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Message from the Editor-in-Chief

It is with great pleasure that I present Volume 4, Issue 1 of *Dilla Journal of Education*, a peer-reviewed bi-annual publication of Dilla University. This issue showcases a compelling collection of articles that explore diverse and significant facets of education within Ethiopia.

On behalf of the editorial board, I invite you to delve into the research presented in this issue. The first article examines students' perceptions of university instructors' leadership styles in Ethiopia's Amhara Region, investigating their prevalence, dominance, and the case for an integrated approach. The second article provides a critical analysis of the physical environment, facilities, and risk factors impacting students with disabilities in selected higher education institutions in the post-COVID-19 era. The third article explores the practices and challenges of implementing gender-based affirmative action in public universities of Ethiopia. The fourth article investigates the effect of slide projector-assisted classroom instruction on students' exam scores through a one-group quasi-experimental study. Finally, the fifth article presents pathways to quality and inclusive education in the 21st century by indigenizing and decolonizing Ethiopia's education system. It is my sincere hope that this issue provides valuable insights, sparks meaningful discussion, and inspires further research within the Ethiopian education sector. I encourage you to engage with these articles and contribute to the ongoing conversation surrounding educational advancement.

Finally, I extend my deepest appreciation to the authors for their significant contributions, to the reviewers for their meticulous and constructive evaluations, and to the dedicated editorial team for their unwavering commitment to excellence in publishing this issue. Your collective efforts are truly valued.

Misganu Legesse (PhD, Associate Professor)
Editor-in-Chief
Dilla Journal of Education



Students' Perceptions of University Instructors' Leadership Styles in Ethiopia's Amhara Region: Prevalence, Dominance, and the Case for an Integrated Approach

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Abstract

Ethiopian higher education has grown rapidly, significantly expanding access while posing serious challenges to learning, such as congested classrooms and demanding teaching assignments. This study examined how third-year students at four public universities in the Amhara Region perceived the leadership styles of their instructors. In 2024, data were gathered from 321 students using a modified version of the Multifactor Leadership Questionnaire (MLQ-5X). Transformational leadership ($M = 3.60$, $SD = 0.59$) and transactional leadership ($M = 3.73$, $SD = 0.52$) are both evident, according to the findings, with transactional behaviors being rated slightly higher (paired-samples $t = -4.97$, $p < .001$). Instructors usually integrate the two approaches, which indicates a significant positive correlation ($r = .68$, $p < .001$). The results advocate for faculty development initiatives that strengthen transformational components of the current transactional framework and support an integrated leadership model appropriate for environments with limited resources. This study contributes to the expanding body of research on contextualized educational leadership in developing countries and offers the first comprehensive evidence from student perceptions on classroom leadership styles in Ethiopia's Amhara Region.

1 Introduction

Higher education in Ethiopia has expanded at one of the fastest rates in sub-Saharan Africa (Asgedom, 2019). Before the early 1990s, the country had only two public colleges; today, there are more than fifty, enrolling over 800,000 undergraduate students. Government initiatives aimed at building competent human capital for national development have driven this remarkable growth (Semela, 2011). However, infrastructure and human resource development have not kept pace, creating serious challenges for educational quality.

Institutions are inadequately equipped, research centers lack essential instruments, and classrooms originally designed for 40–50 students now often

accommodate 120–150. Most instructors teach four or five courses per semester while also supervising graduate papers and engaging in community service (Fekadie *et al.*, 2023). Under such conditions, it is nearly impossible for many instructors to adopt innovative teaching methods, and even traditional lectures become difficult to deliver effectively. Teaching objectives are further complicated by Ethiopian higher education institutions' struggles to align research methods with local community needs, which extend beyond infrastructure limitations (Habtu & Melesse, 2024).

Bass and colleagues' full-range leadership model provides a useful framework for distinguishing transformational leadership (inspiration, intellec-

tual stimulation, individualized consideration) from transactional leadership (clear expectations, rewards, corrective actions) (Bass, 1985; Bass & Riggio, 2006). Despite growing interest in leadership within Ethiopian organizations (Yohannes & Wasonga, 2023), few empirical studies have examined leadership at the classroom level. Most research has focused on senior administrators. For example, a recent study on organizational change and leadership in Ethiopian institutions found that leadership behaviors strongly influence change management processes (Jinga *et al.*, 2024). Yet classroom-level leadership dynamics were not explored.

To address this gap, the current study collected perspectives from third-year students in the Amhara Region, one of Ethiopia's largest higher education zones, focusing on two key questions:

1. How common are transformational and transactional leadership behaviors, and which style is more dominant?
2. Do instructors typically employ both approaches in combination or as alternatives?

Bass's Full-Range Leadership Theory (FRLT), which conceptualizes leadership along a continuum from laissez-faire to transformational leadership, with transactional leadership occupying the middle range, serves as the theoretical foundation for this study (Bass, 1985). Previous research in Ethiopian contexts has demonstrated strong links between transformational and transactional leadership styles and student engagement, using FRLT to analyze motivation (Teshome & Alemu, 2024). Building on this foundation, the present study investigates the prevalence, dominance, and integration of these leadership approaches in classroom settings.

1.1 Literature Review

1.2 Transformational Leadership in Higher Education

Transformational leadership is grounded in four interrelated components: idealized influence (acting as a role model), inspirational motivation (articulating an inspiring vision), intellectual stimulation (encouraging critical thinking), and individualized consideration (attending to each student's needs) (Bass & Riggio, 2006). International meta-analyses

consistently show that instructors who demonstrate these behaviors foster higher student engagement, satisfaction, and academic performance (Balwant, 2016).

Evidence from Ethiopia remains limited and highly context-dependent. Some studies suggest that transformational practices positively influence worker innovation and organizational commitment (Mamo *et al.*, 2025). However, the full expression of individualized consideration is particularly difficult in Ethiopian public universities, where large class sizes and standardized national curricula constrain personalized approaches (Kidane, 2019). Moreover, research indicates that transformational leadership can sometimes negatively affect organizational change management in Ethiopian universities (Jinga *et al.*, 2024). These findings highlight the importance of context in shaping the effectiveness of transformational leadership within higher education.

1.3 Transactional Leadership in Structured Systems

Transactional leadership functions through contingent reward (providing grades, praise, or recognition) and management by exception (intervening when problems arise). It relies on contingent compensation, where incentives are offered for meeting established standards (Bass, 1985). This approach is particularly effective in generating order, clarity, and accountability within large, highly regulated systems, though it is sometimes criticized as overly mechanical or rote.

Ethiopian state universities are widely regarded as highly bureaucratic, characterized by institutional pressure to achieve high throughput, standardized credit hour systems, and nationally mandated curricula (Asgedom, 2019). Within this context, transactional practices are seen as both common and functionally necessary. Local scholars argue that such practices are essential for meeting ministerial targets and managing classrooms on a daily basis (Kidane, 2019; Jinga *et al.*, 2024). Broader research on organizational transformation in Ethiopian public universities further supports this view, showing that effective management is positively correlated with structured leadership behaviors (Jinga *et al.*,

2024).

Thus, the prevalence of transactional leadership in Ethiopian higher education may not reflect a philosophical preference for this style, but rather a practical response to structural constraints imposed by large class sizes, bureaucratic systems, and standardized curricula.

1.4 Integrated Leadership in Resource-Constrained Environments

Transformational and transactional styles were never intended as mutually exclusive alternatives within the original full-range leadership philosophy. Bass (1997) argued that the most effective leaders establish a strong transactional foundation, providing structure, clarity, and fairness, before augmenting it with transformational behaviors, a phenomenon known as the augmentation effect. Recent research across Africa supports this integrated approach. For example, successful university deans in Ethiopia and school principals in Kenya combine personal inspiration with explicit norms, rather than relying solely on one leadership style (Yohannes & Wasonga, 2023).

In congested, under-resourced classrooms, a purely transformational method may be impractical, while a strictly transactional approach risks producing only low-level compliance (Fekadie *et al.*, 2023). Within Ethiopian public universities, the integrated model therefore appears particularly relevant. Evidence from Amhara Region universities shows that transformational and transactional leadership styles are significantly correlated ($r = .678$), with instructors frequently employing blended approaches to motivate students (Teshome & Alemu, 2024). This suggests that integration emerges organically, shaped by the demands of resource-constrained environments.

1.5 Gaps in the Literature

Despite growing interest in educational leadership in Ethiopia, several important research gaps remain (Yohannes & Wasonga, 2023). First, most existing studies emphasize institutional leadership, focusing on senior administrators rather than classroom-level instructor leadership. Second, limited attention has been given to how transformational and transac-

tional leadership styles are integrated in practice. Third, few investigations have explored leadership from the student perspective, particularly within the Amhara Regional State (Teshome & Alemu, 2024).

This study seeks to address these gaps by examining students' perceptions of instructor leadership styles and how these approaches are integrated within the classroom context.

2 Methodology

2.1 Research Design

This study employed a quantitative cross-sectional correlational design to assess the prevalence of leadership styles and examine their relationships at a single point in time across multiple institutions. In educational leadership research, this design is frequently used when experimental manipulation is either inappropriate or impractical (Balwant, 2016). The approach enabled the use of inferential statistics to generalize findings to the broader population of third-year students in the Amhara Region. Moreover, cross-sectional data provided timely insights that can inform faculty development policies and interventions.

2.2 Research Context and Population

The target population consisted of all third-year undergraduate students enrolled in public universities in the Amhara Region during the 2023–2024 academic year. Third-year students were selected because they provide a consistent and comparable perspective on instructor leadership styles, having completed at least four semesters and been exposed to a wide range of instructors (Balwant, 2016). This approach aligns with regional research on student motivation and instructor leadership (Teshome & Alemu, 2024).

To capture institutional diversity, four universities were purposively chosen: Wollo University, Debre Tabor University, Debark University, and the long-established University of Gondar. This selection ensured that variations in teaching methods, resource availability, and institutional culture factors likely to influence leadership styles were represented in the sample.

2.3 Sampling Procedure

A proportionate stratified random sampling technique, as indicated in Table 1, was employed using official enrollment lists, resulting in a final sample of 321 students (58.9% male, 41.1% female). This strategy ensured proportional representation

from each university as well as across academic disciplines. By reflecting the diversity of institutions and fields of study, the sampling approach enhanced the representativeness of the sample and strengthened the generalizability of the findings to the broader population of third-year students in the Amhara Region.

Table 1: Sample Characteristics by University

University	Number of Students	Percentage	Gender Distribution
University of Gondar	98	30.5%	58.2% male, 41.8% female
Wollo University	85	26.5%	59.3% male, 40.7% female
Debre Tabor University	74	23.1%	58.1% male, 41.9% female
Debank University	64	19.9%	60.2% male, 39.8% female
Total	321	100%	58.9% male, 41.1% female

2.4 Instrument, Validity, and Reliability

The study employed an adapted version of the Multifactor Leadership Questionnaire (MLQ 5X), one of the most widely validated instruments for assessing transformational and transactional leadership (Bass & Riggio, 2006). To ensure cultural relevance, five Ethiopian specialists in educational leadership reviewed the items and rephrased them to address “my instructor.” This adaptation process confirmed that the scale appropriately reflected leadership characteristics within the Ethiopian higher education context.

Exploratory factor analysis revealed a clear two-factor structure ($KMO = .912$, Bartlett’s test $p < .001$), accounting for 58.4% of the variance. Reliability testing showed Cronbach’s alpha coefficients of .904 for transformational leadership and .721 for transactional leadership, indicating strong and acceptable internal consistency. These reliability indices align with previous studies conducted in the region using similar instruments (Teshome & Alemu, 2024).

2.5 Data Collection and Ethical Considerations

Data were collected between April and May 2024 by trained research assistants, who distributed paper-based questionnaires during regular class sessions with departmental approval. This ap-

proach ensured a complete response rate and minimized bias associated with non-response. Ethical clearance was obtained from the University of Gondar Research and Ethics Committee (reference: O/V/P/RCS/05/1234/2024). Informed consent was secured from all participants, participation was entirely voluntary, and anonymity was strictly maintained throughout the study.

2.6 Data Analysis Techniques

Data were entered and analyzed using IBM SPSS version 28. Descriptive statistics (means and standard deviations) were computed for both leadership styles. The dataset met parametric assumptions: Shapiro–Wilk tests indicated normality, skewness and kurtosis values fell within ± 2 , and Q–Q plots showed no significant deviations.

To assess prevalence, one-sample t-tests were conducted using 3.0 (the scale midpoint) as the test value. To examine dominance, a paired-samples t-test compared the two mean scores. The Pearson product-moment correlation was used to evaluate the relationship between transformational and transactional leadership styles. Effect sizes (Cohen’s d and r) were calculated to determine practical significance, and an alpha level of .001 was applied to control for family-wise error.

3 Results

3.1 Prevalence of Leadership Styles

One-sample t-tests showed that both leadership styles scored significantly higher than the neutral midpoint of 3.0, confirming their dominance in classroom settings (see Table 2). The mean score

for transformational leadership was 3.60, while transactional leadership averaged 3.73, indicating that students regularly encounter both types of behaviors. Effect sizes were large (Cohen's $d > 0.80$ for each), indicating both statistical and practical significance. These results strongly suggest that neither leadership style is absent from Ethiopian university education.

Table 2: One-Sample t-tests (test value = 3.0, N = 321)

Style	M	SD	t	df	p	Cohen's d
Transformational	3.6	0.59	18.21	320	< .001	1.02
Transactional	3.73	0.52	25.29	320	< .001	1.4

3.2 Dominance and Relationship between Styles

A paired-samples t-test indicated that transactional leadership was modestly but significantly more dominant than transformational leadership (see Table 3). The mean difference of -0.14 was small but statistically significant, with a 95% confidence interval that did not include zero.

Furthermore, a strong positive association was observed between the two styles, as reflected in the Pearson correlation coefficient of $.68$ ($p < .001$). This high correlation suggests that instructors who score highly on one leadership style also tend to score highly on the other, providing evidence of integration in practice rather than exclusive reliance on a single approach.

Table 3: Paired-Samples t-test and Correlation

Variable	M	SD	Mean Diff. [95% CI]	t (320)	p	r
Transformational	3.6	0.59	-0.14 [-0.19, -.08]	-4.97	< .001	.68***
Transactional	3.73	0.52				

$P < .001$ Source: Field Survey (2024)

3.3 Additional Analyses: Demographic Variations

Although the primary research questions focused on overall prevalence and dominance, supplementary analyses explored potential variations by gender and institutional type. Results showed no significant differences in students' perceptions of leadership styles between male and female respondents. This finding is consistent with an Ethiopian study on ped-

agogical leadership, which reported that gender had no significant effect on perceptions of leadership practices.

However, slight differences emerged across institutions. Longer-established universities scored marginally higher on measures of innovative leadership, suggesting that institutional maturity and resource availability may contribute to more diverse leadership practices (Table 4).

Table 4: Leadership Style Means by University

University	Transformational Mean	Transactional Mean	Integration Correlation (r)
University of Gondar	3.65	3.71	0.72
Wollo University	3.58	3.75	0.66
Debre Tabor University	3.59	3.72	0.65
Debark University	3.55	3.76	0.63

4 Discussions

The strong presence of transactional leadership is fully consistent with the structural conditions Ethiopian instructors face (Asgedom, 2019). In classrooms of 100–150 students, under rigorous national curricula and institutional pressure to cover subject matter and achieve acceptable pass rates, clear requirements and transparent assessments are practically indispensable. Students frequently cite confusing grading as their primary complaint; transactional techniques directly address this issue, explaining the higher mean score. This finding aligns with broader studies of Ethiopian higher education, which show that transactional leadership practices can enhance organizational change management (Jinga *et al.*, 2024).

At the same time, the transformational mean of 3.60 is comfortably above the neutral threshold and offers a more favorable picture than many outside observers might expect. Despite large class sizes, many educators continue to connect theory to Ethiopian realities (agriculture, health, governance), stimulate debate, share personal anecdotes, and demonstrate genuine interest in individual students (Fekadie *et al.*, 2023). These practices highlight instructors' adaptability and commitment in challenging circumstances.

Perhaps the most policy-relevant finding is the correlation of 0.68 between transformational and transactional leadership. Instructors are not easily categorized as either “strict rule enforcers” or “inspiring mentors”; rather, those who excel at providing structure also tend to motivate effectively. This pattern directly supports Bass's augmentation hypothesis (Bass, 1997) and is consistent with recent African research showing that integrated leadership is the most effective approach in resource-constrained environments (Yohannes & Wasonga, 2023; Jinga *et*

al., 2024). The strong association between the two styles suggests that competent Ethiopian instructors have developed a hybrid strategy that responds to local demands while maintaining instructional effectiveness.

5 Conclusion

This study examined the prevalence, dominance, and integration of transformational and transactional leadership styles among instructors in Ethiopian public universities, focusing on third-year students in the Amhara Region. The findings demonstrate that both leadership styles are significantly present in classroom practice, with transactional leadership emerging as modestly more dominant. This outcome reflects the structural realities of Ethiopian higher education, including large class sizes, standardized curricula, and institutional pressure to achieve throughput.

At the same time, transformational practices remain evident, as many instructors continue to contextualize theory, encourage debate, and show genuine concern for students despite resource constraints. The coexistence of these approaches highlights the adaptability and resilience of Ethiopian educators. Most importantly, the strong positive correlation between the two styles underscores the emergence of a hybrid leadership model. Instructors who excel at providing structure also tend to inspire and motivate, supporting Bass's augmentation hypothesis and aligning with African research on integrated leadership in resource-constrained environments.

This study contributes to the literature by shifting attention from institutional leadership to classroom-level dynamics and by incorporating student perspectives, which have been largely overlooked. It provides evidence that integrated leadership is not only possible but necessary in Ethiopian univer-

sities, where structural limitations demand both clarity and inspiration.

Theoretical Implications

The findings have significant implications for leadership theory, particularly the use of Western-developed frameworks in African educational settings. They confirm the cross-cultural validity of Bass's Full-Range Theory while emphasizing the importance of culturally sensitive interpretations. The integration of leadership styles observed here suggests that binary conceptualizations of "transactional versus transformational" are insufficient to capture the complexities of instructor behavior in resource-constrained contexts.

Furthermore, the results challenge simplistic assumptions about the universal superiority of transformational leadership (Balwant, 2016). While transformational leadership remains crucial, its integration with transactional components appears critical for effectiveness in Ethiopian higher education. This supports contingent leadership perspectives that emphasize tailoring techniques to situational restrictions and opportunities (Kidane, 2019).

Contextual Challenges and Instructor Adaptation

The findings must be interpreted within the difficult realities of Ethiopian higher education (Asgedom, 2019). Overcrowded classrooms, limited resources, and heavy teaching loads naturally encourage transactional practices. Yet, as noted by Fekadie *et al.* (2023), effective leadership in such circumstances requires strategic adaptation, balancing systemic constraints with opportunities for transformative influence. Instructors in this study appear to have developed this adaptive capacity, demonstrating that effective teaching leadership requires integration rather than strict adherence to a single style.

