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THE STUDENT TEACHERS' LINGUISTIC REASONING PROCESSES

BY

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**A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF
EDUCATION IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS
OF THE AWARD OF BACHELOR OF EDUCATION LANGUAGE AND
LITERATURE OF BUSITEMA UNIVERSITY**

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STATEMENT OF DECLARATION

I **NELIMA JUDITH** declare that this research report is my original work and its contents have not partially or wholly been presented for an academic award by any person in any university or institution of high learning.

NELIMA JUDITH

Sign 

Date: 2nd Aug 2026

DEDICATION

I dedicate this research report to my beloved parents for their endless love, support, and sacrifices that have enabled me to reach this far in my academic journey

To my family and friends for their encouragement and moral support throughout my studies

Above all, I dedicate this work to the Almighty God for His grace, strength, and wisdom

SUPERVISOR'S ENDORSEMENT

This research report has been prepared under my supervision/mentorship upon appointed by Busitema University

A handwritten signature in blue ink, appearing to read 'Rachael', is written over a horizontal dotted line.

Madam: Rachael Nakazinga

Date: 2nd Aug 2026

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I give glory to the Lord Almighty, who gave me knowledge, skill and understanding with courage.

My heartfelt gratitude goes to my dearest and beloved parents Khaukha Fred and Nakamate Annet, my dear siblings, cousins and all those I haven't mentioned for supporting me during the study.

I acknowledge my respondents for the information on which the research is based on, without them this research will not be successful.

I thank the administration of Busitema University for having admitted me to this course and my supervisor for patiently guiding and correcting me in this research work.

SUMMARY

This research report explores the linguistic reasoning processes of student teachers, focusing on how they formulate linguistic questions, consult relevant sources and construct arguments. The study was conducted at Busitema University, involving 32 student teachers from the Education program. The primary aim was to understand the mechanisms underlying their linguistic engagement to inform pedagogical improvements.

The problem addressed is the observed gap in student teachers' ability to engage deeply with linguistic concepts which affects their teaching efficacy. The purpose was to analyze their reasoning processes with specific objectives: (1) to examine how student teachers ask linguistic questions, (2) to investigate how they consult linguistic sources and (3) to assess how they build argumentation. Research questions included: What strategies do student teachers use to formulate linguistic questions? What types of sources do they prefer and why? How do they structure arguments based on linguistic evidence?

A mixed-methods approach was employed, including surveys, interviews and observation of classroom activities. Data were analyzed using thematic analysis for qualitative data and descriptive statistics for quantitative data. Validity was ensured through triangulation and ethical considerations included informed consent and anonymity.

Findings revealed that student teachers often asked surface-level questions due to limited exposure, primarily consulted online sources like dictionaries and academic websites and built arguments through logical sequencing but struggled with evidence integration. Interpretation linked these to curriculum deficiencies, suggesting enhanced training in critical linguistics. Conclusions highlight the need for targeted interventions with recommendations for curriculum reform, further research on digital literacy in linguistics and policy changes to integrate reasoning skills in teacher education. This study contributes to improving student teachers' linguistic proficiency, ultimately benefiting language education outcomes.

Definition of Key Terms

Linguistic Reasoning: The cognitive process of analyzing, interpreting, and applying language structures and meanings in problem-solving contexts.

Student Teachers: Individuals enrolled in teacher education programs who are preparing to become professional educators.

Argumentation: The systematic construction of claims supported by evidence and reasoning in linguistic discussions.

TABLE OF CONTENT

STATEMENT OF DECLARATION.....	ii
DEDICATION.....	iii
SUPERVISOR'S ENDORSEMENT	iv
ACKNOWLEDGEMENT	v
SUMMARY	vi
Definition of Key Terms	vii
TABLE OF CONTENT	viii
CHAPTER ONE	1
1.1 Introduction and Background to the Study	1
1.3 Purpose of the Study.....	3
1.4 Aim of the Study	3
1.5 Objectives of the study	3
1.6 Hypotheses/Research questions.....	3
1.7 Significance of the Study.....	4
1.8 Structure of the Report.....	4
CHAPTER TWO	5
REVIEW OF RELATED LITERATURE.....	5
2.1 Introduction to the Literature Review	5
2.2 How Student Teachers Ask Linguistic Questions.	5
2.3 How Student Teachers Consult Linguistic Sources.	6
2.4 How Student Teachers Build Argumentation	6
CHAPTER THREE.....	9
RESEARCH METHODOLOGY.....	9
3.1 Introduction.	9

3.2 Research Design.....	9
3.4 Study Area	10
3.5 Study Population The target population consisted of all third-year student teachers enrolled in	
3.6 Sampling Criteria Participants were selected using 3.7 Research Tools and Instruments.....	10
3.8 Data Analysis Procedures.	11
3.9 Validity and Reliability.	11
3.10 Ethical Considerations	12
3.11 Limitation of the Study	12
CHAPTER FOUR:.....	13
PRESENTATION OF FINDINGS	13
4.1 Introduction	13
4.2 Findings on How Student Teachers Asked Linguistic Questions. adequacy of theoretical explanations.....	13
Table 1: Distribution of Question Types Asked by Student Teachers.	13
4.3 Findings on How Student Teachers Consulted Linguistic Sources	14
Table 2: Preferred Linguistic Sources by Student Teachers.	14
Table 4: Barriers to Accessing Reliable Linguistic Sources	15
4.4 Findings on How Student Teachers Built Argumentation.....	15
Table 3: Argumentation Structure Ratings.....	15
4.5 Interconnections among the Three Reasoning Processes.	16
CHAPTER FIVE	18
INTERPRETATION AND DISCUSSION OF FINDINGS.....	18
5.1 Introduction	18
5.2 Interpretation and Discussion on Asking Linguistic Questions.	18
5.3 Interpretation and Discussion on Consulting Linguistic Sources.	18
5.4 Interpretation and Discussion on Building Argumentation.	19
5.5 Conclusions	19
5.6 Recommendations for Curriculum and Pedagogy	20
Policy Recommendations.....	20

REFERENCES.....	22
APPENDICES.....	24
Appendix 1: Research Tools and Instruments	24
Appendix 4: Research Budget	25

CHAPTER ONE

1.1 Introduction and Background to the Study

Linguistic reasoning forms a critical component of teacher education particularly for student teachers who will instruct future generations in language arts, literature and related fields. In an increasingly interconnected and multilingual world, the capacity of teachers to reason explicitly about language structures, meanings and uses has become indispensable. Linguistic reasoning encompasses the ability to dissect language elements such as syntax, semantics, phonology, morphology and pragmatics in order to form coherent educational strategies, diagnose learner difficulties and design effective instructional interventions.

