

Perception and Adaptation of First-Year International Graduate Students Towards Academic Writing: A Case Study at a School of Engineering

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Abstract

International graduate students (IGS) encounter a few challenges in academic writing during their first semesters in the United States. These difficulties encompass language barriers, cultural variances, and a lack of familiarity with academic norms. This research investigates the perception and adaptation of first-year IGS in engineering at a historically black college and university (HBCU). The study adopted a mixed-methods design, combining quantitative findings from an Academic Literacy Questionnaire (ALQ) utilizing the Academic Literacies Framework and with qualitative data collected from interviews with only ten participants. The questionnaire examines the obstacles in academic writing, while the interviews offer comprehensive insights into adaptive strategies. Quantitative findings were analyzed using Statistical Package for the Social Sciences (SPSS) at a significance level of 95 % confidence level to determine descriptive and inferential statistics. At the same time, thematic analysis was utilized for the qualitative data to reveal periodic themes and distinctive strategies used by the participants. Results showed that participants struggled with writing methodology, logically integrating information, and articulating their ideas effectively. Despite these challenges, they implemented various adaptive techniques, including reviewing prior literature, utilizing online platforms like ResearchGate and YouTube, working with peers and mentors, enrolling in formal writing courses, and employing AI tools to enhance grammar and structure. External motivation, such as awards and prizes, and maintaining supportive work environments, was also noted as a crucial influence. The study concluded that institutional support plays a critical role in mitigating these challenges. Suggested improvements include writing programs, availability of academic resources, opportunities for peer collaboration, incorporation of AI tools, and establishment of supportive learning environments. These initiatives can significantly enrich the academic writing skills of IGS, ultimately enhancing their academic performance, retention, and success in their chosen fields.

Keywords: Perception, International Graduate Students, Academic writing, Higher Education.

1.0 Introduction

International students make significant contributions to the diversity and richness of academic institutions globally [1, 2]. These individuals migrate to countries like the United States (US) to realize their aspirations for advanced education and professional success [3]. For instance, in the US, these students hold temporary visas or F-1 nonimmigrant visas, and English is not their primary language of communication [1, 3]. However, these students are tasked with engaging in various forms of writing, including evaluation, summarization, reporting, conclusion formulation, argument construction, and selection of suitable lexicon and grammatical constructs, while simultaneously avoiding acts of plagiarism [4]. Nevertheless, many international graduate students (IGS) encounter challenges in meeting the requisite writing standards and exhibiting competencies in critical thinking [5].

According to the Institute of International Education (IIE) [6], international students comprised 5.6% of the overall population of tertiary education in the United States, which totaled 18,961,280 students. During the 2022/2023 school year, the number of international students registered in US universities and colleges experienced a 12% increase, reaching 1,057,188 students. Within this demographic, approximately 298,523 individuals were classified as new international students. Specifically, the distribution of newly admitted students includes undergraduate (347, 347,602 (32.87%)), graduate (467, 467,027 (44.19%)), non- degree (43, 766 (4.14%)), and OPT (198, 198,793 (18.80%)).

Several recent research have examined the difficulties of academic writing from various viewpoints, such as the faculty advisors' perspective [7] or the perspective of undergraduate students and faculty advisors [5]. Hence, this research evaluates the perception and adaptation of first-year international graduate students (IGS) to academic writing. IGS confront unprecedented writing challenges during their initial two semesters in the United States as they navigate a new educational landscape. While composing academically oriented papers, IGS often encounter numerous obstacles. These challenges may stem from linguistic barriers, cultural differences, and unfamiliarity with academic expectations, among other factors. This study will ultimately recommend appropriate solutions based on the findings.

2.0 Literature Review

Educational institutions are concerned about improving graduates' academic writing abilities, particularly in nations where English is the primary language [8]. Developing academic writing within a specific discipline requires an in-depth, proactive, and rigorous engagement with that discipline's facts and foundational principles [9]. As noted by Arkoudis and Tran [10], academic writing is a cognitive process that is essential to international students' academic achievement. Tardy [4], and Hyland [11], further stress that students' ability to effectively articulate arguments and integrate concepts to compose works in English for educational use is essential for academic achievement, especially at college and university levels.

Writing at a graduate level frequently present obstacles for international students. As an illustration, non-native English speakers often encounter challenges related to grammar, vocabulary, and syntax [9]. These challenges are "worsened" by the complexities inherent in academic English rhetoric, including the substantiation of claims, organization of concepts, and engagement with readers [12].

