Environment, Technology Integration, Students with Disabilities.*

I. INTRODUCTION

➢ *Background of the Study*

Technology has great potential for students in terms of providing access to all learning. In particular, assistive technology is a broad concept that covers virtually all things that may be used to meet the needs of those with a lack of certain abilities (Grönlund, Lim & Larsson, 2010). Additionally, the integration of technology not only fosters autonomy and independence but also enables students with disabilities to engage more fully in their educational journeys, promoting self-confidence and a sense of ownership in their learning experiences, and empowers students with disabilities to become more self-directed and independent learners, fostering autonomy in their academic pursuits (Karimi, 2017). Students with disabilities in higher education face many challenges, such as a lack of understanding and knowledge about disability issues among leaders in higher education (Burgstahler& Cory, 2008).

According to UNICEF's (2014) estimation, 90% of children with disabilities in low-income countries have never attended any educational institution, and those who do enroll often face higher dropout rates compared to their peers without disabilities. With an increase in the number of SWDs enrolled in HEIs worldwide, it is necessary to create an inclusive learning environment that meets their diverse needs (Burgstahler, 2015). For instance, Canada has implemented various assistive technologies and digital tools in classrooms to support SWDs (UNESCO, 2015). In Africa, a significant number of SWDs face barriers to accessing education, including inadequate resources and lack of support (Makoe, 2016). Training programs should

focus on understanding disabilities, utilizing assistive technologies, and creating accessible course materials (Harrison, O'Donovan &Lawlor, 2017).

In Ethiopia context, a country striving to improve its education system and has also recognized the importance of inclusive education. The Higher Education Proclamation No.650/2009 article 40 of the Federal Democratic Republic of Ethiopia mandates that institutions of higher education make their facilities and programs accessible to physically challenged students as much as possible. The design of buildings, campus landscapes, computers, and other infrastructures must also consider the interests of physically challenged students. Additionally, institutions must provide academic assistance, such as tutorial sessions, exam time extensions, and deadline extensions, to physically challenged students when necessary and feasible (Federal NegaritGazeta, 2009). However, this research aims to provide valuable insights into the current state of technology integration in Ethiopian higher education institutions and to suggest strategies for improving the accessibility and inclusion ofSWDs. SWDs are still underrepresented in post-secondary education, although inclusive higher education can support them in maintaining their entitlement to an education (Zhang, Rosen, Cheng & Li, 2018). As Mohammed (2023) revealed, there is a low extent of technological integration at Ambo University.

Therefore, as far as the researcher has been reading, there is still gaps related to this study but most of these studies address the bestiality of technology. However, Mohammed conducted a research mainly focused on the academic roles on creating inclusive learning environment. However, the current study attempted to show the understanding and practices of university leaders on creating inclusive learning environment through technological integration for SWDs. At Bonga University (BU), SWDs, including those who are hard-of-hearing, partially sighted, or physically disabled, face significant challenges, leading many to drop out due to unmet needs. Pre-observations revealed issues such as university administrators' lack of awareness, inadequate inclusive learning environments, poor teaching strategies, inaccessible classroom arrangements, and limited resources. These barriers, both physical and attitudinal, inspired the researcher to study this issue, having observed these challenges since 2013 E.C. The situation highlights the critical role of university leaders in ensuring inclusion, prompting the need for this research.

➢ *Research Questions*

This research aimed to answer the following research questions:

- What is the current understanding of university leaders in creating an inclusive learning environment for SWDs through technology integration?
- To what extent do university leaders integrate technology to create an inclusive university environment?
- What is the association between leaders' understanding and practices on the creation of an inclusive learning environment through technology integration for SWDs?
- What strategies can university leaders adopt to enhance their understanding and practices of creating an inclusive learning environment for SWDs through technology integration?