Within the specific context of Ugandan higher education and at Busitema University in particular, student teachers engage with linguistics primarily through coursework and practicum experiences. Busitema University's Faculty of Science and Education at the Nagongera Campus in Tororo District serves a linguistically diverse student body drawn from communities where Lumasaaba, Luganda, Ateso, Japadhola, Samia and English coexist. This multilingual environment offers both rich opportunities and distinctive challenges for the development of linguistic reasoning. Students arrive with varied prior exposure to formal linguistic analysis, shaped by their secondary-school language experiences and the quality of instruction they received.

The background to the present study stems from systematic observations that student teachers demonstrate markedly varying levels of proficiency in reasoning about language. Some displays confident analytical questioning and the ability to integrate evidence from multiple sources into well-warranted arguments; others remain confined to surface-level description and rely on the most immediately available online resources. These differences appear to be influenced by prior educational trajectories, exposure to multilingual environments, access to digital and print resources and the extent to which critical thinking has been explicitly cultivated within their linguistics modules.

Cognitive linguistics theories provide a useful theoretical lens for examining these processes. Question-asking, source consultation and argument building are recognized as key facets of linguistic reasoning. Bloom's revised taxonomy (Anderson & Krathwohl, 2001) distinguishes lower-order cognitive processes (remembering and understanding) from higher-order ones (analyzing, evaluating and creating). Vygotsky's sociocultural theory (1978) emphasizes that higher mental functions, including sophisticated linguistic reasoning, emerge through social mediation within the zone of proximal development. Kuhlthau's Information Search Process model and Toulmin's layout of arguments further supply frameworks for understanding source consultation and argumentation respectively.

Despite the theoretical richness of these frameworks, empirical research on how Ugandan student teachers actually enact linguistic reasoning remains scarce. Most existing studies originate from Western or Asian contexts and therefore may not fully capture the infrastructural, linguistic and pedagogical realities of East African teacher education. The present study seeks to add contextual gap by generating detailed, process-oriented data from Busitema University that can inform both local curriculum development and broader conversations about linguistic reasoning in teacher preparation across the Global South.

Furthermore, the rapid expansion of digital technologies has altered the landscape of linguistic inquiry. Student teachers now have unprecedented access to online dictionaries, open-access journals and even large language models, yet the pedagogical implications of these tools for the development of disciplined linguistic reasoning are still poorly understood. At the same time, persistent infrastructural challenges like intermittent electricity, limited bandwidth and uneven distribution of digital devices which mean that the benefits of technological change are unevenly distributed. Understanding how student teachers navigate this complex information ecology is therefore both timely and practically urgent.

Finally, the multilingual character of Ugandan classrooms adds another layer of complexity. Student teachers who themselves navigate multiple languages on a daily basis may bring valuable metalinguistic awareness to their reasoning; conversely, they may also transfer patterns of interference or simplification that affect the precision of their linguistic analyses. Capturing these dynamics requires careful attention to participants' linguistic biographies and to the interactional contexts in which reasoning occurs. The present study therefore treats multilingualism not merely as background context but as a potentially formative influence on the three core reasoning processes under investigation.

1.2 Problem Statement

Student teachers at Busitema University and comparable institutions exhibit persistent challenges in linguistic reasoning. These challenges manifest in three interrelated domains. First, many student teachers formulate imprecise or predominantly factual questions that fail to probe relationships, implications or alternative analyses. Second, they frequently rely on convenient but sometimes unreliable sources particularly general online dictionaries and the first few results returned by commercial search engines rather than authoritative linguistic databases, peer-reviewed journals or carefully evaluated textbooks. Third, the arguments they construct often contain clear claims and some supporting data yet lack explicit warrants that connect evidence to

conclusions, and rarely incorporate rebuttals or consideration of counter-examples.

These deficiencies hinder student teachers' ability to teach language effectively. Teachers who themselves struggle to reason deeply about linguistic phenomena are less well equipped to diagnose learner errors, design scaffolded activities that promote higher-order thinking, or model the kind of critical engagement with language that secondary-school syllabuses increasingly demand. Consequently, linguistic misconceptions may be perpetuated across successive cohorts of learners. The problem is exacerbated by limited access to quality linguistic resources (both print and digital), intermittent internet connectivity in the campus environment, and the relative absence of explicit instruction in critical thinking and argumentation within existing linguistics modules.

Unless these gaps are systematically documented and addressed through evidence-based interventions, teacher-education programmes risk graduating professionals whose linguistic reasoning remains underdeveloped relative to the demands of contemporary language classrooms. The present study therefore sets out to analyze the nature, causes and consequences of reasoning processes in order to generate actionable recommendations for curriculum reform and pedagogical innovation.

1.3 Purpose of the Study

The purpose of the study was to analyze the linguistic reasoning processes of student teachers at Busitema University in order to identify existing strengths and areas requiring improvement within teacher-education programmes. By generating detailed empirical evidence on question formulation, source consultation and argumentation, the study aims to provide a diagnostic foundation for targeted pedagogical interventions.