Moreover, Paltridge [13] indicated that the thesis writing process is mostly challenging for students whose first dialect is not English, as they often do not possess the requisite language proficiency for engaging in critical discourse, understanding categories, and recognizing cultural nuances. As a result, the most significant hurdle in producing written texts is the prevalence of linguistic errors, which can lead to unfavorable perceptions [14].

Angelova and Riazantseva [15] undertook a longitudinal study to investigate the writing obstacles faced by four IGS in the United States. Their results classified these obstacles into attitudinal, cognitive, and social dimensions. Attitudinal obstacles were shaped by previous writing experiences and a preference against rigid academic formats; however, explicit guidance from professors facilitated adaptation. Cognitive obstacles encompassed challenges with reflective papers that conflicted with cultural norms, discouraging critique of authority, and the time-consuming nature of revising assignments. Social obstacles highlighted ambivalence towards collaborative work and difficulties adjusting to the proactive engagement expected within the US academic framework. Unlike the conventional cross-sectional methodology, their research provides valuable insights by monitoring students over a year.

Foreign students, notably those whose predominant dialects are not English, confront difficulties adjusting to innovative educational strategies and academic structures. Additionally, they may struggle to comprehend concepts essential within Western academic contexts, such as citation practices and the implications of plagiarism. This lack of understanding could result in integrity issues that adversely affect their academic performance [15, 16]. Furthermore, the writing conventions from their respective cultures differ significantly, necessitating that international students often relearn how to write suitably within the local academic framework. According to Andrade [1], and Angelova and Riazantseva [15], students from Russia and China frequently miss out on essential elements of academic writing, like thesis statements, topic ideas, and conclusions, which are typically anticipated in the American academic landscape. This situation raises important questions regarding whether international students ought to be retrained to conform to the writing standards upheld by the host educational institutions.

According to Korotkina [17] and Yuldasheva [18], Russian academic writing is formal, indirect, and citation-heavy due to Soviet influences and limited writing instruction while American academic writing values clarity, directness, and critical source engagement, with structured courses teaching thesis-driven essay construction. Chinese academic writing prioritizes sentence accuracy over organization, with studies indicating a less linear rhetorical structure than English, though it increasingly adopts Western styles [19]. These distinctions illustrate broader cultural and pedagogical differences that affect students' adaptation to global academic norms.

Academic Literacies Framework (ALF)

The Academic Literacies Framework (ALF) is a transformative and critical approach to understanding student writing and literacy practices in higher education. It interrogates conventional perceptions of writing as a straightforward, skills-oriented endeavor, instead highlighting the intricate interactions among social, cultural, and institutional influences that inform literacy practices [20]. There are unique communicative traits that are frequently more vital and comprehensive than those seen in non-academic contexts, even though they are part of a wider spectrum of diverse literacies. These distinguishing features of written academic literacy include adherence to practices such as avoiding plagiarism and effectively applying concepts and theories commonly associated with specific academic disciplines [21].

Lea and Street [22] outline three models to explore student writing and literacy in academic settings: academic literacies, academic socialization, and study skills. The study skills model emphasizes technical proficiency, such as grammar and syntax, while the academic socialization model focuses on understanding and applying disciplinary conventions for effective writing. The Academic Literacies Framework (ALF) builds on these models by incorporating aspects like understanding how to analyze and interpret information critically, creating new insights or perspectives that contribute to deeper learning or scholarly discourse, institutional practices, and literacy development, offering a more comprehensive perspective on writing and student learning [20].

This emphasis on identity challenges conventional perceptions of writing as a technical or skill-oriented endeavor, instead positioning it as a critical and reflective practice. By critically examining institutional policies and prevailing academic norms, the framework prompts students and educators to interrogate dominant discursive conventions and investigate how writing influences social interactions and relationships [23]. These tenets establish Academic Literacies as a means for institutional critique, promoting transformations that transcend rigid, skill-centric methodologies to acknowledge the intricacies of student writing practices [24],

The ALF redefines teaching and learning by emphasizing the need for educators to move beyond skills-based approaches to writing. It encourages a student-centered pedagogy that considers the diverse literacy practices students bring to the university and the meanings they ascribe to academic writing [20]. It promotes a student-centric pedagogical approach that acknowledges the multifaceted literacy practices that students contribute to the university environment and the interpretations they attribute to academic writing [20].

The ability to critically assess digital content and use it to create knowledge is increasingly linked to academic literacy in contemporary situations [25, 26].

Academic literacy capability is made up of the following elements:

1. Approaches to academic literacy encompass the development of self-evaluation, self-regulation, metacognitive skills, self-esteem, and self-efficacy as a writer. Additionally, it involves fostering persistence and tolerance for frustration [27].