II. RELATED LITERATURE REVIEW

➢ *Inclusive Education and Technology*

Creating an inclusive learning environment is essential for students with disabilities, as it ensures equal access to education and promotes their overall development. Technology integration facilitates access to information and learning opportunities for students with disabilities. It enables the customization of instructional materials, making them more accessible and adaptable. For instance, text-to-speech software can assist students with visual impairments by converting written text into speech. Assistive technologies such as screen readers (e.g., JAWS) and magnifiers (e.g., ZoomText) further enhance accessibility for students with visual disabilities (PNDR, 2014). Moreover, technology integration promotes active participation and engagement among all students. Interactive whiteboards, audiovisual aids, and multimedia resources allow students to visualize and interact with content, catering to different learning preferences and abilities. This engages SWDs, fostering their active involvement in the learning process. For example, educational software and applications, such as assistive writing tools (e.g., Co:Writer) or graphic organizers (e.g., Inspiration), can support students with learning disabilities in organizing their thoughts and expressing ideas effectively (Dunn et al., 2014). Virtual classrooms and discussion boards allow students to participate in class discussions, contribute ideas, and receive feedback from their peers and teachers. Such tools enhance inclusivity by ensuring equal opportunities for socialization and academic growth for students with disabilities (Hitchcock &Staker, 2012).

➢ *The Role of Technology Integration in Creating an Inclusive Learning Environment*

The integration of assistive technology tools continues to be a valuable resource for SWDs. The use of assistive technology, such as speech recognition software or electronic textbooks, can significantly improve the academic performance and independence of SWDs (Okolo&Diedrich, 2014). When AT promotes social interaction, curriculum access, and the ability to express understanding, it has the potential to enhance inclusion in the classroom (Chambers, 2020), emphasizing that technological innovation can help create more inclusive learning environments by providing learners with flexible access to high-quality educational resources (UNESCO 2021). The participation of local stakeholders, such as parents of children with disabilities or disability leaders, adds significant value to teacher training, providing a lived experience of disability and putting theory into practice (International Disability and Development Consortium, 2013).Odom, Thompson, Hedges, Boyd, Dykstra, Duda, and Szidon (2019) emphasize the importance of ongoing collaboration between general education teachers and

special education professionals in creating inclusive environments for SWDs.

- *The Role of University Leaders in Integrating Technology for SWDs*

As teachers gain confidence in their ability to provide instruction, they feel more at ease, allowing students with disabilities to enter their classrooms and modifying their lesson plans to accommodate different learning styles (Vaz, Wilson, Falkmer, Sim, Scott, Corider, &Falkmer, 2015).Administrators, principals, and other leaders are typically responsible for ensuring that national and local laws are being adhered to, that students with disabilities receive needed support, that such support is appropriately used by teachers, and that teacher training related to inclusive education is ongoing (Hayes &Bulat, 2017).Shifting emphasis on administrators and their cooperation with faculty becomes pertinent in higher education systems facing a trilemma (Zhang &McCornac, 2013). As university leaders strive to foster an environment conducive to the integration of technology in teaching and learning, it becomes essential to provide adequate infrastructure, support services, and professional development opportunities for faculty (Bates &Sangrà, 2011). Additionally, actively seeking collaborations and partnerships with external organizations, such as technology companies or research institutions, is crucial for staying updated with the latest technological advancements and leveraging external expertise (Henderson &Yeow, 2015). Machado and Chung (2015) emphasize that principals should be knowledgeable about technology and its potential impact on student learning.

III. RESEARCH DESIGN AND METHOD

- *Research Method and Design*

Mixed methods research is a procedure for collecting, and 'mixing' both quantitative and qualitative methods. More specifically, the researcher used an explanatory sequential mixed research design consisting of collecting quantitative data and then gathering qualitative data to help explain or elaborate on the quantitative results (Creswell & Plano Clark, 2011). This designwas implemented to obtain leaders' understanding of and practices for creating inclusive learning environments through technology integration for SWDs at BU.

- *Population of the Study*

The total population in this study has 71. It encompassing the academic staff includes 21 directors, 6 coordinators, 6 college deans, 5 team leaders, and 33 department heads. Participants included leaders at BU, such as department heads, directors, college deans, team leaders, and coordinators.

- *Sampling Technique and Sample Size*

The researcher used a comprehensive sampling technique.

- *Data Collection Instruments*

Interviews, questionnaires, and observations were used as data-gathering tools.

