UNIVERSITY OF EDUCATION, WINNEBA

SIGN LANGUAGE INTERPRETERS' EXPERIENCE IN INTERPRETING ENGLISH INTO GHANAIAN SIGN LANGUAGE AT SEKONDI COLLEGE

DANIEL NARH ADDO

MASTER OF PHILOSOPHY

2025

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A thesis in the Department of Special Education, Faculty of Applied Behavioral Science Education, submitted to the School of Graduate Studies in partial fulfilment of the requirements for the award of the degree of Master of Philosophy (Special Education) in the University of Education, Winneba

SEPTEMBER, 2025

DECLARATION

Students' Declaration

I, DANIEL NARH ADDO, declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature: …….

Date: ……

Supervisors' Declaration

We hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis as laid down by the University of Education, Winneba.

Name of Supervisor: Dr. Daniel Fobi

Signature: …….

Date: ……

DEDICATION

This work is dedicated to my mother and sister, Mary KorKor Kojo Ayitah and Evelyn Addo for their wise words shared with me to further my education.

ACKNOWLEDGEMENTS

I thank the Lord Almighty for granting me the strength and good health which has brought me this far. To Him be glorify. I am again indebted to my research advisor and supervisor, Dr. Daniel Fobi for this support and encouragement, and patience. Every encounter with him boosted my understanding and professional advancement in research. I would like to express my heartfelt gratitude to Prof. Sekina Acqua and Mrs. Priscilla Hammond for their timely interventions and guidance throughout my stay as a graduate student at the University of Education, Winneba. I acknowledge the contributions of Dr. Frank Twum, Dr. Emmanuel K. Acheampong, and Dr. Adams Awini. I say God richly bless you all for the roles you played in making this work a success.

I would like to express my profound appreciation to my mother Mary Korkor Kojo Ayita and my brother Bernard Addo Tei for their kind gestures and support. My deepest love to all my colleagues Gabriel Klinogo and Peter Essandoh, I appreciate your contributions to the success of my work. Last but not the least, I say thanks to all authors whose works have been of immense help to me throughout my course of study, especially this thesis and all those whose names were not mentioned but played key roles in the completion of this work. May the good Lord bless all of you.

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ABBREVIATIONS

NGL – Nertherland Sign language

NMM – Non Manual Maker

D/HH – Deaf and Hard Hearing

YMSL – Yucate Mayan Sign Language

MSL – Maritime Sign Language

SASL – South Africa sign language

ITT – Interpretive Theory of Translation

ASL – American Sign Language

GhSL – Ghanaian Sign Language

SOV – Subject Object Verb

OVS - Object Verb Subject

DGS – German Sign language

ASLLRP – American Sign Language linguistic

SNDA – Sign Nevestro Densenet Attention

DSDS – Swiss Germany sign Language

SLP – Speech Language pathologist

ABSTRACT

This study examines sign language interpreters' experience in interpreting English into Ghanaian Sign Language (GhSL) at Sekondi College. The study focused on four (4) objectives: how sign language interpreters' experience influences English–GhSL syntactic transfer, strategies adapted to address errors, exploring support services available, and proposing approaches for improving interpretation. Guided by the Interpretation Theory of Translation which emphasizes understanding, deverbalization and reformation as a core stage of effective interpretation and interpretivist paradigm. The study employed a qualitative research approach and used case study design. Data was collected through semi-structured interviews with eleven (11) interpreters. Thematic analysis revealed that interpreters rely on cognitive processes such as comprehension, deverbalization, and reformulation to render English academic discourse into meaningful GhSL structures. The findings revealed that interpreters experience significant challenges in syntactic restructuring, vocabulary equivalence, technical terminology, and time constraints during live classroom interpretation. The study also found that most interpreters acquired their skills informally, with limited access to structured professional training. Strategies such as visual clarification, simplification of complex English structures, and peer consultation were used to manage interpretation difficulties. The study concludes that interpreter experience, institutional support, and professional development significantly influence the quality of English–GhSL interpretation in inclusive classrooms. It recommends structured training programs, institutional policy support, and the development of bilingual instructional materials to improve interpreter-mediated learning for Deaf students.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Ghana is an English-speaking country (de facto official language) with about eighty local languages. English serves as the primary medium of instruction and formal communication across government, education, and legal systems (Anyidoho & Dakubu, 2008; Eberhard, Simons, & Fennig, 2022). One major support offered to students who are deaf at all levels of education that practice inclusion is Sign Language interpreting. Sign language interpreters in inclusive senior high schools are required to interpret various subjects such as science, management in living, mathematics, biology, and economics from English to Ghanaian Sign Language (GhSL) for their Deaf students. Interpreters play an integral role in facilitating classroom communication. Teachers typically use spoken English, and interpreters convert this into sign language for Deaf students and vice versa. Cokely (2015) defines interpretation as "the competent and coherent use of one naturally evolved language to express the meanings and intentions conveyed in another naturally evolved language".

Linguistically, GhSL is similar to the American Sign Language (ASL) with indigenous signs but is distinct from the English used in Ghana. Ghanaian Sign Language (GhSL) has its own grammar and syntax, which differ significantly from English (Mac Hadjah, 2024). This creates an urgent need for effective communication strategies that bridge the linguistic gap between hearing facilitators and Deaf students (Crystal, 2003; Kendon, 2004; Sandler & Lillo-Martin, 2006).

The presence of an interpreter in the inclusive classroom enables students who are deaf to effectively participate in the learning and teaching environment (Fobi & Oppong, 2018). These challenges have necessitated the development and implementation of

effective interpreting strategies to ensure that Deaf students have meaningful access to classroom content.

Sekondi College, founded in 1951 by Mr. Joseph W. Acquah at Essaman Ekuasi, is now a pilot inclusive senior high school in the Western Region of Ghana. The school began admitting Deaf students in the 2023–2024 academic year, initially enrolling three students in the Home Economics program. This number increased to ten the following year. Deaf students are taught alongside their hearing peers in the same classroom environment. "To ensure access and participation, sign language interpreters are required to accurately mediate communication between languages while preserving meaning and intent (Fobi, 2021; Napier & Leeson, 2015)." In this regard, the interpreter serves as the ears and voice of the Deaf student, both interpreting what is spoken and voicing what is signed (Adade et al., 2022).

In Ghana, the relevance of sign language interpretation has increased significantly due to the growing adoption of inclusive education policies and the recognition of the linguistic rights of Deaf learners. As more mainstream secondary schools admit Deaf students, the demand for qualified sign language interpreters has become critical to ensuring equitable access to academic content. Sign language interpreters serve as the primary communication bridge between hearing teachers who use spoken English and Deaf students whose natural language is Ghanaian Sign Language (GhSL). Without effective interpretation services, Deaf learners risk academic marginalization, limited classroom participation, and reduced comprehension of subject content. The current state of sign language interpretation in Ghana remains underdeveloped, characterized by limited formalized interpreter training programs, absence of standardized certification structures, and inadequate institutional support systems. This situation highlights the urgent need to strengthen interpreter preparation, particularly in

educational settings where interpreters must render complex English grammatical structures into visually structured GhSL in real time. Interpreting English into GhSL is not a simple linguistic substitution process but a cognitively demanding activity that requires deep understanding of both languages' grammatical systems, cultural nuances, and modality differences. Strengthening the professionalization of educational interpreters is therefore essential for advancing inclusive education and promoting meaningful academic access for Deaf students across Ghana.

English typically uses a Subject–Verb–Object (SVO) syntax to construct meaning, relying on relatively fixed word order, since grammatical relations are not marked morphologically. It also employs tenses and aspect expressed through auxiliary verbs, as well as articles to indicate definiteness and specificity (Crystal, 2003; Huddleston & Pullum, 2002; Quirk, Greenbaum, Leech, & Svartvik, 1985). In contrast, GhSL often uses Object–Subject–Verb (OSV) structures and conveys grammatical information through spatial referencing, facial expressions, and non-manual signals (Adjei & Kendon, 1991; Nyst, 2010). These differences make literal, word-for-word interpreting between English and GhSL ineffective and potentially misleading. When interpreters attempt to follow English syntax too closely, the message may lose clarity and coherence for Deaf students, resulting in confusion or misunderstanding (Napier, McKee, & Goswell, 2006).

With such syntactic inconsistencies, interpreters must employ a range of strategies to preserve meaning and enhance communication effectiveness. The quality of interpretation has direct implications for Deaf student's comprehension and academic performance. Research indicates that misinterpretations of complex grammatical structures, passive constructions, and idiomatic expressions are common when

interpreters lack the tools to restructure English syntax into GhSL grammar (Bontempo & Napier, 2007).

Beyond linguistic complexity, educational interpreting involves significant cognitive and physical strain. Interpreters must simultaneously listen to spoken English, cognitively process the message, and then deliver it visually in GhSL all in real time. This dual-tasking results in what Bontempo and Napier (2011) describe as "interpreter fatigue." Schwenke et al. (2014) also highlight that sign language interpreters frequently experience burnout due to inadequate working conditions, especially in educational settings.

These challenges are exacerbated by the limited formal training available to interpreters in Ghana. According to Adade et al. (2022), most educational interpreters acquire their skills informally, either through interaction with the Deaf community or basic exposure in special education courses. Structured interpreter training programs are rare.

Although research has been conducted on the experience of Deaf students with interpreters in Ghana (Adu, 2016; Appau, 2020; Fobi, 2021; Oppong et al., 2018), little scholarly attention has been given to the linguistic and syntactic challenges interpreters themselves face while interpreting English into GhSL within mainstream secondary school settings.

1.1 Statement of the Problem

One major support offered to students who are deaf at all levels of education that practice inclusion is Sign Language interpreting. However, despite the presence of sign language interpreters, Deaf students continue to experience challenges in fully understanding classroom instruction delivered in English.

Deaf students whose primary language is Ghanaian Sign Language (GhSL) are at a systemic disadvantage because GhSL uses a visual-spatial language with distinct

syntactic rules that do not align structurally with English (Adjei & Kendon, 1991; Nyst, 2010). This divergence in syntax, particularly differences in sentence structure (e.g., Subject–Verb–Object in English vs. Object–Subject–Verb in GhSL), presents a significant challenge in educational interpreting (Nyst, 2010; Wilbur, 2000). These challenges are most pronounced in content-heavy and grammar-intensive subjects such as English Language, Science, Economics and Social Studies, where interpreters must perform real-time syntactic transformations without altering meaning.

Sekondi College, a newly piloted inclusive senior high school, started admitting Deaf learners in the 2023–2024 academic year. Despite the deployment of sign language interpreters to support inclusive teaching, several structural and pedagogical gaps persist. Interpreters at Sekondi College often lack formal training in educational interpreting, a challenge that is common across Ghanaian inclusive schools due to the absence of standardized interpreter education programs and do not receive lesson plans or access to subject-specific glossaries (Adade et al., 2022). Field observations at Sekondi College indicate that interpreters struggle with accurately rendering complex grammatical concepts due to limited preparation and absence of institutional support. Furthermore, the physical and cognitive demands of constant real-time interpreting lead to what Bontempo and Napier (2011) identify as interpreter fatigue, a condition that affects performance, comprehension, and student engagement.

Although several research has been conducted on the experiences of Deaf students with interpreters in Ghana (Adu, 2016; Appau, 2020; Fobi, 2021; Oppong et al., 2018), however, little scholarly attention has specifically focused on interpreters' experiences in interpreting English into GhSL within inclusive senior high school settings such as Sekondi College. This study, therefore, seeks to explore sign language interpreters' experiences in interpreting English into GhSL at Sekondi College. This gap makes it

difficult to understand the specific linguistic and professional challenges interpreters face and how these challenges affect Deaf students' learning outcomes. Therefore, this study seeks to examines sign language interpreters' experience and identify strategies to improve English–GhSL interpretation in inclusive classrooms.

1.2 Purpose of the Study

The purpose of this study is to examine sign language interpreters' experience in interpreting English into Ghanaian sign language (GhSL) at Sekondi College.

1.3 Objectives of the Study

The objectives of the study were to examine:

1) How interpreters experience influence the interpretation of English syntax into Ghanaian Sign Language at Sekondi College.

2) The strategies interpreters adapt to overcome syntactic error when interpreting English into Ghanaian Sign Language at Sekondi College.

3) The supportive services that are availability when interpreting English into GhSL at Sekondi College.

4) The strategies that can be implemented to improve the interpretation of English into GhSL at Sekondi College.

1.4 Research Questions

The following research questions were raised to guide the study:

1) How do interpreters' experience influence the interpretation of English syntax into Ghanaian Sign Language at Sekondi College?

2) Which strategies do interpreters adapt to overcome syntactic error when interpreting English into Ghanaian Sign Language at Sekondi College?

3) What supportive services that are available to enhance the interpretation of English into GhSL at Sekondi College?

4) What strategies can be implemented to improve the interpretation of English into GhSL at Sekondi College?

1.5 Significance of the Study

The findings of this study would give significant insights into the experience of sign language interpreters at Sekondi College as they interpret English into Ghanaian Sign Language (GhSL). These insights are intended to inform school authorities, educational stakeholders, and policymakers about the practical challenges that interpreters encounter daily. With a better understanding of these realities, stakeholders would be more equipped to develop remedial strategies that support both interpreters and Deaf students. This would ensure inclusive education policies are not only enacted but also accurately enforced in forms sensitive to actual classroom needs.

The results of the study would shed light on the pragmatic approaches interpreters use to overcome syntactic challenges when interpreting from English to GhSL. Techniques of message restructuring, simplification, role-shifting, use of classifiers, and visual-spatial adaptations will be explored. By documenting these practices, the research would provide valuable contributions to interpreter training and professional development. Educator preparation programs can integrate these findings into their curricula, ensuring that new interpreters are equipped with classroom-relevant tools and strategies for effective communication in inclusive learning environments.

The study would also evaluate the availability and effectiveness of supportive services that facilitate interpretation, such as access to lesson plans, training opportunities, digital tools, and teacher collaboration. These supports are critical in the delivery of effective and meaningful interpretation. Understanding the existing gaps in these systems would guide educational institutions and government bodies in reinforcing

structures that enhance learning experience for Deaf students and working conditions for interpreters.

Furthermore, this study would propose actionable strategies for improving English–GhSL interpretation. These include institutionalizing regular training, enhancing interpreter–teacher collaboration, providing interpreters with preparatory access to lesson content, and introducing bilingual subject glossaries. Implementing these strategies would improve interpretation accuracy and clarity, thereby allowing Deaf students to engage more effectively with academic content and achieve better learning outcomes (Adade et al., 2022; Ntoaduro et al., 2023).

Ultimately, this study would contribute to the body of literature on sign language interpretation, inclusive education, and language accessibility in Ghana. The research would be an asset for subsequent researchers, teacher-educators, and policymakers aiming to enhance interpretation services for Deaf learners. Through the provision of evidence-based recommendations, the study will advance the bigger goal of educational equity and inclusion, particularly for Deaf students.