2. The ability to manage suitable registers, reflection on the writing process, and awareness of academic rhetorical forms and their distinctive characteristics are all components of academic literacy knowledge, which is relevant to text production. Using cohesion mechanisms efficiently is another aspect of it [28].
3. Academic literacy practice involves employing effective reading, writing, and speaking strategies within academic contexts. These strategies ensure that texts are linguistically and technically appropriate for various academic settings [29].
4. Problem-solving skills enable learners to construct problem scenarios and identify similarities between situations connected to learning objectives. They also promote critical thinking [30]

3.0 Methodology

This study was conducted among first-year international graduate students ($N = 22$) in engineering at a Historically Black College University in the United States. A mixed-methods approach was utilized, and this study thoroughly examined participants' academic literacy competencies using quantitative and qualitative techniques. The main instrument for collecting quantitative data was the Academic Literacy Questionnaire (ALQ) [7, 31, 32, 33], and a semi-structured interview was used to acquire qualitative data. According to Tashakkori and Creswell [34], a mixed design method is a study in which a researcher gathers and analyzes data, combines the findings, and concludes using a combination of qualitative and quantitative approaches.

The quantitative study used purposive sampling to include all qualified participants who might provide correct and trustworthy data pertinent to the research problem [35, 36]. The questionnaire was divided into two sections for this study: "Overcoming the Challenges in Academic Writing Practices" six (6) items and "Challenges Faced in Academic Writing Practices" twenty (20) items. On a scale of 1 (extremely tough) to 4 (very easy), the participants were asked to score the academic writing practice tasks' level of difficulty.

Reliability Test on the Instrument

Pallant [37] conducted a pilot study consisting of a sample size of $n = 21$ to evaluate the reliability of the research instrument. A comparatively high degree of internal consistency was established by Cronbach's Alpha reliability coefficient, with values above the recognized limit of 0.70

The alpha coefficient for the preliminary investigation was 0.822, demonstrating a strong internal consistency liability. The ALQ consists of 20 items addressing challenges in academic writing practices. Cronbach's Alpha value, 0.903, further confirms the instrument's reliability. A mean score of 2.5 or above, derived from questions modified from [32], was determined to represent relative ease in handling academic writing difficulties. Singh [38] was the source of this questionnaire.

Figure 1 illustrates the study's theoretical framework. Academic writing exercise, as the main dependent variable, is shaped by the challenges IGS encounter and their strategies to address them [38].

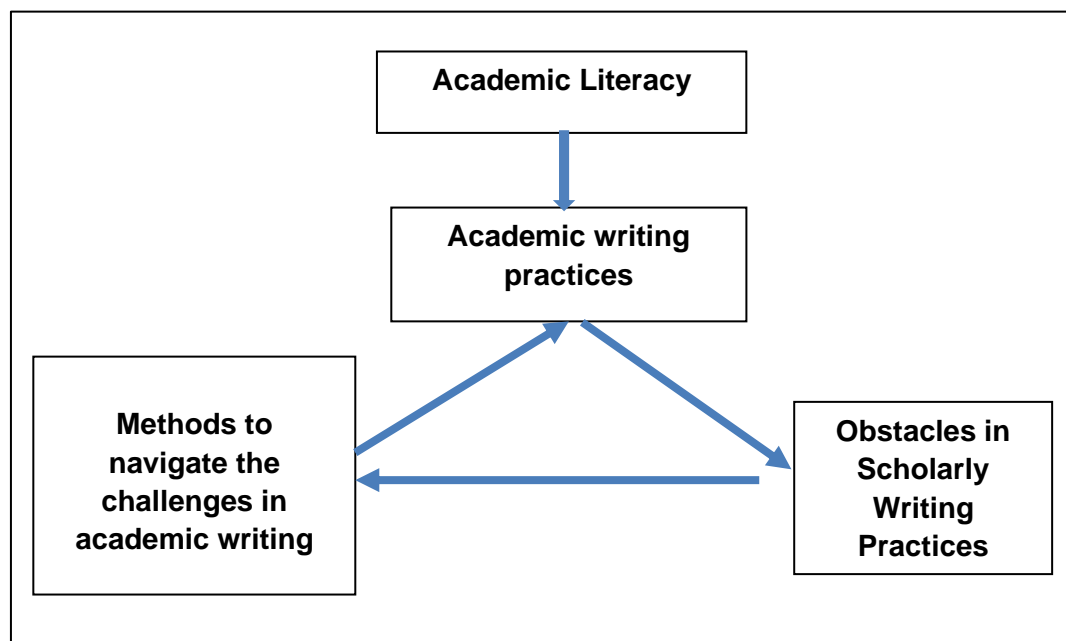


Figure 1: Theoretical Framework of the study [38]

Data Analysis

Quantitative Analysis:

The data from the ALQ were analyzed using statistical software, Statistical Package for the Social Sciences (SPSS) version 27, at a 95 % significance level. Descriptive statistics summarized the data, while inferential statistics identified significant trends and correlations.