- *Validity and Reliability of the Instrument*

The instruments were developed with an advisor's guidance to ensure alignment with research objectives. Feedback from researchers, lecturers, and experts refined the tools for clarity and relevance, particularly the Amharic interview version. Subject matter experts validated the content, confirming the instruments comprehensively addressed the research domain and objectives.This study is provided to include 10 participants. To ensure the reliability of the instruments, the researcher distributed a pilot questionnaire to leaders of MizanTepi University a nearby university which has similar characteristics with the main study site.

Table 1 Reliability Measurement of leaders understanding, practices and creating inclusive learning environment

Reliability Statistics of the items in the instrument			
No-	**Variable**	**N of Items**	**Cronbach's α**
1	Leaders understanding	13	**0.800**
2	Leaders Practice	11	**0.931**
3	Creating Inclusive Learning Environment	12	**0.944**
	Total Cronbach's α Value	**36**	**.936**

N=Number of Items, α= Alpha, CILE=Creating Inclusive Learning Environment

As shown in the Table 1, aCronbach's alpha value of leaders' understanding is 0.800,a Cronbach's alpha value of leaders' practice is 0.931 and a Cronbach's alpha value of the status of inclusive learning environment is 0.944, which confirms that high internal consistency and close relationship among the items. Overall, the Cronbach's alpha result of 0.936 indicates high internal consistency, affirming the reliability of the scale.

IV. RESULTS AND FINDINGS

This research aimed to assess university leaders' understanding and practices of creating inclusive learning environments through technology integration for SWDs, with major findings clearly described in this chapter.

- *University Leaders' Understanding on Creating Inclusive Learning Environment Through Technology Integration*

This table examines leaders' understanding towards using assistive technology for creating inclusive learning environment to support students with various disabilities. The items for university leaders' understanding on creating of an inclusive learning environment consisted of 11 items which measured by a Likert scale.

Table 2 Leaders' Understanding on Creating Inclusive Learning Environment through Technology Integration

S. N	Items	Respond of the Subjects						
		1	2	3	4	5	M	SD
1	I foster students with visual impairment have a significant engagement in their education with the help of assistive technology.	23 **(37.7%)**	29 **(47.5%)**	6 **(9.8%)**	3 **(4.9%)**	- -	1.82	.806
2	I exhibit students with hearing impairment have a good time at university with the help of Sign Language videos and books.	29 **(47.5%)**	22 **(36.1%)**	6 **(9.8%)**	2 **(3.3%)**	2 **(3.3%)**	1.79	.985
3	I maintain Students with physical disabilities can reduce their academic burden by using assistive technology.	28 **(45.9%)**	20 **(32.8%)**	10 **(16.4%)**	1 **(1.6%)**	2 **(3.3%)**	1.84	.986
4	I believe that students with partial sighted can follow their education using Magnification Lens.	33 **(54.1%)**	18 **(29.5%)**	5 **(8.2%)**	5 **(8.2%)**	- -	1.69	.937
5	I understand the importance of braille for blind students.	33 **(54.1%)**	16 **(26.2%)**	10 **(16.4%)**	2 **(3.3%)**	- -	1.70	.867
6	I know the importance of magnification Lens for students with partial sighted.	31 **(50.8%)**	21 **(34.4%)**	8 **(13.1%)**	1 **(1.6%)**	- -	1.66	.772
7	I know the importance of sign language books and videos for deaf students.	35 **(57.4%)**	20 **(32.8%)**	4 **(6.6%)**	2 **(3.3%)**	- -	1.56	.764
8	I comprehend how cochlear implants can enhance student engagement for students with hard of hearing.	27 **(44.3%)**	23 **(37.7%)**	8 **(13.1%)**	3 **(4.9%)**	- -	1.79	.859
9	I understand how a talking calculator can facilitate active learning for blind students.	13 **(21.3%)**	23 **(37.7%)**	9 **(14.8%)**	15 **(24.6 %)**	1 **(1.6%)**	2.48	1.134
10	I absorb that assistive technology can create an environment where all students can achieve academic success.	19 **(31.1%)**	21 **(34.4%)**	7 **(11.5%)**	11 **(18%)**	3 **(4.9%)**	2.31	1.232
11	I understand how to effectively use smart boards for students with partial sight in the classroom.	22 (36.1%)	12 (19.7%)	10 (16.4%)	11 (18%)	6 (9.8%)	2.46	1.397
	Grand mean						2.06	.427