1.6 Delimitation of the Study

This study is delimited to Sekondi College. The study focused on the interpretation of English syntax into Ghanaian Sign Language (GhSL) within inclusive classroom setting. Specifically, it focuses on sign language interpreters with firsthand experience interpreting for Deaf students within the classroom contexts in the academic buildings of Sekondi College. The scope of the research is delimited to interpreting from English into GhSL only, thereby excluding interpretation involving other languages such as French.

The study purposefully excludes interpreters who have not worked within Sekondi College, as well as those who operate in non-academic or non-inclusive environments,

since their interpreting styles and challenges may differ significantly from those encountered in formal educational contexts. This focus ensures that the study captures the unique syntactic, pedagogical, and linguistic challenges that arise when rendering English into GhSL in an inclusive academic setting. Only interpreters with active engagement in classroom instruction and subject content delivery would be considered, as their experience are central to understanding the complexities of grammar transfer in an inclusive learning environment.

1.7 Limitations of the Study

The study was limited by its small sample size and focused on a single senior high school in the Western Region of Ghana, which may affect generalizability. To mitigate this, the researcher used n-depth interviews and focus group discussions to gather rich, detailed data that provide meaningful insight despites the limited number of participants. The limited literature on interpreting English in Ghanaian Sign Language (GhSL) and restricted access to formal interpreter training and institutional resources were challenges, which were addressed by incorporating expert interviews, grey literature, and dissertation to provide a comprehensive contextual understanding

It was difficult to schedule appointments with the interpreters for the interview because they were interpreting different subjects and they had different timetables for their interpreting assignments. I overcame this difficulty by waiting for them and making sure that I remind them once they are through with their classroom interpretation of the interview as planned. Although, this delayed the data collection, but the results of the study were not significantly affected

1.8 Operational Definition of Terms

This section provides definitions of key terms that are used throughout the study to ensure clarity and consistency.

Ghanaian Sign Language (GhSL): The main language of communication among Deaf individuals in Ghana, consisting of visual and manual signs unique to the country's Deaf community.

Syntactic Restructuring: The process of reorganizing English sentence structure into a grammatically appropriate GhSL structure during interpretation, which may result in structurally inappropriate or linguistically unnatural sign constructions.

Interpreter-Mediated Learning: Learning that occurs through the communication support provided by a sign language interpreter.

English language (source language): English refers to the official language of instruction in Ghana and the source of language in the study.

Syntax: The set of rules governing sentence structure in a language.

Inclusive Education: An educational system where students with disabilities learn alongside their peers in mainstream classrooms with appropriate support services, including sign language interpretation.

Interpreter Experience: Level of training, years of practice, and exposure to professional development.

Deaf students: Students who experience varying levels of hearing loss that significantly limit their ability to perceive spoken language. They primarily rely on sign language for communication and often depend on sign language interpreters to access spoken information in educational settings.

Sign Language Interpreter: A trained professional who facilitates communication between hearing individuals and those who are Deaf or hard of hearing by interpreting spoken language into sign language and vice versa.

Classifiers: Handshapes in sign language that indicate categories of nouns or actions.

Sekondi College: The Ghanaian Senior High school where the research location was situated, and sign language interpreters provide access for Deaf students in an inclusive learning environment.

Communication Access: People's ability to receive and convey information effectively within a particular environment, regardless of language or hearing ability

Quality of Interpretation: The accuracy, clarity, and completeness of meaning transfer from English to GhSL.

Institutional Support: Availability of training, materials, policies, and administrative backing for interpreters.

Deaf Students' Comprehension: The level of understanding achieved through interpreter-mediated instruction.

English Grammatical Complexity: The level of structural difficulty in English sentences (e.g., passive voice, idioms, technical terms).

1.9 Organization of the Study

In line with the in–house style of the University of Education, Winneba, this thesis was presented in five chapters. Chapter one comprised the background to the study, statement of the problem, the purpose of the study, objectives of the study, research questions, significance of the study, delimitations of the study, limitations, operational definition of terms, and general layout of the study. Chapter two focused on the literature review taking into account the research objectives and the theoretical framework of the study. Chapter three dealt with the methodology including research approach, research design, population, sample and sampling technique, the instrument used in data collection and analysis, and description and distribution of instruments.

Chapter four covered the presentation, analysis and discussion of results. Chapter five dealt with the summary, conclusions, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

This chapter explores existing literature relevant to the focus of the study. The review draws on a range of sources, including academic journals, research articles, books, and prior studies related to the interpretation of English into Ghanaian Sign Language (GhSL). The review begins with a discussion of the theoretical framework guiding the research, followed by an explanation of key concepts derived from the research questions. The main areas examined in this chapter include: the theoretical framework, the influence of interpreters experiences on English-GhSL syntactic Transfer, the Strategies for Overcoming Syntactic Errors in English-GhSL, the support service for Enhancing English-GhSL Interpretation, strategic approaches to improving English into GhSL interpretation, the conceptual framework and the summary of literature

2.1 Theoretical Framework

The study adopted Interpretive Theory of Translation (ITT), which was formulated in the 1970s by Danica Seleskovitch and later expanded by Marianne Lederer in 1989. The theory posits that the basic purpose of interpretation is to convey meaning and not perform literal, word-for-word translation (Seleskovitch & Lederer, 1989). This theory emerged in reaction to earlier models of translation which were focused on direct equivalence, and it witnessed a shift towards looking at translation as a communicative and cognitive process. ITT states that interpreters pass through three phases of thought: comprehension of the source message, deverbalization of the linguistic structure, and re-expression in the target language (Lederer, 2003). This theoretical approach is especially useful in situations where the languages have a different syntactic frame, like English and the Ghanaian Sign Language (GhSL), which are examined in this paper.

The first phase of the theory, comprehension, is understanding the message in terms of more than its mere surface language. The interpreters are supposed to glean the speaker's intent and meaning in context rather than merely individual words. In the process of deverbalization, the interpreter figuratively dismisses the initial linguistic form and is left with just the sense or meaning of the message.

Again, as reformulating the linguistic form into deverbalization, the sense to be extracted is formulation in the target language by appropriate syntax, grammar, vocabulary, and discourse conventions (Seleskovitch & Lederer, 1989). These stages emphasize the reality that interpreting is more an issue of sense-making rather than linguistic correspondence an understanding which has a central place when interpreting between structurally and modality-different languages like English and GhSL.

This theory is particularly relevant to this study because of one of the main challenges in switching between English and GhSL, namely the syntactic difference between the two languages. English employs a linear Subject-Verb-Object word order with various grammatical markers to indicate tense, aspect, and number. GhSL, however, relies to a greater extent on topic-comment structure, spatial location, classifiers, and non-manual markers like facial expressions (Agyekum, 2018). Interpreters working in this context cannot rely on a one-to-one correspondence between English words and GhSL signs. In translating situations such as English to GhSL, words and signs do not correspond one-to-one, and interpreters must convey meaning by considering linguistic and contextual factors (Napier, McKee, & Goswell, 2010).Instead, they must focus on conveying the intended meaning using the grammatical devices and visual-spatial logic of GhSL an activity in which ITT is particularly well-suited.

For example, the sentence "The teacher gave the students an assignment" cannot be translated into GhSL from English without changing the syntax. The interpreter needs

to be aware of who does what to whom (comprehension), untangle that meaning from the SVO structure in English (deverbalization), and then follow role-shifting, spatial location, and classifiers in order to rephrase the message in GhSL (reformulation) (Napier, McKee, & Goswell, 2006). It ensures that the Deaf students in Sekondi College are getting the message in a linguistically and culturally compatible form.

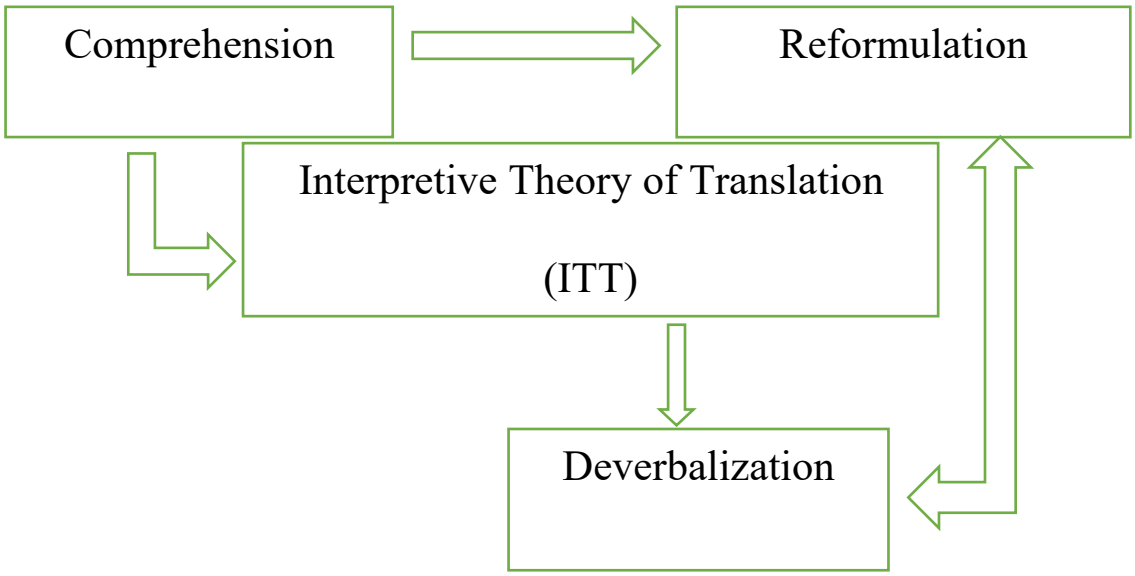
In this study, the ITT theory also has room for a wide range of interpretation strategies employed to resolve syntactic challenges. They include simplification, chunking, restructuring, use of classifiers, and role-shifting. All these strategies adhere to the stipulation of the theory that meaning, not form, is of central importance. "For instance, dividing an involved sentence into segments (chunking) supports the interpreter and the Deaf learner in managing cognitive load during real-time classroom interactions (Roy, 2000). Similarly, role-shifting enables interpreters to represent different speakers within a conversation an approach common in GhSL that supports ITT's notion of reformulation in the target modality (Winston & Monikowski, 2000)".

In addition, ITT has key implications for the training and education of interpreters in Ghana. The majority of educational interpreters in Ghana acquire their competence informally and will default to literal translation due to the absence of theoretical knowledge. Integrating ITT principles into interpreter training programs allows students to focus on conceptual knowledge and build on flexible thinking skills necessary for effective interpretation (Bontempo & Napier, 2007). This kind of training assists interpreters in being more reflective and intentional in their work, thereby raising both accuracy and usability for Deaf students within inclusive classrooms.

Beyond interpreter individual practice, the ITT model also deserves institutional and systemic support. Interpreting, especially in educational settings, is a cognitively complex activity. The psychological and emotional load on interpreters is likely to lead

to fatigue and susceptibility to error if not appropriately sustained, as contended by Dean and Pollard (2001). Consequently, as detailed by the ITT, interpreters must be given time for planning lessons, classroom interaction with teachers, and engagement in professional development. Such supports become essential for the realization of integrating meaning-based approaches recommended by ITT into meaningful practice in the classroom.

Figure 2.1: Theoretical Framework



Source: (Seleskovitch & Lederer, 1989).

2.2 Influence of Interpreter Experience on English–GhSL Syntactic Transfer

Interpreter experience significantly influences syntactic transfer from English to Ghanaian Sign Language (GhSL). The interpreter advantage hypothesis posits that professional interpreters (PIs) develop specialized cognitive and linguistic skills that generalize to improved executive functioning and semantic processing beyond the interpreting task (García, 2014). This hypothesis is supported by studies highlighting improved working memory, cognitive flexibility, and syntactic adaptation among trained interpreters.

Nour et al. (2020) systematically reviewed how interpreter training affects executive functions using the "unity and diversity" framework. They found a consistent advantage

in Shifting and Updating two key executive components among interpreters, although gains in Updating were less robust in longitudinal studies. This suggests that specific components of executive function improve more than others through interpreter training.

Transfer learning has emerged as a vital technique in addressing the scarcity of annotated sign language data. Mocialov et al. (2018) demonstrated improved syntactic modeling for British Sign Language (BSL) using transfer learning from English corpora. Similarly, Tipan et al. (2024) and Jin et al. (2022) showed that models trained on resource-rich languages can be adapted to under-resourced sign languages like Filipino Sign Language (FSL), enhancing both accuracy and syntactic alignment.

The age of sign language acquisition also critically affects syntactic and cognitive development. Henner et al. (2016) observed that earlier exposure to signing environments results in stronger syntactic and analogical reasoning skills in ASL users. These findings underscore the importance of linguistic experience and input timing, aligning with the idea that interpreter performance is partly shaped by the depth and timing of language acquisition.

Chmiel (2018) explored semantic priming effects in bilingual interpreters and found that advanced trainees recognized words faster than beginners, though they did not outperform professionals. Interestingly, priming effects were only observed in the L1–L2 direction, revealing asymmetries in cross-linguistic processing that persist despite interpreter experience.

Sign languages themselves display unique and diverse syntactic structures, some of which diverge substantially from spoken language norms. Fischer (2017) emphasizes both the universal and language-specific syntactic properties of sign languages, which

complicates the syntactic transfer process in interpretation. Thus, interpreters must navigate not only modality differences but also typological variation.

Dasgupta et al. (2010) outlined structural challenges in spoken-to-sign translation systems, identifying major barriers stemming from modality and syntax mismatches. These structural differences further emphasize the necessity of interpreter expertise in ensuring accurate syntactic mapping from English to GhSL.

2.2.1 Linguistic and Modal Challenges in English–GhSL Interpretation

English–GhSL interpretation presents unique challenges shaped by the visual-gestural modality, sociolinguistic factors, and structural disparities between spoken and signed languages. Quer and Steinbach (2019) emphasize that experimental and corpus studies involving sign languages face significant barriers related to modality, such as variability among signers, social perceptions of sign languages, and interface issues between gesture and language. These factors complicate both data elicitation and methodological design, making linguistic analysis in sign languages more complex than in spoken languages.

Mcdermid et al. (2023) identified modality-driven syntactic adjustments in a study on interpreters translating ASL into English. Interpreters inserted articles and conjunctions not signed in the original ASL texts, suggesting a conscious effort to improve comprehensibility for hearing audiences. This highlights the adaptive strategies interpreters employ to bridge structural gaps between modalities.