Limitations

Several limitations are acknowledged:

- The study was limited to four universities in the Amhara Region, which may not represent all Ethiopian institutions.
- The correlational design captured perceptions at one point in time, leaving questions about how practices evolve.
- Reliance on student self-reports introduces potential bias.
- Although the MLQ 5X was adapted for cultural relevance, some nuances of Ethiopian classroom leadership may remain underexplored.

Recommendations

Based on the findings of this study, the following recommendations are made for enhancing instructional leadership in Ethiopian higher education:

- Institutions should develop and implement comprehensive faculty development programs focusing on both transformational and transactional leadership skills. Such programs should educate instructors on how to integrate these styles effectively to foster a more enriching learning environment.
- Regular workshops that provide actionable strategies for personalized attention in large classrooms can enhance instructors' transformational leadership capabilities. This can also include peer mentoring, where experienced instructors share practices that merge both leadership styles.
- Establishing formal channels for student feedback regarding instructional practices can help instructors continually refine their leadership behaviors and tailor their approaches to better meet student needs.
- University administrations should explore strategies to reduce class sizes where feasible or enhance support services (like teaching assistants) to allow for more personalized instruction.
- Institutions must prioritize resources that support innovative teaching methods, such as technology integration and better classroom facilities, which can enable instructors to effectively apply transformational leadership practices.

- Institutions should utilize structured performance evaluations that specifically assess both transformational and transactional leadership behaviors among instructors. This can help identify areas for improvement and promote effective teaching practices.

Future Research Directions

- Future research could employ longitudinal designs to examine how leadership styles evolve over time within Ethiopian universities. Such studies could provide deeper insights into the long-term impacts of integrated leadership approaches on student outcomes and instructional effectiveness.
- Conduct comparative studies across different regions of Ethiopia or other sub-Saharan African countries to identify commonalities and differences in instructional leadership styles. Such comparative research can enhance understanding of context-specific leadership dynamics in varying educational settings.
- Integrating qualitative methods, such as interviews or focus groups, could provide richer contextual insights into how students perceive and experience different leadership styles. This could also reveal nuances that quantitative methods may overlook, particularly regarding the subjective experiences of students.
- Research could explore how leadership styles manifest across different academic disciplines. Understanding whether certain fields lend themselves more readily to transformational or transactional approaches could help tailor faculty development initiatives to educate effectively.
- Investigating the direct effects of different leadership styles on student engagement, satisfaction, retention, and performance can offer valuable insights for educators and policymakers focused on enhancing the quality of higher education in resource-constrained settings.

In conclusion, addressing the complexities of leadership in Ethiopian higher education requires intentional strategies that blend transformational and transactional leadership. By implementing these recommendations and pursuing the suggested avenues for future research, stakeholders can contribute to the advancement of effective instructional leadership practices in Ethiopia's Amhara Region and beyond.

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Conflict of Interest

The authors declare no conflict of interest.

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Data Availability Statement

The corresponding author will provide data upon reasonable request.

Credit Authorship Contribution Statement

Sisay Fekadie Molla: Writing – original draft, review & editing; Software; Methodology; Formal analysis; Data curation.

Professor Tesfaye Ketsela Woldyesus: Writing – review & editing; Formal analysis; Conceptualization

Markos Tezera Taye (Associate Professor): Writing review & editing; Visualization; Investigation; Formal analysis.

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Analysis of physical environment, facilities and risk factors impacting students with disabilities in selected higher education institutions post the COVID-19 pandemic in Ethiopia

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Abstract

The purpose of this study was to analyze the physical environment, facilities, and risk factors impacting students with disabilities in six selected higher education institutions post the COVID-19 pandemic in Ethiopia. The research utilized an explanatory sequential mixed-methods design. The sample of this study was 193, including 181 students with disabilities, six university administrators, and six facilitators for students with disabilities from these universities. The data-gathering tools were questionnaires, semi-structured interviews, and observation. The information obtained from the questionnaire was analyzed using percentages. The data collected from semi-structured interviews and observations were also analyzed in narrative form. Subsequently, the quantitative findings were interpreted in light of the qualitative data following the research design. The study results showed that students with disabilities encounter various physical barriers in their environment, including inconvenient buildings, inaccessible ramps, open drainages, a lack of elevators, poles on road curves, and holes in walkways, which pose risks, especially for visually impaired individuals and wheelchair users. The study also identified facilities issues, including inaccessible toilets, limited access to water supply, low health services, and sanitation problems, which negatively impacted attendance and academic success, particularly for female students in universities post-pandemic. Moreover, findings of the study revealed that existing dormitories, bathrooms, and dining halls were not inclusive to students with disabilities, particularly in third-generation universities. Therefore, the universities should implement inclusive infrastructure design principles and risk management strategies to accommodate students with disabilities and minimize risk factors that influence their social inclusion and learning experiences. Finally, the effects of inclusive WASH on the enrollment, attendance, and academic performance of students with disabilities require further investigation.

1 Introduction

Students with disabilities require access to an inclusive physical learning environment and facilities to fulfill their educational needs at various education levels, including higher education (Fossey, 2015; Tirussew, 2005). In particular, access to higher education for students with disabilities re-

quires purposeful planning and management of the physical environment, accommodations, facilities, technology, and other related resources that support educational needs. The physical environment and facilities are crucial in supporting and enhancing educational outcomes for all higher education students. However, students with disabilities have faced numerous environmental barriers, including

a lack of accommodations, inadequate physical environments and facilities, and insufficient health services (Alam & Kbir, 2023; Gore, 2021; Tefera Tirago, 2019).

In addition, students with disabilities face challenges related to infrastructure facilities within higher education institutions due to a lack of risk management strategies and insufficient attention from administrators. These situations affect their ability to cope with their disabilities, and the consequences of the COVID-19 pandemic have exacerbated existing inequalities in education, social environments, and support services. Hence, the COVID-19 pandemic magnified existing challenges in the social inclusion and protection of students with disabilities (United Nations Human Rights, 2020; UNESCO, 2020; World Bank, 2020).

According to the UN report, persons with disabilities were among the hardest-hit groups during the COVID-19 pandemic. Even under normal circumstances, people with disabilities worldwide are less likely to access health care and education and are more likely to live in poverty and experience violence (UNESCO, 2020). The COVID-19 pandemic has further heightened this situation, particularly for individuals with disabilities in fragile or precarious contexts and humanitarian settings. Supporting these issues, Akanzum and Pienaa (2023) and the UN (2025) noted that girls with disabilities' performance and involvement in education are impacted by inadequate sanitary and hygiene (WASH) facilities; therefore, it is crucial to ensure they have access to water, healthcare, sanitation, and hygiene services to support their academic success.

Although few students with disabilities have had the opportunity to join higher education institutions, apart from coping with the trauma of a disability, they may face difficulties accessing and affording several facilities and services while attending their education. As a result, many students with disabilities also encounter multiple forms of exclusion concerning education, health and social services, the physical environment, and facilities when attending higher education institutions. The COVID-19 pandemic created a significant crisis in the education system, leaving many students confined to their homes and facing numerous chal-

lenges (Wooldridge *et al.*, 2021; Anderson, 2020; UNESCO, 2020). This hardship has left marks on students with disabilities' social and learning experiences.

Students with disabilities face attitudinal challenges and physical environmental barriers that hinder their equal participation in education, particularly in developing countries. Attitudinal challenges involve negative beliefs and stereotypes that limit opportunities for students with disabilities, fostering discrimination (Mudzingwa & Madungwe, 2019). In addition, physical environment accessibility for students with disabilities is often ignored, with infrastructure barriers such as stairs, narrow passages, and poorly designed entrances remaining common (Rama, 2023; Gore, 2021). Addressing these barriers is essential to ensure their full inclusion in education and equal access to quality education.

Creating an inclusive, barrier-free learning environment for students with disabilities (SWDs) often requires additional resources, such as specialized teaching materials, assistive technologies, and reliable internet access, as well as convenient infrastructure and accommodations that support students with disabilities. Many higher education institutions in Ethiopia still struggle to generate and allocate these supports effectively. A barrier-free physical environment can promote equality and inclusiveness (World Bank, 2017); disability inclusion has the potential to benefit everyone through the application of universally accessible buildings and infrastructure to increase educational engagement of learners.

In higher education, not only do students with disabilities face challenges due to the inadequacy of the physical and social environment and facilities, but teachers with disabilities who are working there also encounter similar obstacles. In fact, the impacts of the physical learning environment in higher education institutions contribute to low educational participation and academic achievement for persons with disabilities; primarily, this occurs due to a lack of attention to risk management when constructing truly inclusive learning environments (Wooldridge *et al.*, 2021). As a result, some students are forced to drop out.

Students with special needs are significantly underrepresented in institutions of higher education. They rank among the most marginalized, vulnerable, and excluded groups within universities. Establishing a positive and inclusive learning setting is crucial for encouraging the success of these students, as it not only supports their academic performance but also their social integration. By enacting supportive policies and practices, educational institutions can offer barrier-free learning experiences for students alongside adaptive materials and assistive technologies, ensuring they feel respected and empowered to succeed (UN, 2025). Consequently, fostering an enabling learning environment is essential for students with disabilities, facilitating a learning and living environment that helps to minimize discrimination and enhance diversity and inclusion within higher education institutions.

2 Statement of the problem

Students with disabilities encounter considerable difficulties, such as academic barriers, insufficient public accommodations, inadequate physical facilities, and other related risk factors that have negatively impacted their educational experiences. The Ethiopian government has acknowledged the right to learning opportunities for all children, as stated in Federal Negarit Gazeta No. 351/2003. This proclamation also mandated that universities make their facilities and programs more accessible to students with physical challenges. However, students with disabilities face various challenges in exercising these rights, especially concerning the physical learning environment, accommodations, and infrastructure, which hinder their ability to fulfill educational, social, and economic needs while pursuing higher education.

In Ethiopia, higher education is mandated to provide equal educational opportunities for all students with disabilities. However, the enrollment of students with disabilities in universities remains low due to a lack of enabling learning environments and limited parental awareness regarding the education of persons with disabilities (Tirussew *et al.*, 2014). Support for students in higher education is crucial, as they face challenges such as inaccessible physical learning environments, inadequate accommodations, limited assistive technologies,

and scarce resources, which can hinder academic performance. Research shows that these issues have created a significant gap between students with disabilities and their non-disabled counterparts in Ethiopian higher education (Tefera Tirago, 2019; Yared, 2008; Tirussew, 2005; Tirussew & Elena, 2000). The COVID-19 pandemic introduced a new crisis that affected the learning of students with disabilities in Ethiopian higher education (UN, 2020). As a result, institutions have faced increased difficulties in the post-pandemic period, leading to greater social exclusion for these students (UNESCO, 2020; United Nations, 2020; Ntombela & Soobrayen, 2013).

Analyzing the physical environment and facilities of higher education involves identifying, evaluating, and mitigating various risk factors that may affect the educational provision, process, and achievement of students with disabilities due to inconvenient physical learning environments and inadequate facilities. The impacts of physical environments and facilities on students with disabilities have not been extensively explored and analyzed since the COVID-19 crisis. Therefore, this research is crucial for identifying and analyzing the physical environment, facilities, and risk factors influencing students with disabilities in Ethiopian higher education institutions after the COVID-19 pandemic.

This study aims to analyze the physical learning environment, facilities, and risk factors impacting the learning outcomes of students with special needs in higher education institutions (HEIs). Specifically, the study examined the adequacy of the physical learning environment and the convenience of facilities—including health, hygiene, and sanitation services—impacting students with disabilities on campus, and the measures taken by university administrators to overcome these challenges to enhance the learning outcomes of students with special needs in HEIs.

Grounded in this context, the study attempts to answer the following overarching research question: “How are the physical learning environments and facilities convenient and inclusive for students with disabilities in selected higher education institutions after the COVID-19 pandemic?”

Under this main question, the study aimed to answer the following specific research questions:

1. How are physical learning environments convenient and inclusive for students with disabilities in higher education?
2. What are the major risk factors that influence students with disabilities in universities while pursuing their education after the COVID-19 pandemic?
3. How are hygiene and sanitation facilities maintained in universities after the COVID-19 pandemic?
4. What efforts do university administrators make to minimize risk factors affecting the education of students with disabilities through risk management plans in higher education?

3 Research Method

This study employed an explanatory sequential mixed-methods design. It involved an initial phase of collecting and analyzing quantitative data, followed by a second phase in which qualitative data were collected and analyzed, building on the findings from the quantitative phase (Creswell & Creswell, 2018). Both quantitative and qualitative data were collected and analyzed separately and later integrated through triangulation, enhancing the interpretation of findings. The qualitative phase provided contextualization and explained the results derived from the quantitative phase.

3.1 Research Areas / Delimitation

This study was conducted in six selected public universities in Ethiopia. There are more than 42 public universities in the country. Among these six universities—namely Bule Horra, Dilla, Hawassa, Jimma, Wachemo, and Wolayta—were selected purposefully due to their accessibility and as representatives for students with disabilities based on their generation: first-generation (Bule Horra & Wachemo) universities, second-generation (Dilla & Wolayta) universities, and third-generation (Jimma & Hawassa) universities. Students with disabilities are not a homogeneous group and include people

with physical disabilities, visual impairments, hearing impairments, intellectual disabilities, and psychosocial disabilities, among others (World Bank, 2017). Among these, the study focused on students with sensory impairments (visual and hearing) and physical disabilities who were attending these universities. Students with other disabilities are not expected to join universities in Ethiopia.

3.2 Sample and Sampling Techniques

The samples for this study were selected through both purposive and random sampling approaches. Six public universities were identified and selected using purposive sampling as representatives of 1st-, 2nd-, and 3rd-generation universities, and based on the presence of special needs education departments. A total of 193 participants (104 males and 89 females) were selected through purposive sampling based on the characteristics of the population and the objectives of the study. Among them, 181 students with various types of disabilities were also selected through purposive and random sampling methods to gather quantitative data and complete questionnaires (see Table 1). In addition, 12 participants (8 males and 4 females) were selected for the interviews via purposive sampling (see Table 4).

Data were collected using questionnaires, interviews, and observation. Quantitative data were gathered through a close-ended questionnaire, whereas qualitative data were collected through semi-structured interviews, observation, and document review.

Questionnaire: Closed-ended questions were prepared and compiled for students with disabilities. A 99% response rate was achieved because the researchers closely monitored the completion of the questionnaires without interfering with participants' responses.

Interview: Interview data were collected from mid-level university administrators and facilitators/supporters of students with disabilities using a semi-structured interview guide. Six mid-level higher education administrators and six facilitators or supporters were interviewed. The researchers scheduled meetings with participants, and the interviews were conducted according to the specified

Table 1: Sample

Type of University	Name of University	Participant students with disability type			
		Visual	Physical	Hearing	total
1 st generation	Jima	13	16	1	30
	Hawassa	12	15	3	30
2 nd generation	Wolayita	20	19	1	40
	Dilla	13	14	3	30
3 rd generation	BuleHora	12	16	2	30
	Wachemo	3	9	8	20
	Other				1
	Total	73	89	18	181

format and at times most convenient for the interviewees.

Observation: In addition to the interviews, direct observation was used to gather data regarding the convenience of the physical environment and facilities, as well as health services, hygiene, and sanitation.

3.3 Data Collection Tools

3.4 Data Analysis

The study utilized both quantitative and qualitative data analysis techniques, employing descriptive statistics for quantitative data and qualitative analysis to identify themes related to accommodations, infrastructure, educational barriers, and risk factors affecting university students with disabilities.

4 Results and Discussion

This chapter presents the organization and analysis of data collected from facilitators, administrators, and students through questionnaires, interviews, and observations. Questionnaires were administered to students with disabilities, while interviews were conducted with mid-level university administrators and facilitators who support students with disabilities (SWDs) in university settings.

As shown in Table 2, 98 male students (54.1%) and 83 female students (45.9%) with disabilities participated in the study. A significant gender gap was observed between male and female students with disabilities. This information helps readers

understand the participation of male and female students with disabilities in higher education institutions. The disparity highlights the need to encourage the education of female students with disabilities from primary through tertiary levels.

Table 2: Demographic Characteristics of Participant SWDs

Variable		N	(%)
Sex	Male	98	54.1
	Female	83	45.9
	Total	181	100
Age	19–24	145	80.1
	25–30	25	13.8
	31–36	11	6.1
	Total	181	100
Education	Undergraduate	168	92.8
	Graduate	13	7.2
	Total	181	100

Regarding the respondents' age distribution, the majority of participants with disabilities ($n = 145$, 80.1%) were between 19 and 24 years old, while a smaller group ($n = 25$, 13.8%) was between 25 and 30 years old, and the remaining participants ($n = 11$, 6.1%) were aged 31 to 36. Students in the 31–36 age range were pursuing postgraduate programs. This indicates that some students with disabilities have the opportunity to pursue postgraduate education. These age ranges were appropriate for providing reliable and relevant information. However, students with disabilities often enter higher

education later than their non-disabled peers due to social, economic, psychological, and health-related challenges.

Concerning educational level, 186 students (92.8%) with disabilities were enrolled in undergraduate programs, while 13 students (7.2%) were pursuing postgraduate studies. The number of students pursuing postgraduate degrees was considerably lower compared to those in undergraduate programs. Overall, these students are able to articulate their experiences and identify risk factors within the physical learning environment that impact their education in universities.

The participants, as indicated in Table 3, were categorized by disability type: visual impairment, hearing impairment, and physical disability. Of the three categories, 73 students (40.3%) had visual impairments, 89 students (49.2%) had physical disabilities, and 18 students (9.9%) had hearing impairments. Participation among students with physical disabilities was higher compared to those with visual or hearing impairments.

Table 3: Participants with disability type

Participant	N	%
Visual impairment	73	40.3
Physical impairment	89	49.2
Hearing impairment	18	9.9
Other	1	.6
Total	181	100

Findings from interviews and observations indicate that students with hearing impairments face significant challenges due to communication barriers and social stigma, as some universities admit only a few students without adequate preparation to support their needs. According to the Ethiopian Higher Education Proclamation, Article 650/2009, academic assistance must be provided for students with hearing impairments, including sign language support, accessible facilities, and supportive aids

(Federal Negarit Gazeta, No. 35/2003).

Regarding inaccessible facilities and assistive technologies for students with hearing impairments, one facilitator explained:

"Although the number of students with hearing impairments is small in the universities, they struggle with social, psychological, and educational problems due to communication barriers and negative attitudes more than physical facilities and supportive aids. They face significant challenges in education, including a lack of sign language interpreters and inaccessible assistive technologies, leading to difficulties in forming relationships and feelings of loneliness."

Qualitative results further confirm that students with hearing impairments encounter barriers in communicating with classmates and teachers, facing social and educational challenges due to inadequate supportive aids and the absence of sign language interpreters. As noted by Farid, Fatima, and Jahanzaib (2023), language gaps in students with hearing impairments can lead to social, cognitive, and communication difficulties, such as challenges in interpreting social cues, managing emotions, and low self-esteem. These problems arise from the impact of hearing loss on learning and spoken language processing, which restricts effective interaction with peers and the broader community. Supporting this issue, Batista and García (2023) emphasize the social, cognitive, and communication challenges faced by students with hearing impairments, compounded by the hearing academic community's limited understanding and empathy toward these students.