1.4 Aim of the Study

The aim was to generate insights capable of enhancing linguistic pedagogy in teacher-training programmes, both at Busitema University and, by extension, in other Ugandan institutions facing similar contextual constraints. The study aspires to contribute to a more evidence-informed approach to the teaching of linguistics within pre-service teacher education

1.5 Objectives of the study

This study was guided by three specific objectives.

To examine how student teachers asked linguistic questions.

To investigate how student teachers consulted linguistic sources.

To assess how student teachers built argumentation.

1.6 Hypotheses/Research questions

In line with the objectives, the following research questions were formulated.

What strategies did student teachers employ to formulate linguistic questions?

To what extent did prior knowledge influence the depth of questions asked?
What types of linguistic sources were most commonly consulted by student teachers?
What barriers existed in accessing reliable linguistic sources?
How did student teachers structure their linguistic arguments?
What role did evidence from sources play in building argumentation?

1.7 Significance of the Study

The study holds significance at multiple levels. For curriculum developers at Busitema University, the findings highlight concrete strengths and weaknesses in current linguistic reasoning practices and thereby provide an empirical basis for revising course content, sequencing and assessment. For student teachers themselves, the research offers a mirror in which they can examine their own cognitive habits and identify pathways toward more sophisticated engagement with linguistic material. For practising educators and professional-development providers, the study supplies diagnostic information that can inform in-service training modules focused on critical linguistics and argumentation.

At the policy level, the recommendations concerning digital literacy, resource provision and the integration of reasoning skills into accreditation standards may inform national discussions within the Ministry of Education and Sports and the National Council for Higher Education. Finally, by addressing a documented gap in Ugandan research on student teachers' linguistic reasoning, the study contributes to the regional and international literature on teacher cognition and language-teacher education.

1.8 Structure of the Report

The report is organized into five substantive chapters preceded by the conventional preliminary pages. Chapter One has introduced the background, problem, purpose, objectives, research questions and significance of the study. Chapter Two reviews related literature organized around the three core processes of question formulation, source consultation and argumentation, and presents the conceptual framework that guided the inquiry. Chapter Three details the research methodology, including design, methods, study area, population, sampling, instruments, analysis procedures, validity, reliability, ethics and limitations. Chapter Four presents the empirical findings structured according to the three objectives. Chapter Five interprets and discusses those findings in relation to the literature, draws conclusions and offers recommendations for practice, further research, community development and policy. The report concludes with a list of references and appendices containing research instruments, introduction letters, the research timeline and the research budget.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction to the Literature Review

This chapter reviews theoretical and empirical literature relevant to the linguistic reasoning processes of student teachers. The review is organised around the three objectives of the study: question formulation, source consultation and argumentation building. It draws on cognitive, sociocultural and information-literacy frameworks and examines research conducted in diverse geographical contexts, with particular attention to African and Global-South settings where available. The chapter concludes by identifying knowledge gaps that the present study seeks to address and by presenting the integrated conceptual framework that guided data collection and analysis.

2.2 How Student Teachers Ask Linguistic Questions.

Question formulation constitutes the entry point of linguistic reasoning. According to Bloom's revised taxonomy (Anderson & Krathwohl, 2001), higher-order questions that demand analysis, evaluation and creation drive deeper cognitive engagement than lower-order questions focused on knowledge recall and basic comprehension. Vygotsky's sociocultural theory (1978) further posits that questions emerge through social mediation within zones of proximal development; the quality of the discursive environment therefore shapes the sophistication of the questions learners generate.

Empirical studies reveal mixed competencies among student teachers. Graesser and Person (1994) found that pre-service teachers predominantly ask shallow questions (for example, "What is a morpheme?") rather than deep ones (for example, "How does morphological opacity affect learnability?"). In a Malaysian context, Rajaretnam and Kaur (2021) observed that 68% of 120 student teachers' linguistic questions in microteaching were convergent, a pattern they attributed to examination-oriented training. Conversely, Alhodiry (2022), in a Saudi Arabian study using think-aloud protocols, documented that exposure to Socratic seminars increased divergent questioning by 42% among 45 trainees.

African evidence remains relatively sparse. Ogunleye (2019) in Nigeria noted that student teachers' questions on phonology were constrained by mother-tongue interference, leading to predominantly surface-level inquiries. Studies from Ghana and Kenya similarly report that pre-service teachers tend to privilege definitional and example-seeking questions over those that explore theoretical tensions or pedagogical implications. No published Ugandan studies focusing specifically on the question-formulation practices of student teachers in linguistics were located at the time of this review, representing a clear contextual gap that the present study addresses.

Several factors appear to influence question depth. Prior knowledge and the quality of secondary school language instruction shape the conceptual resources students bring to university level

linguistics. The design of university modules whether they emphasis coverage of content or explicit modelling of inquiry also matters. Collaborative learning structures and the presence of more knowledgeable peers or tutors can scaffold movement toward higher-order questioning, consistent with Vygotskian principles. Conversely, high-stakes assessment regimes that reward factual recall may inadvertently discourage the risk-taking associated with evaluative and creative questions.

2.3 How Student Teachers Consult Linguistic Sources.

Source consultation reflects information literacy within linguistic inquiry. Kuhlthau's Information Search Process (ISP) model (2004) outlines six stages: initiation, selection, exploration, formulation, collection and presentation. Student teachers often falter at the evaluation stage, accepting sources on the basis of convenience or surface credibility rather than rigorous appraisal of authority, accuracy, currency and relevance.

Badke (2018) argued that digital natives frequently default to convenience-based searching (Google, Wikipedia) over authority-based selection (corpora, peer-reviewed journals). A longitudinal study by Walraven et al. (2019) tracked 80 Dutch pre-service teachers and found that only 12% verified source authorship while 71% relied on the first three Google results. In linguistics-specific tasks, Conijn et al. (2023) used screen-capture software to reveal that student teachers spent on average only 30 seconds evaluating linguistic database entries such as those in the Corpus of Contemporary American English.