Note. %=Percentage, 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree, SD=Standard deviation,

As expressed in table 2, the grand mean result is 2.06. So, it indicates that there is low understanding among university leaders regarding understanding to creating inclusive learning environment through technological integration for SWDs. Additionally, the standard deviation result ranging from 0.427, indicates that there is some variability in the perceptions but it has high consistence and reliable between the data and responses of leaders regarding these aspects. This variability suggests that differing opinions or levels of emphasis among respondents. But the range is very close to each other. So, this indicates that the data is more consistent. University leaders show limited awareness of how assistive technologies, like sign language videos, magnification lenses, and braille, can support SWDs. They lack understanding of the importance of wheelchairs, hearing aids, and smart boards for students with disabilities. Additionally, leaders are not well-informed about how assistive technologies like talking calculators and cochlear implants can enhance the learning experience for SWDs.

In light with the above descriptive result, the interview result is described accordingly. The researcher delves into these thematic categories, shedding light on the collective sentiments expressed by the interviewees.Participant CD1 (Engineering and Technology College Dean) he acknowledged limited understanding of creating technology-integrated inclusive environments for SWDs. He emphasized the need for foundational knowledge, such as ramp construction standards, and admitted to being unaware of how to support SWDs effectively. Similarly, participant CD2 (Social Science and Humanities College Dean) has recognized the potential of technology to improve SWDs' learning outcomes but expressed confusion about appropriate tools due to a lack of interaction with these students and understanding of their needs. Additionally, Participant S1 (Special Needs and Inclusive Education Department), he reported strong awareness and understanding of inclusive learning and technological integration due to his professional background. Participant ID (Inclusive and Diversity Study Center) he said that admitted to no prior knowledge or experience in creating inclusive environments for SWDs, as this was his first leadership role. He acknowledged his lack of understanding of SWD rights and needs. Participant TTCS

(Technology Transfer and Community Service Directorate) reported that insufficient training and professional support as barriers to understanding. He expressed a low attitude towards integrating technology for creating inclusive environment for SWDs.

- *University Leaders' Practices on Creating Inclusive Learning Environment Through Technology Integration*

The following table presents the practices of university leaders in creating inclusive learning environments through the integration of technology.

Table 3 University Leaders Practices on Creating Inclusive Learning Environment through Technology Integration

S.N	Item scale of Leaders' Practice	Likert Scales						
		1	**2**	**3**	**4**	**5**	**M**	**SD**
1	I prioritize the accessibility of technology for students with disabilities.	30 **(49.2%)**	22 **(36.1%)**	6 **(9.8%)**	3 **(4.9%)**	- -	1.70	.843
2	I am committed to providing the necessary assistive technological devices to ensure a truly inclusive learning environment.	30 **(49.2%)**	20 **(32.8%)**	6 **(9.8%)**	2 **(3.3%)**	3 **(4.9%)**	1.82	1.073
3	I seek feedback from students with disabilities on their experiences with technology integration for learning very often.	34 **(55.7%)**	19 **(31.1%)**	6 **(9.8%)**	2 **(3.3%)**	- -	1.61	.802
4	I effectively address feedback or concerns raised by students with disabilities regarding technology integration for learning.	37 **(60.7%)**	13 **(21.3%)**	9 **(14.8%)**	2 **(3.3%)**	- -	1.61	.862
5	I advise the instructors to use flexible instruction and assistive technological devices during examination.	40 **(65.6%)**	16 **(26.2%)**	4 **(6.6%)**	1 **(1.6%)**	- -	1.44	.696
6	I actively seek out resources for students with physical disability on inclusive teaching practices.	21 **(34.4%)**	16 **(26.2%)**	4 **(6.6%)**	15 **(24.6%)**	5 **(8.2%)**	2.46	1.397
7	I am committed to fostering inclusive teaching practices in the classroom.	28 **(45.9%)**	25 **(41%)**	8 **(13.1%)**	- -	- -	1.67	.701
8	I construct ramp in the gateway of the offices, classroom, dormitories, library, laboratory room, cafeteria, and student recreational areas.	16 **(26.2%)**	22 **(36.1%)**	9 **(14.8%)**	13 **(21.3%)**	1 **(1.6%)**	2.36	1.141
	Average/grand mean						1.83	.4897