Technological systems also face modal challenges. Neidle (2023) notes that while isolated sign recognition has seen advances, continuous signing recognition remains a major difficulty due to coarticulation and handshape ambiguity. Recent models using Graph Convolutional Networks (GCN) and Natural Language Processing (NLP) approaches have leveraged contextual and handshape information to improve sign

classification and contextual word recognition, achieving higher accuracy in real-world signing scenarios (Zhang & Duh, 2023). These developments underscore the growing potential of AI tools in modal interpretation while also revealing the inherent complexity of visual data.

In public communication settings like TV news, interpretation quality is hindered by short-term memory demands, lack of standardized practice, and non-verbal constraints (Arlusi & Afgiansyah, 2025). Environmental factors such as lighting and screen layout also affect comprehension, illustrating that successful sign language interpretation relies on both linguistic and visual-spatial considerations.

Petitta et al. (2018) focus on the difficulty of translating proper names, which cannot be phonetically transferred across modalities. Interpreters must use creative linguistic strategies due to the absence of shared phonological features, further emphasizing how modality affects lexical equivalence and identity representation.

Emerging technologies offer promising multilingual, multi-output solutions. Joseph et al. (2024) describe a real-time Sign Language Detection System supporting ASL and other languages. The tool offers audio, text, and sign outputs tailored to user preferences, aiming to improve accessibility and customization key aspects in multimodal communication.

At the individual level, Modern (2025) explores the case of a Ugandan deaf woman, Silivia, highlighting how social neglect and lack of communicative investment can lead to mislabeling of cognitive abilities. This demonstrates that linguistic marginalization is often socially constructed, especially where formal sign language exposure is absent.

Makharoblidze (2021) documents the limited bilingualism among Georgia's Deaf community, where many struggle with agrammatism in Georgian due to insufficient access to formal language education. This raises critical concerns about language

acquisition, equity, and the need for better bilingual training frameworks tailored to sign language users.

2.2.2 Emotional and Psychological Dimensions of Sign Language Interpreting

Sign language interpreting extends beyond linguistic translation, encompassing deep emotional and psychological complexities. These dimensions shape not only interpreter well-being but also the quality and dynamics of communication between Deaf and hearing individuals.

Emotional communication, particularly through facial expressions in ASL, plays a critical dual role both emotional and grammatical. Lim et al. (2024) highlight that emotional facial cues are often underrepresented in translation technologies, yet when integrated, recognition of signer emotions improves by 32%. This points to the essential role of affective expression in bridging communicative intent across modalities.

Interpreters often engage with emotionally charged content, especially in public service domains. Leanza et al. (2025) found that interpreters adopt four coping strategies two collaborative and constructive, and two obstructive which reflect the significant emotional and cognitive demands of their work. The lack of institutional emotional support systems exacerbates stress and burnout.

Further research by Korpal and Jankowiak (2021) shows that interpreters exhibit increased physiological responses to negatively valenced content, regardless of direction (L1>L2 or L2>L1). This confirms that emotional processing is integral to interpretation, influenced by both linguistic and psychological distance.

Vicarious trauma is a prevalent concern. Macdonald (2015), citing Vigor (2012), stresses that burnout, compassion fatigue, and secondary stress are common among interpreters exposed to traumatic narratives in medical and crisis settings. However, the

field lacks robust preventive frameworks and systemic support, worsening long-term consequences.

From a technological perspective, Mannepula et al. (2024) propose a context-aware AI system that can translate both sign and emotion in real-time. This approach addresses the gap in current systems which typically ignore the emotional context of DHH communication.

In educational settings, interpreters serving Deaf individuals with disabilities (DWD) require unique skillsets. Mason (2020) developed a framework combining special education and interpreting strategies, revealing core interpreter values of individualization, flexibility, and collaboration.

Emotional labor is not confined to DHH spaces. Mahyub-Rayaa and Baya-Essayahi (2021) explored Arabic–Spanish interpreters in refugee contexts, where interpreters regularly confront emotionally triggering experiences without psychological support. This lack of preparedness can diminish professional well-being and communicative integrity.

Workplace dynamics also suffer when interpreters are treated merely as tools rather than communication partners. Young et al. (2019) showed that hearing colleagues often overlook the interpreter's presence, shaped by phonocentric norms, which marginalizes both interpreter agency and Deaf identity.

Finally, Chew and Cheung (2022) analyzed sign language interpreters' roles during COVID-19 briefings. Interpreters navigated high visibility, public pressure, and fatigue, while Deaf audiences were often dissatisfied with their performance. This dual tension highlights the Catch-22 nature of interpreting under scrutiny and inaccessibility.

2.2.3 Role and Identity Negotiation in Deaf-Hearing Settings

Deaf identity formation is a complex, contextual, and evolving process shaped by both intra-community dynamics and interactions with hearing individuals and institutions. Marschark et al. (2017) emphasized the significance of social dominance orientation (SDO) and found that deaf individuals with strong Deaf identities, particularly sign language users without cochlear implants, tend to have more egalitarian social attitudes than their hearing counterparts. This underlines the interplay between identity and broader sociopolitical constructs.

Smolen and Paul (2023) elaborate on the fluid and intersectional nature of d/Dhh identity, shaped by physiological, psychological, and social factors. They highlight key themes like the role of cochlear implants, educational experiences, and relational development, stressing that identity is a lifelong, dynamic negotiation.

Codas (Children of Deaf Adults) navigate bimodal bilingualism and biculturalism. Allard and Roos (2025) show how their daily experiences foster social, cultural, and linguistic awareness, influencing their identity investment and negotiation between Deaf and hearing worlds. The concept of investment from Norton's theory underscores the active role individuals take in engaging with linguistic and cultural systems.

Chapman (2021) explores Deaf adults raised in bilingual–bicultural education systems in Denmark. The narratives reflect a hybrid identity, embracing both Deaf culture and cross-cultural engagement while resisting medicalizing ideologies, such as the normalization associated with cochlear implants. This challenges binary models of Deaf vs. bicultural identity.

In Iceland, the Deaf community faces existential threats due to demographic decline and policy shifts. Diego and Hardonk (2023) document how Deaf Icelanders experience

social insecurity in their identity, with Deaf community interaction acting as a primary identity anchor.

Farias and Bauer (2025) investigate inclusion and exclusion in workplace organizations. They identify that Deaf individuals see recognized employment as a pathway to inclusion emphasizing the importance of affective communication and cultural exchange with hearing colleagues as central to social belonging. Communication, when affectively grounded, becomes either a bridge or a barrier to inclusion and identity expression.

2.3 Strategies for Overcoming Syntactic Errors in English–GhSL Interpretation

Syntactic errors in English–Ghanaian Sign Language (GhSL) interpretation primarily stem from structural and modality differences between the two languages. One central strategy for mitigating these errors is the reordering of sentence structure, a technique proven effective in both human and machine translation contexts. Ohno et al. (2015) and Liu et al. (2020) developed models to reorder words based on dependency parsing and language modeling, demonstrating improved cross-linguistic syntactic alignment.

Technological interventions such as sign-to-text systems and neural models are pivotal in addressing GhSL syntactic irregularities. Suresh et al. (2024) proposed a real-time system that uses MediaPipe and CNNs to recognize and translate hand gestures into grammatically coherent text, making communication more accessible in social and institutional domains.

Interpreter skill development **is** equally vital. Roy & Pöchhacker (2009) advocated for improved interpreter training through curriculum reforms, discourse mapping, turn-taking strategies, and omission recognition to refine syntactic accuracy and contextual interpretation. Their work emphasizes that syntactic fidelity must be balanced with functional equivalence in meaning.

Experience plays a major role in managing syntax in dynamic dialogues. Tiselius (2018) showed that experienced interpreters exhibited better monitoring, vocabulary internalization**,** and turn coordination, suggesting that training should integrate simulated dialogue-based interpreting with real-time feedback.

Remote interpreting introduces additional syntactic challenges due to limited visual cues and temporal lag. Napier et al. (2017) reported interpreters' concerns regarding training gaps and policy limitations in video relay services, underscoring the need for platform-specific syntactic adaptation protocols**.**

Emerging models like Rao's (2025) transfer learning-based ASL interpreter demonstrate how gamified feedback loops and efficient architectures (e.g., MobileNetV2) enhance both accuracy and syntactic coherence during gesture recognition. This holds promise for adaptation to GhSL.

Educational research within the GhSL context (Abire, 2020; Duku, 2012) stresses the importance of local syntactic training. They reveal that lexical gaps, lack of bilingual resources, and insufficient exposure to grammatical variation in English-to-GhSL interpretations are core barriers.

2.3.1 Use of Classifiers and Non-Manual Marker

Classifiers in sign languages function as "depictive verbs," enabling visual-spatial representation of semantic classes such as human referents, objects, and movements. Kimmelman & Khristoforova (2025) found that both Russian Sign Language (RSL) and Sign Language of the Netherlands (NGL) use one-handshape and two-handshape classifiers for anthropomorphic referents but exhibit language-specific tendencies in classifier selection based on syntactic and semantic cues. Non-manual markers (NMMs) such as facial expressions, head tilts, and gaze serve critical grammatical roles in sign languages. Guzikova & Gubina (2020) emphasize their use for syntactic

functions like marking sentence boundaries, questions, and negations in Russian Sign Language. Krebs et al. (2020) used EEG studies to confirm that classifier constructions evoke N400 signals, indicating increased cognitive processing for less expected syntactic orders. This supports the linguistic rather than purely gestural status of classifiers. Pendzich et al. (2022) showed that German Sign Language (DGS) signers distinguish conditional sentences by applying different NMMs to antecedents and consequents, such as distinct eyebrow raises or head shifts. These cues layer grammatical information atop manual signs. Michael et al. (2011) introduced a computational framework using Hidden Markov Models and Support Vector Machines for recognizing NMMs like brow movement and head gestures. Their system achieved greater segmentation accuracy for ASL sentences. Gupta and Bhatnagar (2021) used gyroscope, accelerometer, and EMG sensors in a multi-modal system to recognize Indian Sign Language with high accuracy. Static signs benefited from EMG features, while dynamic signs were better captured by motion-based data. Aarons and Morgan (2012) examined South African Sign Language (SASL) and found that classifier predicates often follow topicalized elements. This reveals syntactic constraints guiding classifier usage and sign order in declarative structures. Hanada (2023) tested FaceReader software for coding NMMs in sign language corpora. While limited by hardware (e.g., beards and glasses), the tool was found useful for capturing facial and head gestures across signers. Datta et al. (2020) used Otsu's image segmentation for hand recognition in video-based Indian Sign Language systems. Though achieving 65% accuracy, the study emphasizes the challenge of real-time classifier and NMM recognition.

2.3.2 Segmentation, and Pausing Strategies Chunking

Chunking strategies are central to understanding cognitive processing in sign language production and recognition, particularly in Ghanaian Sign Language (GhSL). Chunking, which involves breaking down continuous information into manageable units, aids in both language learning and automated recognition. Blume et al. (2016) highlight that chunking not only facilitates faster response times but also offers a lens into cognitive strategies, such as eliminating switch cost effects in dual-item tasks. This model informs how chunking might streamline sign language interpretation by grouping semantic or syntactic units for better fluency.

Odartey et al. (2019) introduce a deep convolutional neural network tailored for GhSL, achieving 96% recognition accuracy. They enhanced this by integrating transfer learning with pre-trained models. This approach underscores the importance of segmentation in machine vision tasks where chunking of hand movements enables accurate classification. Similarly, Fragkiadakis (2022) utilized OpenPose and Dynamic Time Warping in the DistSign tool to quantify movement variations in GhSL, further establishing segmentation as a mechanism for cross-linguistic analysis and false cognate detection.

Edward and Akanlig-Pare (2021) provide a comprehensive overview of Ghana's sign language landscape, noting how language contact and limited documentation threaten indigenous sign languages. Their work recommends increased research and local involvement in preserving linguistic diversity. In alignment with this, Obosu et al. (2023) demonstrate that sociocultural dynamics, such as parental awareness and early exposure, are vital to early chunking and acquisition patterns in deaf children. Educational applications were explored by Hayford and Twum (2025), who showed

that web-based sign language learning tools were perceived as effective, though limited by technical issues like loading speed and lack of offline access.

Instructional chunking was examined by Baker (2010), who outlined the cognitive basis of chunking and scaffolding in online learning, rooted in Vygotsky's social development theory. Chunking enables learners to retain and relate new sign language units to prior knowledge, improving working memory efficiency. Colarusso et al. (2023) expanded this by introducing the CACHET tool with the TIPS method to assess competence through micro-behaviors, effectively modeling how users segment visual stimuli for transcription. These assessments reflect how chunking correlates with memory hierarchy and performance variation.

Collectively, these studies emphasize that chunking in GhSL is more than a performance artifact it is both a linguistic and cognitive strategy. It supports fluency in manual and automated interpretations, strengthens early acquisition, enhances learner competence, and can even help preserve vulnerable indigenous languages through systematic digital recognition and educational support.

2.4 Supportive Services for Enhancing English–GhSL Interpretation

The integration of supportive services to enhance English–Ghanaian Sign Language (GhSL) interpretation is critical in bridging communication gaps and improving accessibility for the Deaf and Hard of Hearing communities. A key motivation stems from the reality that although healthcare is a fundamental right, many adults with disabilities, including the Deaf, face communication barriers in accessing such services (Senayah et al., 2018). These barriers necessitate robust interpreter training, technical innovations, and institutional policy reforms to meet the needs of GhSL users effectively.

One important approach has been the development of digital learning tools. Hayford and Twum (2025) assessed a web-based application tailored to nursing students learning GhSL. The app was reported to be effective and user-friendly, especially due to its accurate sign language videos. However, technical constraints such as high data usage and lack of offline access were notable challenges, prompting recommendations for optimization and offline mode integration. Similarly, Nanaware et al. (2018) created an Indian Sign Language app that includes learning, practice, and testing modules, which was well-received by students who appreciated its personalized interaction.

Technological innovations are also aiding interpreter education and linguistic analysis. Fragkiadakis (2022) introduced "DistSign," which tracks hand movement paths using OpenPose and evaluates them with the Dynamic Time Warping algorithm. This tool achieved 60% accuracy in identifying cognates between American and Ghanaian sign languages and supports semi-automated linguistic analysis for improving interpretation precision. Complementing this, Wong et al. (2024) developed Sign2GPT a gloss-free sign language translation model based on lightweight adapters and pretrained vision-language encoders demonstrating significant advances in sign translation performance on benchmark datasets.

Improved access to interpreters in health facilities remains a central recommendation from the work of Senayah et al. (2018), who emphasized including GhSL courses in health training institutions to overcome communication barriers. Similar advocacy is seen in the dataset design work by Witte et al. (2025), which matched signs and pseudosigns in Swedish Sign Language for psycholinguistic testing, enabling better experimental tools for interpreter education.