In developing contexts, access barriers compound poor evaluative habits. Mulumba (2020) surveyed 150 Ugandan student teachers and reported that 82% cited textbooks over journals because of paywalls and unreliable internet. Tumuheki (2022) at Makerere University observed that peer notes constituted the primary source for 67% of linguistics assignments. These findings underscore the need to examine source hierarchies and evaluation criteria among Busitema University trainees, who operate under similar infrastructural constraints.

Digital literacy training has shown promise in shifting consultation patterns. Interventions that explicitly teach CRAAP (Currency, Relevance, Authority, Accuracy and Purpose) or similar evaluation frameworks, combined with guided practice using university library databases, have produced measurable improvements in source quality in several studies. However, such training remains unevenly implemented in Ugandan teacher-education programmes, leaving many students reliant on informal strategies developed through trial and error.

2.4 How Student Teachers Build Argumentation

Linguistic argumentation requires the integration of claims, evidence and warrants (Toulmin, 1958/2003). Newell et al. (2011) emphasized that effective arguments in linguistics demand counter-argument anticipation and the fluent use of disciplinary met language. Without these elements, arguments remain monologic and under-warranted.

Intervention studies demonstrate that argumentation quality can be improved through explicit instruction. Osborne et al. (2016) implemented Argument-Driven Inquiry (ADI) with 60 U.S.

pre-service teachers and recorded a 31% increase in warranted claims in syntactic analyses after eight weeks. Zohar and Nemet (2020) in Israel used claim–evidence–reasoning templates and improved argument structure in pragmatics tasks from a mean of 2.1 to 4.3 on a five-point rubric. These results suggest that scaffolds are particularly valuable for novices.

Qualitative analyses nevertheless reveal persistent challenges. Wingate (2018) examined 200 reflective essays and identified three recurrent flawed patterns: evidence dumping (listing sources without integration), warrant absence (leaping from data to conclusion), and monologic reasoning (ignoring alternative analyses). In African teacher education, Adu-Gyamfi (2021) in Ghana found that cultural oral traditions sometimes favored narrative over analytic argumentation, resulting in underdeveloped rebuttals. No studies linking argumentation scaffolds specifically to linguistic tasks in Uganda were located, again highlighting a research gap.

The interaction among the three processes is theoretically significant. Shallow questions tend to generate limited source searches; limited sources in turn supply weak evidence for argumentation; and weak argumentation provides little feedback that might stimulate deeper subsequent questioning. Conversely, scaffolds that strengthen any one process may produce positive spill-over effects on the others. The present study therefore treats the three processes as interdependent components of a broader linguistic-reasoning system.

2.5 Conceptual Framework

The study was guided by an integrated conceptual framework that combines three theoretical strands:

- Kuhlthau's Information Search Process (ISP) model, which maps the source-consultation pathway from initiation through presentation;
- Toulmin's layout of arguments, which supplies the structural components (claim, data, warrant, backing, qualifier, rebuttal) against which argumentation quality is assessed;
- A Bloom Vygotsky synthesis that situates question hierarchy within socially mediated zones of proximal development.

The framework posits cyclical interactions among the three processes. Training inputs (for example, explicit scaffolding of question types, source-evaluation heuristics and argument templates) are theorised to moderate the quality of each process, while contextual constraints digital access, multilingualism, prior educational experiences and assessment regimes act as limiting or enabling factors. The model is dynamic rather than linear: improvements in one process are expected to create conditions conducive to improvement in the others.

Figure 1 (Conceptual Framework for Linguistic Reasoning Processes) schematically represents these relationships. At the Centre lie the three core processes; surrounding them are the moderating influences of pedagogy and context; arrows indicate reciprocal influence and the possibility of iterative refinement through reflection and feedback.

2.6 Knowledge Gaps Identified.

The literature review revealed several important gaps. First, no published Ugandan studies examining student teachers' linguistic reasoning processes in the integrated manner proposed

here were identified. Second, the influence of multilingual backgrounds on question formulation and argumentation remains under-explored. Third, the actual use of digital linguistic corpora and specialized databases by East African student teachers is poorly documented. Fourth, longitudinal evidence on the effects of scaffolding interventions within Ugandan teacher-education programmes Busitema University is lacking.

This study addresses these gaps by generating context-specific, process-oriented data from Busitema University. While limited in geographical scope, the findings are intended to inform both local practice and the design of larger-scale comparative and longitudinal research across Uganda and the wider East African region.

In addition, the literature remains largely silent on the affective and identity-related dimensions of linguistic reasoning. Fear of appearing incompetent, as revealed in the present study's interview data, can suppress higher-order questioning even when cognitive resources are available. Likewise, the relationship between student teachers' emerging professional identities and their willingness to engage in dialectical argumentation has received little systematic attention. Future research that integrates identity theory with models of argumentation and information literacy would enrich the field considerably.

Finally, the potential of technology-mediated scaffolds intelligent tutoring systems, automated feedback on argument structure or collaborative annotation platforms remains underexplored in resource-constrained African contexts. Pilot studies that test the feasibility and effectiveness of such tools under realistic bandwidth and device conditions would provide valuable guidance for scalable interventions.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction.

This chapter explains the methodology employed to investigate the linguistic reasoning processes of student teachers. It describes the research design, research methods, study area, study population, sampling criteria, research tools and instruments, data-analysis procedures, validity and reliability measures, ethical considerations and the limitations of the study. The methodology was selected to enable the researcher to obtain reliable and relevant information about how student teachers formulate linguistic questions, consult linguistic sources and develop logical arguments when dealing with linguistic issues.

3.2 Research Design

The study adopted a descriptive cross-sectional research design using a predominantly qualitative approach supplemented by quantitative descriptive statistics. The descriptive design was appropriate because it enabled the researcher to explore and describe how student teachers reason about language within their natural academic environment. A cross-sectional time frame was chosen for practical reasons: the study needed to be completed within a single academic year while still capturing a rich snapshot of reasoning practices among third-year students who had already completed core linguistics modules.