In contrast, the number of students with physical disabilities exceeds that of students with visual or hearing impairments. It appears that students with physical disabilities have relatively better access to education, particularly those who can navigate independently. Unfortunately, no hearing-impaired teachers were reported among the sampled universities.

Table 4: Interview participants

Participant	Sex	N	%
Administrators	Male	5	83
	Female	1	17
	Total	6	100
Service providers/ facilitators for SWDs	Male	2	33
	Female	4	67
	Total	6	100

As observed in Table 4, five males (83%) and one female (17%) were administrators. Among the facilitators or service providers for students with disabilities, two (33%) were male and four (67%) were female. In total, 12 participants—six middle-level administrators and six facilitators/service providers—were interviewed. The interviews focused on the availability of health and hygiene services, challenges faced on campus, risk factors and barriers in the physical environment affecting students' education, and measures taken by university officials through risk management to provide

students with disabilities an accessible physical environment.

Regarding the convenience of university classroom buildings, library buildings, and dormitory buildings for students with disabilities, 92 respondents (50.8%) and 30 respondents (16.6%) identified them as "inconvenient" and "highly inconvenient," respectively. This indicates that when these buildings were designed, universities did not adequately consider the challenges faced by students with disabilities or factors that influence their learning and living experiences.

Table 5: Convenience of Infrastructure and facilities for SWDS in the Universities

Variable	Highly Convenient (%)	Convenient (%)	Medium (%)	Inconvenient (%)	Highly Inconvenient (%)	Total (%)
Universities' building designs for SWDs	1.7	11.6	19.3	50.8	16.6	100
Campus compound physical facilities	3.3	11.1	20.4	48.6	16.6	100
Walkways for SWDs in Universities' compound	12.7	15.5	19.3	41.4	11.1	100
Classroom entrances	7.7	10.5	19.3	42.5	20	100
Classroom physical facilities for SWDs	4.4	13.3	13.8	49.2	19.3	100
Existing ramps	3.9	11.6	18.2	50.3	16	100

Most classroom buildings were not convenient or inclusive for students with disabilities. Muzemil (2018) and the World Bank (2017) noted that inconvenient building construction and related physical facilities can negatively affect the implementation of inclusive education at any level. Therefore, buildings and other facilities should be designed to be convenient, accessible, and inclusive, ensuring equal access for all students. These challenges were also supported by the qualitative findings.

Concerning the physical facilities on university campuses for students with disabilities, 88 partici-

pants (48.6%) and 30 participants (16.6%) reported them as "inconvenient" and "highly inconvenient," respectively. The study found that most university campuses are neither convenient nor accident-free for students with disabilities, particularly in third-generation institutions.

Interview and observation results showed that classroom physical environments were not inclusive for students with disabilities. Students with physical and visual impairments faced challenges due to inadequate classroom design, particularly in first-generation universities. The inconvenience of

walkways on campuses was also noted: 75 respondents (41.4%) and 20 respondents (11.1%) rated them as "inconvenient" and "highly inconvenient," respectively. Classroom entrances and physical facilities were similarly reported as inconvenient by 77 respondents (42.5%) and 89 respondents (49.2%). Observations confirmed that most university physical environments, including gateways and walkways, were not designed to support the education of students with disabilities. However, two universities prioritized accessibility by incorporating ramps, elevators, adjustable furniture, and inclusive design principles to accommodate diverse needs. Ali (2014) emphasized that inaccessible architecture restricts the movement of individuals with impairments, exacerbating their exclusion from learning activities.

Regarding existing ramps—inclined planes used by wheelchair users—91 respondents (50.3%) and 30 respondents (16.6%) reported them as "inconvenient" and "highly inconvenient," respectively. Observations revealed that ramps were often inaccessible for students using wheelchairs or other mobility aids, preventing independent movement

and full participation in school activities. This issue was particularly pronounced in two third-generation universities. Interviews further revealed that some universities lacked risk management plans to accommodate students with disabilities, despite national agencies assigning students to these universities without prior communication.

The respondents' perceptions regarding dormitory facilities reveal that most students with disabilities found them inconvenient. Specifically, 87 participants (48.1%) rated the dormitories as "inconvenient," while 31 students (7.1%) considered them "highly inconvenient." Additionally, 46 respondents (25.4%) chose "medium," reflecting that existing dormitory services are limited and inadequately accommodate students with disabilities based on the type and degree of their impairments. Qualitative findings corroborate this, showing that nearly all university administrators did not implement risk management strategies to address the impact of facilities on students with disabilities. This highlights a lack of institutional attention to minimizing these barriers.

Table 6: Convenience of dormitories, bathrooms and dining halls facilities for SWDs

Variable	Highly Convenient (%)	Convenient (%)	Medium (%)	Inconvenient (%)	Highly Inconvenient (%)	Total (%)
Dormitories	1.1	8.3	25.4	48.1	17.1	100
Bathroom/Washrooms	2.8	6.1	21.5	40.3	29.3	100
Dining halls	–	23.7	40.3	18.9	17.1	100

Regarding bathroom facilities, 73 respondents (40.3%) and 53 respondents (29.3%) reported them as "inconvenient" and "highly inconvenient," respectively. Interview and observational data indicated that insufficient attention was given to designing accessible bathrooms for students with disabilities, reflecting both infrastructural and attitudinal barriers. The lack of convenient bathrooms and water supply hinders students' ability to meet their educational needs comfortably, limiting their full participation in academic activities. Observations confirmed that nearly all sampled universities lacked adequately designed bathrooms, despite ongoing efforts in some institutions to renovate facilities and ensure privacy for students with

disabilities.

Concerning dining facilities, 73 respondents (40.3%) and 34 respondents (18.9%) rated them as "inconvenient" and "highly inconvenient," respectively. The arrangement of tables and chairs in dining halls was not suitable for students with varying disabilities. Interviews and observations revealed that most sample universities did not provide barrier-free physical environments or facilities, largely due to a lack of risk management strategies and insufficient awareness among administrators regarding students' rights to accessible campus resources.

In discussing administrative efforts to mitigate risk factors in the physical environment post-COVID-19, one facilitator stated: "Now our university is struggling with limited resources to serve the different needs of students with disabilities and manage risk factors related to the physical environment and

other facilities. Consequently, all students receive the same accommodations from the university. We are now working to improve the situation, which makes it challenging to provide significant support services for students with disabilities."

Table 7: Access to Water, health service, sanitation, and hygiene after COVID-19 for SWDs

Variable	Highly Convenient (%)	Convenient (%)	Medium (%)	Inconvenient (%)	Highly Inconvenient (%)	Total (%)
Access to health services	5.5	10.5	24.9	43.6	15.5	100
Sanitation and hygiene	-	13.8	22.1	45.9	18.2	100
Toilet accessibility	-	9.4	19.9	53	17.7	100

Lack of access to water, sanitation, and hygiene (WASH) services puts students with disabilities at significant risk for health problems (Table 7). Inadequate WASH services were identified as a key risk factor, particularly for female students, whose academic performance and participation are impacted by insufficient sanitation facilities (Akanzum & Pienaa, 2023; UN, 2025). As indicated in Table 6, out of the total respondents, 83 (45.9%) and 33 (18.2%) reported WASH facilities as "inconvenient" and "highly inconvenient," respectively, highlighting insufficient health services to support students with disabilities. Inaccessible sanitation facilities also created situations that disadvantaged students in attending to their most basic and private needs.

Interview and observation results revealed that hygiene problems in these universities often led to additional diseases, such as typhoid, typhus, diarrhea, and malaria, particularly in 1st- and 2nd-generation public universities. During the COVID-19 pandemic, universities prioritized hygiene by providing ample handwashing facilities, which were seen as both a right and an obligation. Post-pandemic, however, these facilities have largely been discontinued, resulting in water scarcity and declining hygiene standards.

Students who frequently encounter such challenges may be forced to drop out. Ensuring access to water, healthcare, sanitation, and hygiene services is therefore crucial to supporting their academic success (Akanzum & Pienaa, 2023). Access to wa-

ter is particularly important for maintaining proper sanitation and hygiene in crowded campus areas, while good health and hygiene significantly contribute to successful class attendance and learning outcomes (Alam & Kbir, 2023; United Nations Human Rights, 2020; UNESCO, 2020).

The research also identified specific challenges regarding sanitation and hygiene services. In Table 6, 83 (45.9%) and 33 (18.2%) of respondents reported these facilities as inconvenient and highly inconvenient, respectively. These risk factors negatively influenced students with disabilities' ability to complete their education on time.

Toilet inaccessibility was highlighted as the most pressing problem across nearly all universities, with 96 (53%) and 32 (17.7%) of students rating the facilities as inconvenient and highly inconvenient, respectively. Qualitative data confirmed that, during the COVID-19 pandemic, sanitation and hygiene facilities were more accessible due to relatively easy access to water at walkways, gateways, and building corners. Post-pandemic, handwashing facilities have largely been removed, and the existing toilets remain neither comfortable nor accessible for students with disabilities. Thus, access to water, healthcare, sanitation, and hygiene services has consistently been a critical risk factor for students.

5 Conclusions and Recommendations

The convenience and inclusivity of the physical environment and facilities in higher education institutions significantly impact educational outcomes.

They enhance social interaction among students and help build self-confidence for individuals with disabilities pursuing higher education. However, the study found that nearly all universities fail to adequately address the needs of students with disabilities regarding the physical environment and facilities. This lack of preparedness necessitates an inclusive planning approach aimed at developing and addressing the specific needs of these students. It is essential to implement effective risk management and risk minimization strategies to enhance their academic success and overall well-being. This is particularly crucial for students with visual and physical disabilities, who may face additional challenges in accessing educational resources and engaging fully in the learning environment. Mechado & Oliveira (2021) and Ntombela & Soobrayen (2013) support this finding, emphasizing that to ensure the right to inclusive education for students with disabilities, higher education institutions must create high-quality, inclusive physical learning environments that address and minimize physical barriers. To enhance such environments and facilities, universities should prioritize accessible infrastructure and involve students and other stakeholders in planning and decision-making processes.

The study also identified several risk factors that hinder students with disabilities from learning and moving freely on campus, including ramps, open drainages, walkway holes, inaccessible entrances, and poles on road curves across the six universities. Therefore, universities should adopt and implement inclusive universal design principles for infrastructure to ensure that all students can fully participate in their educational journeys. Addressing these issues requires collaboration among university administrations, funding NGOs, and local authorities to improve infrastructure and create a safer environment for all students.

During the COVID-19 pandemic, water supply and sanitation facilities were well-maintained and accessible to all students. However, after the pandemic was declared over as a global health emergency, water supplies and handwashing stations that had been available in every building and at every entrance were discontinued in many universities. This

change has raised concerns among students, particularly those with disabilities, regarding hygiene and health safety on campuses, including risks of typhoid, thapsus, and malaria. Universities should advocate for the reinstatement of these essential services to ensure a safe, secure, and clean environment for everyone.

Additionally, students with disabilities remain highly exposed to health risks due to limited access to water, sanitation, and hygiene services, which are particularly critical for female students. To improve educational outcomes, university administrations should ensure adequate water supply, sanitation, and hygiene facilities. Finally, the effects of inclusive WASH on the enrollment, attendance, and academic performance of students with disabilities warrant further investigation.

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The Practices and Challenges of Implementing Gender-based Affirmative Action in Public Universities of Ethiopia

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Abstract

Women constitute fifty percent of Ethiopia's population, yet their participation in higher education affairs is strikingly low. Thus, to redress past oppressive practices and address inequalities and discrimination, gender-based affirmative action is being practiced in higher education institutions. Therefore, this study was conducted to assess the status and challenges of implementing gender-based affirmative action in public universities of Ethiopia. To achieve this aim, five public universities, namely Dilla University, Hawassa University, Bule Hora University, Walayta Sodo University, and Madda Walabu University, were purposively selected. The necessary data for this study were gathered through three data collection instruments: questionnaires, interviews, and document analysis, from academic staff, gender office directors, and academic leaders (i.e., vice presidents, deans, and directors) of the universities. The data gathered were examined using both quantitative and qualitative analysis methods. Following the study, it was found that although the universities under investigation had gender-based affirmative action policies, they were not adequately implemented. Numerous barriers, such as socio-cultural factors, individual/self-factors (i.e., lack of self-confidence), and policy factors, have significantly affected their effective implementation. It was also recommended that, to increase the visibility of women in universities, preference should be given to deserving female academics through recruitment, scholarships, research grants, leadership positions, promotions, job transfers, and training through affirmative action. Moreover, the universities' leaders and other concerned bodies should make tireless efforts to alleviate, or at least minimize, obstacles that hinder the effective implementation of gender-based affirmative action.

1 Introduction

Modern globalization has led nearly every nation worldwide to adopt and adhere to international laws promoting gender equity and equality principles (Kaimenyi, Kinya, and Chege, 2013). Regionally, the Maputo Protocol, also known as the African Women's Protocol, was adopted in July 2003 in Mozambique by members of the African Union (AU). It mandates that signatory parties undertake affirmative measures to ensure women have the

same opportunities to engage in political life (Yasin, 2013). Ethiopia is a signatory to both global and regional gender equality conventions and has incorporated the provisions of these conventions into its Federal Constitution (FDRE Constitution, 1995). Particularly, Articles 25 and 35 of the Constitution of the Federal Democratic Republic of Ethiopia explicitly specify the rights of women.

As a measure to promote gender equity, affirmative action was incorporated into Ethiopia's education

and training policy in 1994, shortly after the EPRDF regime assumed power. To facilitate its practical application, the constitutional provisions on affirmative action have mandated that it be integrated into policies and laws, enabling implementation in particular situations (FDRE, 2015). Hence, as a means to compensate for past discrimination against women, affirmative action was also supported by university management. To do so, Ethiopia has established goals to enhance the presence of female academics in universities, aiming for them to constitute 20% of the academic staff by 2015. Despite this, women's representation in academic leadership in public universities is only 7.1%, which is far below the critical mass (30%) minimum threshold recommended (Gojjam and Singh, 2015). Therefore, the higher education gender imbalance is acute in virtually all universities in Ethiopia.

The absence of transparency and well-defined communication channels in executing this strategy was identified as a barrier to the effectiveness of the entire implementation process (Chitsamatanga, 2020). Moreover, from the researchers' experience, it is common to observe uneven implementation of gender-based affirmative action, which sometimes depends on the will and interest of the committees in charge of recruitment and selection, delegation to leadership, scholarship allocation, and research grant decisions. That is why women employees in Ethiopian higher education institutions are behind their male counterparts in terms of employment, leadership, access to scholarships, and competition for research grants (Education Strategic Center, 2015). Consequently, the Global Gender Gap Index (2013) ranked Ethiopia 118th out of 136 countries on the overall gender gap measurement.

There are scant research studies nationwide on gender-based affirmative action (GBAA), and this, coupled with the irregularity of its implementation, has not narrowed or halted the gender gap in enrolment, employment, and leadership in higher education institutions. Hence, there is a need for further research. This is the underlying reason that has motivated the researchers to conduct this study. Accordingly, this study aims to assess the status and challenges of implementing gender-based affirmative action for women academic staff in public

universities of Ethiopia. To this end, this research addresses the following research questions:

1. To what extent are gender-based affirmative action policies implemented to support women academic staff in public universities?
2. What are the challenges that impede the effective implementation of gender-based affirmative action for women academic staff in public universities?

2 Literature Review

2.1 Understanding Affirmative Action

Affirmative action is described as a policy aimed at redressing past injustices experienced by women, ethnic minorities, and other marginalized groups (Gu, McFerran, Aquino, & Kim, 2014). Likewise, Musingafi and Mafumbate (2014) characterize affirmative action as proactive measures to enhance the representation of women in employment and educational opportunities from which they have been historically barred. Consequently, affirmative action serves as a strategy for preventing and eradicating discrimination.

Sabbagh (2011) indicates that affirmative action policies encompass a wide range of areas and sectors, such as university or professional school admissions, employment opportunities, promotions, public contracts, business loans, as well as rights related to buying, selling, or utilizing land.

Affirmative action encompasses measures such as quotas, preferential employment practices, scholarships for minorities, diversity initiatives, reverse discrimination, positive discrimination, compensatory discrimination, protective discrimination, and reservation-based discrimination. All these seek to execute corrective measures and strategies that safeguard the interests of historically disadvantaged sections of society and bring them to participate with the rest of the population by ensuring equal opportunity (Selam, 2017). Therefore, gender-based affirmative action can be understood as policies and practices aimed at increasing opportunities for women and other minorities to address historical inequalities and discrimination.

2.2 The Rationale for GBAA in Universities

Gender-based affirmative action is implemented to promote equality and address historical and systemic disparities faced by women and gender minorities. It aims to create a level playing field in education, employment, and other areas by providing preferential opportunities. According to Bhopal (2013), gender-based affirmative action helps to reduce gender inequality and empower marginalized groups, fostering social justice and diversity.

Research indicates that such affirmative actions can positively influence gender parity among university instructors. For example, Klasen and Clots-Figueras (2018) highlight that gender quotas and affirmative policies can significantly strengthen women's representation in academia, leading to more diverse and inclusive educational environments. Additionally, researchers such as Joshi *et al.* (2015) emphasize that gender-based affirmative action can enhance the career progression of women in higher education, though it may also encounter resistance and challenges related to perceptions of fairness. Therefore, gender-based affirmative action in the context of university instructors aims to advance gender equality and overcome historical inequalities in academia. It encompasses strategies and procedures designed to elevate the representation of underrepresented genders, typically women, in faculty positions.

2.3 The Implementation of Gender-Based Affirmative Action

Ethiopia's adoption of gender-focused affirmative action has made significant progress, though challenges remain. Ethiopia has introduced a range of policies designed to enhance gender equality and boost women's involvement in political, economic, and social domains. The country has been acknowledged for its elevated level of female representation, which exceeded 30% in the Federal Parliament in recent years (Ethiopian Parliament, 2021). Both the government and civil society organizations have launched initiatives to enhance women's opportunities for education, employment, and leadership roles. Nonetheless, researchers point out that, despite these initiatives, gender disparities persist in rural areas, in specific sectors,

and within traditional social frameworks. Gaps in execution, cultural hurdles, and limitations in resources persist as challenges to fully achieving gender equality objectives (Abirha, 2020).

The application of gender-focused affirmative action in Ethiopian universities has also been a developing policy initiative aimed at advancing gender equality and enhancing women's involvement in higher education. Tsegaye (2018) highlights that Ethiopian universities have implemented affirmative action policies to enhance women's admission and involvement, but the actual implementation varies across institutions, with some making significant progress while others lag behind. Similarly, a report by the Ethiopian Higher Education Strategy (2017) notes that although gender parity has improved, there remains a gap in leadership and academic representation of women in Ethiopian universities.