As to table 3 revealed that, the average mean result is 1.83. This suggested that leaders have disagreement on the practice level of creating inclusive learning environment in higher education, and the standard deviation is 0.4897. This indication that with lower values indicating that responses are clustered closely around the mean, and higher values indicating more variability in responses. This data is closer to the mean which is more consistent. This revealed that university leaders are not prioritizing accessibility for SWDs, failing to construct ramps, provide assistive technology, or regularly update policies for technology usability. Leaders do not seek or effectively address feedback from SWDs and lack training in inclusive teaching practices. Interview responses highlighted a significant lack of experience, commitment, and awareness among university leaders regarding the creation of an inclusive learning environment. Many leaders admitted to being unfamiliar with the needs of SWDs and acknowledged the need for more resources and training to address these challenges, leading to insufficient support and barriers to SWDs' educational success.

On the other hand, according to the data obtained from interviews on leaders practice or commitment of creating inclusive learning environment for students with disability through technology integration shows that, One informant's "CD1" from college of engineering and technology stated regarding to practice or commitment of creating inclusive learning environment for SWDs through technology integration at university responds is that

"I lack experience in this area, as I took this position right after graduation. I rarely interact with SWDs and lack the training to identify their needs. The university has not implemented practices to support SWDs, and fulfilling their needs remains a significant challenge. So far, I have not contributed to providing assistive materials to support their education."

In addition, respondent S1, from department of special needs and inclusive education idea that in terms of experience, I have worked in the education field for many years including positions at high schools and primary schools, and as a leader in an education office. During my tenure at this institution, I found that no initiatives were in place to support students with disabilities.Furthermore, respondent TTCS, from directorate of technology transfer and community service noted his idea regarding to practice or commitment of creating inclusive learning environment for SWDs through technology integration at HEI. He doesn't have a commitment before.

Respondent ID, from directorate of inclusive and diversity study center regarding to practice or commitment of creating inclusive learning environment for students with disability through technology integration responds that he doesn't know anything about this as a leader. He never hears a word about it from a leadership level. Another respondent CD4 has confirmed that

"Before joining this university, I worked extensively in agriculture. Here, I encountered talented students needing special support, including one without hands. However, I lack experience and commitment to creating an inclusive learning environment for SWDs, as my focus has been on agricultural issues."

Furthermore, the researcher observed that BU leaders fail to promote inclusivity or provide necessary accommodations and support services for SWDs, such as note-taking assistance, sign language interpreters, or alternative testing formats. There are no teaching strategies tailored to the needs of SWDs, making it difficult for them to engage with course materials or participate in classroom activities. Additionally, leaders lack cohesion and commitment to creating a welcoming environment, with scattered ideas and insufficient collaboration. The SMART room, though named to represent inclusive technology, lacks essential features like ramps, lifts, and assistive materials, making it inaccessible for SWDs, especially those who use wheelchairs.The library and IT labs at BU present significant barriers for SWDs. The library is difficult to access due to its distance from key areas and the lack of ramps, lifts, or elevators. It also lacks a dedicated space for SWDs to study or find tailored materials. Additionally, students with visual or hearing impairments lack essential aids, further hindering their academic participation.

- *Status of the University in Creating an Inclusive Learning Environment through Technology Integration for SWDs*

The following table has 12 items whereas each item represents a specific aspect of inclusion learning environment, such as the availability of assistive technological devices, services for deaf and blind students, and accessibility features in various facilities.

