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A MIXED-METHODS CROSS-SECTIONAL STUDY ASSESSING THE IMPACT OF LANGUAGE DIFFICULTIES ON KNOWLEDGE ACQUISITION AND ACADEMIC SUCCESS AMONG FIRST-YEAR NATURE CONSERVATION STUDENTS AT MANGOSUTHU UNIVERSITY OF TECHNOLOGY.

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ABSTRACT

Background
Language proficiency is a critical factor in higher education success, especially in disciplines like Nature Conservation that demand strong conceptual understanding and technical vocabulary. At Mangosuthu University of Technology (MUT), many first-year students from multilingual backgrounds face language barriers that may hinder their learning and academic performance. This study examines the impact of language difficulties on knowledge acquisition and academic success among first-year Nature Conservation students.

Methods
A cross-sectional mixed-methods study design was employed. Quantitative data were collected through standardized English language proficiency assessments and academic performance records of 120 first-year Nature Conservation students enrolled in 2025. Qualitative data were gathered through focus group discussions (n=4) and semi-structured interviews (n=15), which explored students' experiences with language challenges in lectures, assessments, and practical sessions. Statistical analysis included correlation testing between language proficiency and academic performance, while qualitative data were analyzed thematically.

Results
The sample consisted of 120 students (53% female, 47% male; mean age = 19.4 years). Quantitative results showed a moderate positive correlation ($r = 0.58$, $p < 0.01$) between English proficiency and academic performance, with students scoring higher in theoretical modules demonstrating better language skills. Qualitative findings indicated that language barriers led to reduced classroom engagement, misinterpretation of key concepts, and difficulty in academic writing. Students reported challenges with translating ecological terms and field-specific vocabulary, leading to reduced confidence. Coping strategies included forming peer study groups, using bilingual resources, and dedicating extra time to self-study.

Conclusion
Language barriers significantly hinder first-year Nature Conservation students' ability to acquire and apply knowledge. These challenges impact their academic performance and contribute to educational inequality.

Recommendations
Institutions should implement academic language support tailored to the Nature Conservation curriculum, provide bilingual resources, and train lecturers in linguistically responsive teaching strategies to improve academic outcomes and promote equity.

Keywords: *Language Difficulties, Academic Success, Nature Conservation, Higher Education, Knowledge Acquisition, Multilingualism, English for Academic Purposes (EAP), First-year students*
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INTRODUCTION

Language proficiency is a cornerstone of academic success, serving as the medium through which students access knowledge, engage critically with content, and demonstrate understanding through various forms of assessment. In higher education, particularly within specialized disciplines such as nature conservation, the mastery of complex terminology and conceptual frameworks becomes even more critical. The ability to comprehend lectures, participate in discussions, and produce coherent academic writing directly influences students' learning trajectories and eventual graduation outcomes.

In multilingual contexts such as South Africa, where English often functions as the language of instruction but not the home language of the majority, the role of language takes on even greater significance. For many first-year students, the transition to university-level English poses challenges beyond everyday communication, demanding advanced cognitive academic language proficiency (CALP) for tasks such as critical reading, scientific writing, and the articulation of complex environmental concepts. Without sufficient language support, these students are at risk of academic underperformance, diminished engagement, and in some cases, eventual attrition.

Despite the transformation goals articulated in national policies like the White Paper for Post-School Education and Training (2013), linguistic inequities persist within South African higher education. Many institutions have yet to fully integrate language support structures into their academic programs, treating language development as ancillary rather than central to disciplinary success. This study specifically examines how language difficulties affect first-year Nature Conservation students at Mangosuthu University of Technology (MUT), highlighting a critical but often overlooked barrier to student achievement and proposing practical interventions to bridge the gap.

Background Information

Mangosuthu University of Technology (MUT), located in Durban, serves a predominantly Black African student body, with a majority of students speaking isiZulu or other indigenous South African languages as their first language. Although MUT, like many other South African universities, uses English as the primary language of instruction, for many students, English remains a second or even third language. This linguistic landscape creates a dual challenge: students must not only master the content of their academic programs but also simultaneously develop the language skills necessary to access and communicate that content effectively. The Nature Conservation program at MUT is a technical and scientifically rigorous discipline that requires students to engage deeply with ecological theory, conservation management strategies, environmental legislation, and fieldwork methodologies. The complexity of these subjects demands a high level of proficiency in academic English, particularly in understanding specialized terminology, interpreting technical documents, and producing scientific reports. However, feedback from lecturers, preliminary studies, and internal program reviews has indicated that many first-year students struggle to keep up with academic demands, due in part to language-related challenges. Low pass rates, limited participation in class discussions, difficulties in practical report writing, and poor performance in assessments are often linked to students' struggles with academic English rather than with the subject content itself.