2.4 Factors Affecting the Implementation of Gender-Based Affirmative Action

Recent research studies highlight that several key elements influence the effective implementation of gender-based affirmative action. Institutional factors, sociocultural factors, policy-related factors, and individual (self-imposed) factors can considerably affect gender-based affirmative action interventions. These factors influence how GBAA programs are designed, implemented, and received within communities.

2.4.1 Socio-cultural Factors

Regarding how this factor affects gender-based affirmative action, a study by Tarekegne (2018) found that deep-rooted cultural beliefs and societal norms often hinder the successful execution of gender-focused affirmative action policies in Ethiopian higher education institutions. Similarly, Kumar and Patel (2020) claim that cultural norms, beliefs, and practices shape perceptions of gender, impacting gender-based affirmative action. Bhopal *et al.* (2022) also emphasize the role of societal gender norms and stereotypes in shaping the success of affirmative action policies. They argue that deeply ingrained cultural attitudes can either facilitate or hinder gender equality initiatives.

2.4.2 Institutional Factors

Institutional structures and resources can also either facilitate or hinder GBAA efforts (Johnson & Smith, 2018). Similarly, Acker (2006) underscored that a lack of institutional support often results in superficial compliance rather than substantive change. He also argued that organizational cultures resistant to change undermine affirmative action initiatives. This finding also aligns with Kelleher and Miller (2000), who underscored that the presence of supportive institutional frameworks and clear policies facilitates GBAA implementation, while bureaucratic inertia and lack of clarity hinder progress.

2.4.3 Individual Factors

Individual (self-imposed) perceptions, awareness, and biases of women beneficiaries influence gender-based affirmative action outcomes (Liu & Martinez, 2021). Internalized gender stereotypes and low self-esteem can discourage women from pursuing opportunities (Bandura, 1991; Eagly & Wood, 2012). Women's willingness to challenge gender norms is also influenced by societal support and personal resilience. Consistent with these findings, Buchmann and DiPrete (2006) also found that opposition from women themselves, who view affirmative action as a threat to their status, can impede GBAA implementation.

2.4.4 Policy-Related Factors

Government policies and legal frameworks can support or restrict the implementation of gender-based affirmative action (UN Women, 2019). Clear, well-resourced policies with specific targets and accountability mechanisms are more effective. Conversely, policies lacking enforcement provisions or political will tend to be ineffective for the implementation of GBAA (Krook & O'Brien, 2012). Similarly, Moghadam (2005) underlined that robust legal provisions and policy clarity are necessary to legitimize and operationalize affirmative action and vice versa. Consistent with this, Basu (2010) found that legal frameworks that explicitly mandate gender equality and anti-discrimination laws can facilitate the adoption and enforcement of gender-based affirmative action policies.

As Archibong, Uduak, Utam, and Kingsley (2023) note, several obstacles have been recognized as hindering the adoption of gender-based affirmative action. Some of these challenges are shared across multiple countries, while others are specific to certain contexts. These obstacles encompass limited financial resources, reluctance among target groups to get involved, insufficient support from senior management and leaders, lack of backing from line managers, and significant resistance or skepticism from employees.

Another fundamental factor that affects women-based affirmative action is insufficient training in executing affirmative action programs (April & Govender, 2022). Furthermore, Okedele (2021) confirms that leadership in an organization influences how affirmative action is carried out. This means that if senior leaders are reluctant to follow the affirmative action policy, its enforcement may be hindered. Moreover, Archibong, Uduak, Utam, and Kingsley (2023) reported that a lack of support from colleagues, or opposition from management, who regard their equality obligations as mere formalities, presents significant barriers to engagement in affirmative action measures.

2.5 Gaps in the Literature

Various studies have been carried out on affirmative action for ethnic minorities, people with disabilities, religious minorities, and other beneficiaries to address historical inequalities. For instance, Yilma (2017) conducted a study on tokenism and the representation of ethnic minorities and found the overrepresentation of dominant groups within minority categories.

Alemu and Mekonnen (2020) conducted a study on disability and affirmative action in Ethiopia and found that efforts are being made to improve access and opportunities for persons with disabilities through affirmative action policies. Bekele (2018) also conducted a study on religious minorities and political inclusion in Ethiopia and found limited success due to socio-political challenges and resistance, although some positive steps have been observed. Despite this, little research emphasis has been placed on gender-based affirmative action for academic staff within universities. Therefore, this

research extends current knowledge by addressing the overlooked aspect of gender-based affirmative action implementation practices for women academic staff in higher education institutions.

2.6 Conceptual Framework

The following conceptual framework explains the key concepts and the dependent and independent variables and their interrelationships figuratively to help readers easily synthesize the central tenets of the study (Figure 1).

The below conceptual framework illustrates the re-

lationships between various independent variables and the dependent variable. In this context, the independent variables include socio-cultural factors, individual factors, institutional factors, and policy factors, which are hypothesized to influence the implementation of gender-based affirmative action. The framework posits that these independent variables collectively impact the effectiveness and extent of gender-based affirmative action implementation. Understanding these relationships helps identify key drivers and barriers, guiding strategies to enhance policy effectiveness and promote gender equality within institutional settings.

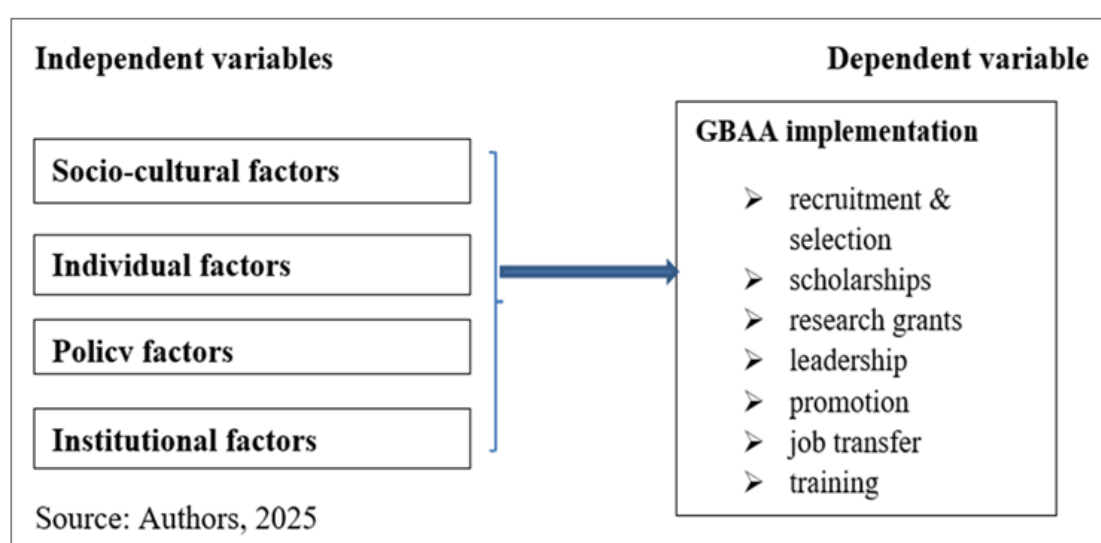


Figure 1: Conceptual Framework

3 Research Methodology

3.1 Research Approach

To enhance the validity of the research, this study utilized a mixed-methods approach (concurrent), which involves both quantitative and qualitative data. The rationale for using multiple approaches, as per Cresswell (2012), is to leverage the advantages of each method while compensating for their respective weaknesses, resulting in a deeper understanding of research issues than using either approach individually.

3.2 Research Design

In this study, both qualitative and quantitative data were collected simultaneously. Thus, a concurrent

parallel design was employed. Cresswell (2012) indicates that when we are dealing with the collection of both qualitative and quantitative data at the same time, we have to use a concurrent parallel design. Therefore, a concurrent parallel design, which allows qualitative and quantitative forms of data to be collected at the same time during the study, was employed, and these data were integrated (triangulated) during interpretation to arrive at a consolidated conclusion.

3.3 Data Sources

With regard to the sources of data, both primary and secondary data were utilized. The primary data were gathered using questionnaires and interviews from academic staff of the universities,

gender office directors, and academic leaders such as vice presidents, deans, and directors. Conversely, additional information was gathered via document analysis from university legislation, operational plans (i.e., quarterly, semi-annual, and annual plans), university-level strategic plans, minutes of the gender office, and the universities' quarterly, semi-annual, and annual performance reports.

3.4 Sample and Sampling Techniques

Five universities that are found within a near radius of Dilla University, where the researchers are employed (including Dilla University itself), namely Hawassa University, Bule Hora University, Walayta Sodo University, and Madda Walabu University, were included in this study.

The study utilized a combination of probability sampling, specifically proportional stratified random sampling, where participants were randomly chosen to minimize bias across various strata, and non-probability sampling, namely purposive sampling, to select participants who possess the essential information required for this research. Thus, sample academic staff of the universities were selected from all colleges and departments of the universities under study based on proportional stratified random sampling. Whereas gender office directors and academic leaders such as vice presidents, deans, and directors were selected deliberately because they are thought to be responsible for overseeing and coordinating activities pertaining to the implementation of gender-based affirmative action in their organizations. Thus, of the 6,544 academic staff of the universities under study, 372 respondents were selected based on proportional stratified random sampling.

3.5 Instruments of Data Collection

The data intended for this research were gathered using questionnaires, interviews, and document analysis. Quantitative data were collected via closed-ended questionnaires, while qualitative data were obtained through in-depth interviews, open-ended

questionnaires, and document analysis.

3.6 Validity and Reliability of the Instrument

The instrument's validity was checked through discussion with the gender office director of Dilla University, where the researchers are employed, and with experts in the Institute of Education and Behavioral Sciences of the university.

The pilot test method was used to measure the reliability of the questionnaire, and it was estimated using Cronbach's alpha coefficients. As a result, the internal consistency rating of the instrument was found to be 0.859, which is good.

3.7 Ethical Considerations

As research involving human participants requires careful consideration, ethical clearance was obtained from Dilla University. During the process of filling out the questionnaire, a good rapport was established with the participants to make them comfortable, and they were informed that participation was based on their consent and voluntariness. All the questionnaire and interview data were handled with strict privacy, ensuring the confidential nature of the responses, to which only the researchers had access.

3.8 Method of Data Analysis

After the data were collected through the three data collection instruments, they were analyzed using a mixed approach. The data obtained from the closed-ended questionnaires were analyzed quantitatively using SPSS version 23. Both descriptive statistics (such as frequency, percentage, mean, and standard deviation) and inferential statistics (such as independent sample t-tests and multiple linear regression) were used.

The data obtained through interviews, responses from open-ended questionnaire items, and document analysis were analyzed qualitatively through thematic analysis and quotation. Finally, the quantitative and qualitative data were triangulated to create a holistic picture of the study.

4 Results

Before analysis, the dataset was checked to determine whether it was free from violations of parametric assumptions such as normality, linearity, and homogeneity of variance. Thus, the assumptions were fulfilled.

4.1 Gender based Affirmative action policy and its implementation

Table 1: Availability of GBAA policy

	Items	Responses	Frequency (f)	Percentage (%)
1	Does the university you work in have affirmative action policy in place?	Yes	190	51.1
		Not sure	163	43.8
		No	19	5.1
		Total	372	100.0
2	Does your university formally communicate you about affirmative action policy of the organization	Yes	102	27.4
		Not sure	102	27.4
		No	168	45.2
		Total	372	100.0
3	Is there a continuous follow-up, monitoring and evaluation of gender based affirmative action implementation in your university?	Yes	66	17.7
		Not sure	223	59.9
		No	83	22.3
		total	372	100.0

In Table 1 above, 190 (51.1%) of the respondents confirmed that the university they work in had affirmative action policies in place, while 163 (43.8%) were not sure, and the remaining 19 (5.1%) respondents indicated that the university they work in did not have an affirmative action policy in place. When analyzing whether their university formally communicated this policy to them, the majority, 168 (45.2%), confirmed that it was not communicated, while 102 (27.4%) respondents confirmed

the reverse or were not sure, respectively. Furthermore, in the last item of the same table, the vast majority, that is, 223 (59.9%) of the respondents, were not sure if there was continuous follow-up, monitoring, and evaluation of gender-based affirmative action implementation, while 83 (22.3%) respondents indicated that it does not take place at all, and the remaining 66 (17.7%) indicated that this practice exists.

Table 2: Implementation levels of gender based affirmative action

S/n	Item	N	Mean	Standard Deviation
1	Hiring quotas	372	2.9651	1.1381
2	Scholarship	372	2.8629	1.16786
3	Research grants	372	2.957	1.13426
4	Leadership position	372	2.8038	1.14769
5	Staff promotion	372	2.7285	1.14404
6	Job Transfer	372	2.629	1.04457
7	On/off the job training	372	2.8656	1.15074
	Weighted mean	372	2.8303	0.8131

Scales: ≤ 1.49 = very low, $1.5 - 2.49$ = low, $2.5 - 3.49$ = average, $3.5 - 4.49$ = high, ≥ 4.5 = very high (Wade, 2006)

As demonstrated in Table 2 above, respondents were asked to what extent their universities take extra steps to apply/implement gender-based affirmative action using a rating scale. Accordingly, with regard to the implementation of areas of GBAA, it was found that special privileges such as hiring quotas, scholarships, research grants, leadership positions, staff promotion, job transfer, and on/off-the-job training were implemented at an average level, as indicated by the mean scores of 2.9651, 2.8629, 2.9570, 2.8038, 2.7285, 2.6290, and 2.8656, respectively. The overall mean score for the implementation of gender-based affirmative action, 2.8303, also indicates that it is implemented at an average level.

The result of the interview was also consistent with

the above findings. In this regard, a sample reflection from one dean/principal is quoted as follows:

“Knowingly or unknowingly, gender policies pertaining to women’s affirmative action are not properly implemented to the extent required. The purpose of the policy and guidelines seems to be insufficiently understood or is being interpreted incorrectly by the officers responsible for implementation. Additionally, there is a lack of uniformity in how the policy is applied (i.e., sometimes it is implemented, and at other times it receives no attention). Therefore, the GBAA policies pertaining to females’ leadership seem to have only paper value, though they are reported by higher officials as if they are effectively implemented.”

Table 3: Comparisons of male and female staffs on the implementation of gender based affirmative action

S/n	Items	Gender	N	Mean	SD	T	Df	p-value
1	Implementation of GBAA policy	males	289	2.8596	0.84996	1.489	166.93	0.138
		Females	83	2.7281	0.66357			

P value < 0.05 = statistically significant, p value > 0.05= statistically not significant

As demonstrated in Table 3 above, the mean score (M = 2.8596, SD = 0.84996) of male respondents and (M = 2.7281, SD = 0.66357) of female respondents confirmed that the GBAA policy was implemented at a moderate level. Concerning the result of the independent sample t-test, $t(166.93) = 1.489$, $p = 0.138$, it indicates that there was no statistically significant difference in the mean scores between male and female respondents.

Table 4: Comparisons of leader & non-leader respondents on the implementation of gender based affirmative action

S/n	Items	Leadership status	N	Mean	SD	T	Df	p-value
1	Implementation of GBAA policy	leaders	174	2.9269	0.82225	2.226	370	0.029
		Non-leaders	198	2.7383	0.80067			

P value < 0.05 = statistically significant, p value > 0.05= statistically not significant

As shown in Table 4 above, the mean score (M = 2.9269, SD = 0.82225) of leader respondents and (M = 2.7383, SD = 0.80067) of non-leader respondents confirmed that the GBAA policy was implemented at a medium level. Regarding the result of the independent sample t-test, $t(370) = 2.226$, $p = 0.029$, indicating that there was a statistically

significant difference in the average responses between the leaders and non-leader respondents on the implementation of GBAA. The difference between the reflections of leader and non-leader respondents might be because leader respondents tend to report more positively about their achievement in implementing GBAA.

4.2 Factors affecting the implementation of gender based affirmative action

Table 5: Model summary of multiple regressions

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.251 ^a	0.063	0.053	0.79125

a. Predictors: (Constant), socio-cultural factors, institutional factors, individual factors, policy factors

The model summary in Table 5 above showed that approximately 5.3% of the variance in the dependent variable (GBAA) is explained by the combination of the four independent variables (socio-cultural factors, institutional factors, individual factors, and policy factors).

Table 6: Model fit (ANOVA)

ANOVA ^a					
Model		Sum of Squares	Df	Mean Square	F Sig.
1	Regression	15.514	4	3.879	6.195 .000 ^b
	Residual	229.768	367	0.626	
	Total	245.282	371		

a. Dependent Variable: GBAA implementation

b. Predictors: (Constant), socio-cultural factors, institutional factors, individual factors, policy factors

The regression model was statistically significant, $F(4,367) = 6.195, P < 0.001$, indicating that the predictors collectively explain a significant proportion of the variance in GBAA (Table 6).

Table 7: Significance of the effect

Model		Coefficients ^a			T	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	2.842	0.214		13.269	0
	institutional factors	0.032	0.074	0.029	0.426	0.671
	individual factors	0.144	0.064	0.136	2.267	0.024
	policy factors	0.295	0.072	0.296	4.117	0
	socio-cultural factors	0.126	0.056	0.138	2.275	0.023

a. Dependent Variable: GBAA implementation

As demonstrated in Table 7, institutional factors have no significant effect on the implementation of gender-based affirmative action, $t(367) = 0.426, p = 0.671$; individual factors have a significant effect on the implementation of gender-based affirmative action, $t(367) = 2.267, p < 0.05$; policy factors have a significant effect on the implementation of GBAA, $t(367) = -4.117, p < 0.05$; and socio-cultural factors have a considerable impact on the execu-

tion of GBAA, $t(367) = 2.275, p < 0.05$. Thus, of the four independent variables, three of them, that is socio-cultural factors, individual (self-factors), and policy factors, significantly affected the execution of GBAA at a 0.05 criterion of statistical significance.

In the interview in this regard, the academic vice president of one of the universities under study re-

vealed the main obstacles that inhibit the operation of GBAA as follows:

“The barriers that affect the implementation of GBAA are not attributed to a single factor. They are multifaceted in nature: lack of coordination, lack of planning, monitoring and evaluation on the implementation of GBAA, lack of aspiration from the women themselves to be beneficiaries of their right of affirmative action, lack of institutional commitment to implement gender-based affirmative action policy, and lack of awareness on the implementation of GBAA, etc., are some of the bottlenecks of GBAA implementation.”

5 Discussion

Although it was not formally communicated to the staff, the universities under study had gender-based affirmative action policies. Similar results have been reported by Teshome (2019), who found that Ethiopian universities have increasingly adopted affirmative action policies aimed at promoting gender equality, recognizing the historical underrepresentation of women in higher education. The failure to formally communicate the GBAA policy to staff in this study is inconsistent with the suggestion of Tesfaye and Mekonnen (2020), who reported that in Ethiopian universities, the success of gender-based affirmative action depends significantly on how well the policies are communicated and understood by all staff members.