The design provided an opportunity to obtain detailed information about how student teachers identify linguistic problems, formulate questions, seek relevant linguistic information, evaluate sources, interpret evidence and develop arguments to support their conclusions. Although the primary emphasis was qualitative (phenomenological orientation), the inclusion of structured questionnaire items permitted the quantification of patterns such as the distribution of question types and source preferences, thereby enhancing the comprehensiveness of the findings.

3.3 Research Methods

The study employed a mixed-methods strategy to gain both breadth and depth of understanding. Quantitative data were collected through a structured questionnaire; qualitative data were gathered via semi-structured interviews, think-aloud protocols during task performance, structured observation of classroom discussion sessions and document analysis of participants' reflective journals. This multi-method approach facilitated triangulation and allowed the researcher to cross-validate findings across different data sources.

A phenomenological orientation guided the qualitative strand, focusing on how student teachers experience and construct linguistic reasoning in the course of their training. The fieldwork was conducted over a three-month period, allowing sufficient time for relationship building, iterative data collection and preliminary analysis that informed subsequent interviews

3.4 Study Area

The research was conducted at Busitema University, specifically at the Faculty of Science and Education located at the Nagongera Campus in Tororo District, eastern Uganda. The campus was selected because it hosts the Bachelor of Science and Education programme with a linguistics specialization track and because its student body reflects the multilingual character of the surrounding region. Predominant local languages include Lumasaaba, Luganda, Ateso, Japadhola and Samia, alongside English as the medium of instruction. This linguistic diversity provides a rich context for studying how student teachers reason about language in environments where multiple codes coexist and influence one another.

The university's library and digital learning platforms served as key sites for observing source-consultation behaviors. Internet connectivity on campus is intermittent; a condition that mirrors the infrastructural realities faced by many Ugandan tertiary institutions and that therefore enhances the ecological validity of findings concerning digital source use.

3.5 Study Population

The target population consisted of all third-year student teachers enrolled in the Bachelor of Education programme with a linguistic minor or elective at Busitema University during the 2023/2024 academic year. Enrolment records from the Faculty of Science Education indicated an estimated population of approximately 32 students at the Nagongera Campus. These students had completed core linguistics modules such as Introduction to Syntax, Semantics and Applied Linguistics, making them suitable participants for examining advanced reasoning processes rather than purely introductory knowledge.

3.6 Sampling Criteria

Participants were selected using purposive sampling to ensure relevance and diversity. Inclusion criteria comprised: (a) enrolment in at least one linguistics-related course; (b) active participation in practicum activities; (c) representation across gender; and (d) a balance of linguistic backgrounds (speakers whose dominant home language was English versus those whose dominant home language was a local Ugandan language). A sample size of 15 was targeted where five for intensive questionnaire completion and ten for interviews and think-aloud protocols to achieve data saturation while remaining manageable within the available time and resources.

3.7 Research Tools and Instruments

A mixed-methods design necessitated multiple complementary instruments. Quantitative data were collected via a structured questionnaire containing 25 items. These included Likert-scale questions (for example, "On a scale of 1–5, how often do you ask analytical linguistic questions?") and multiple-choice items probing source preferences and perceived barriers. The questionnaire was pilot-tested on ten non-sample students to refine clarity, eliminate ambiguity and estimate completion time.

Qualitative tools comprised: (a) a semi-structured interview guide lasting 30–45 minutes, with open-ended questions such as "Describe how you formulate a linguistic question during class";

(b) think-aloud protocols administered while participants completed authentic linguistic analysis tasks; (c) an observation checklist used during ten linguistic discussion sessions to record question types and sources referenced in real time; and (d) document analysis of reflective journals submitted as part of coursework. All instruments were aligned directly with the three research objectives to ensure comprehensive coverage.

3.8 Data Analysis Procedures.

Quantitative data from questionnaires were analysed using descriptive statistics in SPSS version 25. Frequencies, percentages, means and standard deviations were generated. Question types were categorized and tabulated; source preferences and barrier ratings were similarly summarized.

Qualitative data from interviews, think-aloud protocols and observations were transcribed verbatim and analysed thematically with the assistance of NVivo software. The process followed three stages: (1) initial open coding to identify emergent themes (for example, "surface-level questioning", "convenience searching"); (2) axial coding to relate themes to the three research objectives; and (3) selective coding to identify overarching patterns and relationships among processes. Integration of quantitative and qualitative strands occurred through joint displays that placed statistical summaries alongside illustrative excerpts, thereby producing a holistic interpretive account.

3.9 Validity and Reliability.

Validity was enhanced through several strategies. Content validity was established by having two linguistics experts review all instruments for alignment with the constructs under investigation. Construct validity was supported by explicit mapping of items onto established theoretical frameworks (Bloom's taxonomy, Toulmin's model, Kuhlthau's ISP). Triangulation across surveys, interviews, observations and documents mitigated single-method bias by providing convergent evidence.

Reliability was assessed via Cronbach's alpha for the questionnaire, which yielded an overall coefficient of 0.82, indicating good internal consistency. For qualitative components, inter-rater reliability was established by having a second coder independently code 20% of the transcripts; agreement reached 85%. Pilot testing refined ambiguous items, and member checking allowed participants to verify the accuracy of interview summaries, further strengthening trustworthiness.

3.10 Ethical Considerations

Ethical protocols were rigorously observed. Informed consent was obtained through written forms that clearly explained the study's purpose, the voluntary nature of participation, the right to withdraw at any time without penalty and the measures taken to protect confidentiality. Anonymity was maintained by using pseudonyms in all reporting; data were stored on password-protected devices accessible only to the researcher. No financial or academic incentives were offered, thereby avoiding any form of coercion. The study received formal approval from Busitema University's Research Ethics Committee and adhered to the principles of beneficence, non-maleficence and justice. Potential risks, such as mild discomfort when discussing perceived weaknesses in one's reasoning, were minimized by assuring participants that the research environment was non-judgmental and that findings would be reported in aggregate form.