In Mexico, Hilario-Acuapan et al. (2025) proposed a novel recognition system for Mexican Sign Language using decomposed arm movements and pose estimation,

supported by a dataset curated with input from Deaf community members. Their work underscores the need for culturally and linguistically inclusive datasets to train AI models. Meanwhile, broader recommendations have been made by Fobi et al. (2022), who examined Ghanaian interpreter training and stressed the importance of community engagement, policy frameworks, and interpreter participation in service design to ensure sustainability.

Collectively, these studies highlight the role of digital tools, interpreter training programs, linguistic datasets, and institutional policies in enhancing English–GhSL interpretation. They advocate for an ecosystem that combines technology, education, and human support services to achieve meaningful inclusivity and improved communication outcomes for Deaf individuals.

2.4.1 Peer Mentorship, Networking, and Community Practice

Peer mentorship and community-based practices serve as foundational elements for cultivating expertise and social inclusion within the Deaf and interpreting communities. Friedner (2018) ethnographically explored how ASL-English interpreting students navigate their roles within the Deaf community amid ongoing professionalization in the interpreting field. She found that legitimacy was often negotiated through peer relational strategies involving nuanced interpretations of kinship categories, although these remained under-critiqued, thus leading to static representations of Deaf identity. Community identity is also reinforced through placemaking efforts. Yoel (2022) illustrated this in the context of Maritime Sign Language (MSL), a moribund language still used in eastern Canada. MSL users maintain cultural cohesion through collaborative efforts that bind them both to ASL-using Deaf communities and broader non-Deaf populations, emphasizing language as a cultural marker of identity.

MacDougall (2015) presented a compelling case of Yucatec Mayan Sign Language (YMSL) in Chican, Mexico, where deafness is seen positively. Unlike state views that consider deafness a disabling condition, the local community integrates Deaf individuals through family-driven language transmission and broad societal use of YMSL. This highlights the potential of family-centered, culturally contextual mentorship and the limitations of external development policies. In technology-enhanced interaction, Rao et al. (2023) and N & Shenoy (2023) developed systems using Convolutional Neural Networks (CNN) and MediaPipe for real-time sign language-to-text conversion, increasing accessibility and communicative independence. These systems, though technically innovative, implicitly benefit from community user feedback and alignment with culturally embedded sign use.

Community engagement is critical to the success of assistive technology development. Fox et al. (2023) outline best practices in sign language technology research, including involving Deaf researchers and aligning research objectives with community perspectives. This participatory model ensures cultural relevance and ethical accountability. On the topic of linguistic representation and language preservation, Lev-Ari et al. (2025) show that larger sign language communities (e.g., ASL) exhibit higher rated iconicity, especially in non-social signs, compared to smaller languages. This suggests that social scale influences not only usage patterns but also cognitive and interpretive accessibility.

Moreover, peer mentorship has proven vital in supporting professional development and social integration. Huyck et al. (2021) demonstrated that Deaf and Hard-of-Hearing (D/HH) professionals benefit significantly from peer mentorship networks which facilitate inclusive career advancement and identity support. Similarly, Lynn et al. (2020) emphasized the importance of matching D/HH undergraduates with culturally

aware peer mentors to improve retention and sense of belonging in academic institutions. In interpreter training, Listman (2013) noted that traditional educational pathways may overlook subjugated knowledge embedded within Deaf mentors, indicating that mentoring relationships need to incorporate community wisdom and lived experience.

Community-based mentorship also plays a critical role in resisting educational and occupational marginalization. Hardy (2018) showed that Deaf youth mentoring others in instructional settings contributes to a culture of peer empowerment and self-efficacy, while Ballentine (2024) emphasized the need to include Deaf interpreters in mentorship and certification systems to overcome systemic career barriers. Together, these studies demonstrate that community-oriented mentorship and networked support not only enhance interpreter training and sign language preservation but also support psychosocial well-being and linguistic equity across the Deaf and Hard-of-Hearing population.

2.4.2 Access to Resources and Technological Tools

Access to linguistic resources and technological tools is central to advancing equity and accessibility for deaf and hard-of-hearing communities. The American Sign Language Linguistic Research Project (ASLLRP) exemplifies this progress by offering open access to annotated ASL video data via SignStream®. Neidle et al. (2022) emphasize that the ASLLRP Sign Bank includes nearly 6,000 lexical entries and over 41,000 examples, supporting both linguistic research and computational sign language recognition efforts. However, tools designed for spoken or written languages often overlook the visual-gestural modality of signed languages. To address this gap, Mahajan et al. (2022) advocate for sign language-centric survey tools that do not require

literacy in written languages, improving accessibility for Deaf individuals by aligning questionnaire design with ASL structure and delivery.

Beckmann (2022) offers a sociohistorical perspective, examining the introduction of Ugandan Sign Language in Acholi during a time of conflict. Drawing on Heidegger's framework, the research reflects how sign language implementation created new forms of sociality and community agency, demonstrating that technology and language access are tightly interwoven with cultural and political dynamics. Similarly, Mishra et al. (2024) provide a thorough review of sign language recognition (SLR) technologies, highlighting how advancements in deep learning, especially unsupervised techniques, are helping create robust tools for gesture-to-text translation, though challenges remain in adapting these tools for low-resource sign languages.

On the dataset front, Hermawan & Subono (2025) introduced a high-performance deep learning model called Sign Nevestro Densenet Attention (SNDA), trained on an extensive American Sign Language dataset comprising over 64,000 labeled images. Their model achieves over 99% accuracy, demonstrating the promise of highly refined neural network architectures in ASL recognition. However, educational equity is not solely a technical problem. El-Taweel (n.d.) finds that Deaf individuals in higher education continue to face significant barriers rooted in linguistic ideologies and systemic oralism, limiting the recognition of sign language as a legitimate medium of instruction.

Humphries et al. (2014) further reinforces this by analyzing the educational systems and language acquisition, concluding that outdated perceptions of the Deaf community and the lack of sign language centered resources hinder the development of identity and positive language attitude. Their findings reveal that support systems both peer and technological are crucial in fostering a sense of belonging. Moreover, while access to

the national sign language is often perceive as a sign of respect and integration, it is not sufficient without institutional support for full academic inclusion. In contrast, Reagan (2010) explores ho Deaf communities in diverse sociolinguistic contexts navigate sign language use, particularly among Deaf immigrants, and emphasizes the need for policies that recognize sign language as a legitimate medium of instruction and cultural identity.

Collectively, these studies show that access to technological tools and linguistic resources for sign language is not just a matter of software or data availability it also involves rethinking how educational systems, research instruments, and policy frameworks conceptualize language, identity, and inclusivity in the Deaf world.

2.5 Strategic Approaches to Improving English - GhSL Interpretation

Improving English–GhSL interpretation requires multifaceted strategies that address cognitive, educational, linguistic, and technological gaps in current interpreter education and practice. One of the foundational challenges, as noted by Shaw et al. (2004), lies in the transition from language learning to professional interpretation. Students often perceive their language proficiency as inadequate for interpretation tasks, leading to reduced confidence and attrition in interpreter training programs. This issue is exacerbated by the limited attention given to interpreting from signed to spoken language, which is equally crucial yet underexplored in academic literature. (McDermid et al., 2023; Wang, 2021).

To bridge this gap, user-centered software solutions like TerpTube have emerged. Hibbard et al. (2020) highlight that conventional language software, often built around English textual input, poses accessibility challenges for sign language learners. The TerpTube platform instead adopts a video-centric, Deaf-centric interface, allowing mentors and students to engage in ASL dialogue via video feedback. Evaluations with

interpreter students confirmed that such tools enhance learning and better simulate authentic language use.

In practice, interpreters must also make active interpretive choices to enhance clarity and coherence for the audience a process described by McDermid et al. (2023) as "explicitation." Their study of ASL-to-English interpreting revealed how interpreters insert articles and conjunctions not present in the signed source to improve comprehensibility. This shows that interpreters are not neutral conduits but rather strategic communicators who manage cognitive load and audience expectations.

Shaw et al. (2004) further explored how interpreter education programs in Austria and the U.S. approach the transition from second-language acquisition to interpreting. Their comparative analysis revealed that students in both spoken and signed language programs experience similar difficulties with confidence, readiness, and metacognitive awareness. Their findings advocate for curriculum enhancements that incorporate scaffolded practice, peer support, and real-world interpreting simulations.

A critical but often overlooked domain is international sign interpreting**,** a hybridized, improvised language form used at global events. McKee & Napier (2002) analyzed interpretations from English to International Sign Pidgin and found interpreters relying heavily on contextual knowledge, relevance theory, and inferencing strategies to construct accessible messages. These findings support the notion that interpreters function as cultural and linguistic mediators, not just translators.

In the field of technology-assisted interpreting, the "ASL Interpreter" project (Khondker, 2016) utilizes MATLAB and image processing to recognize hand gestures and translate them into English. The software matches histogram patterns of live hand images to a pre-defined sign database, showing potential for enhancing communication for deaf individuals through automated interpretation systems.

Lastly, Wang (2021) studied the cognitive demands of simultaneous interpreting from Auslan to English in conference settings. Findings revealed that interpreters must maintain formal registers, manage sign language variation, and sustain high cognitive load, especially when rendering spontaneous or culturally specific expressions into spoken English.

Taken together, these studies underscore that improving English–GhSL interpretation depends on integrative strategies ranging from Deaf-centric technology and explicitation training to culturally responsive pedagogy and cognitive load management. These insights are crucial for shaping future interpreter training programs, educational policies, and inclusive technology.

2.5.1 Collaborative and Team-Based Interpreting Models

Research into collaborative and team-based interpreting models in sign language underscores the importance of collective approaches in advancing communication access, dataset enrichment, and interpretation strategies. Braem (2024) provides a historical lens into the foundational work of sign language research in the USA and Switzerland. The collaborative nature of this early research particularly the team formation for Swiss German Sign Language (DSGS) illustrates the role of interdisciplinary and multinational cooperation in establishing robust linguistic frameworks.

Team-based strategies extend beyond academic research into practical communication interventions. Shakele et al. (2022) explore the use of the bodily tactile modality for enhancing interaction between a deafblind child and her family in Zambia. Their intervention model demonstrates how close-knit communicative teams grounded in dialogical interaction and mutual role-sharing can foster expressive and receptive

capacities through tactile and gestural modes, reaffirming the relational basis of accessible communication.

Collaborative data efforts are essential in building technological tools for sign language translation. Feng and Yuan (2022) introduce a new continuous Chinese Sign Language dataset, created through cooperation among 50 signers, amassing over 27,000 video clips. They demonstrate that teamwork among data contributors and computational linguists can produce high-quality corpora for training sequence-to-sequence translation models, advancing accessibility for deaf users.

In a further step toward practical application, Zuo et al. (2024) present a three-phase continuous sign language recognition (CSLR) system. This includes the creation of a sign dictionary, training of isolated recognition models, and integration of gloss-to-text conversion for real-time translation. Their model simulates the way interpreter teams operate: combining segmented tasks (glossing, recognition, production) to deliver fluid communication experiences.

Building on the necessity of data augmentation for low-resource languages, Walsh et al. (2025) propose the use of generative modeling SignGAN and SignSplat to synthetically generate varied signer appearances and motion patterns. Their team's use of multimodal augmentation techniques illustrates how research collectives can fill resource gaps while improving performance across machine learning models for sign language translation.

Together, these studies demonstrate that team-based approaches are fundamental not only in live interpretation settings but also in the research, technological development, and educational advancement of sign language practices. From tactile interventions to machine-learning collaborations, cross-disciplinary and community-driven models enhance accuracy, inclusivity, and scalability in signed language communication.

2.5.2 Integration of Cultural Competence and Ethical Standards

The integration of cultural competence and ethical standards is essential in enhancing the quality of English–Ghanaian Sign Language (GhSL) interpretation in inclusive educational settings. Cultural competence enables interpreters to understand the values, communication norms, and identity dynamics of the Deaf community, while ethical standards guide professional conduct, neutrality, confidentiality, and accuracy in message delivery. In educational contexts such as Sekondi College, interpreters must not only transfer linguistic meaning but also mediate cultural differences between hearing teachers and Deaf students. Without strong cultural awareness and adherence to ethical principles, interpretation may distort meaning, reinforce power imbalances, or compromise the learning experience of Deaf students.

Foster's (1996) ethnographic work contextualizes these institutional barriers by emphasizing the variability of Deaf individuals' language skills and the nuanced interplay between spoken English and ASL. He argues that Deaf people often navigate systemic constraints that impair communication even when they possess strong bilingual proficiency. This foundational perspective underscores that ethical service delivery requires more than linguistic access it demands cultural understanding and engagement.

Singh et al. (2022) approach accessibility from a technological lens with the "SignUpCrowd" system, designed to allow Deaf users to participate in microtask-based crowdsourcing using sign language input. Their study found that sign language input is functionally equivalent to traditional modes like text or click interfaces, suggesting that broader adoption of sign-centric interfaces could expand Deaf inclusion in the digital economy.

Mweri (2010) highlights that interpreters are not passive conduits but active participants who must possess sociolinguistic and cultural awareness. He warns that cultural misunderstanding can compromise message accuracy and interpreter neutrality, especially in nuanced or sensitive communicative contexts.

The need for ethical alignment in Deaf research is echoed in Desai et al. (2024), who critique the dominance of hearing researchers in sign language AI development. Their systematic review reveals how many models fail to incorporate Deaf perspectives, resulting in technologies misaligned with community needs. They call for more Deaf-led research and inclusive collaboration frameworks.

Clinical training standards are further addressed by Secora et al. (2025), who conducted a Delphi study to establish expert consensus on speech-language pathologists (SLPs) working with signing Deaf and hard-of-hearing children. While participants agreed on the value of cultural responsiveness and respectful attitudes, the study identified a lack of consensus on required ASL proficiency levels suggesting a need for clearer professional benchmarks.

2.6 Conceptual Framework

Spoken English to Ghanaian Sign Language (GSL) interpretation is a cognitively and culturally advanced task that involves more than word-for-word equivalence. This study takes recourse to the Interpretive Theory of Translation, initially proposed by Seleskovitch (1970) and later furthered by Lederer (1989). This theory emphasizes that effective translation consists of the process of understanding the meaning of a message, deverbalizing the source linguistic form, and re-expressing the latter's meaning in the target language. This triadic method is particularly relevant to sign language interpreters whose job includes not only the interpretation of spoken words into signs but also adapting to the grammatical and spatial composition of GSL. Since GSL and

English belong to fundamentally different modalities visual-gestural and oral-auditory the interpretation process will need to consider semantic gaps, idiomatic usage, and cultural references. The theory provides us with a basis from which to understand how interpreters reconstruct and process meaning in their minds so that it remains true and transparent to Deaf people in Ghana.