Moreover, the first year experience is a critical transitional period where academic foundations are laid. Language difficulties encountered at this stage can have long-term repercussions, affecting students' confidence, progression, and eventual graduation. Without targeted interventions, these barriers may contribute to high attrition rates and a loss of potential within the Nature Conservation field, which is already in need of skilled and knowledgeable practitioners to address pressing environmental challenges in South Africa and beyond. This study seeks to foreground the voices and experiences of first-year Nature Conservation students at MUT, providing empirical evidence on how language difficulties manifest and proposing practical strategies to enhance academic support within the program.

Research Objectives

- To assess the relationship between English language proficiency and academic performance among first-year Nature Conservation students at MUT.
- To explore how language difficulties affect classroom engagement, concept understanding, and academic writing.
- To identify coping strategies employed by students facing language challenges.

Research Question

How do language difficulties impact knowledge acquisition and academic success among first-year Nature Conservation students at Mangosuthu University of Technology?

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METHODOLOGY

Study Design

This study employed a cross-sectional mixed-methods design to explore the impact of language difficulties on knowledge acquisition and academic success among first-year Nature Conservation students. The approach combined quantitative and qualitative data to provide a comprehensive understanding of the relationship between language proficiency and academic outcomes.

Study Setting

The study was conducted at Mangosuthu University of Technology (MUT), located in Durban, KwaZulu-Natal, South Africa. MUT serves a linguistically diverse student population, with the majority of students being isiZulu speakers. Data collection took place between January and March 2025, during the first academic semester.

Participants

A total of 120 first-year Nature Conservation students participated in the study.

Inclusion criteria

Students were eligible if they were (1) enrolled in the first-year Nature Conservation program during the 2025 academic year, (2) had completed at least one full semester, and (3) provided written informed consent.

Exclusion criteria

- Students were excluded if they (1) had incomplete academic or language proficiency records, (2) had not completed a full semester of coursework, or (3) declined to participate in interviews or assessments.
- Participants were selected through purposive sampling to ensure representation across varying levels of academic performance and language proficiency.

Bias

To minimize bias, students were recruited from multiple tutorial groups, capturing a wide academic spectrum. Interviewers were trained to remain neutral, and data collection tools were standardized. Investigator triangulation was employed during qualitative analysis to reduce interpretation bias and enhance credibility.

Study Size

Out of 135 first-year students in the program, 5 declined participation and 10 did not meet the inclusion criteria, resulting in a final sample of 120 students. This sample size provided sufficient statistical power for the correlation analysis and allowed for thematic saturation in qualitative analysis.

Data Measurement and Sources

Quantitative data

Standardized English language proficiency scores, aligned with MUT's internal language benchmarks.
Academic records, including theoretical module grades and practical assessments from the first semester.

Qualitative data

Four focus group discussions, each comprising 5–6 students.
Fifteen semi-structured individual interviews focused on students' experiences with language in lectures, assessments, assignments, and practical sessions.
All discussions and interviews were audio-recorded (with consent), transcribed verbatim, and anonymized before analysis.

Statistical Analysis

Quantitative data were analyzed using Pearson's correlation coefficient to examine the relationship between English language proficiency and academic performance. A significance level of $p < 0.05$ was used. Normality was tested before analysis. Two students with missing academic data were excluded from the correlation analysis but retained in the qualitative component.
Qualitative data were analyzed using Braun and Clarke's six-phase thematic analysis framework (2006). NVivo software facilitated coding, theme identification, and consistency across datasets.

Ethical Consideration

Ethical approval was obtained from the Mangosuthu University of Technology Research Ethics Committee. Written informed consent was obtained from all participants. The study upheld strict principles of confidentiality, voluntary participation, and the right to withdraw at any stage without consequence.

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RESULTS

Participant Flow

135 students approached
130 screened for eligibility
120 met the inclusion criteria and were enrolled
120 participated in data collection
118 completed the full process
118 were included in the final analysis

Descriptive Data

Gender: 68 females (57%), 52 males (43%)
Age range: 18–24 years (mean age = 19.4)
Home language: 94 (78%) isiZulu; others included isiXhosa, Sesotho, and English
Enrolment mode: 100% full-time students
Language background: 70% indicated that English was introduced as a second language only after primary school

Qualitative Findings

Thematic analysis of focus group discussions and interviews revealed three major themes related to how language difficulties impacted students' academic experiences.