It was also found in this study that respondents were not sure whether ongoing monitoring, evaluation, and follow-up of gender-based affirmative action were practiced in their university or not. This contradicts the suggestion of Tesfaye and Alemu (2019), who underscored that monitoring and evaluation serve as critical tools to measure the impact of gender-based affirmative actions and promote accountability within Ethiopian higher education institutions.

It was identified that, despite the constitutional provisions (special privileges) of the GBAA policy, it was not effectively implemented. This is reminiscent of findings reported by Abebe (2021), who demonstrated that despite policy efforts, the implementation of gender-based affirmative action

faces challenges rooted in cultural norms and institutional practices. Similarly, a report by the Ethiopian Higher Education Strategy (2017) notes that although gender parity has improved, there remains a gap in leadership and academic representation for women.

Individual (female self-imposed) factors, socio-cultural factors, and policy-related factors significantly affected the implementation of GBAA. The way each factor determines the implementation of GBAA aligns with the findings of different researchers. Tarekegn (2018) found that deep-rooted cultural beliefs and societal norms hinder the successful execution of gender-focused affirmative action policies in Ethiopian higher education. This finding is also consistent with Kumar and Patel (2020), who found that cultural norms, beliefs, and practices shape perceptions of gender, impacting gender-based affirmative action. With regard to the impact of policy-related factors on GBAA, this finding also aligns with UN Women (2019), who stated that government policies and legal frameworks can support or restrict GBAA. Similarly, it is consistent with Krook and O'Brien (2012), who underscored that policies lacking enforcement provisions or political will tend to be ineffective in the implementation of GBAA. The finding also aligns with Kelleher and Miller (2000), who underscored that the presence of supportive institutional frameworks and clear policies facilitates GBAA implementation, while bureaucratic inertia and lack of clarity hinder progress. Moreover, with regard to how individual (female self-imposed) factors affect GBAA implementation, Buchmann and DiPrete (2006) found that opposition from women themselves who view affirmative action as a danger to their status can impede GBAA implementation. Buchmann and DiPrete (2006) further added that opposition from women groups that perceive affirmative action as a threat to their status can impede GBAA implementation.

6 Conclusion

The purpose of this study was to determine the extent to which gender-based affirmative action policies are implemented to support women academic staff in the public universities under study and

to identify the challenges that impede the effective implementation of gender-based affirmative action for women academic staff in the public universities. Therefore, the following conclusions were drawn:

- Policies supporting affirmative action were implemented in the universities under study. However, these policies were not formally communicated to university staff. Additionally, it was unclear whether ongoing monitoring, evaluation, and follow-up were in place to determine the reasons behind the positive and negative outcomes of gender-based affirmative action practices and activities.
- Despite the international and national campaign for the implementation of GBAA, it was found that constitutional provisions (special privileges) of GBAA such as hiring quotas, scholarships, research grants, leadership positions, staff promotion, job transfer, and on/off-the-job training were not implemented at the expected level. Thus, effective implementation of these areas of GBAA demands further intervention.
- Numerous variables, including individual (female self-imposed) factors, sociocultural factors, policy-related factors, lack of coordination, lack of planning, monitoring and evaluation, and lack of awareness, affected the effective implementation of GBAA. For GBAA to be implemented effectively, it is necessary to make coordinated efforts to alleviate these obstacles.

Recommendations

The researchers recommend the following actions to be taken by concerned bodies to ensure the effective implementation of GBAA:

- To enhance the visibility of women in universities, it is important to implement practices that prioritize deserving female scholars by offering opportunities in recruitment, scholarships, research funding, leadership roles, promotions, job transfers, and training initiatives through affirmative action.
- Universities should make persistent efforts to increase understanding and shift the perspec-

tives of their community regarding gender-based affirmative action through extensive and ongoing campaigns, advocacy, education, conferences, workshops, and similar initiatives.

- University leaders and other relevant authorities should work tirelessly to reduce or at least minimize the hurdles that obstruct the effective implementation of GBAA.
- There should be ongoing monitoring of the implementation of constitutionally mandated GBAA measures to guarantee women's equality in all organizational activities.
- The Ministry of Education should develop a uniform set of guidelines for implementing GBAA across all higher education institutions.
- There should be a mechanism whereby leaders in charge of overseeing and coordinating GBAA are held accountable for failures in implementation.

Limitations

Although the concept of affirmative action is broader in scope and includes special provisions made for specific groups, including women, individuals with disabilities, and members of minority ethnic communities (i.e., emerging regions), this study was limited to examining gender-based affirmative action practices given to women academic employees of the universities under study. Therefore, future research studies should conduct a comprehensive investigation that addresses all beneficiaries of affirmative action. Moreover, this study was conducted to assess GBAA practices only in public universities. Thus, future studies should consider private universities as well. Although there are many variables that affect the effective implementation of GBAA, this study tested only some of them in the multiple regression model. Thus, future studies should test other variables that may affect GBAA in addition to those included in this study.

Future Research Directions

- The same study should be conducted by other researchers with a wider scope and depth that

incorporates a large sample of universities and all aspects of affirmative action.

- A comparative study should be conducted on the commonalities and differences in implementing GBAA across research universities, applied universities, and comprehensive universities.
- A comprehensive research study that considers all factors affecting GBAA should be conducted.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

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Data Availability Statement

The authors will supply data upon justified request.

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Effect of Slide Projector-assisted Classroom Instruction on Students' Exam Scores in a One-Group Quasi-experimental Study

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Abstract

This study aims to examine the role of slide projector-assisted classroom instruction in enhancing students' achievement. A quasi-experimental design was employed, including 21 psychology students at Dilla University. Using a Bayesian paired-sample t-test and Bayesian ANCOVA tests, the findings show that there is a statistically significant improvement in the posttest scores, with a moderate effect size (Cohen's $d = 0.50$). The sensitivity analysis further confirmed that the finding was robust. The findings suggest that slide projector-assisted instruction is an effective and reliable approach for enhancing academic achievement.

1 Introduction

This study was grounded in the argument that when comprehensive instructional materials are adequately provided, students' academic achievement may reflect their independent engagement, such as study behaviors, rather than instructional methods (McKeachie, 1963, as cited in Dunkin, 2006). Under such conditions, students may even be capable of compensating for suboptimal or ineffective teaching approaches. Despite the potential efficacy of self-directed learning, higher education institutions continue to allocate substantial resources to teaching roles, reflecting persistent institutional prioritization of instructor-led pedagogy (Kimbrel, 2019; Maynes & Hatt, 2015). Ethiopian universities, including Dilla University, are not exceptions to this trend, as they invest significantly in instructional staffing and infrastructure.

It has long been believed that improving learner outcomes requires effective teaching. As a result, educational institutions spend many resources employing qualified teachers (Kimbrel, 2019; Maynes & Hatt, 2015). Interestingly, few systematic assessments of how lecture-based approaches especially

affect academic attainment exist. By conducting an empirical evaluation of the effectiveness of slide projector-assisted lectures in a university setting, this study seeks to address this gap.

The lecture method continues to be one of the most frequently used instructional methods at all educational levels worldwide, despite a variety of pedagogical approaches (Yu & Liu, 2008). Using chalkboards, whiteboards, or projector displays, this conventional method presents ideas, facts, concepts, and generalizations orally. It basically consists of a thorough, instructor-led presentation of the course material. However, detractors frequently describe this approach as spoon-feeding, in which students take on a passive role in learning (Umoren, 2001; Vincent & Akpan, 2014). Research showing that this one-way transmission model has little effect on long-term retention highlights its shortcomings; Bales (1996) reported that only approximately 5% of the material presented in typical lectures is retained over time.

Effective learning necessitates active student involvement with content, demonstrations, and real-

world applications—elements that are frequently lacking in traditional lecture forms, according to contemporary educational theory (Bernstein & Nash, 2008). Classroom instruction can be presented through a variety of modalities, such as PowerPoint slides, chalkboard presentations, or oral discourse. Despite its widespread use, very few thorough empirical studies have examined how this instructional method actually affects students' learning outcomes in contexts in which adequate learning materials are provided. This study focuses on slide projector-assisted classroom instruction, a technique commonly used in university settings (Umoren, 2001; Vincent & Akpan, 2014), including Ethiopian higher education institutions.

An Experimental Psychology (Psyc-2035) course was chosen to examine these dynamics, and the students were given complete course materials for independent study and evaluation. As part of reflective teaching practice, the course instructor (corresponding author) administered the study via an action research framework (Kemmis & McTaggart, 2005). This strategy made it possible to evaluate how slide projector-assisted classroom instruction and organized learning resources interact to influence student outcomes iteratively. Therefore, on the basis of the aforementioned evidence, the following hypothesis was developed.

H₁: Slide projector-assisted classroom instruction significantly improves students' exam scores.

The directional hypothesis is also consistent with current pedagogical studies on the effectiveness of visually aided instructional methods in improving learning outcomes (Clark & Mayer, 2016; Mayer, 2009) and the cognitive theory of multimedia learning (Mayer, 2014), which holds that learning is improved when verbal and visual information are presented in coordinated, meaningful ways. It also acknowledges ongoing discussions in educational psychology about the relative efficacy of various instructional modalities (Kozma, 1991; Clark, 1994) and is consistent with action research principles that emphasize the methodical investigation of teaching interventions (Stringer, 2014) and standard hypothesis testing procedures in educational research (Creswell, 2012).

2 Methods

2.1 Research Design

Assuming the number of participants, we employed a one-group pretest–posttest quasi-experimental design. Internal validity, history effects, and practice effects are known threats associated with this research design (Knapp, 2016; Spurlock, 2018). However, total population sampling and systematically designed time intervals between pre- and posttests can mitigate selection bias and testing effects, respectively (Brown *et al.*, 2008). The latter also accounts for participant history and maturation effects (Knapp, 2016; Spurlock, 2018).

2.2 Participants and Sampling

Twenty-one psychology students (9 male, 12 female) participated in both the pretest and posttest studies. The project was administered in the 2021–22 academic year. The Experimental Psychology (Psyc-2035) course was selected. Given the principal investigator's dual role as a course instructor and researcher, the study aligns methodologically with action research paradigms, wherein pedagogical practice and systematic inquiry are integrated to enhance educational outcomes (Stringer, 2014). All the students enrolled in the target cohort (Year II, Semester I) were involved.

2.3 Intervention

For the intervention, we prepared a 30-page slide. Three weeks after the PDF reading material was distributed, we conducted a pretest. As a result, the students were able to have adequate time for individual study and exam preparation. On the basis of the content provided in the material, the participants took a pretest. Following that, they participated in a structured three-hour slide projector-assisted instruction, which was in line with conventional instructional techniques used in academic settings.

Forty-three days after the pretest, the same exam was administered. This time frame was deliberately chosen to minimize possible testing effects while providing enough time to assess knowledge retention. This interval allows the examination of sustained information acquisition as opposed to short-term memorization and is consistent with

accepted cognitive science perspectives (Bjork & Bjork, 2011). It also allows for the measurement of long-term learning retention while effectively mitigating recall bias (Brown *et al.*, 2014).

2.4 Measures

A 20-item multiple-choice test (each with four response options) midterm exam was developed in accordance with standard assessment procedures (table of specification method), making up 30% of the course evaluation. The instructor methodically selected these items from a randomly chosen course chapter. The multiple-choice item format was chosen because of its proven impartiality and ability to reduce subjectivity (Gupta *et al.*, 2021). The items were thoroughly examined by subject matter specialists in educational assessment and evaluation to guarantee psychometric quality. They evaluated the items' cognitive difficulty levels and content suitability. For additional analysis, participant background variables such as sex, weekly study hours, and cumulative grade point average (CGPA) were recorded.

2.5 Data Collection Procedures

Identical test administration protocols across both assessments, including timing, classroom conditions, and examination procedures, were followed. On October 10, 2022, from 9:00 AM to 10:35 AM, baseline data were collected. Forty-three days later, posttest data were gathered on November 22, 2022, from 9:00 AM to 10:35 AM.

Table 1: Descriptive statistics of pre-post scores

	N	Mean	SD	SE	95% Credible Interval	
					Lower	Upper
Pretest score	21	14	6.55	1.43	11.1	17
Posttest score	21	18.6	6.7	1.46	15.5	21.6

The Bayes factor ($BF_{10} = 4.68$) indicates moderate evidence (Lee & Wagenmakers, 2003, revision of Jeffreys, 1961) in favor of the alternative hypothesis (i.e., a true mean difference exists between the pretest and posttest). The data were 4.68 times more likely under the alternative hypothesis (dif-

2.6 Data Analysis

We used Jeffrey's Amazing Statistics Program (JASP-0.9) for data analysis. Both the Bayesian paired-sample t-test and Bayesian analysis of covariance (ANCOVA) were performed. The tests provide a Bayes factor that quantifies evidence for or against a hypothesis, providing a more nuanced interpretation than p-values alone, and their confidence intervals (CIs) can be more informative because they reflect the probability that the parameter is within a specific range (Cleophas & Zwinderman, 2018; Fritz & Berger, 2015). They also allow the inclusion of prior beliefs or data, which can improve the analysis, particularly in a small sample size, such as the present study.

3 Results

3.1 Participants' Sociodemographic Characteristics

A class of 21 students (12 females and 9 males) participated in both the pretest and posttest measurements. As indicated in Table 1, the pretest mean (14.0, SD = 6.55) versus posttest mean (18.6, SD = 6.70) shows that the posttest scores were higher on average, suggesting an improvement after the slide projector-assisted classroom instruction. The 95% credible intervals (pretest: [11.1, 17.0]; posttest: [15.5, 21.6]) do not overlap, reinforcing a likely meaningful difference.

ference exists) than under the null hypothesis (no difference). The error percentage (0.00%) suggests high computational reliability (Table 2). Furthermore, the graphical display of the means associated with the 95% credible interval in Figure 1 suggests that this difference was statistically meaningful.

3.2 Bayesian Paired Samples test Analysis

Table 2: Bayesian Paired Sample t test Statistics

	BF ₁₀	error %
Pretest score - Posttest score	4.68	0.00

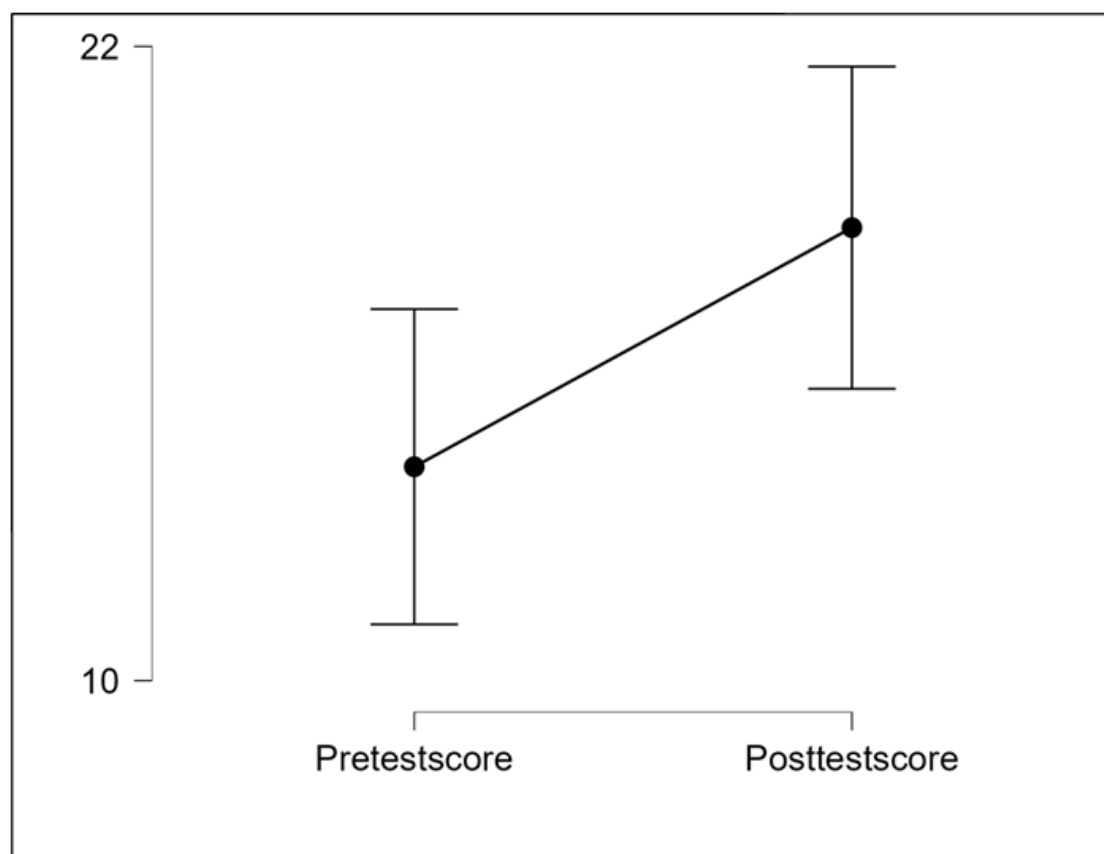


Figure 1: Bayesian Paired Sample test Plot

A Bayes factor robustness check in Figure 2 indicates that the BF remains stable ($BF_{10} = 3.33\text{--}4.94$) across different prior widths, suggesting that the result was robust to prior specifications and in favor of the alternative hypothesis. This strengthens confidence in the conclusion. The Cohen's d was 0.50 (moderate effect) (Figure 2), with a 95% credible interval of $[-1.01, -0.12]$ (Figure 3). The negative sign indicates that the posttest mean was higher, since the analysis computed pretest minus posttest. The interval excludes zero, supporting a statistically meaningful effect (Cohen, 1988). The

result is interpreted as the average score of students' exam scores after a slide projector-assisted lecture being 0.5 standard deviations greater than the average score of students before the lecture. On the other hand, the average score of students before the lecture was 0.50 standard deviations lower than the average exam score after the lecture, hence exceeding the scores of 50% of students' scores in the pretest (Cohen, 1988). Generally, we accepted the research hypothesis that states that classroom instruction via the slide projector-assisted method significantly improves students' exam scores.