In addition to linguistic and cognitive abilities, this study also incorporates Kolb's Experiential Learning Theory (1984) to examine how interpreters learn and become proficient over time. Kolb speculates that learning is a cycle and involves four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. For sign language interpreters, these stages are evident in how they gain competence through exposure to various domains (e.g., legal, school, religious, healthcare settings), introspection on their performance, acquiring new strategies, and applying them during real-time interpretation. This is especially applicable in Ghana where there are no sufficient formal interpreter training programs and learning is done through field practice and community interactions. The theory also refers to how client and Deaf peers' feedback and individual learning styles build an interpreter's competence. Interpreting thus is not a technical skill in the strict sense but is a developmental process governed by context, experience, and reflective practice.

2.7 Empirical Review

Research on the experiences of sign language interpreters in interpreting English into Ghanaian Sign Language (GSL) is gradually gaining attention in African and global linguistic scholarship. Interpreting from a spoken language like English, rich in complex syntactic structures, into a visual-gestural language like GSL presents numerous challenges, particularly in terms of structure, semantics, and cultural context. One of the central findings across several studies is that sign language interpreters'

lived experiences significantly shape their interpretive choices, confidence, and effectiveness. A study by Adade et al.(2022) revealed that interpreters often contend with fast-paced speech delivery, insufficient preparation time, and the cognitive strain of real-time translation. These interpreters reported feeling overwhelmed, especially when translating syntactically dense content, such as technical lectures or legal discourse, into GSL. The absence of standardized training in sign language linguistics and the non-availability of teaching materials in both English and GSL further complicate their roles. Similarly, Adade, Fobi, and Oppong (2022) found that interpreters' prior exposure to Deaf culture, continuous engagement in real-world settings, and personal motivation strongly influenced the quality of interaction with Deaf clients. Those with broader experiences were more adaptable and responsive to contextual needs.

Syntactic complexity is one of the most persistent challenges for interpreters. English syntax often includes embedded clauses, passive constructions, conditional statements, and idiomatic expressions that lack direct GSL equivalents. According to Adade et al. (2022), sign language interpretation services in Ghana are hindered by the lack of formally trained interpreters, misconceptions about the interpreter's role, and weak institutional support, including limited legal and organizational protection for practitioners. For instance, passive voice expressions in English are often reconstructed into active visual-spatial formats in GSL to ensure clarity. De Vos and Pfau (2015), though focusing on rural sign languages, provide relevant insights into the strategies used by interpreters to simplify complex syntax, suggesting that restructuring and visual modeling are common adaptations. Mapson (2015) adds that pragmatic aspects, such as politeness and modality, also pose syntactic challenges when attempting direct conversions between spoken and signed modes. These findings reinforce the idea that

interpreting syntax is not merely a linguistic function but also a cultural and cognitive task.

The lack of support services for interpreters remains a critical limitation in Ghana and similar contexts. Adade et al. (2022) report that many Ghanaian interpreters do not have access to glossaries, digital tools, or standardized reference materials, which hinders both the accuracy and consistency of their interpretations. Institutional neglect means that interpreters often have to rely on informal peer learning or self-study. In Zambia, Deneke (2017) found that universities failed to provide adequate interpreting services, leaving many Deaf students without consistent access to lectures. Adu-Gyamfi (2023), investigating interpreter experiences at the University of Education, Winneba, further noted that interpreters were frequently assigned across multiple departments without consideration for subject specialization, leading to high cognitive demands and inconsistent quality. Without structured support such as mentoring, thematic training sessions, and evaluation feedback, interpreters remain under-resourced and under-recognized.

Despite these limitations, interpreters adopt various improvement strategies to build their skills. Asare (2022) highlighted that Deaf students in Ghana strongly believe the quality of interpretation influences their academic performance, suggesting a need for interpreter certification and policy integration. Kaula (2023) emphasized that professional growth for sign language interpreters in many African countries, including Ghana, is largely self-driven, relying heavily on peer-led initiatives, reflective practice, and community engagement due to the absence of structured national training or certification systems. While these informal methods provide some level of support, they are insufficient to ensure long-term professional development. In contrast, Grbić (2014), studying Austria's training models, illustrated how formalized interpreter

education and continuous professional development (CPD) lead to improved syntactic handling and consistency in delivery. These models offer a valuable reference for Ghanaian institutions seeking to institutionalize interpreter education.

2.8 Summary of the Literature

This chapter discussed applicable literature on the subject of science, empirical literature and the theoretical context. The following were addressed in the chapter: Influence of interpreter experience on English–GhSL syntactic transfer, emotional and psychological dimensions of sign language interpreting, role and identity negotiation in deaf-hearing settings, strategies for overcoming syntactic errors in English– GhSL interpretation, use of classifiers and non-manual marker, segmentation, and pausing strategies chunking, supportive services for enhancing English– GhSL interpretation, peer mentorship, networking, and community practice, access to resources and technological tools, strategic approaches to improving English - GhSL interpretation, collaborative and team-based interpreting models, integration of cultural competence and ethical standards. Although literature revealed the role of interpreting in the inclusion of deaf students in tertiary education, classroom communication experience for students who are deaf. None of the above-mentioned research has attempted to look at the sign language interpreters experiences in interpreting English into Ghanaian Sign Language at Sekondi College. Therefore, study on sign language interpreters' experiences in interpreting English into Ghanaian Sign Language at Sekondi College is therefore required.

CHAPTER THREE

METHODOLOGY

This chapter describes the methodology for the study. It comprises of philosophical underpinning, research approach, research design, population, sample size, sampling techniques, instrumentation, transferability, dependability, confirmability, credibility, the procedure for data collection, method for data analysis, and ethical considerations.

3.1 Philosophical Underpinning

This study is grounded in the interpretivist paradigm, which emphasizes understanding human experiences, meanings, and interactions within their social and cultural contexts (Creswell & Poth, 2017). Interpretivism offers an appropriate philosophical foundation for this study in the sense that it acknowledges the complexity of language interpretation, particularly in a bilingual setting where English and Ghanaian Sign Language (GhSL) possess dissimilar syntactical structures and cultural influences.

Interpretivism posits that reality is socially constructed, and knowledge is obtained from subjective experiences rather than objective measurements (Schwandt, 2000). This aligns with the qualitative nature of the study seeking to explore the lived experiences of interpreters in Sekondi College. Since sign language interpretation is very contextual, meaning-making processes, and cognitive models of interpreters, an interpretivist position is necessary to explore how interpreters handle the linguistic challenges of interpreting English into GhSL.

3.2 Research Approach

The study employed a qualitative research approach to explore sign language interpreter's experiences in interpreting English into Ghanaian Sign Language (GhSL) at Sekondi College. A qualitative approach is essential because it allows me to gain an in-depth understanding of interpreters' lived experiences and strategies, which cannot

be fully captured through quantitative methods (Creswell & Poth, 2018). This study focuses on experiences of sign language interpreters navigating linguistic differences between English and GhSL, rather than simply assessing the academic performance of deaf students (Morgan & Liddell, 2016).). Since GhSL has a high reliance on non-verbal aspects such as spatial location, facial expression, and gesture, I utilized qualitative research methods like interviews to appropriately elicit these factors to ensure a clear understanding of the interpretation process (Napier, 2011).

I used qualitative research since it involves direct interaction between me and the participants and allows me to conduct the study in the socio-cultural background of the interpreters (Creswell, 2014).

In qualitative studies, Bryman (2008) and Creswell (2013) established that the participants are expected to give descriptive rather than abstract details on the specific features of the phenomenon being studied. Similarly, Creswell and Creswell (2018) and Creswell (2016), and Marshall and Rossman (2016), emphasized that qualitative researchers prefer collecting data in the field where the problem or issue exists at the location where the participants reside. Additionally, Ary, Jacobs, Sorensen, and Razavieh (2010) continued that qualitative research design entails collecting data from the participants themselves in an attempt to understand the phenomenon from the perspective of the parties participating in the study.

3.3 Research Design

The study adopted a descriptive case study research design which was appropriate approach to examining sign language interpreter's experience in interpreting English into GhSL for Deaf students at Sekondi College. A descriptive case study design enabled the researcher to study the bounded context of Sekondi College. The research design will also helped facilitate the support of the inquiry into the complex interactions

and dynamics in a natural setting, which is critical for uncovering the nuances of interpreting English into GhSL. According to Yin (2018), case studies are particularly effective in situations where the boundaries between the phenomenon and its context are not clearly evident, as is the case in this study. In this case, the study seeks to examine the complexities, interactions, and teaching dynamics involved in interpreting English into GhSL within a real classroom environment.

The choice of a descriptive case study design is further supported by its capacity for an in-depth exploration of complex phenomena. The study aims to delve into the linguistic and pedagogical intricacies of interpretation, as well as the institutional and social factors that influence this process. Case study research is particularly useful when the aim is to explore the "how" and "why" of complex social phenomena in real-life contexts (Yin, 2018). In this study, interpreters will be given the opportunity to share their lived experiences of interpreting English into Ghanaian Sign Language (GhSL) through semi-structured interviews. This approach encourages in-depth reflection and generates practical insights that can inform interpreter training programs and inclusive education policies. Case studies are also valuable for producing actionable recommendations, especially in studies seeking to impact practice and policy (Simons, 2009; Thomas, 2016).

3.4 Population

The population for this study consisted of eleven (11) sign language interpreters at Sekondi College. This group was made up of seven (7) full-time interpreters who had been interpreting in inclusive classroom for more than one academic year at Sekondi College, and four (4) National services personnel who had been assigned to interpret in inclusive classrooms at Sekondi College. The sign language interpreters comprised of six (6) females and five (5) males, aged 26 to 37 years with an average age of 30 years.

According to Creswell (2014), a population is a set of individuals with some attributes and to whom the researcher wants to generalize the outcomes of the study. The population chosen was appropriate for this study because all the participants had practical experience of translating English into Ghanaian Sign Language (GhSL) in inclusive classrooms at Sekondi College.

3.5 Sample Size

The sample size for the study was eleven (11) participants, comprising of seven (7) full-time interpreters and 4 National Service Personnel who were all engaged as interpreters. The group was made up of six (6) females and five (5) males aged between 26 and 37 years.

Seven (7) full-time interpreters were University of Education, Winneba graduates and are on the Ghana Educational Service (GES) payroll to actively interpret English to Ghanaian Sign Language (GhSL) for Deaf learners at Sekondi College. The four (4) National service men were also University of Education, Winneba graduates who were performing their mandatory one-year service to the nation and were assigned to assist with interpreting work in the school.

According to Creswell (2014), a sample is a subset of the population in which data are collected and should represent the characteristics of the population. The sample in this study represented the entire population of interpreters at Sekondi College and, therefore, ensured the validity and utility of the findings of this study.

Table 3.1: Sample Size of Participants

Category	Frequency	Percentage (%)
Full-Time Interpreters	7	63.63
National service personnel	4	36.36
Total	11	100

Source: Field Data, July 2025

3.6 Sampling Technique

In this study, census sampling techniques were used to select the sample. This method involves collecting data from every member of the population that meets the inclusion criteria, rather than selecting a subset (Creswell, 2014). It was adopted to ensure that the data reflected the full spectrum of interpreter experiences in the specific setting under investigation. The study focused on all sign language interpreters assigned to Sekondi College, a defined group with clear boundaries and a manageable population size. Because the number of interpreters involved in interpreting English into Ghanaian Sign Language (GhSL) at this institution was limited, it was both feasible and methodologically sound to include the entire group.

According to Taherdoost (2016), census sampling is particularly appropriate in research with a small and specialized population since it allows for complete data coverage and the avoidance of sampling bias. Utilization of such strategy allowed all voices that were relevant not to be omitted, and hence the validity and thematic richness of the data were enhanced. All the perspectives of the interpreters were considered, which is particularly important in qualitative thematic analysis, because meaning is derived from patterns and differences between cases. The research through applying the total population of the interpreters from Sekondi College was able to separate common issues and diverse strategies used in English–GhSL interpretation.

As Patton (2015) notes, when the population is small and information-rich, a census approach maximizes the study's credibility and trustworthiness. Furthermore, the use of census sampling aligns with the principles of inclusive educational research, ensuring that interpretations are not skewed by selective sampling. The holistic data collected from all participants provided a balanced and representative insight into the realities of interpretation practice in the academic environment. This method was

particularly important given the nuanced and context-specific nature of sign language interpretation, where variability in experiences, exposure, and technique among interpreters can significantly affect the findings.

3.7 Instrumentation

The primary data collection tool used in this study was a semi-structured interview guide. This was utilized because it has the ability to facilitate the depth of probing participants' experiences, perceptions, and intentions in interpreting English into Ghanaian Sign Language (GhSL). The semi-structured method allowed a mixture of structured and open-ended questions with the freedom to probe further into participants' responses so that rich, qualitative data were gathered. Interviews can be described as a form of conversation between two or more people, allowing the researcher to collect data within a social context (Cohen, Manion, & Morrison, 2000). In the interviews, the researcher included probes and prompts to further explore lines of questioning.

The interview guide was divided into four sections, each aligned with the research questions to ensure a systematic approach to addressing the study's objectives. Part 1 focused on sign language interpreters' experiences in interpreting English into GhSL. Part 2 examined strategies interpreters adapt to overcome syntactic errors when interpreting English into GhSL. Part 3 explored supportive services available to enhance the interpretation of English into GhSL. Part 4 focused on strategies that have been implemented to improve English–GhSL interpretation.

Cohen, Manion, and Morrison (2000) consider interviews a conversation of opinions regarding common issues, with emphasis on the social context of research information. Gall et al. (2007) highlight the importance of creating an interview guide, identifying the questions explicitly, their order, and procedures for starting and ending the interview. Creswell (2014) further states that in qualitative research, interviews are an

important source for obtaining participants' idiosyncratic perspectives. Creswell and Poth (2018) also recommend that an interview guide provides room for face-to-face communication, which enables the researcher to obtain participants' views and opinions in an organized way. Fraenkel and Wallen (2009) also posit that interview is one of the major methodologies adopted to collect qualitative data in research.

The primary instrument for data collection in this study was a semi-structured interview guide. This instrument was chosen because it allowed the researcher to gather rich and detailed data on participants' experiences, insights, and strategies in interpreting English into Ghanaian Sign Language (GhSL). The semi-structured format provided a balance between structured questions and the flexibility to probe further into participants' responses. The interview guide was pretested on six (6) sign language interpreters at Agona senior high/technical school in the Ashanti Region of Ghana. All the six (6) interpreters were interviewed and they shared their varied views which helped to know if the interview guide will produce rich and required data for the study.

3.8 Validation of the Instrument

Content validity was adopted to ensure that the interview items accurately addressed the key themes raised in the research questions. The semi-structured interview guide was developed to cover broad areas that would elicit participants' views and opinions, using open-ended questions and probes to encourage deeper responses.

