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University Leaders' Attitude 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' attitude and practices of creating inclusive learning environments through technological integration for SWDs in Jinka 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. Both data were collected through questionnaires, interviews, and observation to make triangulation. Quantitative data was analyzed using descriptive statistics and Pearson correlation and Regression, whereas qualitative data was analyzed in meaningful categories or themes. The key findings revealed that there is a negative attitude of leaders and less extent of practices as well. The correlation result among leaders' attitude, practices, and creating inclusive learning environment was a strong positive correlation. The p-value is <0.01, which means it is statistically significant. Moreover, the result of multiple regression (p=.00) proved that the predictor and residence variable had a strong relationship. Furthermore, training, sharing experience, collaboration with SWD services, and improvement of accessibility are the strategies that are adopted to enhance leaders' attitudes and practices. Finally, it is recommended that all university leaders work in collaboration with disability support services to create an inclusive learning environment for SWDs by integrating technology.

Keywords: Creating Inclusive Learning Environment, Leaders' Attitude, Leaders' Practices, Students with Disabilities, Technology Integration

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). SWDs 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 Negarit Gazeta, 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 of SWDs.

Statement of the Problem

The goal of HEIs is to provide an inclusive campus environment for students with special needs, but HEI administration is currently tackling several issues related to maintaining an inclusive campus. Studies that thoroughly examine the literature on the challenges and obstacles of creating an inclusive campus for students with special needs are still insufficient (Zaki & Ismail, 2021). According to Zhang et al. (2018), there should be good feelings and attitudes in university society regarding the rights of students with disabilities to receive higher education. However, it seems that there is not enough drive, pertinent expertise, ability, or practical coping mechanisms to address SWDs. Furthermore, not enough is known about the ways in which this student population uses digital technologies, including social media and mobile devices, to cope with these problems (Pacheco, Yoong & Lips, 2020). As Mengistu (2024) revealed, there is a low extent of technological integration at Ambo University. This exclusion can have a detrimental effect on the overall campus climate and culture of inclusive for students with disabilities, highlighting the need for university leaders to address their understanding and practices in this area (Davis, 2020). A significant yet often overlooked issue is the challenge of fostering an inclusive atmosphere for SWDs through technological integration. Moreover, assistive technology has been shown to enhance academic engagement and participation for students with disabilities, although barriers to its effective use must also be acknowledged (McNicholl, Casey, Desmond, & Gallagher, 2021). 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 attitude and practices of university leaders on creating inclusive learning environment through technological integration for SWDs. At Jinka University, 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:

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

Conceptual framework

As Figure 1 Ultimately, the attitudes and practices of university leaders can significantly impact the overall climate of the institution, promote accessibility and inclusive, and support the success of a diverse student body. Their actions can champion the creation of a supportive and inclusive learning environment where all learners have the opportunity to thrive. University leaders who are knowledgeable, aware, and committed to creating an inclusive learning environment can have a profound impact on the success and well-being of all students. In fact, the objectives of this framework are to improve accessibility, ensure equal opportunities for all students, enhance student engagement and participation, and promote independent learning.