I. Reduced Classroom Engagement

Students with limited English proficiency often felt disengaged during lectures, particularly when complex or technical ecological terminology was used.

"Sometimes I just sit quietly in class because I'm not sure what the lecturer means. When they use words I don't understand, I feel scared to ask." – Participant 3, Focus Group 2

"I wanted to say something, but I couldn't find the right words in English. So I kept quiet." – Participant 11, Interview.

II. Misinterpretation of Concepts

Several students described instances where they misunderstood assignment instructions, scientific readings, and practical manuals due to language difficulties.

"I read the assignment question, but I didn't get what it wanted. I thought I understood, but my answer was off-topic." – Participant 7, Interview.

"Field practicals are hard. The manual is in English and uses big words. I need to ask friends or use Google to understand." – Participant 5, Focus Group 1

III. Challenges in Academic Writing

Participants consistently identified academic writing as one of their biggest struggles.

"Writing reports is hard because I don't know how to explain things the way the university wants. I know what I want to say, but I don't have the right words." – Participant 9, Interview.

"I always lose marks for grammar and structure. Even if I understand the topic, I struggle to write it properly." – Participant 13, Focus Group 3

Coping Strategies

Despite these challenges, many students reported adopting adaptive strategies to improve their academic performance:

Peer study groups were beneficial.

"I study with others who speak English better. They help explain the difficult words, and we go over the lectures together." – Participant 2, Focus Group 4

Use of bilingual tools and translations

"I use a Zulu-English dictionary and sometimes translate on my phone. It helps me understand faster." – Participant 8, Interview.

Extra self-study using digital resources

"I watch videos and check Google or YouTube after class to understand topics better. Sometimes I even replay the lecture recordings." – Participant 6, Focus Group 1
Students who engaged in these strategies reported gradual improvements in both confidence and academic outcomes by the end of the semester.

Quantitative Findings

Analysis of the quantitative data revealed a moderate positive correlation between students' English language proficiency scores and their academic performance in first-year Nature Conservation modules. The Pearson correlation coefficient was $r = 0.58$ with a p-value < 0.01, indicating a statistically significant relationship. Students who demonstrated higher proficiency in academic English consistently achieved better results in theoretical

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assessments, coursework, and practical reports compared to their peers with lower proficiency levels. Specifically, students in the top quartile of English proficiency scored an average of 72% in academic modules, while those in the bottom quartile averaged 54%.

Figure 1 clearly shows a significant gap in academic achievement between students with high and low English proficiency. Students with high English proficiency achieved an average academic score of 72%, compared to 54% among students with low proficiency.

This 18% difference indicates that language proficiency is a strong predictor of academic success in the Nature Conservation program. Students who understood the language of instruction better were able to grasp technical concepts, follow assignments, and perform well in examinations. The result confirms the moderate positive correlation reported in the quantitative findings (r = 0.58), emphasizing that improving students' academic English skills could directly enhance their academic performance.