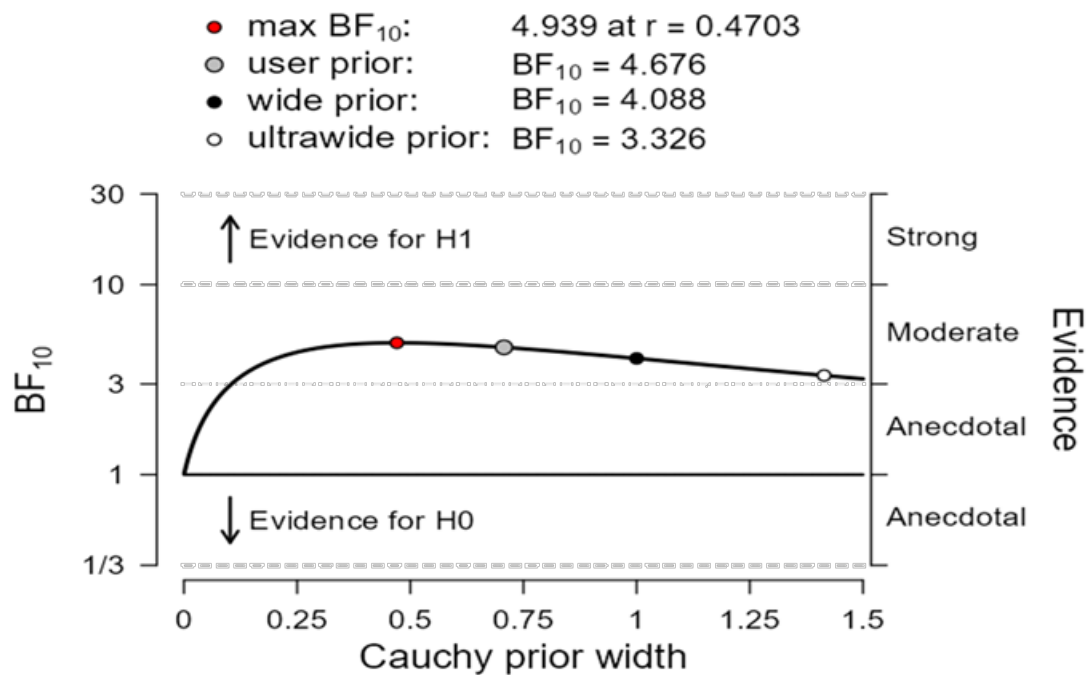


Figure 2: Bayes Factor Robustness Check

The posterior distribution was shifted away from the prior (default Cauchy prior, $r = 0.707$), confirming that the data strongly update beliefs toward a nonzero effect. Visual alignment with higher posttest scores supports the intervention's efficacy (Figure 3).

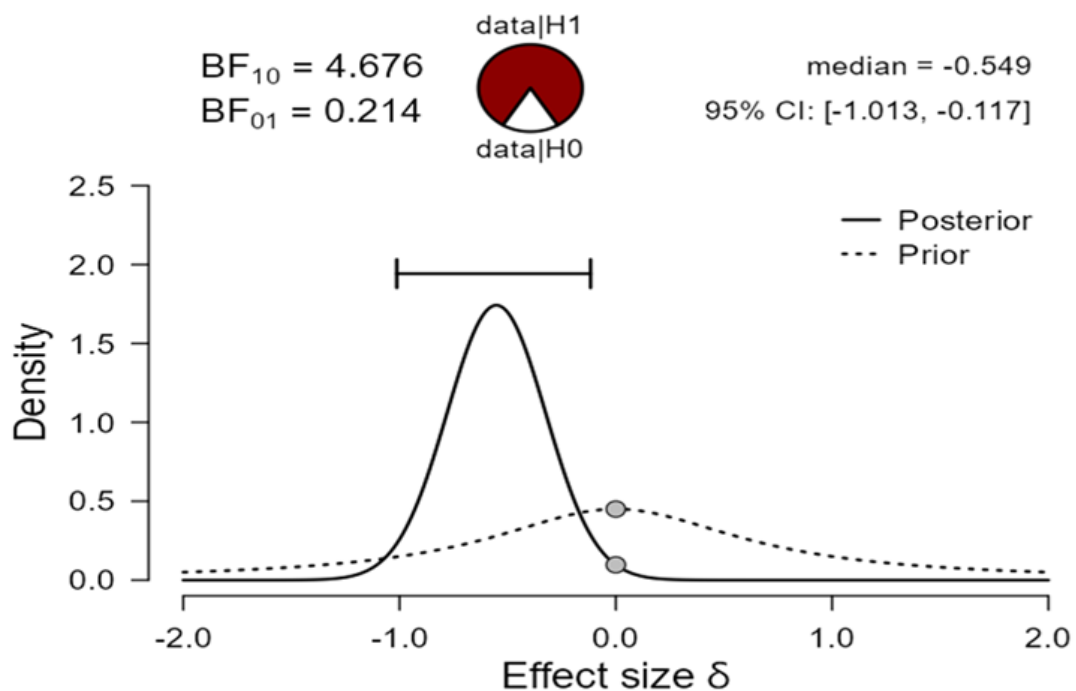


Figure 3: Prior and Posterior Plots

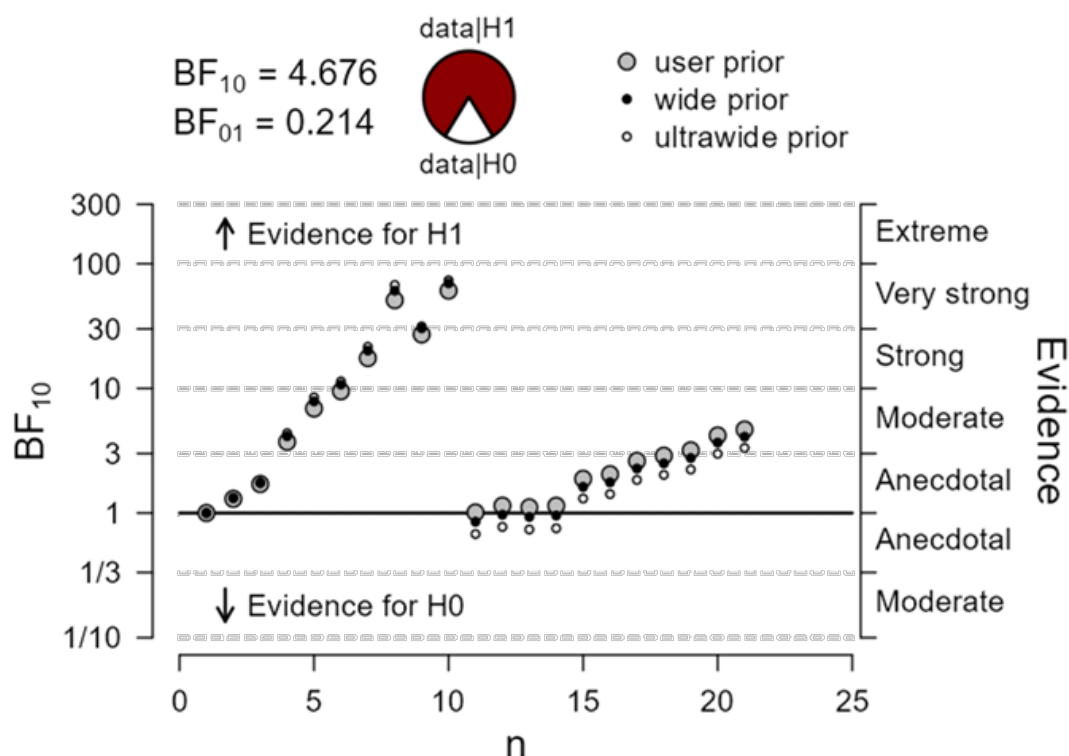


Figure 4: Sequential Analysis

Figure 4: The x-axis represents the number of observations (sample size) or the order of data collection, and the y-axis represents BF_{10} , indicating the strength of evidence for the alternative hypothesis over the null hypothesis. Initially, with small sample sizes, the BF fluctuates markedly, as each new data point has a large impact, indicating that the initial evidence lacks stability. As the sample size increases, the BF stabilizes toward a consistent value (e.g., approaching $BF = 4.68$ in earlier results), indicating that the final BF is robust and representative of the true effect.

3.3 Bayesian Covariance Analysis

As shown in Table 3, multiple model comparisons were made to determine the best model that explains the posttest data. A combination of variables, including the pretest score, sex, study hours, and CGPA, was included in each model. Prior probability of the model ($P(M)$) (all models start with equal priors, 0.06, since there are 16 possible combinations of four predictors). The posterior probability of the model given the data ($P(M|data)$). Higher values indicate better support from the data. Bayes

factor for the model (BFM) compared with the null model. Values > 1 favor the model over the null model. BF comparing the model to the null model (BF_{10}). Values > 1 suggest that the model is more likely than the null model. Estimation error (error %) for the BF (a lower value is better).

The findings indicate the top models (highest $P(M|data)$): pretest score + study hours: strong support ($P(M|data) = 0.28$, $BFM = 5.84$). Pretest score + sex + study hours, additionally, was well supported ($P(M|data) = 0.24$, $BFM = 4.67$). These models were 5–6 times more likely than the null model ($BFM > 1$).

Weak models show that models with sex or CGPA alone perform poorly (e.g., sex: $P(M|data) = 0.02$, $BFM = 0.23$). The null model was outperformed by most models but was still a baseline reference. This means that the pretest score and study hours are the most important predictors, especially when they are combined. Sex and CGPA have little explanatory power unless they are combined with other variables.

Table 3: Bayesian ANCOVA Model Comparison Posttest Score

Models	P(M)	P(M data)	BF _M	BF ₁₀	error %
Null model	0.06	0.039	0.61	1.00	
Pretest score	0.06	0.05	0.70	1.15	0.00
Sex	0.06	0.02	0.23	0.4	0.00
Pretest score + Sex	0.06	0.02	0.28	0.48	0.74
Study hours	0.06	0.03	0.45	0.75	0.00
Pretest score + Study hours	0.06	0.28	5.84	7.21	0.00
Sex + Study hours	0.06	0.01	0.18	0.31	1.21
Pretest score + Sex + Study hours	0.06	0.24	4.67	6.10	0.63
CGPA	0.06	0.02	0.33	0.56	0.00
Pretest score + CGPA	0.06	0.02	0.33	0.55	0.00
Sex + CGPA	0.06	0.01	0.13	0.21	1.01
Pretest score + Sex + CGPA	0.06	0.01	0.14	0.23	0.98
Study hours + CGPA	0.06	0.04	0.54	0.90	0.00
Pretest score + Study hours + CGPA	0.06	0.12	2.06	3.106	0.00
Sex + Study hours + CGPA	0.06	0.02	0.25	0.413	0.86
Pretest score + Sex + Study hours + CGPA	0.06	0.09	1.52	2.364	0.80

Table 4 shows the importance of individual predictors across all the models. P(incl): prior inclusion probability (0.5 for all, assuming equal chance). Posterior inclusion probability given the data (P(incl|data)) of higher values indicates stronger evidence for the predictor's importance. The Bayes factor for including the predictor (BF_{Inclusion}) values > 1 suggests that the predictor should be included. Therefore, the strong predictors include the pretest score: P(incl|data) = 0.82, BF = 4.67, and study hours: P(incl|data) = 0.82, BF = 4.63, which show very strong evidence for inclusion. The weak predictors include sex: P(incl|data)

= 0.41, BF = 0.69, and CGPA: P(incl|data) = 0.32, BF = 0.48, both showing weak evidence or favoring exclusion. This means that the pretest score and study hours were critical for explaining the posttest score. Sex and CGPA were less important and may be omitted unless theoretically justified. Therefore, the best model for predicting the posttest score includes the pretest score plus study hours. Adding sex or CGPA to the model did not significantly improve the predictions. Only the pretest score and study hours strongly predict and show consistent evidence of inclusion, suggesting that both variables affect students' exam scores.

Table 4: Analysis of Effects – Posttest Score

Effects	P(incl)	P(incl data)	BF _{Inclusion}
Pretest score	0.5	0.82	4.67
Sex	0.5	0.41	0.69
Study hours	0.5	0.82	4.63
CGPA	0.5	0.32	0.48

4 Discussion

The effect of slide projector-assisted classroom instruction on students' exam scores was examined. The pretest and posttest data were compared, and the posttest scores were significantly improved over the pretest scores in a sample of twenty-one students. The 95% CIs for the pretest and posttest did not overlap, suggesting a significant difference between the two situations (Kruschke, 2015). The quantitative learning benefits are strengthened by the use of slide projectors in classroom instruction.

4.1 Bayesian t-test for Paired Samples

According to the Bayesian paired-sample t-test analysis, the results were 4.68 times more likely under the hypothesis that posttest scores were higher than under the null hypothesis of no difference. This indicates that a real mean difference was detected between the pretest and posttest scores. The presence of an effect was supported by moderate evidence. An extremely low error percentage further validates computational reliability, as per Lee and Wagenmakers's (2013) interpretation of Jeffreys's (1961) classification.

A moderate effect size was indicated by the estimated Cohen's d (Cohen, 1988). This shows that students' posttest values exceeded 50% of the pretest distribution. According to Cohen's U_3 convention, this implies a significant improvement in academic achievement, since the average posttest score was higher than 69% of the pretest scores. This finding was consistent with the existing educational research literature that highlights how effectively visual aids improve learning outcomes (Mayer, 2009).

4.2 Sensitivity and Robustness Evaluations

The Bayes factor robustness result shows that the BF_{10} remains between 3.33 and 4.94 for different prior widths. This implies that the outcome was resilient to modifications in prior specifications, increasing confidence in the findings (Kass & Raftery, 1995; Rouder *et al.*, 2012). The Bayes factor was utilized in a sequential analysis over progressively increasing sample sets. Confidence in the effect was increased by the convergence of BF_{10} at approximately 4.68 with increasing sample size, which

implies that early fluctuations did not influence the outcome (Schönbrodt *et al.*, 2017). This suggests that the BF_{10} levels vary as a result of early sample addition due to the high sensitivity to initial data. However, BF_{10} stabilizes around the final estimate (4.68) as the sample size increases, indicating that the outcome is stable and indicative of a real effect (Rouder *et al.*, 2009). The observed data also strongly suggest a nonzero effect, as evidenced by the posterior distribution shifting away from the prior distribution (default Cauchy prior, $r = 0.707$). The effect of instruction on student achievement was highlighted by this visual proof.

4.3 Bayesian Covariance Analysis

We compared many models that use posterior model probabilities and Bayes factors to predict posttest scores. The null model (intercept-only) has a posterior probability, $P(M|data) = 0.04$, and a Bayes factor $BFM = 0.61$, indicating weak evidence against it compared with the best-performing models (Rouder *et al.*, 2012).

The model that combines the pretest score plus study hours has the highest posterior probability ($P(M|data) = 0.280$) and a substantial Bayes factor ($BFM = 5.84$), suggesting strong evidence in favor of this model (Kass & Raftery, 1995). The full model (pretest score plus sex plus study hours) also performs well ($P(M|data) = 0.24$, $BFM = 4.67$), reinforcing the importance of these predictors.

Models including sex or CGPA alone have low posterior probabilities ($P(M|data) < 0.05$) and Bayes factors ($BFM < 0.5$), indicating minimal explanatory power. With respect to the error rates, most models exhibit low estimation errors ($< 1\%$), except for those including sex, which show greater variability (with an error of up to 1.2%).

Study hours and pretest results were found to be significant predictors of posttest exam achievement. This finding is in line with those of previous studies. Credé and Kuncel (2008) and Schneider and Preckel (2017), for instance, identified prior achievement and study habits as significant determinants of students' academic performance. Sex and CGPA seemed to have less of an impact on the posttest score. According to Jeffreys (1961), thresholds

and Bayes factors greater than three were regarded as moderate evidence, whereas those greater than ten were regarded as strong evidence. Only the pretest score plus study time met this requirement in this case. Further research is necessary, since the significant error rates for sex-based models point to possible multicollinearity or measurement noise.

Limitations

First, the sample size was small, warranting caution regarding external validity. Therefore, replication with a larger sample size is needed. Second, it lacks randomization and comparison groups, which restricts the ability to draw strong causal inferences. Without a comparison group, it is difficult to know whether changes were due to classroom instruction or other factors (e.g., maturation, historical events). To mitigate such potential knowledge-sharing behaviors, two dichotomous (yes/no) items were administered. These were: Did you discuss answers to the pretest questions with peers? and Did you discuss potential posttest content with classmates prior to the examination? These items were designed to evaluate the extent of interstudent information exchange regarding assessment content across testing phases. The participants gave “no” responses for both items. Finally, the lack of alternative instructional methods for comparison limits the generalizability of the findings to other instructional approaches.

5 Conclusion

Slide projector-assisted classroom instruction significantly improves students’ achievement. Pretest scores and study hours significantly predicted posttest achievement. The model with these variables provides the strongest explanatory evidence. Overall, we conclude that even with sufficient provision of instructional materials, students’ academic achievement may not accurately reflect their autonomous engagement with the content; rather, it may also reflect methods of instruction, particularly those that use slide projectors.

Ethical Statement

The study was conducted in accordance with the ethical standards of research involving human participants and the Helsinki Declaration of 2008.

The study’s purpose was explained, and written informed consent was obtained from each participant prior to participation. Participation was voluntary. All the data were kept confidential, and no personal identifiers were reported. The instructional activities related to the lecture intervention were conducted independently prior to the regular class schedule, and all collected data were used solely for research purposes.

Declarations

Ethical Approval

Ethical approval was not required for this study in accordance with institutional guidelines, because the study involved routine educational practices and did not collect sensitive personal data.

Consent to Participate

Written informed consent was obtained from all participants prior to their inclusion in the study.

Consent to Publish: Not applicable.

Data Availability

Data are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare that they have no competing interest.

Article Preparation

Springer Nature CURIE and GPT-5 were used solely for language editing. The authors take full responsibility for the manuscript’s content.

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Indigenizing and Decolonizing Ethiopia's Education System: Pathways to Quality and Inclusive Education in the 21st Century

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Abstract

Education is crucial to the development of social values, knowledge formation, and identity construction. However, the major challenge faced by many post-colonial education systems, including Ethiopia, has been the extreme domination of Western models with little recognition of indigenous knowledge systems. The main objective of this study was to analyze the need for, and explore the pathways to, indigenizing and decolonizing the Ethiopian education system to promote quality and inclusive education in the 21st century. This study adopted qualitative research with a case study orientation. Data were gathered through interviews, FGDs, and document analysis, and analyzed thematically. The study reveals that Ethiopia's formal education system has been mostly constructed by externally dominant ideologies, which often ignore indigenous knowledge systems. The main challenge of Ethiopia's education in the 21st century is not only the externally dominant language of instruction, texts, and values, but also the epistemological hierarchy they establish. This epistemic displacement hinders the quality and inclusiveness of education, leading to the estrangement of students from community life, their own heritage, and the diminishing relevance of education to community demands. Even though Ethiopia has rich indigenous knowledge systems, they have not yet been integrated into the country's formal education curriculum, while a Eurocentric curriculum is commonly used. The study indicates that, despite the negative effects of dominant Western education systems on the country's education policy and institutions, there has been very limited experience of indigenous knowledge inclusion in the course curriculum. The country has opted for a dominant Eurocentric system of education rather than indigenous knowledge systems, which hinders inclusive and quality education. The Ministry of Education of Ethiopia should encourage the inclusion of indigenous knowledge in curricula, books, and other materials through systematic collaboration with local communities, organizations, and policymakers to establish quality and inclusive education in the country.

1 Introduction

Education, which is regarded as a vital factor in the progress of any society, has been used as an effective tool for the construction of human identities, transmission of culture, and enhancement of socio-economic advancement (UNESCO, 2006). However, the colonial legacies and the Western-inspired modernization projects that are still prevalent in

many postcolonial contexts continue to sideline the indigenous knowledge systems (IKS) of many African societies. Although the colonial-modernist type of education is associated with some merits, it has also played a vital role in the reconstruction of African societies along Eurocentric perspectives that create space for an emphasis on Western knowledge systems, pedagogical methodologies,

and curricula at the expense of Africa's diverse cultural identities and intellectual traditions (Al-Natour, 2016).