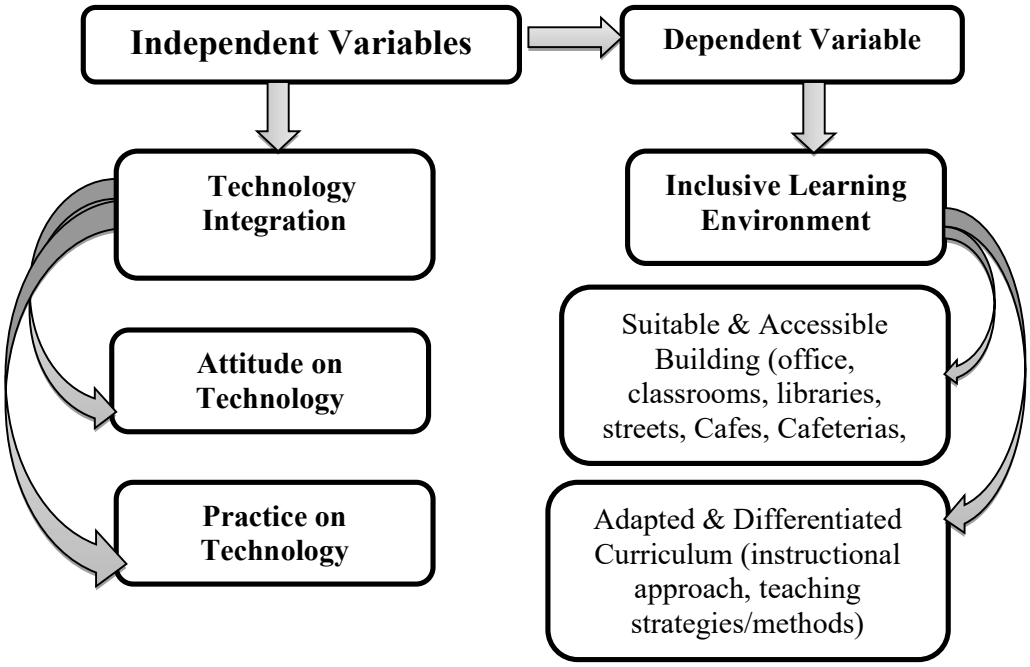

Figure 1: conceptual framework

MATERIALS AND METHODS

3.1 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 design was implemented to obtain leaders' attitudes and practices for creating inclusive learning environments through technology integration for SWDs at Jinka University.

3.2 Population of the Study

The total population in this study is 71. Its encompassing academic staff includes 21 directors, 6 coordinators, 6 college deans, 5 team leaders, and 33 department heads. Participants included leaders at Bonga University, such as department heads, directors, college deans, team leaders, and coordinators.

3.3 Sampling Technique and Sample Size

The researcher used a comprehensive sampling technique.

3.4 Data Collection Instruments

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

3.5 Validity and Reliability of the Instrument

The 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 Bonga University, a nearby university that has similar characteristics to the main study site.

Table 1: *Reliability Measurement of leaders' attitude, practices and creating inclusive learning environment*

Reliability Statistics of the items in the instrument			
No-	Variable	N of Items	Cronbach's α
1	Leaders Attitude	7	0.902
2	Leaders Practice	11	0.931
3	Creating Inclusive Learning Environment	12	0.944
	Total Cronbach's α Value	30	.936

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

As shown in Table 1, a Cronbach's alpha value of leaders' attitude is 0.902, a Cronbach's alpha value of leaders' practice is 0.931, and a Cronbach's alpha value of the status of the inclusive learning environment is 0.944, which confirms that there is high internal consistency and a close relationship among the items. Overall, the Cronbach's alpha result of 0.936 indicates high internal consistency, affirming the reliability of the scale.

RESULTS AND FINDINGS

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

4.1 University Leaders' Attitude on Creating Inclusive Learning Environment through Technology Integration

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

Table 2: *Leaders' Attitude on creating inclusive learning environment through technology integration*

S. N	Items	Respond of the Subjects						
		1	2	3	4	5	M	SD
1	I believe integrating technology is essential for creating an inclusive learning environment for students with disabilities.	23 (37.7%)	29 (47.5%)	6 (9.8%)	3 (4.9%)	- -	1.82	.806
2	I advocate for continuous improvements in university infrastructure to support accessible learning technologies.	29 (47.5%)	22 (36.1%)	6 (9.8%)	2 (3.3%)	2 (3.3%)	1.79	.985
3	I believe that technological integration significantly enhances the academic performance of students with disabilities.	28 (45.9%)	20 (32.8%)	10 (16.4%)	1 (1.6%)	2 (3.3%)	1.84	.986
4	I believe that training university staff on assistive technologies is crucial for fostering inclusivity.	33 (54.1%)	18 (29.5%)	5 (8.2%)	5 (8.2%)	- -	1.69	.937
5	I support the implementation of policies that mandate the use of accessible digital materials for students with disabilities.	33 (54.1%)	16 (26.2%)	10 (16.4%)	2 (3.3%)	- -	1.70	.867
6	I actively encourage faculty and staff to use inclusive digital tools and technologies in teaching.	31 (50.8%)	21 (34.4%)	8 (13.1%)	1 (1.6%)	- -	1.66	.772
7	I am committed to allocating resources for assistive technologies that support students with disabilities.	35 (57.4%)	20 (32.8%)	4 (6.6%)	2 (3.3%)	- -	1.56	.764
	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 attitude among university leaders regarding attitude to creating inclusive learning environments 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 consistency and reliability between the data and responses of leaders regarding these aspects. This variability suggests that there are differing opinions or levels of emphasis among respondents. But the ranges are 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 a positive attitude about 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 of 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) 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) reported a strong awareness and attitude of inclusive learning and technological integration due to his professional background. Participant ID (Inclusive and Diversity Study Center): he said

that he 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 awareness of SWD rights and needs. Participant TTCS (Technology Transfer and Community Service Directorate) reported that insufficient training and professional support are barriers to attitude. He expressed a low attitude towards integrating technology for creating an inclusive environment for SWDs.