The mean score of each respondent was evaluated and used to determine their perception of difficulties. A mean score less than 2.50 was considered "Difficult," while mean scores of 2.50 and above were reported as "Easy." For Overcoming the Challenges in Academic Writing Practices, polar answers "Yes or No" were required by the twenty-two participants who undertook the Academic Literacy questionnaire. The social demographic data of each respondent was also observed to understand how their distribution would affect the study using inferential statistics using Fisher's Exact Test. Fisher's exact test is only used when analyzing for a smaller sample size [39].

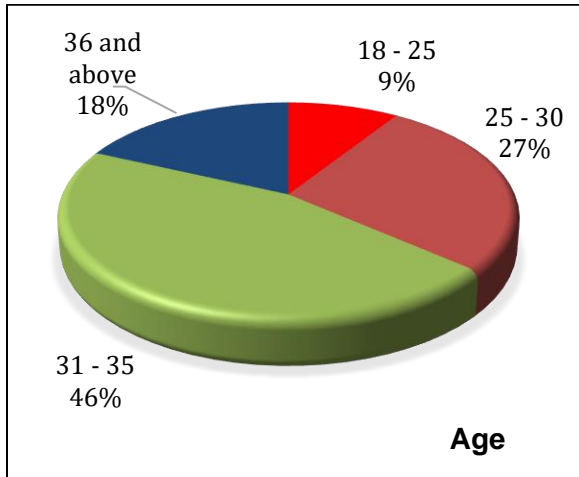
Qualitative Analysis:

Descriptive theme analysis was used to analyze the interviewee's response. A short interview was conducted with ten (10) participants, asking them "how they overcame the challenges of academic writing", and a supplementary question was asked to know if they could write in their first language to ease writing challenges and then translate to English. The interview complemented the questionnaire by providing deeper qualitative insights [40, 41]. Questions were used to explore participants' experiences, perceptions, and strategies related to academic literacy. The interview transcripts were thematically analyzed to identify recurring themes, patterns, and unique perspectives. The response will involve coding the data, categorizing themes, and interpreting the findings to align with the study's objectives. This approach helped to reduce how data elements are organized qualitatively [42, 43].

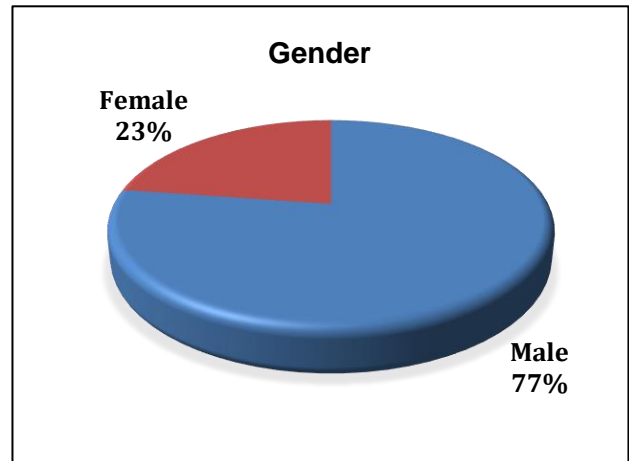
4.0 Results and Discussion

The social demographic data of the respondents, as shown in Figure 3 (a-d), reveal that the majority were aged between 31-35 years (45.5%) and male (77.3%). All respondents were international graduate students, with 77.3% coming from Nigeria and 13.6% from Iran. Most respondents (86.4%) used English as their primary language for lectures during their first degree. Regarding their current degree programs, 81.8% were enrolled in PhD or DEng programs, while 18.2% were pursuing a master's degree.