Vanderstoep and Johnston (2009) and Guthrie (2010) explain that validity is the ability of an instrument to measure what it is designed to measure. In this study, face-to-face interviews were conducted in the participants' natural setting to make sure that the data collected reflected their experience and opinion. To improve validity further, the interview guide was also tested and reviewed by lecturers in the Department of Special Education as well as my supervisor. Their suggestions and inputs were integrated into

the final guide. The aspect of conducting the interviews face-to-face with the participants in their natural setting also improved the validity of the data in ensuring authenticity and setting relevance.

3.9 Trustworthiness

This study employed the concept of trustworthiness to ensure the quality and rigor of the research. Trustworthiness is the framework used to judge the accuracy and dependability of qualitative studies and comprises four key components: credibility, transferability, dependability, and confirmability (Lincoln, Lynham, & Guba, 2011). These criteria ensure that qualitative research findings are believable, applicable, consistent, and neutral.

Schreier (2012) states that trustworthiness is the extent to which qualitative findings are perceived as credible and convincing. In the same line, Korstjens and Moser (2018) explain that trustworthiness is attained if data collection and analysis methods are rigorous enough to ensure that the findings are credible.

In this study, several strategies were employed to enhance trustworthiness. First, the interview guide was reviewed by lecturers in the Department of Special Education and vetted by my supervisor to ensure its appropriateness and relevance. Second, during data collection, adequate time was given to participants to express their views freely, and their responses were followed up with probes and prompts where necessary. This prolonged engagement enhanced credibility by allowing deeper insights into participants' experiences. Finally, by documenting the procedures and aligning them with established qualitative research practices, the study ensured that its findings could be replicated with similar participants in other contexts, thereby enhancing transferability and dependability.

3.9.1 Credibility

To ensure the credibility of the study, multiple strategies were employed. First, the themes that emerged from the data were discussed with experts in the field of Deaf education to check the appropriateness and validity of the interview items. This expert review helped to confirm that the data analysis process accurately reflected the research objectives.

Second, member checking was conducted by allowing participants to review and verify their responses. This process ensured that what was recorded and transcribed truly represented their intended views and experiences (Lincoln & Guba, 2011).

Third, peer review was carried out by involving friends who reviewed some of the audio recordings and transcripts. Their independent assessment helped determine whether the findings were consistent with the data collected.

Together, these processes strengthened the credibility of the study by confirming that the interpretations and conclusions drawn were trustworthy and reflective of participants' experiences.

3.9.2 Transferability

Transferability refers to the extent to which the findings of a qualitative study can be applied or generalized to other contexts or settings. It focuses on providing sufficient information about the participants, context, and methods used in the study so that readers can determine whether the results are relevant to their own situations (Lincoln, Lynham, & Guba, 2011). To facilitate this judgment, researchers are encouraged to provide a thick description of the study, including the criteria for selecting participants (such as inclusion and exclusion criteria), the study setting, and the procedures followed.

In this study, detailed information was provided about the interpreters and the study parameters, enabling readers to assess the extent to which the findings may be applicable elsewhere. By offering a thorough description of the participants, context, and methods, this study supports transferability through contextual transparency, allowing other researchers to consider the applicability of the results in different settings.

3.9.3 Dependability

To ensure the dependability of the interview questions, they were piloted with six individuals prior to the main study. Additionally, I collaborated closely with three research assistants during the data analysis process. According to Korstjens and Moser (2018), dependability in qualitative research is strengthened through detailed documentation and external checks, ensuring that, if repeated in the same context, the study would yield similar results.

To enhance dependability, the three research assistants were trained over a period of two months to assist in conducting interviews and transcribing recorded audio into written text. They also reviewed and cross-checked each participant's interview data over several days to verify the accuracy of the transcripts and ensure that the interpretations and conclusions reflected the participants' accounts accurately. During data interpretation, both positive and negative cases were considered, in line with best practices for qualitative rigor (Nowell, Norris, White, & Moules, 2017).

Dependability involves maintaining consistency and trustworthiness of the findings by documenting methodological decisions, minimizing potential interviewer bias, and ensuring transparency throughout the research process. In this study, consensus was reached between myself and the research assistants on how participants' responses were

interpreted, further supporting the stability and reliability of the findings (Nowell et al., 2017; Korstjens & Moser, 2018).

3.9.4 Confirmability of the Study

Confirmability refers to the degree to which the findings of a research study can be corroborated by other researchers. It ensures that the data and interpretations are not products of the researcher's imagination, but are clearly derived from the participants' narratives and perspectives (Creswell, 2017).

To enhance confirmability in this study, the researcher documented all processes of data collection, analysis, and interpretation. This included detailing the procedures for checking and re-checking the data to ensure that findings accurately reflected the participants' views, without any researcher bias. The researcher also explicitly identified their role before and during data collection, explaining the purpose of the study to participants and establishing transparency.

By maintaining a thorough audit trail of methodological decisions and data verification processes, the study ensured that the findings could be independently confirmed. This approach not only strengthened confirmability but also built trust with participants, encouraging their willingness to provide honest and accurate accounts (Creswell, 2017).

3.10 Procedure for Data Collection

The researcher secured an introductory letter from the Department of Special Education, University of Education, Winneba, to inform the Headmistress of Sekondi College and the Home Economics department about the study and to solicit their cooperation ("See Appendix B"). According to Creswell (2012), it is important to respect the site where research takes place, which is demonstrated by obtaining permission before entering the site.

The researcher went to the Head of Department's office and discussed the purpose of the study with her. She agreed and permitted me to conduct the interviews with the department sign language interpreters. A teacher from the department led the researcher to visit the interpreters in their resource room to explain the purpose of the study to them. The researcher explain to the participants that the purpose of this research was for a requirements for completion of master of philosophy program as such findings would benefit Deaf students, Sekondi College and interpreters of the school. After explaining the purpose of the study, the researcher told the participants to feel free to ask questions. One of the participants was intelligent enough to ask for the time, day and venue to conduct the interview as they were busy with various subject classroom interpretation and other social gathering. We all agreed on a time, days and venue to conduct the interview. The researcher took that opportunity to give all the participant the assurance that the information gathered from them would be confidential and solely for academic purpose.

The consent form was provided to each participant to sign before starting the interview. The form clearly stated that participation was voluntary, the interview was not compulsory, and participants could choose to withdraw at any time.

The researcher agreed with participants on our meetings days, the interpreters for the interview said, they were having subjects to interpret from Monday to Friday each week. The only time they have free period was on Thursdays from 1:30pm-3:40pm when there is no program for students, so our meeting was then scheduled on Thursdays. The face-to-face interviews of the participants was done in one of the conference rooms at the school's library popularly known as Philip Eiwuley Armah Center for Excellence. The interview was conducted in the afternoon, within the period of 1:30pm -3:40pm because most of the participants were free during that time.

The interview guide was used to interview participants and three focus group were form. All the eleven (11) interpreters were interviewed. The items in the interview guide were divided into four sections (that is, Section A, Section B, Section C and Section D) and were focused on the research questions raised. Section A was made up of questions raised under research question one which has to do with how sign language interpreters' experience influence the interpreting of English language into Ghanaian Sign Language (GhSL). Section B which was made up of questions raised under research question two has to do with Strategies interpreters adapt to Overcome Syntactic Errors when interpreting from English into Ghanaian Sign Language (GhSL). Section C which was made up of questions raised under research question three has to do with the supportive services available to enhance the interpretation of English into Ghanaian Sign Language (GhSL) and Section D which has to do with questions raised under research question 4 has to do with strategies that can be implemented to improve the interpretation on English into Ghanaian Sign Language (GhSL). The interview conducted lasted about 1 hour 30 minutes interpreters were interviewed through audio tape. Each interview session lasted for about 30 minutes. The interpreters were interviewed using spoken language. The interview was done on two working days. The researcher employed three (3) research assistance (RAs) to help me with the data collection to audio tape all the interviews. These three RAs were two (2) males and one (1) female who were ready and willing to assist me with the study. The researcher made the RAs known to the participants and their role they will play to them. One of the RAs who was a female was a graduate of University of Education, Winneba (UEW). She is more experienced with recording audio tapes and the other two (2) male was a colleague hearing teacher. The researcher give the necessary training to the RAs on how to conduct the interview. Thursday 10th July, 2025, was the interview day. The researcher

went to the school with the RAs and invited the participants to one of the conference rooms in the school's library for the interview. The school library was chosen because it was a quiet place without any disturbances. We arranged the chairs in a horse shoe shape. Eight (8) chairs were used for the interview. Four (4) chairs for the researcher and the RAs and the other four (4) for the participants. The researcher used my mobile phone Techno Spark 8 to interview the participants. One of the RAs also used Tecno spark 9 mobile phone to record the responses from the participants. The other two (2) RAs were taking note on the participant's responses. During the time for the interview, only eight (8) interpreters showed up out of eleven (11) for the interview. The other three (3) interpreters were present the following week on Thursday for the interview to continue. The researcher took the opportunity to explain to the participants on how the focus group interview would be done. The researcher made it clear to the participants that when a question is asked and they have response for it they have to raise their hand and it shouldn't be done in rash form. Turn taking was also ensured. The researcher also made them aware that there is no wrong or correct answer all responses would be accepted. The researcher conditioned the participants and established rapport in a manner that allow them feel free to express their views concerning the interview before the interview was started.

3.11 Data Analyses

A thematic approach was used to analyse the data collected. Data for the study was analyzed based on each theme emerged from the respondents. Data collected from the face-to-face interview were transcribed and familiarized myself with the data by reading it continuously. The researcher formulated coding categories into manageable units of sentences or phrases, according to the research questions. All the information that was collected from different participants through the interview was coded to

identifiable themes. Expressions of interpreters were also used where necessary. The transcription and translation of the data were carried out immediately after the data collection.

3.12 Ethical Issues Considered in the Study

In conducting this study, the researcher ensured that all ethical considerations were addressed to protect the rights and well-being of the participants. Before beginning data collection, the purpose of the study was clearly explained to the participants, and their informed consent was obtained. Participants were assured that their involvement was voluntary and that they could withdraw from the study at any time if they felt uncomfortable.

Confidentiality was maintained throughout the study. Participants were informed that their names would not be recorded and that all data collected would be treated with the utmost care. The researcher also sought permission to use mobile phone in place of an audio recorder during interviews to capture detailed responses accurately, while ensuring that participants' privacy was protected.

During the interviews, participants were treated with respect, and no coercive tactics were used. They were encouraged to share their perspectives freely, and the researcher provided reassurance that they could access the findings of the study and contact the researcher if needed. According to Creswell (2012), ethical qualitative research requires establishing trust and ensuring a high level of participant disclosure, which was carefully considered and implemented in this study.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

This chapter presents the results and discussions of the study's findings. Data were collected using a semi-structured interview guide, and thematic analysis was employed to interpret the responses of sign language interpreters.

How do interpreters' experience influence the interpretation of English syntax into Ghanaian Sign Language at Sekondi College?

What strategies do interpreters adapt to overcome syntactic error when interpreting English into Ghanaian Sign Language at Sekondi College?

What supportive services are available to enhance the interpretation of English into GhSL at Sekondi College?

What strategies can be implemented to improve the interpretation of English into GhSL at Sekondi College?

4.1 Analysis of Bio-Data of Interpreters

The study was carried out at Sekondi College with a sample size of 11 interpreters.

Table 4.1: Bio-Data of Interpreters

Gender	Frequency	Percentage (%)
Male	5	45.45
Female	6	54.55
Total	**11**	**100**

Source: Field Data, July 2025

The Table above shows the gender of the interpreters who were interviewed at Sekondi College. Out of the eleven (11) interpreters, 5 (45.45%) were males, whiles 6 (54.55%) were females. This indicates that there were more female interpreters than male interpreters who participated in the present study.

Table 4.2: Interpreters' Employment Status

Class levels	Frequency	Percentage (%)
Employee	7	63.64
National service personnel	4	36.36
Total	**11**	**100**

Source: Field Data, July 2025

The table above shows the employment status of the interpreters who were interviewed at Sekondi College. Out of the eleven (11) interpreters, 7 (63.64%) were employed as a permanent staff whiles 4 (36.36%) were National Services Personnel. This indicates that there were more permanent staff employed than National Services Personnel who participated in the present study.

4.2 Research Question 1: How do Interpreters' Experience Influence the Interpretation of English Syntax into Ghanaian Sign Language at Sekondi College?

This research question aimed to explore how interpreters' experience influence the interpretation of English syntax into Ghanaian Sign Language at Sekondi College. Three themes emerged from this research question. The first theme that emerged from the data sought to address the interpreters' experience influencing the interpretation. The second theme also sought to address the journey of becoming a sign language interpreter. The last theme of this research question sought to address teaching methodology that shapes interpreter effectiveness.

4.2.1 Experiences of Interpreters Influencing Interpretation

According to the interview data, Eight (8) out of eleven (11) revealed that conversion of English syntax into GhSL is not a task that is performed on a daily basis at Sekondi College; it is determined by each interpreters' awareness of English syntax, syntax of GhSL, learning needs of Deaf learners, and even from native languages like "Fantse "that often arise in the classroom setup. These experience have led them to absorb elastic, adaptable, and pedagogically informed strategies to deal with such complexities. Some of their comments were;

Because I have taught Deaf learners for a while, I know that GhSL does not adhere to English syntax. I've learned to watch for meaning instead of word order. Practice tells me when to stop, rephrase a sentence, or clarify before signing especially with conditional or passive voice sentences in English. Participant 1 ((Female)

Through my years of interpreting I have learned syntax is more than just about grammar it's about clarity. I learned through doing how to rearrange English sentences into visual concepts. Without going through those day-to-day frustrations, I would have no idea when to rearrange or repeat sentences to facilitate better understanding. Participant 3(Male)

With time, I've learned how confusing English sentence order can be to Deaf learners. My experience helps me anticipate which structures will confuse them. So even before the hearing teacher finish talking, I'm already thinking of how to simplify or visualize the sentence differently in GhSL. Participant 4 (Female)

I have had to learn to apply what I can do in knowing the classroom context sometimes. For instance, when a teacher speaks Fantse and I am unsure, I know how to cue the learners or where to seek help. My experience in multilingual settings has instructed me when to halt, when to ask, and how to complete gaps when interpreting. Participant 6 (Female)

When I first began interpreting, I would do word-for-word signing, and it never worked. But after a while, I realized that Deaf learners require something more than direct signs they require context. So I employ examples, synonyms, or visual explanation, all experience-based. Experience has taught me what does and what doesn't confuse them. Participant 8 (Male)

4.2.2 Journey into Becoming a Sign Language Interpreter

From the interview data, various pathways of becoming a sign language interpreter were shared, all the eleven (11) participants commented on their journey of becoming

a sign Language interpreter as quiet challenging. It was clear that majority of the interpreters had knowledge about sign language. Three (3) out of eleven (11) of the participants had the opportunity to learn sign language before going to the university. One of the participant had three (3) cousins who were Deaf and through that, she was taught how to communicate using basic signs. Some of their views were;

Gone were the days at village SHS where I used to watch GTV. I noticed a man waving his hands on the right side of the TV set. I asked my daddy, and he told me it was for the Deaf. It meant nothing to me, but my daddy told me not to worry because as I grew up, I would somehow be able to understand it. After SHS, when I needed to enter for a program in the university, my brother advised me that Special Education was the best and most marketable since it is not popular in Ghana. I needed to specialize in Community-Based Rehabilitation and Disability Studies, but my brother once again guided me that since I had interest in sign language, it would be best to specialize in Special Education. I did, and now I am happy that it has earned me a job as a sign language interpreter within an inclusive classroom at Sekondi College.