4.2 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, it revealed that the average mean result is 1.83. This suggested that leaders have disagreement on the practice level of creating inclusive learning environments in higher education, and the standard deviation is 0.4897. This indicates that with lower values, responses are clustered closely around the mean, and higher values indicate 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 to creating inclusive learning environments for students with disabilities through technology integration, One informant, "CD1," from the college of engineering and technology stated, regarding the practice or commitment to creating inclusive learning environments for SWDs through technology integration at the university, that

"I have limited experience in this area since I assumed this position immediately after graduation. My interactions with SWDs have been minimal, and I have not received training to understand their specific needs. The university has not yet established practices to support SWDs, making it challenging to address their requirements effectively. So far, I have not played a role in providing assistive materials to enhance 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 the practice or commitment of creating an inclusive learning environment for SWDs through technology integration at HEI. He doesn't have a commitment before.

Respondent ID, from the directorate of inclusive and diversity study center regarding the practice or commitment of creating an inclusive learning environment for students with disabilities 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, my professional background was primarily in agriculture. During my time here, I have encountered talented students who require specialized support, including a student without hands. However, I have limited experience and commitment to fostering an inclusive learning environment for students with disabilities, as my primary focus has been on agricultural matters."

Furthermore, the researcher observed that Bonga University leaders fail to promote inclusive 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.

4.3 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 in creating 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 the average/grand mean of statements related to creating an inclusive learning environment is 1.812. This indicates a disagreement with the statements. And the result of standard deviation is .460. This suggests 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 something regarding creating an inclusive learning environment at BU. So, he replied that

….Based on my observations, SWDs have not yet received the necessary assistive devices to support their education. In some cases, students with severe disabilities have been forced to leave and return home due to the lack of accessible facilities on campus. I remember one student with a severe physical disability who did not even have a wheelchair.

One of the informants from the directorate "(ID)" has claimed the above idea, and he also adds that as directorate, he observes many things, but everything isn't convenient for SWDs on this campus. The material that is bought for these students has not been 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 been equipped with special devices. IT labs have not considered SWDs. Mean that IT labs do not have headphones, tape recorders, JAWs, and other assistive devices that help 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.

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

One way to assess the relationship between leaders' attitude 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' attitude and practice and creating an inclusive learning environment were tested.

Table 5: *Correlation Result of Leaders Attitude, Leaders Practice, and CILE*

Correlation result					
			CILE	Leaders attitude	Leaders Practice
Pearson Correlation Coefficient	CILE	Correlation Coefficient	1.000	.838**	.864**
		Sig. (2-tailed)	.	.000	.000
		N	61	61	61
	Leaders attitude	Correlation Coefficient	.840**	1.000	.690**
		Sig. (2-tailed)	.000	.	.000
		N	61	61	61
	Leaders Practice	Correlation Coefficient	.864**	.960**	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 Attitude, Leaders Practices and CILE (Creating Inclusive Learning Environment). The correlation between leader attitude and leader practice was 0.690**, leader attitude and CILE is 0.840** and Leaders' Practice and CILE is 0.864**, indicating a strong positive correlation between them. The significance level (p-value) associated with these correlation coefficients is 0.000, which is $p < .01$, indicating a significant and meaningful relationship between Attitude, 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 attitude
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 attitude. The results for checking auto-correlation using the Durban-Watson and Standard Error of the Estimate measure the accuracy of the predictions made by the model, with a value of 0.19065 indicating a relatively low error. Besides, the Durban-Watson statistic is a test for auto correlation in the residuals of a regression analysis. The value of 1.901 falls close to 2, which suggests that there is auto correlation present in the independent variable (leaders' attitude and leaders' practice).

Table 7: *Multi-collinearity test of independent variables*

Coefficients[a]													
Model		Unstandardized Coefficients		Standardized Coefficients	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					
	attitude	.445	.081	.439	5.520	.000	.284	.607	.838	.568	.295	.453	2.29
	practice	.507	.075	.540	6.787	.000	.357	.656	.864	.765	.363	.453	2.29

a. Dependent Variable: CILE

In table 7, looking at the VIF values for the variables attitude and practice:
The VIF value of leaders' attitude is 2.29 and Tolerance value is .568, it suggests that there is suffer from severe multi-collinearity issues associated with the attitude variable. Similarly, the VIF value for leaders practice is also 2.29 and Tolerance value is .765, indicating no multi-collinearity problem. Therefore, there is no serious multi-collinearity problem between leaders' attitude and leaders practice.