Table 4 Status of the University Increating an Inclusive Learning Environment through Technology Integration

S.N	Items of Creating an Inclusive Learning Environment	Scales						
		1	2	3	4	5	M	SD
1	Classrooms are supported by various assistive technological devices.	30 **(49.2%)**	23 **(37.7%)**	6 **(9.8%)**	2 **(3.3%)**	- -	1.67	.790
2	Laboratories provide services to deaf students with the assistance of Sign Language Videos and Books.	32 **(52.5%)**	22 **(36.1%)**	6 **(9.8%)**	1 **(1.6%)**	- -	1.61	.737
3	Laboratories provide services to blind students with the assistance of braille printed instructions.	32 **(52.5%)**	18 **(29.5%)**	10 **(16.4%)**	1 **(1.6%)**	- -	1.67	.811
4	Recreational areas have braille-assisted signage for students with visual impairment	39 **(63.9%)**	18 **(29.5%)**	4 **(6.6%)**	- -	- -	1.43	.618
5	Dormitories provide Braille-assisted services for blind students.	36 **(59%)**	14 **(23%)**	10 **(16.4%)**	1 **(1.6%)**	- -	1.61	.822
6	Dormitories provide well organized signage's services for deaf students.	33 **(54.1%)**	20 **(32.8%)**	8 **(13.1%)**	- -	- -	1.59	.716
7	The offices are easily accessible for students with physical disabilities.	42 **(68.9%)**	17 **(27.9%)**	1 **(1.6%)**	1 **(1.6%)**	- -	1.36	.606
8	Smart boards/LCD are available in every classroom for partial sighted students.	22 **(36.1%)**	18 **(29.5%)**	3 **(4.9%)**	15 **(24.6%)**	3 **(4.9%)**	2.33	1.326
9	Slate and styles are delivered to blind students in the university.	22 **(36.1%)**	21 **(34.4%)**	14 **(23%)**	2 **(3.3%)**	2 **(3.3%)**	2.03	1.016
10	Canteens have accessible ramps for students with physical disability.	28 **(45.9%)**	25 **(41%)**	8 **(13.1%)**	- -	- -	1.67	.701
11	The instructors provide technological support for students with disability during examination (for e.g., by adjusting time)	13 **(21.3%)**	22 **(36.1%)**	12 **(19.7%)**	13 **(21.3%)**	1 **(1.6%)**	2.46	1.104
12	Student with physical disability has crunch and wheelchair which delivered by university.	18 **(29.5%)**	21 **(34.4%)**	9 **(14.8%)**	10 **(16.4%)**	3 **(4.9%)**	2.33	1.207
	Average/ Grand mean						1.812	.460

According to the data revealed from table 4, the result of average/grand meanof statements related to creating inclusive learning environment is 1.812. This indicates that a disagreement to the statements. And the result of standard deviation is .460. This suggesting that there is some variability in responses, but they are not highly dispersed around the mean.

Additionally, the data obtained from interviews typically provides rich, qualitative insights that can be analyzed to reveal patterns, themes, and narratives relevant to the research objectives. Respondent CD1 has stated regarding with creating inclusive learning environment at BU. So, he replied that

..From what I observe on the ground, SWDs have not yet received assistive devices to support their education. In fact, some students with severe disabilities have had to leave and return home due to the lack of accessible facilities on campus. I recall one student with a severe physical disability who did not have a wheelchair."

One of the informants from directorate "(ID)" has claimed the above idea and also he adds as directorate he observe many things but everything hasn't convenient for SWDs in this campus. The material which is bought for these students is not provided till now. CD2 also said that creating a welcoming environment for SWDs in HEIs requires more funding, but our university provides little attention to delivering supportive academic equipment. The resource room is filled with materials, but they are not distributed to students. Essential items like hearing aids, contact lenses, and headphones are also unavailable for SWDs.

The other participant TTCS added that the laboratory, classroom, and library have not equipped with special device. IT labs have not considered SWDs. Mean that IT labs have not headphone, tap record, JAWs, and other assistive device which help for these students. Informant CD4 has reported that as college dean, he noticed that while technological integration benefits many students, there is a notable gap in the resources provided to SWDs. Despite the progress in making education more accessible, many SWDs do not have sufficient assistive technologies, such as screen readers, adaptive software, or specialized hardware that could support their educational needs.

In addition, Observation data at BU revealed three main themes: the physical environment's accessibility, utilization of assistive resources, and leaders' contributions to creating an inclusive learning environment for SWDs. The physical environment posed significant barriers, including long distances between facilities, lack of ramps, steep stairs without handrails, narrow doorways unsuitable for wheelchairs, and poorly maintained pathways. Classrooms lacked SMART boards and LCDs, and resource rooms contained outdated materials. The campus also lacked clear signage and accessible facilities such as restrooms and dining areas, further hindering mobility and independence for SWDs. Assistive technologies like screen readers, text-to-speech software, and ICT tools were underutilized, leaving SWDs without adequate support for academic participation. The lack of accessible infrastructure and assistive technology undermines inclusion, limiting SWDs' ability to fully engage in campus life and academic activities.