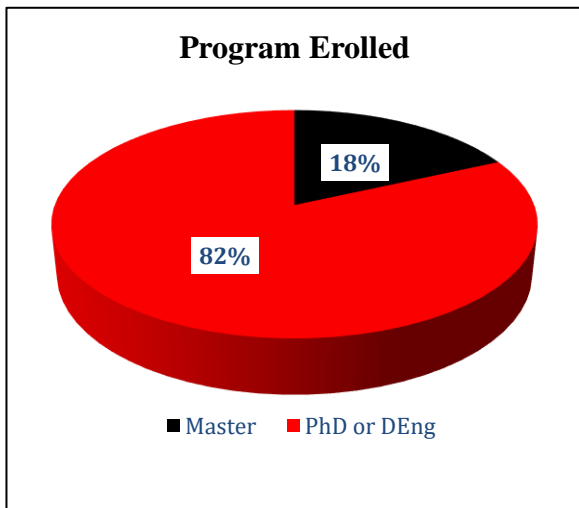
Table 2 highlights the varying difficulty levels of academic writing tasks. Writing the findings/analysis section (mean = 2.64) and writing coherent paragraphs (mean = 2.68) were considered the most difficult, with over 60% of respondents rating these tasks as difficult.



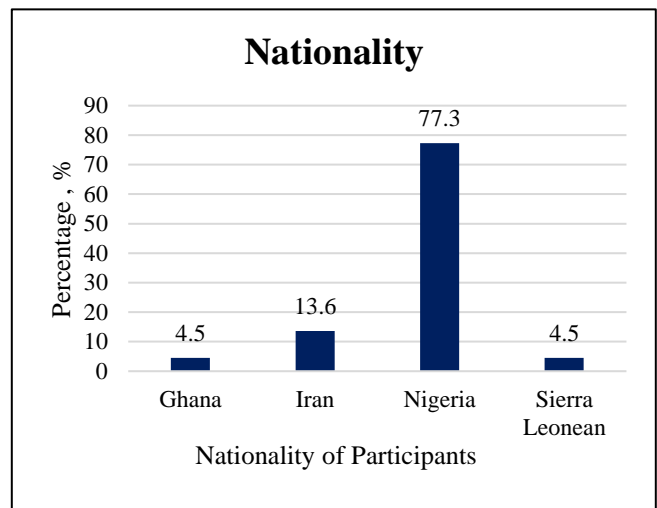
(a)



(b)



(c)



(d)

Figure 3(a -d): (a) chart of age distributions; (b) chart of gender; (c) chart of program enrolled for; (d) The chart of the participants nationality

Similarly, writing the methodology and literature review (mean = 2.68) was seen as difficult by more than 40% of respondents. Revising written work and linking sentences smoothly (mean = 2.73) were also rated as difficult. Tasks such as expressing ideas clearly/logically, synthesizing

Table 2: Obstacles in Scholarly Writing Practices

| Encounters in Academic Writing | 1 (%) | 2 (%) | 3 (%) | 4 (%) | Mean |
|---|--------------|--------------|--------------|--------------|-------------|
| Drafting the method used in writing | 0.0 | 45.5 | 40.9 | 13.6 | 2.68 |
| Employing a suitable academic style | 4.5 | 9.1 | 72.7 | 13.6 | 2.95 |
| Writing structured and logical paragraphs | 4.5 | 27.3 | 63.6 | 4.5 | 2.68 |
| Writing the analysis of your findings | 4.5 | 36.4 | 50.0 | 9.1 | 2.64 |
| Conveying ideas in proper English syntax | 4.5 | 13.6 | 54.5 | 27.3 | 3.05 |
| Communicating thoughts in a structured and comprehensible way | 4.5 | 22.7 | 59.1 | 13.6 | 2.82 |
| Performing a thorough literature review | 0.0 | 45.5 | 40.9 | 13.6 | 2.68 |
| Integrating information/concepts | 0.0 | 31.8 | 54.5 | 13.6 | 2.82 |
| Preparing a writing task | 4.5 | 31.8 | 54.5 | 9.1 | 2.68 |
| Writing the discussion section | 0.0 | 22.7 | 72.7 | 4.5 | 2.82 |
| Paraphrasing/summarizing | 0.0 | 27.3 | 59.1 | 13.6 | 2.86 |
| Editing written assignments for precision | 0.0 | 22.7 | 54.5 | 22.7 | 3.00 |
| Revising composed texts: Composing the introductions. | 0.0 | 40.9 | 45.5 | 13.6 | 2.73 |
| Ensuring coherent transitions between sentences | 0.0 | 31.8 | 63.6 | 4.5 | 2.73 |
| Writing conclusion | 0.0 | 27.3 | 59.1 | 13.6 | 2.86 |
| Citing the sources | 0.0 | 18.2 | 59.1 | 22.7 | 3.05 |
| Writing references/bibliography | 4.5 | 9.1 | 54.5 | 31.8 | 3.14 |
| Writing the recommendation section | 0.0 | 22.7 | 63.6 | 13.6 | 2.91 |
| Writing executive summary/abstracts | 0.0 | 36.4 | 50.0 | 13.6 | 2.77 |

information, and writing the discussion section (mean = 2.82) were considered moderately difficult, with fewer respondents finding them very difficult.