Table 8: *Model Summery (R & R²)*

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	.893[a]	.854	.828	.19065	.834	145.756	2	58	.000

a. Predictors: (Constant), practice, attitude

Table 8 revealed that the correlation coefficient (R) value of 0.893 (89.3%) indicates a strong positive linear relationship between the independent variables (leaders' practice and leaders' attitude) and the dependent variable (creating an inclusive learning environment). The coefficient of determination (R^2) value of 0.854 suggests that approximately 85.4% of the variance in the dependent variable can be explained by the independent variables in the model (creating an inclusive learning environment is explained by Leaders Attitude 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.

4.5 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 attitude 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 the majority of the respondents, 25 (41%), respond that training and collaboration with SWD services and the evaluation and improvement of accessibility and Sharing experiences are ways to enhance leaders' attitudes and practices for creating inclusive learning environments through technology integration for SWDs. Interviews revealed that most respondents emphasized the importance of training and sharing experiences to enhance leaders' attitudes 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 inclusive. Overall, training, collaboration with support services, and experience-sharing are the primary strategies for promoting inclusive learning environments through technology.

Discussion

University leaders with fewer attitudes toward the issue of exhibiting hearing impairment can improve their time spent at university through the use of sign language videos and books, and SWDs can reduce their academic burdens through the use of assistive technology. This is consistent with Uygur, Ayçiçek, Doğrul, and Yanpar Yelken (2020). Leaders have fewer attitudes towards technology integration for sustainable support of inclusive education practices. lack of comprehensive infrastructural support for differently able students can hinder their full participation and engagement within the university environment. This is confirmed with Burgstahler and Doe (2019), who highlight that inadequate infrastructure and policies can lead to feelings of exclusion among differently-able students, reducing their sense of belonging and academic success. Faculty development programs have shown promise in improving knowledge, attitudes, and willingness to accommodate SWDs. These programs often focus on universal design for learning, disability awareness, and inclusive instructional practices (Hsiao, Burgstahler, Johnson, Nuss & Doherty, 2019; Savaglio & Spector, 2021). UDL and Universal Design for Instruction are approaches that can enhance the educational experience of SWDs by promoting accessible learning environments. Despite these efforts, barriers persist, including a lack of understanding of disability laws and accommodation processes among both faculty and SWDs (Allen & Anderson, 2020). Providing academics and administrators with ongoing training and support is still crucial to creating inclusive campus environments. A study by Sukhraj and Frawley (2019) found that after undergoing training on inclusive education, higher education leaders showed an increased commitment to implementing inclusive strategies. Regarding the strategies, as Lancaster and Bain (2019) emphasized, leaders who engaged in continuous learning were better able to adapt to evolving technologies and pedagogical methods that support inclusion. The study recommends that training should not only focus on the theoretical aspects of inclusion but also provide practical strategies for implementing accessible technologies and fostering a campus-wide culture of inclusive. Respondents likely view training and sharing experiences as fundamental because they recognize learning as an ongoing process rather than a one-time event. Effective collaboration between university leaders and SWD support services is crucial for creating inclusive learning environments.

Conclusions and Recommendations

Conclusions

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

- ✓ University leaders have a limited attitude 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 in extent.
- ✓ The association between the three variables (leaders' attitude, leaders' practices, and creating an inclusive learning environment) demonstrates a strong positive correlation. The statistical significance of this correlation ($p < 0.05$). The result of the Pearson correlation coefficient indicates that the variables have a strong positive relationship with each other. Furthermore, the result of regression analyses of the variable has revealed that the 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' attitudes 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' attitude and proactive engagement in creating an inclusive atmosphere that leverages technological advancements.

- ➢ For top-level university leaders expected to improve infrastructure and accessibility in universities.
- ➢ 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.
- ➢ For minister of education expected to strengthen institutional commitment to inclusive technology integration, enhance faculty and staff training on assistive technologies and encourage research and innovation in assistive technology.

CRediT authorship contribution statement

Habtamu Debasu: Conceptualization; Methodology; Software; Validation; Formal analysis; Investigation; Data Curation; Writing – Original Draft; Writing – Review & Editing; Visualization; Supervision; Project Administration; Funding Acquisition.

Declaration of competing interest

There is no competing interest.

Ethical approval

This study was conducted in full accordance with ethical standards for research involving human participants. Ethical clearance was obtained from the Research Ethics Committee of Arba Minch University here, School of Pedagogical and Behavioral Sciences, prior to the commencement of the study. Permission to conduct the research was also formally obtained from Bonga University with the reference number **AMU-SNIE/144/2024 on August 21/2024**. All participants were provided with clear information about the purpose of the study, their role in it, and their right to voluntarily participate or withdraw at any stage without penalty. Informed consent was obtained from all participants before data collection. Confidentiality and anonymity were strictly maintained throughout the study. The collected data were used solely for research purposes and securely stored to prevent unauthorized access.

Data availability statement

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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