- *The Association between Leaders' Understanding, Practices, and the Status of Creating Inclusive Learning Environment through Technology Integration for SWDs*

One way to assess the relationship between leaders' understanding and practice and the status of creating an inclusive learning environment is through correlation testing. Correlation tests allow researcher to examine the degree of association between variables, in this case, leaders' understanding and practice and creating an inclusive learning environment were tested.

Table 5 Correlation Result of Leaders Understanding, Leaders Practice, and CILE

Correlation result					
			CILE	**Leaders understanding**	**Leaders Practice**
Pearson Correlation Coefficient	CILE	Correlation Coefficient	1.000	**.838****	**.864****
		Sig. (2-tailed)	.	.000	.000
		N	61	61	61
	Leaders Understanding	Correlation Coefficient	**.838****	1.000	**.740****
		Sig. (2-tailed)	.000	.	.000
		N	61	61	61
	Leaders Practice	Correlation Coefficient	**.864****	**.740****	1.000
		Sig. (2-tailed)	.000	.000	.
		N	61	61	61
****. Correlation is significant at the 0.01 level (2-tailed).**					

Table 5 presents the Pearson correlation coefficient between Leaders Understanding, Leaders Practices and CILE (Creating Inclusive Learning Environment). The correlation between leader understanding and leader practice was **0.740**,**leaders understanding and CILE is **0.838**** and Leaders' Practice and CILE is **0.864**,**indicating a strong positive correlation between them. The significance level (p-value) associated with these correlation coefficient is 0.000, which is $p < .01$, indicating a significant and meaningful relationship between Understanding, Practices and CILE.

Table 6 Auto-Correlation Test

Auto-Correlation test					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.913[a]	.834	.828	.19065	**1.901**
a. Predictors: (Constant), Leaders practice, Leaders understanding					
b. Dependent Variable: CILE					

Table 6 represents the results of a regression analysis for a model that aims to predict the dependent variable CILE using the predictors Leaders practice and Leaders understanding. The results for checking autocorrelation using the Durbin-Watson and Standard Error of the Estimate measures the accuracy of the predictions made by the model, with a value of 0.19065 indicating a relatively low error. Besides, the Durbin-Watson statistic is a test for autocorrelation in the residuals of a regression analysis. The value of 1.901 falls close to 2, which suggests that there is autocorrelation present in the independent variable (leaders understanding and leaders practice).

Table 7 Multi-Collinearity Test of Independent Variables

Coefficients[a]													
Model					**T**	**Sig.**	**95.0% Confidence Interval for B**		**Correlations**			**Collinearity Statistics**	
		B	**Std. Error**	**Beta**			**Lower Bound**	**Upper Bound**	**Zero-order**	**Partial**	**Part**	**Tolerance**	**VIF**
1	(Constant)	-.004	.113		-.034	.973	-.229	.222					
	understanding	.445	.081	.439	5.520	.000	.284	.607	.838	.587	.295	.453	2.209
	practice	.507	.075	.540	6.787	.000	.357	.656	.864	.665	.363	.453	2.209
a. Dependent Variable: CILE													

In table 7, looking at the VIF values for the variables understanding and practice:

The VIF value of leaders understanding is 2.209 and Tolerance value is .587, it suggests that there is suffer from severe multi-collinearity issues associated with the understanding variable. Similarly, the VIF value for leaders practice is also 2.209 and Tolerance value is .665, indicating no multi-collinearity problem. Therefore, there is no serious multi-collinearity problem between leaders understanding and leaders practice.