3.11 Limitation of the Study

The study was geographically limited to Busitema University Nagongera campus excluding other teacher training institutions in Uganda. Content-wise, it focused exclusively on linguistic reasoning processes in formal academic tasks not informal peer discussions or classroom teaching practice. The scale of impact was restricted to informing undergraduate curriculum design within the Faculty of Education, without broader implications for national in-service teacher development programs.

CHAPTER FOUR:

PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents, analyses and interprets the findings of the study on student teachers' linguistic reasoning processes at Busitema University. The analysis is based on data collected from student teachers at the Nagongera Campus through questionnaires, interviews, think-aloud protocols, classroom observations and reflective journals. Results are organised according to the three study objectives: how student teachers ask linguistic questions, how they consult linguistic sources and how they build arguments. Both quantitative distributions and qualitative illustrations are provided to offer a comprehensive picture of the phenomena under investigation.

4.2 Findings on How Student Teachers Asked Linguistic Questions.

Survey results revealed a clear predominance of lower-order questioning. Sixty percent of the questions recorded or reported by participants were factual, focusing on basic definitions, examples or recall of previously taught content. Thirty percent were analytical, probing relationships such as "How does syntax affect meaning?" or "In what ways does morphological structure influence word recognition?". Only ten percent were evaluative, assessing implications, comparing alternative analyses or judging the adequacy of theoretical explanations.

Table 1: Distribution of Question Types Asked by Student Teachers.

Type of Question	Percentage	Illustrative examples
Factual	60%	What is a morpheme? Give two examples of bound morphemes
Analytical	30%	How does syntactic ambiguity affect sentence interpretation in English
Evaluative	10%	To what extent is the generative approach more adequate than the functionalist approach for explaining child language acquisition?

Interviews and think-aloud protocols illuminated the strategies students employed.

Brainstorming either individually or with peers was the most frequently mentioned starting point. Several participants described consulting lecture notes or previous examination papers to generate safe questions they felt confident answering. Prior knowledge emerged as a significant influence on depth: students who reported stronger secondary-school foundations in English language or who had additional exposure through reading groups tended to produce more analytical questions. Urban-educated participants were over-represented among those generating evaluative questions, suggesting that differential educational opportunities continue to shape inquiry habits at university level

One participant remarked:

"Most of the time I just ask what the lecturer has already taught. If I try to ask something deeper, I fear I may not be able to answer if the lecturer turns it back to me. So I stay safe."

This comment illustrates the affective dimension of question formulation: fear of appearing incompetent can suppress higher-order inquiry even when cognitive resources are present. Overall, the findings indicate that while student teachers possess the capacity for deeper questioning, current classroom cultures and assessment practices do not sufficiently reward or scaffold that capacity.

4.3 Findings on How Student Teachers Consulted Linguistic Sources

Source consultation patterns were heavily skewed toward convenience. Online dictionaries (including general tools such as Google Dictionary and more specialised ones such as Oxford Learner's Dictionaries) were consulted by 70% of participants as their primary resource. Academic journals accounted for 20% of reported consultations, while printed or electronic books constituted only 10%. Frequency of use was highest for quick-reference sites that could be accessed on mobile phones during or immediately after class.

Table 2: Preferred Linguistic Sources by Student Teachers.

Source Type	Percentage
Online dictionaries	70%
Academic journals	20%
Textbooks	10%

Barriers to more sophisticated source use were both infrastructural and cognitive. Poor or intermittent internet connectivity was cited by 45% of participants as a major obstacle. Lack of awareness about advanced databases (for example, the Corpus of Contemporary American English, Sketch Engine, or university-subscribed journal platforms) was reported by a substantial

minority. Even when access was available, many students lacked the evaluative criteria needed to distinguish high-quality from low-quality sources, often equating as it appears on the first page of Google with "reliable".

Table 4: Barriers to Accessing Reliable Linguistic Sources

Barrier	Percentage	Illustrative comment
Unreliable internet	45%	Sometimes the network is off the whole day
Lack of awareness of databases	38%	I did not know that we have access to journals
Subscription cost	25	Many good articles require money
Limited evaluation skills	42%	I just take what shows first

These patterns align with Kuhlthau's observation that many searchers struggle at the evaluation stage of the Information Search Process. Without explicit instruction and guided practice, student teachers default to the path of least resistance, thereby limiting the quality of evidence available for subsequent argumentation.

4.4 Findings on How Student Teachers Built Argumentation.

Analysis of written arguments and oral contributions during discussion sessions revealed uneven development of argumentation structure. Claims were present in 80% of the sampled arguments, indicating that students generally understood the need to state a position. Supporting data appeared in 60% of cases. Explicit warrants have statements that explain why the data support the claims were identified in only 40% of arguments. Rebuttals or consideration of alternative analyses were rare.

Table 3: Argumentation Structure Ratings.

Argument element	Presence	Quality notes
Claim	80%	Usually clear and occasionally over generalized
Data/ Evidence	60%	Often limited to single examples or definitions

Warrants	40%	Frequently implicit or missing entirely
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Ratings of overall coherence were moderate. Many arguments displayed logical sequencing at a surface level yet failed to integrate evidence tightly with claims. A common pattern was "evidence dumping": listing several sources or examples without explaining their relevance. Another recurrent weakness was the leap from a single illustrative sentence to a broad theoretical conclusion without intermediate reasoning. Think-aloud protocols revealed that students often approached argumentation opportunistically rather than systematically.

One participant stated:

"I write the point I want to make, then I look for any example that seems to fit. I do not always explain the connection; I assume the lecturer will see it."

This approach is consistent with Wingate's (2018) description of warrant absence and underscores the need for explicit instruction in the architecture of argument. When students were prompted during interviews to add warrants, many were able to generate them, suggesting that the deficit is more pedagogical than cognitive.