Participant 9 (Female)

I never learned anything about sign language until I came to the university, where they presented to me Special Education. Throughout the length of the program, I developed an interest in learning sign language, which was included in the courses in the program. Then I was interested in how to deal with Deaf learners, and in the process, I learned sign language. Upon graduating from university, I was already in the field, interpreting in all programs because of the passion that I had for the work.

Participant 8 (Male)

It all started ages ago when I was staying in a deaf community and started learning sign language bit by bit. I went into full-time interpreting after

college training. I further undertook some sign language trainings, workshops, and seminars just to broaden my skills in sign language. I affirm that I have been interpreting the last 10–12 years in various sectors and now in an integrated classroom at Sekondi College. Participant 5 (Male)

I had interest during childhood. I have three deaf cousins, and because of them, I became interested in sign language. I was able to sign everyday things and interact in GhSL following JHS and SHS. My dad inquired after SHS where I could learn it and do it well. I found myself at UEW to learn more so that I could help other deaf people around me. Participant 6 (Female)

Mine started when my church organized a sign language training program where we could learn basic sign language. But then the COVID came, and we could not proceed anymore. Since I had shown interest, I was interested in knowing how I could learn and gain that skill as well. Even though I enjoyed or had the passion or interest to work with disabled people, I think my interest in sign language deepened even more. So I studied and learned about Special Education. Then I decided to study education for hearing impaired so that I could also improve my sign language. That's how I became an interpreter. Participant 2 (Male)

4.2.3 Teaching Methodologies that Shapes Interpreters Effectiveness

Regarding this interview data, it was evident that teaching methodology shapes interpreter effectiveness**,** eight (8) out of eleven (11) participants revealed that, teaching style significantly impacts the quality and effectiveness of interpretation in inclusive classroom. Majority of participants preferred teaching methods that were learner-centered, interactive and visual engaging, as these aligned with the learning needs of Deaf learners. Some of their comments were;

During lessons especially if teachers are practicing the demonstration method, discussion, and child-centered approach Deaf learners exceedingly

engaging. But if under a teacher-centered approach, not so. Deaf children are curious about activities; Deaf children learn by sight. So watching what they do and act makes the class exceedingly engaging which makes my interpretation also effective. But when they just get to hear the teacher talking, it becomes monotonous and not interesting in class. So, it is actually wonderful when the teacher modifies his or her method of teaching.

Participant 1 (Female)

Sometimes, the teaching style in an inclusive classroom influences how well I can interpret. When the hearing teacher uses learner-centered approach and uses various types of Teaching and Learning Materials (TLMs), learning becomes effective because Deaf learners are able to easily grasp the content better, hence making interpreting easier. It becomes challenging when there are many TLMs or when the TLMs are conceptual. As an interpreter, I have to do extra hard work to sign and tell what is being spoken, which is exhausting. Participant 3 (Male)

If the teacher comes to class without Teaching and Learning Materials (TLMs), it handicaps my hearing, other people through vision. Deaf learners are completely reliant on visual stimulus. Without proper visual aids, I have to resort to extended demonstration to enable them to understand.

Participant 7 (Female)

4.3 Research Question 2: Which Strategies do Interpreters Adapt to Overcome Syntactic Error when Interpreting English into Ghanaian Sign Language?

This research question aimed to explore strategies interpreters adapt to overcome syntactic error when interpreting English into Ghanaian Sign Language (GhSL) at Sekondi College. Three themes emerged from this research question. The first theme that emerged from the data sought to address clarity through structural Adaptation. The second theme also sought to address navigating structural barriers. The last theme of this research sought to address meaning beyond words.

4.3.1 Syntactic Reframing as a Necessity

According to the interview data collected, 9 out of 11 revealed that interpreters frequently encounter English sentence structures particularly passives, conditionals, and multi-clause statements that do not naturally correspond to Ghanaian Sign Language (GhSL) grammar. To address these mismatches, they apply strategic restructuring that emphasizes clarity, sequence, and visual logic. Participants accounted for acquiring through experience how to break down abstract or formal constructions into simplified, action-based representations meaningful to Deaf learners. Whether reformulating complex mathematical expressions, rephrasing scientific procedures, or deconstructing formal business terminology, interpreters emphasized the need to prioritize meaning over literal accuracy, making GhSL more accessible and comprehensible in academic contexts. Some of their views were;

You can't sign 'x approaches infinity' literally. Deaf learners get confused. I do it in motion like 'X move big no stop.' It's pictures, and they can see it. I had to do it by trial and error. Participant 2 (Male)

When I came across sentences such as 'The beaker was filled with water,' I had to cut back on using the passive. Now I sign it as 'We pour water into beaker.' It reads better, and the deaf learners aren't confused.

Participant 4 (Female)

Conditional tenses such as 'If I had known…' are difficult. I've learned to say 'I no know so mistake happen.' That's simple and easy to understand. My initial blunders showed me how to rephrase clearly.

Participant 5(Male)

Some business phrases are too formal, like 'delegation of duties.' I realized I needed to focus on verbs. I sign 'boss give task' and then explain. It was hard at first, but experience taught me what to prioritize.

Participant 8 (Male)

In Biology, if you do not show students the steps clearly, they get confused. So I break long sentences into pieces like 'heart pump blood go body give oxygen.' Experience taught me that form matters. Participant 11 (Female)

4.3.2 Constructing Conceptual Equivalence through Culture

Based on the interview data collected, ten (10) out of eleven (11) revealed that, When English expressions lack direct signs in GhSL especially idioms, abstract terms, or technical jargon interpreters turn to culturally grounded examples, visual metaphors, and analogical reasoning. Participants noted that linking unfamiliar academic concepts to familiar, everyday experiences enhances understanding and retention among Deaf learners. Whether using Ghanaian food items to explain economic trade-offs, reimagining cloud computing through spatial imagery, or acting out scientific processes through relatable examples, interpreters create meaning by tapping into learners' lived experiences. This approach transforms potentially alien content into culturally relevant, visually intuitive lessons. Some of their remarks were;

Since there is no sign for 'opportunity cost,' so I take food. I explain, 'You opt for "kenkey" you lose rice.' They get that. They remember it because they grasp the concept through everyday life. Participant 3 (Male)

Cloud computing' doesn't exist in GhSL. I say, 'many computers internet share work store online.' I even point to the sky. It's better to explain through images and examples than force unknown words. Participant 5 (Male)

For 'balanced diet,' I do 'food different types mix make body strong. I show examples like rice, kontomire, and meat. They know things they know, so they equate to the idea. Participant 10 (Female)

I use sign for words like 'asymptote' 'line get close never touch.' It's not in the vocabulary, so I think of it. That's what sign language is really very good at showing, not just telling. Participant 11 (Female)

4.3.3 Embodied Expression as a Core Interpretive Tool

According to the interview data collected, nine (9) out of eleven (11) interpreters rely heavily on embodied expression to convey nuance, animate content, and sustain engagement. Strategies such as role-shifting, facial expressions, classifiers, and spatial mapping enable interpreters to bring concepts to life, particularly in subjects involving narratives or physical processes. Participants highlighted how using their bodies as visual references acting out characters in history, representing biological systems, or mapping information flow in ICT creates a dynamic interpreting experience. Some of their comments were;

When I interpret colonial history, I act it out I become the chief, then the colonizer. My body changes to represent different characters. Deaf learneds like it. It helps them keep track of who's speaking. Participant 2 (Male)

I demonstrate digestion. I show food entering, going down, breaking down, and nutrients entering blood. My hands become the digestive system. It's more effective than diagrams alone." Participant 3 (Male)

I use space to explain CPU and RAM. CPU on one side, RAM on the other. I act out information moving between them. It gives the students a mental map to understand. Participant 5 (Male)

When interpreting organs, I use my body. I show chest for heart, side for kidneys. It's easier for Deaf learners to associate the signs with real locations. Participant 5 (Male)

4.4 Research Question 3: What Supportive Services are available to enhance the Interpretation of English into GhSL at Sekondi College?

This research question sought to explore the availability, usage and effectiveness of supportive services in enhancing the interpretation of English into Ghanaian Sign Language (GhSL) and also facilitating communication and comprehension for Deaf learners at Sekondi College. Three themes emerged from this research question. These were, availability of resources during lesson, mentorship programs and Digital tools usage.

4.4.1 Availability of Resources during Lesson

One of the themes that emerged from the interviewed data was availability of resources during lesson. Eight (8) out of the eleven (11) participants revealed that supportive resource services when interpreting English into Ghanaian Sign Language (GhSL) are few and inconsistently available. One (1) other participant revealed that some resources are available during mathematics lessons and another participant who interpret English language indicated that literature texts are often not simplified. Majority of the participants revealed that they often have to improvise or rely on personal initiatives. Some of the views were;

> *I interpret mathematics. Mathematics is a practical subject which can greatly employ TLMs. Fortunately enough, the majority of the teachers improvise by taking along necessary tools. When hearing teachers are teaching topics such as construction, for example, the teacher provides tools such as rulers, compasses, and other such material from the learners' math kits. I use these tools to display visually the procedures to the Deaf learners, making the concepts more comprehensible. Participant 4 (Female)*

> *I also make heavy use of my mobile phone in class. But most Deaf learners are not exposed to much of technology devices, especially in ICT classes. In a*

lesson of this nature, I may use my phone to search for solutions on the internet and then forward or display them to the Deaf learners. Rather than struggle to interpret everything the hearing teacher says, I want to help them understand the substance. The most crucial aspect is that they are able to grasp the fundamental concepts and are able to raise questions for clarification. Participant 2 (Male)

As an English interpreter, I also assist students in understanding literature books. But most of such books are not adapted and therefore become difficult for Deaf learners to understand directly. Since there are no specifically devised materials, I take the books home, read and interpret them in Ghanaian Sign Language (GhSL) and then ask the students to read them independently. I am exploring the avenue of obtaining versions of these books in sign language to help them further. Participant 3(Male)

There is not much available to the interpreters at the seenior high school level in terms of resources. We had nothing other than our own amateur sign language group until recently. We now have access to a resource room, which is better. Despite all these limitations, we are still developing our practice by learning new signs on a regular basis. Whenever I am exposed to a new concept, I jot it down and attempt to locate an appropriate sign to go along with it. Participant 5 (Male)

4.4.2 Mentorship Programs

Mentorship programs was one of the themes that emerged from the interview data. Nine (9) out of eleven (11) participants expressed that they have participated in occasional workshops. Majority of the participants revealed that mentorship programs are often irregular and insufficient. Two (2) other Participants revealed that although they had

not attended any workshop, they engaged in self-learning strategies, including personal research and the use of online resources. Some of their remarks were;

I have attended conferences outside of the school to improve my skills as an interpreter. There are also sessions by the school administration to help us upgrade so I can say yes because it's both internal and external. Participant 4 (Female)

For me, I have not attended any workshops in the sense that we have not done any yet, but I do more of personal training and studying how to interpret English into Ghanaian Sign Language (GhSL) for my Deaf learners. Participant 2 (Male)

I also had some workshops, but when there are no workshops, I do it on the internet to upgrade myself so that I can interpret well for my Deaf learners to understand. Participant 6 (Female)

There are no workshop or mentorship initiatives. We attended a three-day workshop prior to this program, and we have not been given any other workshops since then. Participant 7 (Female)

4.3.3 Digital Tools Usage

According to the interview data, ten (10) out of eleven (11) participants revealed that, there is a complex and uneven background in the use of digital tools for interpreting English into GhSL. Three (3) participants revealed the reliance on personal digital tools such as mobile phones. One (1) participant also revealed unpredictability of lesson content as a result of limited collaboration between the teachers and interpreters. This affects the integration of digital resources in lesson planning and delivery. Some of their views were;

There are instances when I am not privy to the content of what the teacher taught ahead of time, which poses an obstacle for preparations. When I am given advance information, I prepare with relevant digital resources. If the teacher gives out digital resources in class, I ensure distributing and explaining them to my Deaf learners too. Participant 3 (Male)

For me, before class, I usually resort to Google or my sign language app on my phone to familiarize myself with relevant content. Sometimes I go further to use platforms and content from other countries like America Sign Language to improve my vocabulary and knowledge. Participant 1 (Female)

In mathematics classes, I never use digital aids unless absolutely necessary. Interpretation in this class relies heavily on demonstration and written work on the board. Participant 6 (Female)

I rely on my mobile phones to search for information on the internet to assist my Deaf learners. Unlike my previous school, we were provided with tablets to enable us get immediate access to information during class. Participant 8. (Male)

4.5 Research Question 4: What Strategies can be implemented to improve the Interpretation of English into GhSL at Sekondi College?

This research question sought to explore various strategies that can be implemented to improve the interpretation of English into Ghanaian Sign Language (GhSL) for Deaf learners at Sekondi College. Three themes emerged from this research question. These were, Instructional support strategies, Collaborative and experiential strategies, Bilingual fluency and subject knowledge are essential competencies.