In contrast, proofreading (mean = 3.00), expressing ideas in correct English (mean = 3.05), and referring to sources (mean = 3.05) were generally perceived as easier. Writing references/bibliography (mean = 3.14) was rated as the easiest, with 31.8% of respondents rating it as very easy and 54.5% as easy. Overall, more technical tasks were challenging, while structural and technical aspects like proofreading and referencing were easier for most respondents. Figure 4 is the overall perceived ease of academic writing of the participants in the study which was calculated based on the mean score below 2.50 considered Difficult, and greater than or equal to 2.50, perceived as Easy.

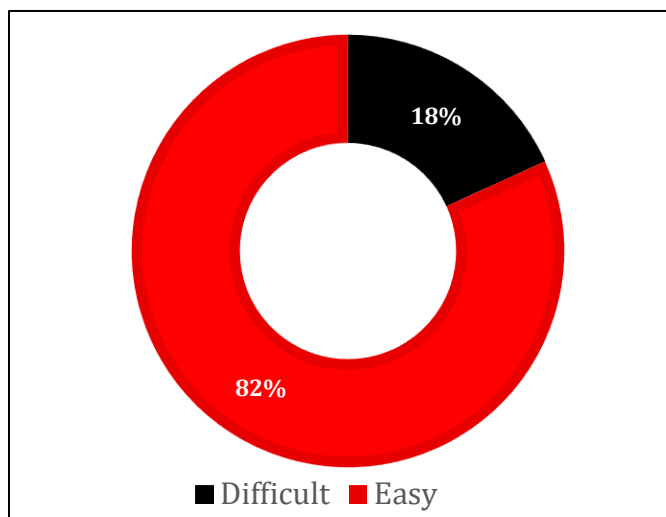


Figure 4: Overall Perceived Ease of Academic Writing

Figure 5 shows the strategies respondents use to overcome academic writing challenges. The most common approach, being persistent and trying to express ideas in diverse ways, was used by 90.9% of respondents. Discussing assignments with lecturers (72.7%) and using editors (68.2%) were also widely employed strategies. Additionally, seeking help from classmates (59.1%) was common, while taking additional writing courses was reported by 54.5%. Fewer respondents (9.1%) wrote in their first language and translated into English. Persistence, seeking lecturer guidance, and utilizing external support were key strategies for overcoming writing challenges.