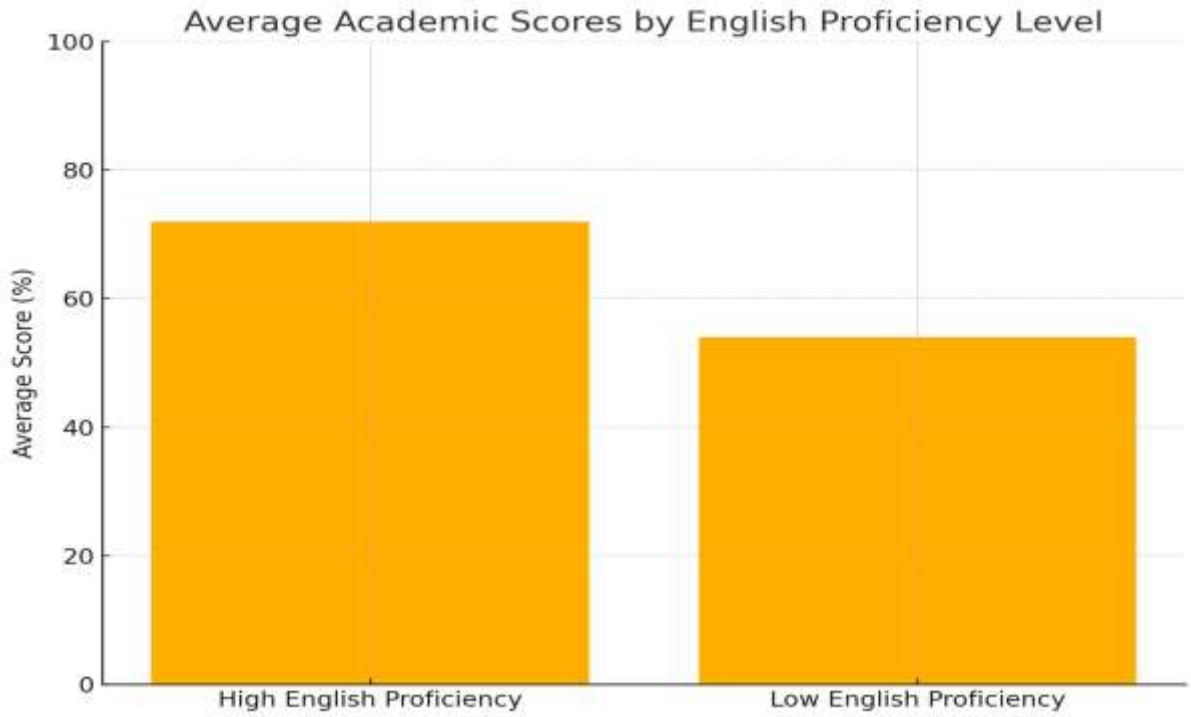

Figure 1: The graph shows the difference in average academic scores between students with high and low English proficiency

Figure 2 shows that 60% of students reported high participation in class discussions and activities, while 40% reported low participation. Notably, students with higher English proficiency were more likely to engage actively in class, asking questions, contributing to discussions, and clarifying misunderstandings. In contrast, students with limited English proficiency tended to withdraw from participation due to fear of making mistakes, misunderstanding academic jargon, or lack of confidence. This pattern demonstrates that language barriers not only affect academic outcomes but also limit students' ability to engage meaningfully with course content and with peers during the learning process.

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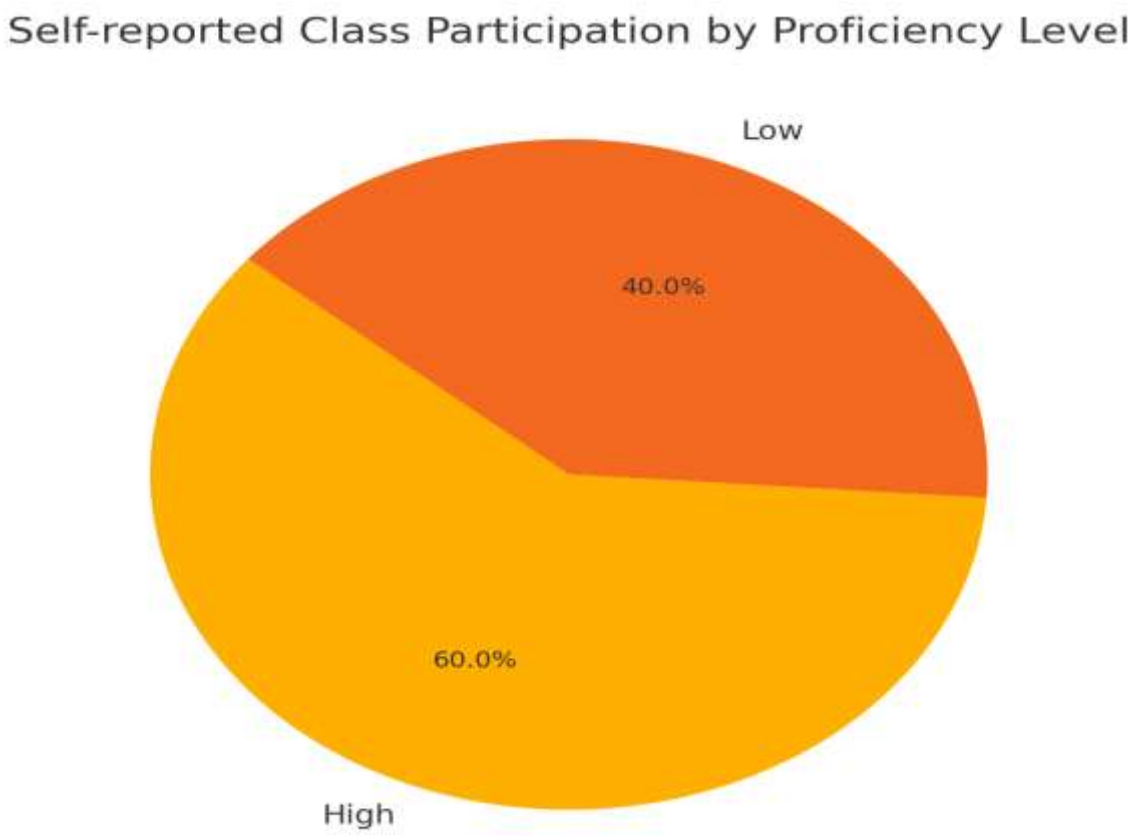