The notion of indigenizing education represents a turning point that departs from externally imposed Western paradigms toward a more participatory, accessible, and culturally authentic education system (Shava and Manyike, 2018). Not only does it do away with exogenous knowledge dissemination, but the paradigm change also incorporates other measures, which include the decolonization of the educational system and challenging paradigm questions such as: what are the underlying assumptions that guide the educational system? What is the distribution of power, and who has the authority to define ways of seeing that which is deemed knowledge? (Ndlovu, 2014). This process aims to identify, document, and integrate indigenous knowledge into all facets of the educational system, from curriculum design and pedagogy to assessment methods and institutional structures (Paraide, 2018).

Indigenization of the curriculum is gaining increasing research attention as higher education institutions seek to decolonize their programs and promote social justice, inclusivity, and representation. Scholars argue that Indigenous Knowledge (IK) can be sustained and revitalized through deliberate curriculum reform, thereby enhancing educational relevance and learner engagement. International experiences illustrate this growing trend. In Australia, the Great Guide to indigenization of the curriculum was developed to support staff at Central Queensland University in embedding Indigenous perspectives into teaching (Al-Natour, 2016). Similarly, tertiary institutions in New Zealand have engaged in indigenization and transformation initiatives since 1999. Attempts to safeguard African Indigenous Knowledge have also been advanced by academic institutions, individuals, and non-governmental organizations worldwide (Maila and Loubser, 2003). These efforts reveal that embedding indigenous perspectives can strengthen educational quality while fostering inclusivity and representation.

The need to decolonize education also extends across Africa. In South Africa, efforts to indigenize the curriculum, following an audit of IK by the

Council for Scientific and Industrial Research in collaboration with selected universities, resulted in the development of an Indigenous Knowledge System policy. Subsequently, the University of KwaZulu-Natal, Northwest University, and Unisa initiated the integration of IK into their academic programs. Moreover, the 2015–2016 student protests concerning curriculum decolonization in South African universities reflected widespread dissatisfaction with colonial curricular legacies (Grange, 2016). Nevertheless, decolonizing the curriculum has proven to be a challenging process. It is a demanding mission requiring institutional commitment and structural transformation. Universities also confront entrenched resistance to change, exemplified by incidents such as the 2021 case at Stellenbosch University. In this context, robust organizational support systems are important for the sustainable integration of IK in higher education and for the promotion of inclusive institutional cultures (Al-Natour, 2016).

Ethiopia, as a country with a long history of independence, presents an interesting case of educational acculturation. While successful in avoiding direct colonization, Ethiopia was, in fact, institutionally influenced by Western values of education, especially during Emperor Haile Selassie I's reign, thus forcing the obliteration of indigenous knowledge and learning practices. The ineffectively managed and categorized education system, presented as a standard one, fails to recognize the diversified culture, language, and ecology of the people of Ethiopia, thereby lessening the social and economic transformative capabilities inherent in every indigenous system. Therefore, the indigenization of the Ethiopian education system is imperative and should inevitably be holistic to address each dimension of the nation—a challenge that needs blending indigenous knowledge and adjustment to the national curriculum (Negash, 2006).

The Ethiopian educational system has been built on and is being shaped by Western paradigms and fails to recognize and celebrate indigenous systems of knowledge. This lack of recognition leads to the breakdown of traditional knowledge, culturally blind students, broadening educational gaps, and a lack of capacity to find locally relevant and ac-

ceptable solutions to local problems (Emeagwali, 2014). A comprehensive, inclusive, and quality education system is constrained by the dominance of Eurocentric perspectives in curriculum development. Accordingly, the misrepresentation of traditional knowledge in the curriculum constrains the relevance of the system and the students' ability to deal with the inherent complexities of the 21st century.

Ethiopia is now undergoing a paradigm shift that advocates education for sustainable development, which calls for a reformation of the existing school curricula. The argument is that constructive solutions to Ethiopia's idiosyncratic problems result from the valorization and appropriation of local resources, notably indigenous knowledge systems (Engdasew, 2022; Demssie *et al.*, 2020). Because the current educational system in Ethiopia is heavily influenced by Western outlooks and practices, it can exacerbate inequalities and hamper the promotion of Ethiopian students as agents of change and as contributors to the nation-building process (Gagura, 2023; Wondimu, 2019). As a result, this study sought to explore the compelling grounds for indigenizing and decolonizing Ethiopian education to incorporate IK into the curriculum, plug knowledge gaps, and foster a more relevant and effective learning environment. Nested in this ground, this study aimed to analyze the need for, and explore the pathways to, indigenizing and decolonizing the Ethiopian education system to promote quality and inclusive education in the 21st century.

2 Research Methodology

This study adopted a case study research design, which provides a profound and detailed understanding of the need for indigenizing the Ethiopian education system. Moreover, using a qualitative approach, this study explored the decolonization of Ethiopian education by integrating IK into the school curricula using an interpretive paradigm. The qualitative approach provides clarity and promotes understanding of the issues of transformation unfolding in the decolonization of Ethiopian education (Amare, 2021).

In this study, both primary and secondary sources of data were employed to fill the gap that was not

covered by one of them and to obtain ample information so as to realize the objectives of this study. Since relying only on primary data cannot fully capture current realities, the use of secondary sources of data was imperative. Therefore, the data that were obtained from primary sources were supported by secondary data collected from published and unpublished sources.

The target population of this study comprises policy-makers in the education sector, curriculum experts, university lecturers, school principals, and indigenous knowledge holders. From this population, participants were selected through a purposive sampling technique based on their expertise, experience, and involvement in educational policy, curriculum development, teaching, research, or indigenous knowledge practices relevant to the study. Thus, they could provide the desired and accurate information that would be relevant to the researcher's focus.

Key informant interviews, focus group discussions, and desk review were used as data collection methods. The primary data were collected through key informant interviews and focus group discussions. Key informant interviews were conducted with curriculum experts, regional education bureaus, university lecturers, school principals, and community elders who have a vast understanding of indigenous education in Ethiopia. This study used a semi-structured interview to investigate issues related to indigenization, decolonization, curriculum relevancy, language of instruction, and inclusive education. In addition, focus group discussions were undertaken with students, parents, and teachers. The composition of the FGD participants was selected considering factors such as gender, age, and educational background. Moreover, desk review was employed as a data collection method. Thus, secondary data were collected through a desk review of education policies, curriculum development documents, governmental documents, journal articles, books, and reports from international organizations. Sources were chosen because of their recency, relevance to decolonization and indigenization, as well as quality and inclusiveness in education.

The collected data were analyzed through the the-

matic analysis method, involving the identification of recurring themes and patterns relevant to the research questions and objectives. Data were coded to reveal underlying themes, which were subsequently discussed and compared to identify areas of convergence and divergence. Furthermore, ethical issues were considered throughout the research process, and all sources used were properly cited.

3 Results and Discussion

3.1 Current Status of Indigenous Knowledge Integration into the Ethiopian Education

Ethiopia enjoys valuable features of Indigenous Knowledge (IK) systems punctiliously hoarded over many generations. This knowledge system holds a range of indigenous practices, principles, inventions, and wisdom associated with natural resource management, agriculture, conflict resolution, governance, medicine, and various other facets of life. Ethiopia has begun a journey to include indigenous knowledge into its curricula and pedagogical approaches, recognizing their transformative benefits. Gumbo (2020) indicated, in his study done in Ethiopia, that there has been indigenization in curriculum development and studies as a plan to naturalize the knowledge base and viewpoints of those who are unnoticed, to make the curricula relevant. According to Makokotlela and Gumbo (2025), traditional knowledge has been downplayed to a greater magnitude due to a lack of revolution in higher education and other settings to decolonize the curriculum. However, the process is driven by a complex mixture of events and problems, leading to a complicated current situation.

Curriculum revision and policy provisions advocate the integration of traditional knowledge into the Ethiopian education system. The government of Ethiopia has identified the significance of IK to increase the relevance of education at local levels. The utility of incorporating indigenous knowledge, indigenous languages, and practices is exemplified by policies such as the Ethiopian Education and Training Policy. Regional Educational Bureaus (REBs) have also begun efforts to incorporate local history, indigenous problem-solving techniques, and traditional ecological knowledge into the curriculum; levels of practice, however, vary consid-

erably depending on available means, institutional motivation, and local participation (KII-01, October 2, 2025).

There is a desire to integrate IK into education at the policy level. The Constitution of Ethiopia recognizes the diversity of cultures and the rights of ethnic communities to sustain and develop their cultures. This has facilitated the formulation of education policies focusing on the need to incorporate local languages, history, and cultural values into the curriculum. Since the Education Sector Development Program lays emphasis on the need to adapt education to local contexts, this indirectly encourages policy for the inclusion of IK and indigenous knowledge into schools. The use of mother tongue language in primary schools is a step toward allowing children to learn about their local cultures and indigenous knowledge (MoE, 2015).

Despite these proclamations, the reality remains patchy, and the integration of IK into the classroom is partial. The greatest challenge faced is related to the practical operationalization of these policies. This requires massive investment in developing curriculum materials, training teachers, providing learning resources that are usable and relevant, and translating generic pronouncements of policy into practical curriculum content, pedagogical methods, and learning tools. Many teachers are unequipped with the knowledge or pedagogical skills to incorporate IK into their classroom lessons. In addition, the curriculum is seldom free from undue emphasis on standardized content, which is nationally set and lacks scope to accommodate local knowledge. IK is more often assimilated through fragmentation than in an integrative manner. This may lead to a situation where IK is seen as trivial or secondary rather than formal science (KII-02, October 5, 2025).

However, there are positive developments to report. Some universities and research institutions are documenting and promoting IK through academic studies, research conferences, and community-based learning programs. Additionally, local knowledge is now integrated into agricultural and environmental education, thus acknowledging the eco-innovations achieved by local communities over centuries. Moreover, endeavors are being made to include mother tongue in the school system and thus

to assist students in studying in their first language (MoE, 2015; Wagaw, 2005).

At present, the education system in Ethiopia has a problem of giving precedence to a one-size-fits-all Western hegemonic version rather than the knowledge and experience of the indigenous Ethiopians themselves. Ethiopian indigenous knowledge is sidelined in the current curriculum, despite the fact that the 1994 education policy recognizes the need for utilizing this valuable resource (Transitional Government of Ethiopia, 1994). The policy promises a combination of indigenous and modern education.

The idea of one of the key informants is quoted below:

The Ethiopian education policy acknowledges the worth of indigenous knowledge systems for development and the preservation of cultural identity. The curriculum mandate that promotes teachers to contextualize learning has been revised. The aim is certainly robust, and IK is theoretically included in subject areas such as civics, environmental science, and agriculture. However, the actual application of this incorporation remains inadequate.

Despite the gap, the incorporation of indigenous knowledge is becoming crucial for creating a resilient national identity, particularly in light of Ethiopia's exceptional history as a state that maintained its independence for a large portion of the colonial era. Therefore, bridging the gap between policy and practice in integrating indigenous knowledge into the curriculum is a vital step toward more relevant and empowering education for Ethiopian students. In general, the findings of this study show that efforts were made, to some extent, to indigenize the Ethiopian curriculum through the inclusion of traditional knowledge, which facilitates the decolonization processes in Ethiopia.

3.2 Benefits of Integrating Indigenous Knowledge Systems into Ethiopia's Curriculum

Ethiopia benefits from the inclusion of IKS into the country's education system. It is not just an add-on; it is a necessary paradigm shift to recognize that

the understanding, significance, and application of locally derived knowledge are crucial, along with indigenous schools of academic thought. Bringing IKS into the curriculum is important to the formation of identity, values, knowledge creation, and sustainable development (KII-03, November 8, 2025).

The most compelling reason for including IKS is to provide a more relevant and engaging learning experience for students. Integrating students' own cultures, histories, and traditions into their education can create an earthly connection between them and the educational course. Thus, education takes a new, nourishing, inward journey to become a meaning-building process. IK presents solid examples and practical applications, which make abstract, intangible concepts more reasonable and feasible for learners. Studying methods of storing grains traditionally or the underpinnings of ecology by using native agricultural practices can seem extremely beneficial for developing learners' cognition and reflection skills. Connecting education with local realities becomes an effort to reduce the disjuncture between school and community and maintains a sense of community and institutional ownership (KII-04, November 15, 2025).

The assimilation of IKS can facilitate learning outcomes in a wide range of courses. Indigenous knowledge systems reflect complex understandings that are frequently highly sophisticated in fields such as medicine and natural resource management, and their inclusion exposes students to new paradigms and creative resolutions to pressing issues. Students can deepen their understanding of health and well-being through the integration of traditional Ethiopian medicinal training with indigenous health systems, and examination of traditional techniques of soil conservation can provide crucial insights into environmentally sustainable and food-secure farming strategies. By drawing on community knowledge, accumulated over many years and built upon by successful experimentation, students are exposed to a broader, and therefore more valuable, spectrum of information in relation to the world (Battiste, 2013; Dei, 2010).

The protection and revival of cultural identity is another advantage of the integration of traditional

knowledge. Since Ethiopia is a multi-ethnic country, it has to preserve its accumulated cultural and historical heritage systems. The proliferation of modern educational systems based on Western models has resulted in the loss of traditional wisdom systems and local dialects. The introduction of traditional knowledge into the curriculum enables learners to become familiar with their culture, wisdom systems, traditional governance systems, traditional folklore, and supreme beings. This reinforces intergenerational learning and continuity by ensuring that indigenous knowledge is transmitted to future generations rather than being lost (KII-05, October 20, 2025).

The application of IKS encourages sustainable development with the aid of the knowledge that indigenous communities possess about the environment. Indigenous people in Ethiopia have managed their resources effectively using traditional tools for generations. A variety of traditional practices, such as herbal medicinal use, water harvesting, and traditional irrigation techniques, are similar to many modern concepts of sustainability and can also address current complex challenges of environmental degradation, desertification, and climate change. By integrating traditional ecological knowledge into biology, environmental science, and agricultural courses, students can be provided with an environmentally sound and culturally meaningful way to connect with their environment. This also promotes the acceptance of sound environmental practices that help to maintain sustainable development and improve their knowledge about local ecosystems (KII-06, October 27, 2025).

The inclusion of indigenous knowledge also benefits students' learning experiences by offering them alternative viewpoints and methods of problem-solving. The knowledge system itself offers different ways of observing the world and enriches scientific information with concrete, lived, and holistic education. The medicinal elements of traditional healing processes can be used together with modern healthcare education. Equally, indigenous methods of conflict resolution, such as traditional laws and consensus decision-making, can be used as resources for legal and social sciences. This inclusion of indigenous knowledge makes education

more lively, interesting, and relevant to students' everyday lives, thus engaging and motivating them as learners (KII-07, October 30, 2025).

The integration of traditional knowledge enhances community participation within the education system. Communities are more willing to participate in the activities of the school and to endorse educational practices if their knowledge and practices are integrated into the formal education system. Elders and custodians of knowledge are valued as resource persons or guest lecturers, and their role in the institutional classroom helps to link formal education with community knowledge and practices. This participatory strategy allows for the restoration of the relationship of equality between the school and the community; it also allows for the creation of opportunities for students to participate in experiential, practical learning outside of the classroom to produce more relevant education (KII-08, November 3, 2025).

The incorporation of IKS plays a vibrant role in the preservation and promotion of Ethiopia's cultural heritage. In today's ever-changing and transient world, the threat of cultural standardization and the erosion of traditional knowledge is prevalent. The inclusion of IKS into the educational curriculum enables the state to defend its cultural identity and ensure the survival of its traditions for the future. This can include recording and documenting indigenous knowledge in order to teach it as part of the curriculum. The use of storytelling, traditional music, art, and craftwork can be incorporated into different courses to encourage cultural pride and appreciation. Such initiatives will encourage students to become custodians of their culture, ensuring that indigenous knowledge remains a living and integral part of Ethiopian society. This maintains not only knowledge but also safeguards the languages, traditions, and social systems that are inseparably intertwined with indigenous knowledge (KII-09, November 10, 2025).

The importance of integrating traditional knowledge systems into Ethiopian education is as diverse as it is wide-ranging. These include a more appropriate, inclusive, and fair education system that incorporates IK along with indigenous subjects and has various benefits such as greater student

engagement, enhanced learning outcomes, cultural preservation and pride, sustainable development, and community strength and well-being. By recognizing the inherent value of locally gathered knowledge and infusing it alongside native academic disciplines, Ethiopia can own its culture while giving its pupils the tools, knowledge, and traits to flourish in an ever-changing world. Ethiopia can build a stronger tomorrow upon a unified educational vision where leading and indigenous knowledge systems empower one another to create a stronger and more sustainable community (KII-10, November 12, 2025).

3.3 Indigenized and Decolonized the Ethiopian Education System

Indigenizing the curriculum is vital to handling the colonial educational system, which disregarded and excluded traditional knowledge systems. Because of this, higher education institutions began to consider decolonizing their curricula (Grange, 2016) and adopting IK as a method to do so (Gumbo, 2020).

Across all key informants and FGD participants, there was a strong consensus that the Ethiopian education system, though there have been some efforts since 2018, is largely alienating and irrelevant to the daily lives and cultural realities of Ethiopian students.

Regarding this, one university professor elaborated:

Our history books often begin with ancient Greece or Rome, not with Aksum or Lalibela. Our science textbooks rarely feature the innovations or environmental knowledge developed by our own people over centuries. Besides, our students learn about Shakespeare but have never heard the proverbs their grandparents use daily.

Self-willed lecturers/teachers did not have to wait for the transformation to be formally started by the leadership of the institution. They were motivated to take the first step to confront the educational atrocities that Western-based education brought, propagating the colonial education system through Western science, which was paraded as more significant than IK. The lecturers/teachers identified

a need to teach students about the importance of local resources, values, indigenous modes of production and management, and their importance for the sustainability of the environment. Concomitant with this move, Maila and Loubser (2003) indicate that lecturers/instructors confronted the notion of teaching only inside the classroom in favor of inclusive approaches that promote diverse and complex environmental problems. The advantage of indigenous people's education is that teaching can take place anywhere at any time, making use of natural resources. Elders take advantage of opportunities whenever they arise to teach about nature and its principles as and when they encounter something worth teaching about.

Live fauna and flora are the breathing teaching aids. The definition of IK discussed in this paper speaks of the local people's knowledge and culture, in line with scholars in the field (Shava and Manyike, 2018). Likewise, Ndlovu *et al.* (2014) indicate that indigenous knowledge is inherently rooted in the sociocultural framework that guided this investigation, which acknowledges that knowledge is socially created. Maila and Loubser (2003) agree that they view IK as traditional and constructed in a local environment to resolve local environmental challenges.