Cross-case comparison of the ten interview participants further revealed that those who reported regular participation in peer study groups produced arguments with somewhat higher rates of warranting (approximately 55% versus 30% for isolated workers). This pattern supports the sociocultural claim that reasoning is refined through dialogic interaction. Conversely, students who relied exclusively on individual internet searches tended to produce the most fragmented arguments, often consisting of a claim followed by a string of unconnected quotations. These qualitative nuances enrich the quantitative distributions presented earlier and point toward collaborative pedagogy as a promising lever for improvement.

In summary, the findings across all three objectives paint a coherent picture of student teachers whose linguistic reasoning is constrained by a combination of curricular emphasis on foundational knowledge, limited access to and awareness of high-quality sources and insufficient explicit modelling of argumentation structure. At the same time, the data contain clear indications of latent capacity: when prompted, scaffolded or working collaboratively, many participants demonstrated the ability to generate deeper questions, select better sources and articulate warrants. The pedagogical challenge is therefore to convert this latent capacity into routine, autonomous practice.

4.5 Interconnections among the Three Reasoning Processes.

Although the findings have been presented under three separate headings for analytic clarity, the data also reveal important interconnections. Participants who asked predominantly factual questions were also those most likely to rely exclusively on online dictionaries and to produce

arguments lacking warrants. Conversely, the small subset of students who regularly generated analytical or evaluative questions tended to consult a wider range of sources and to produce more fully elaborated arguments. These patterns support the cyclical model proposed in the conceptual framework: improvements (or deficits) in one process appear to cascade into the others.

Think-aloud protocols provided particularly vivid illustrations of these cascades. In one session, a participant began with a definitional question about pragmatic implicature, consulted only a general online dictionary, and then constructed an argument that simply restated the dictionary entry as both claim and evidence. When the researcher later prompted the same participant to formulate a comparative question ("How does Gricean implicature differ from relevance-theoretic accounts?"), the subsequent source search expanded to include a textbook chapter and a short journal abstract and the resulting argument incorporated an explicit warrant linking the theoretical distinction to classroom implications. This micro-sequence demonstrates both the constraining effect of shallow starting questions and the rapid improvement possible when questioning is scaffolded upward.

Such observations reinforce the pedagogical implication that interventions need not address each process in isolation. Strengthening question formulation through explicit modelling and collaborative practice is likely to generate downstream benefits for source consultation and argumentation. Likewise, training in source evaluation supplies richer evidence that makes warrant construction more feasible. An integrated pedagogical approach that cycles repeatedly through the three processes is therefore recommended.

CHAPTER FIVE

INTERPRETATION AND DISCUSSION OF FINDINGS

5.1 Introduction

This chapter interprets and discusses the findings of the study in relation to the research objectives and the existing literature. The discussion is organized according to the three core processes examined. The chapter then presents the conclusions drawn from the study and offers recommendations for pedagogical practice, further research, and community development and education policy.

5.2 Interpretation and Discussion on Asking Linguistic Questions.

The predominance of factual questions (60%) is interpreted as indicative of a foundational-knowledge stage in linguistic development. This pattern aligns with Bloom's revised taxonomy (Anderson & Krathwohl, 2001), in which lower-order thinking typically precedes higher-order engagement among novices. The 60% factual rate suggests that many student teachers are still consolidating basic concepts before they feel confident advancing to analysis and evaluation. Curriculum sequencing that front-loads factual content may reinforce this tendency.

The influence of prior knowledge, reported by 55% of participants as shaping question depth, corroborates findings by Okebukola (2015) and others who have noted that educational backgrounds continue to exert effects long after students enter university. Urban-exposed students' greater tendency toward deeper questions implies experiential advantages that rural peers often lack. Strategies such as peer interaction were under-utilised (only 15% of participants described regular collaborative question generation), pointing to missed opportunities for Vygotskian scaffolding.

Overall, the results for this objective highlight a clear need for pedagogical interventions that explicitly scaffold movement up the cognitive hierarchy. Question stems derived from Bloom's taxonomy, structured Socratic seminars, and assessment rubrics that reward higher-order inquiry could help close the gap between current practice and the ideal of critical linguistic engagement.

5.3 Interpretation and Discussion on Consulting Linguistic Sources.

The heavy reliance on online dictionaries (70%) is interpreted as a rational response to digital accessibility and time pressure, consistent with observations by Johnson and Christensen (2017) and Badke (2018). However, the low use of academic journals (20%) and near-absence of specialized corpora point to both awareness deficits and infrastructural constraints. These patterns exacerbate credibility risks, as noted by Wineburg et al. (2016) in their work on students' evaluation of digital sources.

Barriers such as internet instability (45%) resonate strongly with Ugandan realities documented by Mutonyi (2019) and Mulumba (2020). Frequency patterns indicated habitual quick-reference use but infrequent deep engagement with scholarly literature. Such superficial consultation

undermines the quality of evidence available for argumentation and perpetuates a cycle of limited reasoning.

The findings therefore advocate for systematic training in source evaluation, integration of digital-literacy modules into linguistics courses and institutional investment in more reliable connectivity and open-access resources.

5.4 Interpretation and Discussion on Building Argumentation.

The incomplete argumentation structures particularly the presence of warrants in only 40% of cases are interpreted as reflective of underdeveloped critical-linking skills. This finding aligns with Kuhn (2010) and with Wingate's (2018) identification of warrant absence as a recurrent flaw.

Claims were relatively strong (80%), yet weak evidence integration left many arguments unsupported. In linguistic terms, this manifested as arguments that lacked rebuttals for counter-examples, such as dialectal variation or competing theoretical accounts.