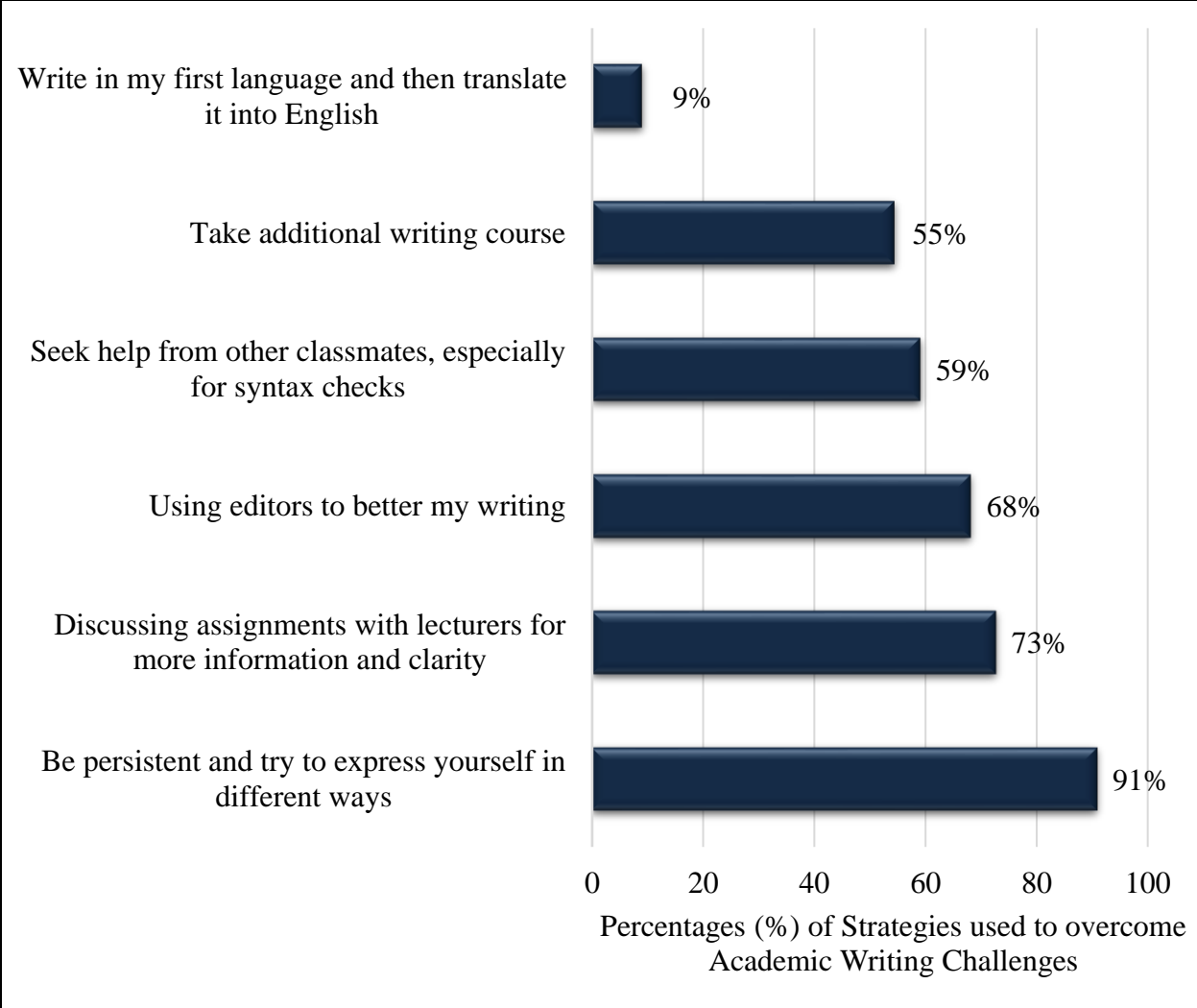


Figure 5: Strategies Used to Overcome Academic Writing Challenges

Table 3: Association between Socio-demographic Variables and Perceived Ease of Academic Writing

| Socio-demographic variables | Difficult <i>f</i> (%) | Easy <i>f</i> (%) | x² | df | p |
|------------------------------------|-----------------------------------|------------------------------|----------------------|-----------|----------|
| Age | | | | | |
| 18 - 25 years | 0 (0) | 2 (9.1) | | | |
| 25 - 30 years | 2 (9.1) | 4 (18.2) | 3.37 | 3 | 0.34 |
| 31 - 35 years | 1 (4.5) | 9 (40.9) | | | |
| ≥ 36 years | 2 (9.1) | 2 (9.1) | | | |
| Gender | | | | | |
| Male | 5 (22.7) | 12 (54.5) | | | |
| Female | 0 (0) | 5 (22.7) | 2.985 | 1 | 0.29 |
| Country of origin | | | | | |
| Nigeria | 3 (13.6) | 14 (63.6) | | | |
| Ghana | 0 (0) | 1 (4.5) | 3.98 | 3 | 0.31 |
| Sierra Leonean | 0 (0) | 1 (4.5) | | | |
| Iran | 2 (9.1) | 1 (4.5) | | | |
| Degree Program | | | | | |
| Masters | 2 (9.1) | 2 (9.1) | | | |
| PhD/Deng | 3 (13.6) | 15 (68.2) | 2.071 | 1 | 0.21 |

The association between socio-demographic variables and perceived ease of academic writing was analyzed using Fisher's Exact Test. Table 3 summarizes the results. These findings indicate no significant associations between the respondents' socio-demographic variables and the perceived ease of academic writing.

Qualitative Analysis of Strategies for Overcoming Writing Challenges

The qualitative feedback from the interview conducted for ten (10) first-year international graduate students in engineering revealed various strategies to overcome writing challenges. Key themes included revisiting related pieces of literature to understand academic conventions and draw motivations from them, with eight participants citing this as a key factor. One noted, "Reviewing prior literature clarifies how experts approach writing."

Internet resources like ResearchGate, Google Scholar, and YouTube are widely used to access journals, articles, and templates to aid comprehension and writing. Collaboration through peer reviews, group discussions, and advisor feedback was also essential for identifying and improving weaknesses.

Participants highlighted the benefits of formal learning, such as writing-focused courses and consistent practice through exercises, seminars, and conferences. Technology and AI tools for grammar correction and structural refinement streamlined the writing process. One participant shared that "AI tools help refine my work, especially with grammar and structure."

External motivators like rewards and recognition enhanced effort, while a calm and organized environment was deemed essential for focus. These findings underscore the combination of resources, collaboration, and motivation in effectively addressing academic writing challenges.