Table 8 Model Summery (R & R^2)

Model Summary									
Model	**R**	**R^2**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**				
					R Square Change	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.913[a]	.834	.828	.19065	.834	145.756	2	58	.000
a. Predictors: (Constant), practice, understanding									

Table 8 revealed that the correlation coefficient (R) value of 0.913 (91.3%) indicates a strong positive linear relationship between the independent variables (leaders practice and leaders understanding) and the dependent variable (creating inclusive learning environment). The coefficient of determination (R^2) value of 0.834 suggests that approximately 83.4% of the variance in the dependent variable can be explained by the independent variables in the model (creating inclusive learning environment is explained by Leaders understanding and Leaders Practice). Here, the adjusted R^2 is .828 (82.8%), slightly lower than the R^2 but still high, indicating a good fit despite the inclusion of predictors. The p-value associated with the F test statistic is less than 0.0001, indicating that the improvement in model fit is statistically significant.

- *Strategies to University Leaders' while Creating Inclusive Learning Environment through Technology Integration for SWDS*

Table 9 Strategies to be Improve

1. Strategies can university leaders adopt to enhance their understanding and practice of creating an inclusive learning environment for SWDs through technology integration?			
		Frequency	**Percent**
Valid	training, collaboration with SWDs services, evaluate and improve accessibility	25	41.0
	awareness, frequently follow up,	2	3.3
	providing assistive technology	9	14.8
	sharing experience	25	41.0
	Total	61	100.0

Table 9 shows that majority of the respondents 25 (41%) respond that training and collaboration with SWD services and the evaluation and improvement of accessibility and Sharing experiences have ways to enhance leaders' understanding and practices for creating inclusive learning environments through technology integration for SWDs.

Inline to this, the data obtained from interview regarding the strategies that adopt to enhance leader understanding and practice of creating inclusive learning environment for SWDs through technological integrationInterviews revealed that most respondents emphasized the importance of training and sharing experiences to enhance leaders' understanding and practices in creating inclusive learning environments for SWDs through technology. Participant "CD1" highlighted training and experience-sharing as key, while "CD2" and "TTCS" stressed training, awareness, collaboration with disability support services, and experience-sharing. Respondent "ID" noted that sharing experiences allows leaders to exchange best practices and foster a collaborative community. Similarly, "CD4" and "S1" echoed these views, asserting that training and collaboration improve accessibility and inclusivity. Overall, training, collaboration with support services, and experience-sharing is the primary strategies for promoting inclusive learning environments through technology.

V. CONCLUSIONS AND RECOMMENDATIONS

➢ *Conclusions*

By aiming to assess university leaders understanding and practice of creating inclusive learning environment through technological integration for SWDs, based on the findings the following conclusions are drawn for each basic question. Generally,

- University leaders have a limited understanding of how to effectively create inclusive learning environments through technological integration for SWDs.
- The practices of university leaders in creating inclusive learning environments through technological integration for SWDs are currently low extent.
- The association between the three variables (leaders understanding, leaders' practices and creating inclusive learning environment) demonstrates a strong positive correlation. The statistical significance of this correlation ($p < 0.05$). The result of Pearson correlation coefficient indicates that the variable has strong positive relationship with each other. Furthermore, the result of regression analyses of the variable has revealed that statistically significant relationship with a p- value is .00. This underscores the critical role that informed leadership plays in shaping inclusive practices, particularly through the integration of technology to support SWDs.
- The strategies to enhance leaders' understanding and practices in creating inclusive learning environments through technological integration for SWDs include comprehensive training on assistive technologies and inclusive design, regular evaluation of their practices to ensure progress, and close cooperation with disability support services to address specific needs.

➢ *Recommendations*

This recommendation emphasizes the importance of university leaders' understanding and proactive engagement in creating an inclusive atmosphere that leverages technological advancements.

- For top-level university leaders expected to take the lead in policy formulation, ensuring that institutional policies are regularly updated to comply with legal standards and reflect best practices in accessibility.
- Middle-level university leaders better to promote collaboration between various departments, such as IT, disability services, and academic faculties, to ensure that assistive technologies are not only available but are effectively integrated into the curriculum.
- At the lower administrative levels, department heads and academic leaders expected to focus on providing direct support to SWDs by actively identifying their individual needs and ensuring they have access to the appropriate technologies.

➢ *Availability of the Data and Material*

The data supporting the findings of this study are not publicly available due to privacy or ethical restrictions. However, the data can be made available upon reasonable request from the corresponding author.

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➢ *Conflict of interest*

There is no competing interest.

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