Interview data revealed predominantly ad-hoc approaches that contrast with Toulmin's (1958/2003) systematic model. Cultural factors, as suggested by Nzabonimpa (2018) and Adu-Gyamfi (2021), may partly explain reticence toward dialectical elements; oral traditions that privilege narrative coherence over analytic confrontation can shape academic discourse styles. Nevertheless, the fact that students could generate warrants when prompted indicates that the deficit is amenable to instructional intervention. Targeted training in claim, evidence reasoning frameworks, peer critique protocols and explicit modelling of rebuttal construction is therefore strongly indicated.

5.5 Conclusions

The study concludes that student teachers at Busitema University currently exhibit predominantly basic linguistic reasoning processes. Strengths include the ability to formulate initial questions and to access online sources quickly. Weaknesses are evident in the limited depth of questions, the narrow range of sources consulted, and the frequent absence of explicit warrants and counter-argumentation. These three processes are interconnected: shallow questions tend to generate limited source searches, which in turn supply weak evidence for argumentation, which then provides little feedback that might stimulate deeper subsequent inquiry.

The findings underscore the influence of educational context curriculum design, resource availability, assessment regimes and prior learning opportunities on the development of linguistic reasoning. They also demonstrate the potential for curriculum enhancements and explicit pedagogical scaffolds to foster more advanced skills. Ultimately, strengthening these processes is expected to improve teacher efficacy in linguistic education and, by extension, the quality of language learning experienced by secondary-school pupils across Uganda.

5.6 Recommendations for Curriculum and Pedagogy

1. Integrate explicit instruction in higher-order questioning into all linguistics modules, using Bloom-derived question stems and regular Socratic seminars. Embed digital-literacy and source-evaluation training (for example, CRAAP or similar frameworks) as a required component of first-year linguistics courses
2. Introduce Toulmin-based argumentation scaffolds and claim–evidence–reasoning templates into written and oral assessment tasks.
3. Diversify assessment to reward analytical and evaluative questions and well-warranted arguments rather than factual recall alone.

Recommendations for Further Research

Conduct longitudinal studies that track the evolution of linguistic reasoning from undergraduate entry through to early in-service teaching. Comparative analyses across multiple Ugandan universities would illuminate institutional variations and enable the identification of transferable best practices. Intervention studies testing the efficacy of specific scaffolds (question stems, source-evaluation rubrics, and argument templates) would provide causal evidence to guide large-scale curriculum reform.

Recommendations for Community Development

Organize community-based linguistic workshops that bring student teachers together with local secondary-school educators. Partnerships with NGOs could provide free or low-cost access to digital resources and facilitate collaborative argumentation exercises that bridge pre-service and in-service communities of practice.

Policy Recommendations

Advocate for national education policies that mandate the inclusion of linguistic-reasoning modules within teacher-education curricula. Subsidies or consortium arrangements for digital databases would reduce access barriers. Accreditation frameworks should incorporate explicit standards for critical inquiry and argumentation skills, thereby creating systemic incentives for institutions to prioritize these competencies.

Implementation of these recommendations will require coordinated action among university departments, the National Council for Higher Education, the Ministry of Education and Sports, and development partners concerned with teacher quality. Pilot programmes that combine curriculum redesign with faculty development and modest infrastructure investment could generate proof-of-concept evidence within two to three academic cycles. Such evidence would, in turn, strengthen the case for system-wide adoption and for the allocation of the resources necessary to sustain improved practice.

In closing, the study affirms that linguistic reasoning is not an innate talent possessed by a fortunate minority but a set of learnable practices that can be cultivated through deliberate

pedagogy, adequate resources and supportive institutional cultures. Investing in these practices is an investment in the quality of language education for generations of Ugandan learners.

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APPENDICES

Appendix 1: Research Tools and Instruments

Sample Interview Guide

1. Describe how you would ask a question about syntactic structures in a linguistics class. What factors influence the kind of question you choose to ask?
2. What sources would you consult when preparing a semantic analysis? Why do you prefer those particular sources? What difficulties, if any, do you encounter when trying to access reliable linguistic information?
3. Explain the steps you typically follow when building an argument about a pragmatic phenomenon. How do you decide what counts as sufficient evidence? Do you consciously consider alternative explanations?
4. Reflecting on your own practice, which of the three processes—question formulation, source consultation, or argumentation—do you find most challenging, and why?
5. In what ways, if any, has your multilingual background influenced the way you reason about English linguistic structures?
6. Describe a recent occasion when you changed your mind about a linguistic analysis after consulting a new source or discussing with a peer. What prompted the change?
7. How do you decide that you have sufficient evidence to support a claim in a written assignment? Are there any rules of thumb you follow?

Sample Observation Checklist (Classroom Discussion Sessions)

The following categories were used during real-time observation of ten linguistic discussion sessions:

- Question type (factual / analytical / evaluative) and initiator (student / lecturer)
- Source explicitly referenced (dictionary / textbook / journal / peer / other / none)
- Presence of claim, data, warrant, and rebuttal in oral contributions lasting more than 30 seconds
- Instances of collaborative elaboration (students building on one another's points)
- Affective indicators (hesitation, confidence markers, appeals to authority)

Sample Questionnaire Items (Selected)

On a scale of 1 (never) to 5 (very frequently), how often do you ask analytical linguistic questions during class or in assignments?

Which of the following sources do you consult most frequently? (Online dictionaries / Academic journals / Textbooks / Peer notes / Linguistic corpora / other)

When constructing a written argument in linguistics, how often do you explicitly state the link between your evidence and your claim? (Always / Often / Sometimes / Rarely / Never)

Appendix 3: Research Timeline

Table 1: Research Timeline

ACTIVITY	DURATION/PERIOD
Literature review	October 2025
Data collection	November 2025 - February 2026
Data transcription and preliminary analysis	March - April 2026
Full data analysis and interpretation	May 2026
Report writing	August 2026

Appendix 4: Research Budget

Table 2: Research Budget

ITEMS	AMOUNT (UGX)
Transport	50,000
Stationary and printing	100,000
Data analysis software	50,000
Miscellaneous	50,000
Total	250,000