Students need to be taught Ethiopian theories that could be used when studying and applying local people's epistemologies. Ethiopian theories may assist with the understanding of content supplied by the curriculum to ensure the smooth indigenization of the education system. This means IK is relevant to local people as its custodians, even theoretically. Proverbs, for example, can be used as theoretical lenses. This contributes significantly to decolonizing the curriculum and considering the language of indigenous people (KII-11, November 18, 2025).

The Ethiopian education system highly emphasizes memorization for examinations. This is a direct legacy of a colonial-era system designed to produce compliant clerks rather than critical thinkers. This implies that students tend to memorize to pass, then forget the content; they do not learn how to solve problems in their daily activities (KII-12, November 23, 2025).

According to Smith (2021), it takes a complete effort to decolonize Ethiopian education with the inclusion of traditional knowledge into the curriculum through reclaiming, validating, and integrating local wisdom, traditions, and epistemologies into the formal education system. This process starts by recognizing local knowledge as a legitimate and valuable source of learning, combating the dominance of Eurocentric paradigms that have historically left out local methods of knowing. To ensure that students are exposed to indigenous knowledge systems, Ethiopian education needs to incorporate the country's traditional practices in conflict resolution, agriculture, medicine, governance, and environmental conservation that have sustained communities for generations.

Promoting indigenous languages as mediums of instruction is a vital element of decolonizing education, as the semantics of many indigenous concepts are deeply rooted in these local languages. Ethiopia can disseminate knowledge and ensure the preservation of traditional practices more successfully by empowering the use of local languages in schools. Additionally, the education system needs to be designed in such a way that it encourages the involvement of elders, traditional healers, artisans, and local historians. Their knowledge can be utilized to enhance the educational experience and make education more integrative with students' lived reality. Inviting these traditional experts as mentors can help to establish a space where traditional knowledge and practices are appreciated (KII-13, November 26, 2025).

Revising teacher training curricula can enable teachers to incorporate local practices into their lessons and teaching methods (KII-14, November 28, 2025). This result is supported by Yeseraw and Melesse (2023), who noted that teachers need to be empowered through training in culturally responsive pedagogy so that indigenous knowledge will not be perceived as lower or inferior to Western knowledge. Priority should be given to research agencies on Ethiopian indigenous knowledge systems so that they can be studied and integrated into the formal education system. This includes supplementing educational resources such as textbooks, films, and CD-ROMs with local content.

According to Yeseraw and Melesse (2023), evaluation methods would need to be modified to accommodate storytelling, oral traditions, and community activities instead of just Western examinations. Educational institutions should respect the transfer of traditional knowledge through oral traditions and practice and accept more experiential assessment. Consideration should also be given by government policies to promote indigenous knowledge in education reform so as to serve national identity and preservation. Community participation is essential in formulating education policies guided by community culture and knowledge.

From the above findings, one can notice that uncovering and recording indigenous knowledge systems in Ethiopia is important. This entails collecting, managing, and documenting indigenous knowledge through a wide range of sources such as oral traditions, ethnographies, and joint research activities with local people, which can be used to build curriculum materials and resources within the country.

3.4 Effects of Western-Influenced Educational Models on Ethiopia's Educational Landscape and Societal Development

Western-inspired approaches in education have remained, more or less, within the Ethiopian educational setup since the beginning of the twentieth century. The adoption of this imported model was part of the modernization efforts initiated by Emperor Menelik II. This borrowed model privileged Western knowledge over indigenous Ethiopian knowledge systems. School curricula were largely based on Western educational models and pedagogical practices, with limited consideration for Ethiopian cultural knowledge systems and local ways of knowing. During the Haile Selassie era, education continued to rely heavily on Western curricula, textbooks, and teaching personnel, making the incorporation of indigenous knowledge difficult. Likewise, during the Derg period, educational policies were influenced by socialist ideologies and foreign models, limiting the development of curricula grounded in Ethiopia's own cultural realities. Consequently, indigenous Ethiopian knowledge and traditions were marginalized (Kebede, 2006; Mamo and Boro, 2023).

As for Western-dominated policies and paradigms, Western knowledge and values have eroded indigenous knowledge and cultures, resulting in cultural alienation and social division in some communities. The decline of indigenous educational knowledge has led to continuous dependence on international assistance and expertise in the education sector, hindering the development of an indigenous, economically self-sufficient education system (Yishak and Gumbo, 2012).

The standardization of curriculum and pedagogy by Western standards is among the most visible impacts. This compelled Ethiopia to align its curriculum with global standards, trying to import and absorb mainstream knowledge, technology, and science. Furthermore, external influences also led to structured learning environments, systematic evaluation practices, and research-oriented approaches, which in turn professionalized the sector. As a result, many Ethiopian graduates played significant roles in bringing about modernization and development in their fields of engineering, medicine, business, etc. (KII-15, November 30, 2025).

A school principal commented:

The curriculum appears to be not relevant to what we want our children to know about their history, values, and environment. Besides, we are demonstrating concepts and illustrations that do not relate to the day-to-day experiences of an Ethiopian child. For example, an Ethiopian child being taught about snow, although they live in a country that has mostly warm weather, or more about European historical figures than their own.

The above findings indicate that the movement away from traditional indigenous ways of knowing, and the replacement of this method of education with formal schooling in Western ways, has generated a gap in methods of learning as well as a lack of respect for local knowledge systems, languages, and cultural traditions. Many students in Ethiopia will have little or no understanding of their own history, traditional methods of governance, or indigenous methods of problem-solving after they have graduated from school. The end result of the increasing adoption of Western-style education has been a weakening of the cultural identity of

young people, whereby many Ethiopian students believe that Western knowledge is more valid than their own traditional knowledge, which they view as outdated or less important.

An Indigenous Knowledge Systems (IKS) expert said:

Our kids are starting to hate their own culture and believe all things Western are better than what they have been taught in school. Also, the rich oral tradition that we have in our country, the local wisdom that we have in our communities, and our traditional conflict resolution methods among our people are not being recognized through the content of the curriculum, so we are losing part of who we are as a community and as a nation.

The above quotation demonstrates how the individualism associated with Western educational outcomes not only conflicts with Ethiopian cultural traditions, community, and family, but also has the potential to divide families and communities across Ethiopia. Besides, the findings reveal that many traditional knowledge areas, including agriculture, medicine, construction, and ethical frameworks, are disappearing at a rapid pace and are being replaced by developing technologies.

The prioritization of individual accomplishments in education, as opposed to collective accomplishment, is another issue. In traditional Ethiopian education, the value placed on collective responsibility, moral teaching, and learning being incorporated into daily life demonstrates clear differences between indigenous education values and contemporary education values. Western educational practices emphasize the competitive nature of education, the use of standard exams, and measuring success based on how well students perform on standardized assessments, as opposed to how students learn and interact with their communities (KII-16, December 1, 2025).

According to Negash (2006), the standard model for education in Western-style learning institutions has contributed to the division of society into lower and upper classes, resulting in barriers for many Ethiopians to receive quality education based on social class, leading to further inequality between

rural and urban populations and fewer opportunities for many Ethiopians to be involved in the development of their country.

Therefore, from the above assertions, one can deduce that modernization and the global integration of education systems through Western-based models have presented many challenges for Ethiopia. These models, by their nature, have overlooked indigenous knowledge systems and detracted from the practice of indigenous communal learning. The reliance on foreign-based educational models has created a pattern of dependence on foreign expertise and educational systems, thereby limiting Ethiopia's ability to create an independent means of education. Ethiopia can forge a more inclusive, relevant, and sustainable development path while balancing the negative influences of Western models and adopting its own approach.

3.5 Historical and Current Barriers to the Integration of Indigenous Knowledge Systems into the Ethiopian Curriculum

Ethiopia is known for its diverse culture and languages, and for the many Indigenous Knowledge Systems (IKS) developed over thousands of years. Unfortunately, due to both historical and contemporary obstacles, it has not been easy to include IKS in the curricula of Ethiopian schools. Examples of these challenges include traditional Ethiopian education being historically overshadowed by new influences from outside Ethiopia, primarily through religion and Western educational practices. As a result, the traditional structure of education in Ethiopia was replaced by institutional and eventually European-style schools introduced first by missionaries and later by Europeans (Mamo and Boro, 2023).

As Kebede (2006) indicated, the shift toward formalized and European-style schools was initiated mostly during the Imperial period, when there was excessive emphasis on providing an educated and literate elite that could either work for the government or support government needs outside of it. Consequently, indigenous knowledge systems were viewed as inferior to newer forms of knowledge developed in industrialized nations and as less developed than knowledge systems based on science.

Since most IKS were developed within communities and local histories, the limited opportunities for communities to participate in the development of curricula used in formal schools created an additional barrier to their involvement in the formal education system.

Similarly, the Derg dictatorship's socialist ideology had a profound impact on the educational system, focusing primarily on industrial and political development at the expense of indigenous pedagogical practices. Although the Derg regime officially supported the use of Ethiopian languages and endorsed the need to protect Ethiopian culture, there remained a top-down model of curriculum development. Due, in part, to the Derg regime's belief that scientific socialism would lead to political stability, the elimination of IKS was justified; therefore, progress and advancement (which were aligned with social scientific models) would prevail. The political instability and violent conflict that took place during this period compounded the challenge of systematic documentation and the incorporation of IKS into the educational curriculum (Negash, 2006).

The federal government, which started operating after the Derg period, has identified the importance of integrating traditional knowledge owing to increasing recognition of cultural diversity. As a result, the Ministry of Education is developing policies and guidelines on how to incorporate local knowledge systems into subject areas such as history, geography, science, and social studies (KII-17, December 6, 2025).

Teachers in Ethiopia are having difficulty integrating indigenous ecological knowledge elements into their classroom instruction due to a lack of exposure or training in traditional education systems, which did not focus on traditional ecological knowledge. Additionally, there is a lack of instructional resources or textbooks that provide clearly defined and organized Traditional Ecological Knowledge information suitable for use in formal education settings. The integration of traditional knowledge into local schools is sporadic and has not been improved due to inadequate funding or a lack of trained teachers (KII-18, December 10, 2025).

Indigenous knowledge has also become increasingly complicated through political and policy issues. Ethiopian education guidelines recognize the value of traditional knowledge and cultural diversity; however, due to varying national agendas and inefficient bureaucracy, implementation is still lacking. Indigenous knowledge continues to be marginalized through expanding access to education, increasing literacy rates, and consolidating STEM curricula (KII-19, December 15, 2025). Mamo and Boro (2023) support this result, stating that although Ethiopia's decentralized education system allows for regional independence in curriculum development, funding inequalities and political agendas make it more challenging to apply.

The major problem is that there are no proper records or a structured system for traditional knowledge, which is usually passed down orally from generation to generation and can easily be lost or changed over time. It is very important that indigenous knowledge holders actively participate so they have a voice in how their knowledge is used and to protect their intellectual property. However, it is very difficult to find and provide written forms of indigenous knowledge in a way that is accessible to both teachers and students, for example, through electronic media, teaching resources, and textbooks (KII-20, December 17, 2025).

Integrating local patterns of knowledge into the educational system in Ethiopia is very important for preserving culture, promoting sustainable development, and providing quality education. However, many current educational practices rely on rote memorization instead of applying knowledge or developing traditional abilities; therefore, these barriers prevent local knowledge from being used effectively and realistically in education. The limited training teachers receive on local contexts reduces their ability and confidence to successfully use indigenous knowledge in the classroom. Teacher training platforms need to change to include traditional values and to equip teachers to use both local knowledge and culturally sensitive pedagogical methods (KII-21, December 18, 2025).

To support the diversity of Indigenous Knowledge Systems in Ethiopia, culturally grounded instructional materials need to be developed in partnership

with local communities to ensure the information is accurate, authentic, and culturally valid. It is also very important for the education system to continue to use indigenous languages within their respective educational contexts to promote and maintain Indigenous Knowledge Systems (KII-22, December 19, 2025).

As Mamo and Boro (2023) noted, dominant Western views often reject traditional forms of knowledge as unscientific in education. To promote understanding and the use of Indigenous Knowledge (IK) for sustainable development, awareness campaigns and workforce training are needed to highlight the value these forms of knowledge can bring to societal challenges. To acknowledge the value of both traditional and modern forms of knowledge, an integrated and collaborative approach is necessary. There has been little collaboration between indigenous peoples and educational institutions, resulting in a disconnection between schools and local cultural practices. There is significant room for growth through greater collaboration with elders, traditional healers, and craftspeople in the education sector through shared classroom activities, visits to cultural sites, and community-based research projects.

Oral presentations, creativity, skill demonstrations, and culturally appropriate initiatives are examples of alternative, culturally relevant evaluation techniques that are required. To overcome these obstacles and utilize the potential of indigenous knowledge for national development and the empowerment of future generations, a variety of initiatives are needed, such as curriculum development, teacher training, policy reforms, the creation of relevant materials, and strengthened community cooperation (KII-23, December 21, 2025).

3.6 Global Experiences Regarding Indigenizing and Decolonizing Curricula

The global movement to decolonize education arises from the need to rectify historical imbalances that have marginalized Indigenous voices and knowledge systems within traditional curricula, thereby creating more equitable, relevant, and culturally responsive learning environments for all (Battiste, 2013; Stein *et al.*, 2023). These days,

many countries are looking for strategies to incorporate indigenous knowledge into their educational systems, recognizing its potential to promote educational relevance, cultural identity, and societal transformation (UNESCO, 2017; Dei, 2000).

In Australia, curriculum decolonization is a major issue, and the country is working to indigenize its education system. Parkinson and Jones (2018) point to incorporating native knowledge into the curriculum of Australian higher education. At Central Queensland University, the Indigenization of the Curriculum guide was developed to support lecturers' efforts to indigenize the curriculum (Al-Natour, 2016). Al-Natour argues that indigenizing the curriculum in Australia would transform its landscape by acknowledging Aboriginal and Torres Strait Islander knowledge and practices. However, these authors indicate that curriculum transformation has been slow, while students continue efforts to maintain their indigeneity. This idea aligns with Grange's (2016) observation that decolonizing the curriculum is not easy. Uneasy as it may sound, it can be argued that it is still crucial to embark on the decolonization of the curriculum; however, slow progress makes it a difficult task. The slowness in transforming the curriculum is evident in the results of an investigation conducted by Parkinson and Jones (2018) in Australia, which revealed a disjuncture between the curriculum and Aboriginal aspirations for their children's education.

New Zealand is a strong example of biculturalism, being a context where Māori knowledge and culture are incorporated into the educational system. Much of the curriculum is based on the values, history, and customs of the Māori and emphasizes holistic learning and a sense of community, *whānau*, or family, that is so prominent there. Its success is thought to lie in its community-based approach, ensuring that local communities play a central role in the development and implementation of the curriculum, while the integration of *Te Reo Māori* and Māori worldviews across schools helps challenge Eurocentric dominance and strengthen awareness of New Zealand's bicultural heritage. Furthermore, the Library and Information Association of New Zealand Aotearoa has contributed to decolonization efforts by promoting Māori knowledge systems

(*mātauranga Māori*) within library and information management education and professional practice (Lilley and Paringatai, 2014).

African countries are finding it difficult to decolonize their education through the use of indigenous knowledge. In Kenya, traditional aspects of music, dance, and oral literature have been integrated into the curriculum for primary and secondary education. Research by Owuor (2008) indicates that the curriculum is also being extended to include indigenous languages, traditional farming practices, and indigenous knowledge of medicinal plants. Kenya is making progress in its effort to decolonize education and restore Kenyan culture, values, and history away from colonial influence. The hurdles include, among others, resistance to change, lack of funds, and failure to implement policies effectively.

South Africa is in the process of reforming its educational framework to address apartheid narratives by incorporating multiple cultures and histories. Since the protests of 2015–2016, most universities and higher education institutions have made strides in decolonizing curricula and indigenizing academic programs. In a 2015 summit, there was a call urging all institutions of higher learning to decolonize their curricula by breaking down remnants of apartheid and colonialism (Grange, 2016).

However, the validity of claims regarding progress toward the decolonization of education was strongly challenged by student protests. The movements suggested that education had done little to decolonize curricula, institutional cultures, and knowledge systems since the advent of democracy in 1994 (Grange, 2016). The curricula of universities continued to be dismissive of IK, which was considered inferior and did little to improve the human condition. Maila and Loubser (2003) argued that IK could be useful in education and should be recognized. In response to the need for change, the Western Cape Provincial Government formed a Central Curriculum Committee with the responsibility to facilitate decolonization processes. Furthermore, the inclusion of the Ubuntu philosophy in education reinforces positive character and active citizenship.

4 Conclusion

In the course of history, the education system in Ethiopia has largely been dominated by Western models, which have failed to comprehensively appreciate the cultural, social, political, and economic realities of the country. The curriculum, which has largely been adopted, borrowed, or articulated with the involvement of Western expertise, has tended to privilege the Western epistemic perspective and undermine Ethiopia's intellectual tradition, contributing to the process of epistemic injustice. In Ethiopia, there is hardly any regime able to indigenize and Ethiopianize the education system by including indigenous knowledge systems into the school curriculum. In plain words, this study, as one of the attempts to indigenize and Ethiopianize the Ethiopian curriculum, has made a positive contribution.

Indigenizing and decolonizing education in Ethiopia requires a radical reform of curricula, pedagogic approaches, and institutions to focus on Ethiopian indigenous knowledge systems in addition to Western knowledge systems. Although the agenda is directed at literacy and skills-based education, these approaches can disconnect from the realities of the majority (especially rural) students. Reigniting traditional modes of knowledge such as traditional medicine, agriculture, conflict resolution, governance, art, and craft makes education more relatable and relevant, empowers students, and helps preserve indigenous culture while ensuring quality and inclusive education in the 21st century in Ethiopia.

Ethiopian education policy acknowledges the superficial inclusion of IK into the curriculum, although its practical manifestation is hardly identified in policy documents. Irrespective of the challenges, the dominance of Western discourses, lack of pedagogically trained teachers, and negative attitudes toward IK in practice, Ethiopia could minimize the gap between policy and practice through contextualized intervention programs. More crucially, the genuine incorporation of IK into the Ethiopian educational system would unleash its blessings, such as cultural vitality, social cohesion, economic resilience, and problem-solving capacity, thus establishing peace and prosperity. Such a transformation is grounded

in strong academic values and has the potential to significantly improve the lives of Ethiopian students.

5 Recommendations

This research advocates an inclusive paradigm shift within the Ethiopian education system that holds the potential for meaningful inclusion of indigenous knowledge. This process requires designing an integrative framework that incorporates traditional knowledge into the curriculum, from pedagogical techniques and assessment procedures to the structure of educational institutions. Indigenous perspectives should be added to the curriculum through the infusion of proverbs, sayings, and Ethiopian worldviews to construct a locally situated understanding of the curriculum and to supplement traditional practices within its theoretical dimension. Capacity-building schemes should be instituted to enhance teachers' skills to effectively elaborate and communicate various forms of traditional knowledge. Assessment schemes should be critically examined to emphasize indigenous knowledge constructively in both summative and formative assessments. Finally, the research supports curriculum reform in Ethiopia in which indigenous knowledge is integrated through promoting greater cooperation among educational policymakers, teachers, and community participants.

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