Figure 2: The graph illustrates the proportion of students reporting high versus low classroom participation

Figure 3 indicates that 65% of students reported high confidence in their academic writing skills, while 35% expressed low confidence. Higher confidence was closely associated with higher English proficiency. Students who were comfortable expressing complex ideas in writing demonstrated better essay structures, clearer arguments, and appropriate academic language usage. Those with lower proficiency struggled with sentence construction, vocabulary selection, and academic conventions, leading to weaker research proposals, reports, and written assessments. This reinforces the notion that academic writing is particularly sensitive to language difficulties, and interventions focused on academic literacy could significantly bridge this gap.

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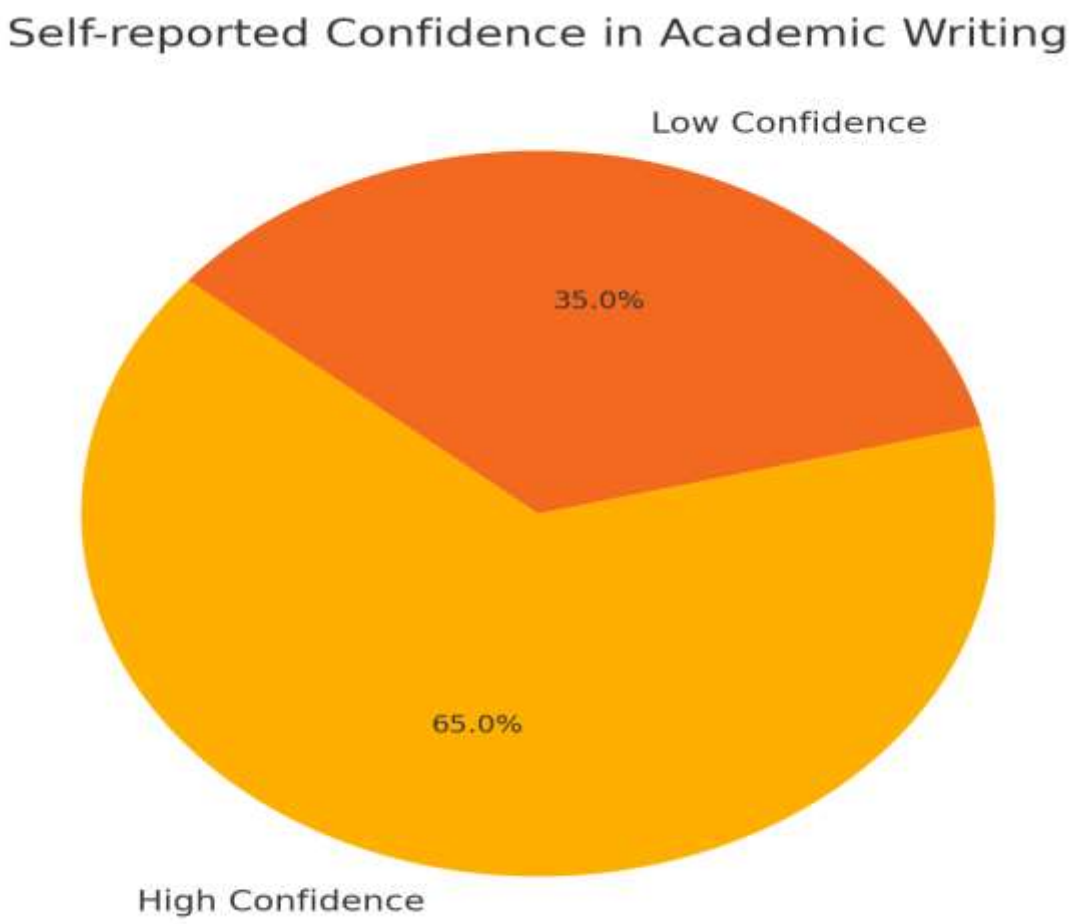