Writing academic work in one's mother tongue or native language and then transcribing it to English poses more challenges for nationals whose official language is English. Some key responses were "English is my country's generally acceptable language, I never took any course on writing in my native language", "It is a waste of time writing in my native language when I can write better in English coupled with the other resources to enhance my writing skills", an Iranian who participated in the interview also highlighted "I can write both in my native language effectively but on an average in English". Yuldasheva [18] emphasized that writing proficiency

represents a transferable skill, it is beneficial to develop this ability by first concentrating on the native language and then transferring those skills to a foreign language, or by undertaking concurrent study of both languages.

4.1 Discussion

This research has shown that students' academic writing skills in graduate school were influenced by their academic background or initial language used to communicate in their previous degrees. A national whose official language differs from the English language finds it challenging to grasp the expectations of the new academic environment, especially in graduate school. Research has revealed that becoming acclimated to an unfamiliar educational system and cultural environment, along with navigating the challenges associated with employing a second language, demands a substantial temporal commitment. [1, 44, 45].

The findings from this study deduced that IGS found technical tasks such as "writing the findings/analysis section, writing coherent paragraphs, and crafting the methodology and literature review" most challenging. Similarly, "revising written work, linking sentences smoothly, and writing the discussion section were also perceived as moderately difficult. "In contrast, tasks such as "writing references or bibliography, proofreading, expressing ideas in correct English, and referring to sources" were generally easier, with many IGS finding them manageable or straightforward.

In general, this study revealed that IGS, notably those from West African anglophone countries like Nigeria, Ghana, and Sierra Leone, found it easier to make the changes needed to study and write in English, while non-anglophone nationals had little exposure to the English language during their first degree, which would have prepared them for their graduate study in English. One explanation for this difficulty is that the amount of transfer that can occur between languages is affected by the language transition from first to second or third languages [46, 47]. Ringbom [46] explained that Arabic speakers take longer to learn English vocabulary because language distance plays a significant role in third-language transfer. As a result, they have trouble learning English and using it in their academic work. The shared characteristic among Anglophone countries is that English is employed within a notably multilingual framework, where it holds a prominent role as

either an official or national language and functions as the primary medium for governance, law, commerce, and education [48]

The most common strategies used to adapt to challenges pose while writing academic papers are tenacity and trying to express ideas in diverse manners, reviewing related literature in the area of study, discussing assignments with lecturers, and using editors and academic social media like ResearchGate, Google Scholar, and YouTube, to mention a few enhanced academic writings. In addition, using technology and artificial intelligence AI tools (ChatGPT, Grammarly, and so on) helps overcome these writing challenges.

The absence or lack of a proper understanding of academic writing may cause respondents to apply their preexisting assumptions, opinions, and methods that have provided them with confidence and reliability when faced with academic challenges like writing a research paper [49]. According to Casanave and Hubbard, [50], faculty members failed to provide students with the necessary materials and guide that can assist international students in lessening their difficulties in academic writing practices and do not offer writing samples that illustrate the genres of academic writing (such as literature reviews, research proposals, and article critique).

5.0 Conclusion

This study reveals that first-year IGS in engineering at HBCUs face various challenges in academic writing. These include difficulties using appropriate academic styles, writing coherent paragraphs, expressing ideas clearly, and constructing sections such as methodology, literature review, and analysis. Regardless of these challenges, students have adopted several adaptive measures to improve their writing skills and overcome these obstacles.

Reviewing previous works is a popular method for helping students with writing difficulties, as it enables them to comprehend academic structure and standards [20]. Moreover, many students rely on online resources like ResearchGate, academia.edu, Google Scholar, and YouTube to access relevant materials and clarify intricate topics. Collaborating with advisors, peers, and writing clubs or groups is also essential, as it provides opportunities for support and critique. Writing and research methods classes offer formal learning opportunities that equip students with technical skills and boost their confidence in academic writing. The increasing dependence on digital

resources for academic success is further evidenced by the fact that some students utilize technology and AI tools for sentence restructuring and grammar correction.

Motivation through external rewards and maintaining a conducive environment are also significant factors in overcoming writing challenges. Rewards such as prizes and recognition encourage sustained effort, while an organized, distraction-free workspace enhances focus and productivity.

To address the challenges faced by IGS in academic writing, universities should provide tailored writing programs, workshops, and training on research methodology, citation, and effective use of academic resources like ResearchGate and library databases. Peer-to-peer learning through writing groups, mentorship, and constructive feedback from advisors can foster collaboration and skill improvement. Integrating AI-powered tools and offering workshops on their use can enhance grammar, structure, and style. Motivating students through awards, essay contests, and a conducive learning environment with quiet academic spaces can further boost engagement and productivity, ultimately improving their academic performance and success.

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