Figure 3: Displays the split between students with high and low self-reported confidence in academic writing

DISCUSSION

The findings of this study highlight the significant influence of language proficiency on knowledge acquisition and academic success among first-year Nature Conservation students at MUT. The strong correlation between English language proficiency and academic performance indicates that language barriers are not peripheral issues, but central to students' academic journeys. Students with higher English proficiency achieved notably higher average scores and demonstrated greater classroom engagement and confidence in academic writing compared to their peers with lower proficiency. This aligns with previous research by Cummins (2000) and Bourdieu (1991), which emphasizes language as a gatekeeper to educational achievement and social capital within academic institutions. Qualitative insights revealed that language difficulties led to misinterpretation of key concepts, passive classroom behavior, and challenges in meeting academic writing expectations. The thematic analysis further showed that students without strong language foundations struggled not only with understanding lectures but also with accurately completing assessments and participating in scientific discourse. Although coping mechanisms like peer study groups and the use of bilingual resources offered some relief, they were largely informal and student-driven, indicating an institutional gap in structured support services. The evidence suggests that addressing language difficulties is essential not merely for student retention but also for fostering an equitable and effective learning environment in specialized fields like Nature Conservation. While this study provides valuable insights, the results are context-specific and should be generalized cautiously. However, the identified patterns of language-related academic challenges likely resonate

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with broader experiences at other South African universities and similar multilingual settings. Therefore, while statistical generalization is limited, analytical generalization is possible, particularly in institutions where students come from diverse linguistic backgrounds and face similar challenges transitioning into English-medium higher education.

CONCLUSION

Language difficulties significantly impact the academic success of first-year Nature Conservation students at MUT. Students who enter university with limited English proficiency face multiple challenges, including reduced classroom participation, difficulty in knowledge assimilation, and weaker performance in academic writing tasks. These challenges compound over time, leading to wider achievement gaps. Therefore, language support should not be viewed as supplementary, but rather as integral to curriculum design and student success strategies in higher education, particularly within technical and scientific programs.

LIMITATIONS

The study focused on a single cohort of first-year Nature Conservation students at a single institution (MUT), which may limit the scope of generalizability. Furthermore, reliance on self-reported measures for classroom participation and academic confidence introduces the possibility of response bias. Finally, while efforts were made to triangulate qualitative and quantitative data, a larger sample size and a longitudinal study design could yield even deeper insights into how language proficiency evolves and affects student progression.

RECOMMENDATIONS

Based on the findings, several interventions are recommended to address the language-related challenges faced by first-year Nature Conservation students. Firstly, **academic language support programs** should be introduced, specifically targeting English for Academic Purposes (EAP) workshops that are tailored to the Nature Conservation curriculum to strengthen students' ability to engage with specialized terminology. Secondly, the development and distribution of **bilingual learning resources,** such as glossaries and translated materials for key ecological and conservation terms, would greatly aid students' conceptual understanding. Furthermore, there is a need for **linguistically responsive teaching,** where lecturers are trained in instructional strategies that scaffold language learning, including the use of visual aids, simplified technical explanations, and a language-across-the-curriculum approach. Additionally, institutions should establish **peer mentorship schemes** by formalizing tutoring programs where senior students assist first-year students both with subject content and academic language development. Finally, implementing **diagnostic language assessments** early in the semester would allow institutions to proactively identify students who require additional language support, enabling timely and targeted remedial interventions that can enhance academic performance and student confidence.

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BIOGRAPHY

Dr. Sibonelo Thanda Mbanjwa is a dedicated lecturer in the Department of Nature Conservation at Mangosuthu University of Technology (MUT), South Africa. He holds a Ph.D. in Environmental Science and specializes in biodiversity conservation, sustainable development, and environmental education. Dr. Mbanjwa is deeply committed to community engagement, student mentorship, and the integration of indigenous knowledge systems into conservation practices. His work bridges academia and practical application, empowering students and communities through innovative teaching, research, and outreach initiatives.

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COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

AUTHOR CONTRIBUTIONS

I, the author, contributed to the study's conception and design. Material preparation, data collection, and research were performed by Mbanjwa S.T. The first draft was written by Mbanjwa S.T.

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DATA AVAILABILITY

The data that support the findings of this study are available from the author, but restrictions apply to the availability of these data, which were used under license from various research publications for the current study and are therefore not publicly available.

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