4.5.1 Instructional Support Strategies

According to the interview data, eight (8) out of eleven (11) participants revealed that effective interpretation of English into Ghanaian Sign Language (GhSL) at Sekondi College is grounded in a multifaceted set of strategies. These include the use of ASL

resources, visual aids, lesson preparation, post-lesson simplification, direct student engagement, vocabulary development, and continuous professional training. Some of the comments were:

As an interpreter, my career largely depends on the interaction between Ghanaian Sign Language (GhSL) and American Sign Language (ASL). Because ASL was the origin of GhSL, i often seek out ASL materials online for learning signs for items that may not be included in GhSL. I then apply these signs in the Ghanaian context through discussions and interactions with my Deaf learners. These interactions are vital not just for the learners' understanding but also for my own growth as an interpreter. The more time I spend with them, the more accurately I can interpret. Participant 1 (Female)

One of the major strategies helping my interpreting process is the use of visual aids. To make the aids successful, I consult subject teachers in advance in order to know what they will be teaching. This helps me to gather or even make suitable visual materials, sometimes using cardboards, to support deaf learners' comprehension of meaning. Participant 2(Male)

Text analysis is another useful method I employ. Once the teacher has presented the lesson, I analyze the content to meet the deaf learners' level of understanding. This not only serves to enhance their understanding but also to enrich my interpreting experience. Participant 4 (Female)

To further improve, I always extend my GhSL vocabulary and even practice creating my own sign language vocabulary, specifically for the most important words that do not yet have signs. I also take time with my learners during weekends to enable the improvement of their English because this improves both their language and my interpretation clarity. Participant 6 (Female)

4.5.2 Collaborative and Experiential Strategies

Majority of the participants, nine (9) out of the eleven (11) revealed that for effective interpretation of English into Ghanaian Sign Language in inclusive classrooms especially for Deaf learners relies heavily on the teaching methods used. The nine(9) participants reveal consistent patterns in preference for interactive and visual-based teaching approaches suggests that interactive (especially discussion-based) and visual teaching methods are the most effective for supporting interpretation of English into Ghanaian Sign Language in inclusive settings. Some of their views were:

> *For me, the most effective one is the discussion method. If the deaf students are mixed with the hearing students, they will do the task without the deaf. But under the discussion method, they can contribute and also assist me in improving on interpretating English into GhSL. Participant 6 (Female)*

> *Generally when the hearing teachers are not using TLMs. For example, when it is time for practical and there are enough TLMs being used for experience and demonstration. It affect my interpretation from English into GhSL. Participant 4(Female)*

> *I think discussion method or grouping in mathematics helps them the most to learn and benefit from each other. It is ideal for my interpreting as well because it has improved and allowed it for me to work. Participant 7(Female)*

> *Group discussion. Having them in groups by ability, the Deaf learners can learn from the hearing learners. It is also helpful to my understanding and improves my interpreting. Participant 8 (Male)*

4.5.3 Bilingual Fluency and Subject Knowledge Competencies

Based on the interview data, ten (10) out of eleven (11) participant revealed that, interpretation between English and Ghanaian Sign Language (GhSL) requires a complex set of proficiencies that goes beyond mere linguistic knowledge. Majority of the interpreters suggests that interpreters working between English and GhSL needs a

well-rounded skill set. Some Key proficiencies include bilingualism, strong vocabulary, cultural and subject matter awareness, and cognitive abilities such as listening and memory. Some of their comments were:

To begin with, interpretation is two-sided. You have to learn Ghanaian Sign Language and you have to learn the English, too, because whatever you learn in Ghanaian Sign Language initially was in English. You have to learn how to interpret it as an interpreter so that you can express in Ghanaian Sign Language. In the same way, you have to learn English so that you can reply accordingly. Participant 1 (Female)

I need to get the idea proper and find out more about it, the handshape movement, the body movement, and the speed, and also be smart enough so I can interpret properly. Participant 3 (Male)

Sign language is a type of local language. When they talk in local language, I perform well. For English, they speak with very wide vocabulary, so I think that I have to enhance my vocabulary so that I perform well.

Participant 5 (Male)

Interpreting exposes you to a great deal of knowledge, and you need to be prepared to learn even more. You need to be well-versed in the fundamentals of most languages. The same goes for all areas of study because you may not specialize in that area of study.

Participant 6 (Female)

4.6 Discussion of Findings

This chapter presents a discussion of the findings, emphasizing the key results of the study and the inferences drawn from them in relation to previous research. The discussion is organized around the research questions that were formulated to guide the study it further seeks to situate the findings within the broader body of literature and highlight their implications for both theory and practices.

4.6.1 Research Question1: How do Interpreters' Experience Influence the Interpretation of English Syntax into Ghanaian Sign Language at Sekondi College?

This study sought to explore how interpreter experiences influences syntactic transfer in interpretation English–Ghanaian Sign Language (GhSL) within inclusive classroom settings at Sekondi College. The findings from the interview data affirm the significance of interpreter experience in shaping not only linguistic competency but also cognitive flexibility, emotional resilience, and pedagogical engagement. Across participant accounts, there was a recurring theme that professional growth in sign language interpreting emerges gradually through a combination of formal education, social immersion, and the ongoing challenges of real-world interpreting contexts.

One of the most prominent findings relates to how experience improves interpreters' ability to restructure and simplify English sentences for GhSL users. Participant testimonies illustrate how interpreters learn to prioritize meaning over direct syntactic mapping, confirming the "Interpreter Advantage Hypothesis" posited by García (2014), which states that interpreters develop specialized cognitive and linguistic skills over time. Interpreters shared that early in their careers, they often attempted word-for-word signing, which proved ineffective for Deaf learners. However, with continued exposure, they developed the ability to anticipate and reformulate English constructions that might cause confusion particularly passive voice, conditionals, or abstract phrases. This observation is consistent with Nour et al. (2020), who found that trained interpreters exhibit superior performance in specific executive functions, notably Shifting and Updating, which are crucial when managing the cognitive demands of real-time translation between two structurally different languages.

The ability to reorganize sentence structure and embed meaning visually reflects deeper levels of syntactic awareness and cognitive flexibility. Participant 3, for example,

emphasized that "syntax is more than grammar it's about clarity," demonstrating an intuitive grasp of interpretation beyond surface-level linguistic competence. These findings reinforce Chmiel's (2018) study on semantic priming among interpreters, where professionals displayed greater fluency in meaning recognition across languages. Moreover, the ability to engage in anticipatory processing thinking ahead about how to visualize and simplify a teacher's spoken content highlights how interpreter experience translates into practical syntactic adaptation in classroom settings.

The findings also bring to light the inherent challenges posed by modality differences between spoken English and GhSL. Interpreters must bridge structural and typological gaps that go beyond vocabulary. As Fischer (2017) points out, sign languages have their own unique syntactic systems that often do not mirror the word order or grammatical features of spoken languages. Participants described how these differences required them to develop creative strategies, including the use of metaphors, repetition, and contextual visualization, to ensure that meaning was effectively transferred. This observation aligns with Dasgupta et al. (2010), who identified structural mismatches in spoken-to-sign translation systems, and Quer and Steinbach (2019), who underscore the complications arising from sign language variability and gesture-language interfaces.

Technological advancements in sign recognition, while promising, are still far from replacing the cognitive and emotional depth of human interpreters. Participant feedback, particularly regarding the absence of teaching aids and how that impedes effective interpretation, aligns with Neidle's (2023) conclusion that continuous sign language recognition still faces hurdles such as co-articulation and ambiguity. While models like those proposed by Santhosh et al. (2022) show significant potential in sign classification using GCN and 3D skeletal data, their use is limited by the complexity of

naturalistic classroom interactions. Additionally, as Petitta et al. (2018) highlight in their work on proper name translation, certain lexical challenges remain inherently resistant to technological solutions, further demonstrating the irreplaceable adaptability of human interpreters. This finding echoes the importance of human adaptability, intuition, and experience in interpreting, particularly in educational contexts where visual cues, teaching style, and classroom dynamics heavily influence communicative success.

Another key insight from the data concerns the pathways by which interpreters acquire sign language and develop professional competence. Many participants reported learning GhSL informally through church, family connections, or community interactions before or during university. This finding also echoes Henner et al. (2016), who emphasized that earlier exposure to signing environments results in stronger syntactic and reasoning skills, underscoring the long-term benefits of early language access. This mirrors findings from Allard and Roos (2025) and Chapman (2021), who show that Deaf-related identity and interpreter commitment often emerge from personal and community-based experiences rather than solely through academic pathways. Participants like 6 and 9 shared personal stories of learning sign language due to having Deaf relatives or growing up in Deaf communities, and later formalizing their knowledge at institutions such as the University of Education, Winneba (UEW). This pathway of experiential socialization into the Deaf world supports Smolen and Paul's (2023) understanding of Deaf and interpreter identity as fluid, situated, and constructed over time through interaction, investment, and social negotiation.

Equally noteworthy are the emotional and psychological dimensions of interpreting that emerged from the data. Participants expressed how emotionally exhausting it can be to interpret without adequate classroom support, especially when teachers do not use

visual aids or adapt their teaching strategies. This finding substantiates earlier research by Macdonald (2015), who draws attention to the prevalence of vicarious trauma and compassion fatigue among interpreters working in emotionally intensive environments. Korpal and Jankowiak's (2021) findings that interpreters display heightened physiological responses to emotionally charged content further support the idea that interpreting is not only cognitively demanding but emotionally taxing as well. Several participants noted that visual teaching methods reduced their cognitive load, while teacher-centered methods exacerbated interpreter fatigue. This aligns with Lim et al. (2024), who show that emotional and facial cues are essential for effective sign communication and are often overlooked in teaching contexts, contributing to interpreter strain.

This underscores the importance of pedagogical collaboration and the need for systemic emotional and logistical support for interpreters in inclusive educational settings. Leanza et al. (2025) similarly found that interpreters often adopt coping strategies in the absence of institutional emotional support, which reinforces the necessity of systemic reforms.

Closely related to this is the influence of classroom pedagogy on interpreting success. Participants indicated that learner-centered, visually rich instructional approaches enabled smoother interpretation and greater engagement for Deaf students. Participant 1 observed that Deaf learners respond positively to activity-based learning, confirming Modern's (2025) observation that visual modalities are central to Deaf learning. When teachers used visual aids and TLMs, interpreters found their work more effective and less draining. Conversely, teacher-centered methods with few visuals placed a heavier cognitive burden on the interpreter, sometimes requiring additional demonstrations or reformulations. These insights are consistent with Mason's (2020) framework, which

emphasizes flexibility, collaboration, and the intersection of interpreting and special education practice in facilitating inclusive learning environments.

Finally, the findings point to broader issues of interpreter identity and social inclusion. Many participants' stories illustrate how their work is informed by both personal values and social contexts. Some interpreters developed a strong professional identity due to early exposure to Deaf culture, while others were motivated by empathy or personal connections to the Deaf community. This sense of identity and inclusion, however, is often threatened by institutional environments where interpreters are undervalued or misunderstood. Young et al. (2019) discuss how phonocentric norms in the workplace marginalize interpreters, reducing their role to that of invisible facilitators rather than collaborative professionals. This phenomenon was hinted at in the data, especially in participants' emphasis on working harder to compensate for pedagogical or institutional shortcomings. Comparable challenges are evident in other contexts, such as Makharoblidze's (2021) study of the Georgian Deaf community, where limited bilingual training frameworks restrict both linguistic equity and professional identity development. Diego and Hardonk's (2023) study of Deaf Icelanders facing policy-driven marginalization resonates here, emphasizing that identity formation for both interpreters and Deaf individuals requires supportive social structures.

4.6.2 Research Question 2: What Strategies do Interpreters Adapt to Overcome Syntactic Error when Interpreting English into Ghanaian Sign Language?

The purpose of this research was to explore the strategies used by sign language interpreters to overcome syntactic errors during interpretation of English into Ghanaian Sign Language (GhSL) at Sekondi College. The findings reveal that interpreters employ a variety of adaptive strategies to bridge the structural and modal disparities between English and GhSL. These strategies align with three major themes derived from the data: syntactic reframing for clarity, constructing conceptual equivalence through

culture, and embodied expression as a core interpretive tool. Each of these themes reflects how interpreters draw on linguistic, cognitive, cultural, and visual-spatial resources to ensure accurate and comprehensible interpretation in inclusive classroom settings.

A recurring theme in the data is the essential role of syntactic reframing in mitigating interpretation errors. Interpreters reported that sentence structures such as passives, conditionals, and multi-clause statements in English often lack direct equivalents in GhSL, necessitating restructuring to preserve meaning. Nine out of eleven participants mentioned the need to simplify and sequence information in ways that align with the visual-spatial grammar of GhSL. For example, Participant 4 explained how "The beaker was filled with water" becomes "We pour water into beaker," emphasizing clarity and action over passive structure. These rephrasings align with the concept of functional equivalence, where the goal is not literal translation but effective communication, as advocated by Roy & Pöchhacker (2009). Their work emphasizes the importance of discourse mapping and omission recognition, both of which are evident in the strategies participants described.

In cognitive terms, this reframing reflects the interpreter's ability to apply real-time language monitoring and syntactic chunking, whereby complex information is broken into smaller, manageable segments. Blume et al. (2016) noted that such chunking facilitates cognitive processing, especially in dual-task scenarios conditions that closely mirror real-time interpreting. Participants confirmed that this technique becomes more intuitive with experience, echoing findings by Tiselius (2018), who observed that experienced interpreters exhibit greater turn coordination and vocabulary internalization. Notably, Participant 2 (Male) described reinterpreting "x approaches infinity" into "X move big no stop," using motion and metaphor to convey abstract

mathematical concepts. Such adaptive competence is not only learned through formal training but is honed through extensive, situated practice in real-world settings.

These strategies are not exclusive to human interpreters. Ohno et al. (2015) and Liu et al. (2020) developed dependency-based syntactic reordering models for machine translation that simulate similar structural shifts to improve accuracy. Suresh et al. (2024) also demonstrated how real-time sign-to-text systems can enforce grammatical coherence. However, unlike automated systems, human interpreters balance structural fidelity with audience understanding, often prioritizing semantic accessibility over grammatical purity. This highlights the interpreter's central role as a meaning negotiator, not merely a linguistic conduit.

When direct syntactic or lexical equivalents are unavailable in GhSL, interpreters often turn to culturally grounded analogies and metaphors to construct conceptual equivalence. Ten out of eleven participants mentioned using culturally familiar references to explain abstract terms, idioms, and academic jargon. For example, Participant 3 (Male) illustrated "opportunity cost" using Ghanaian food items: "You opt for kenkey, you lose rice." Such examples resonate with students' lived experiences and foster deeper understanding of complex economic principles. This strategy mirrors the conceptual metaphor theory used in cognitive linguistics and aligns with Roy & Pöchhacker's (2009) emphasis on meaning over form.

This culturally situated strategy also addresses the lexical gap problem highlighted by Abire (2020) and Duku (2012), who found that interpreters often lack access to bilingual resources that reflect both linguistic and cultural specificity. Participants tackled this gap through visual explanation and analogy, bridging abstract concepts with tangible referents. Participant 5's (Male) description of "cloud computing" as

"many computers internet share work store online" with spatial gestures illustrates how interpreters creatively reframe unfamiliar content in accessible ways.

These practices find support in studies of other sign languages. Aarons & Morgan (2012), for example, found that interpreters in South African Sign Language (SASL) relied heavily on topicalization and classifiers to rearrange declarative structures. Similarly, Kimmelman and Khristoforova (2025) observed language-specific tendencies in classifier selection based on both syntactic and semantic cues. The current data reveals that GhSL interpreters are employing similar strategies intuitively applying analogical reasoning and cultural association as tools for syntactic alignment and pedagogical engagement.

This also intersects with the work of Napier et al. (2017), who noted that interpreters working through video relay services faced increased syntactic errors due to reduced cultural and contextual cues. While remote environments present new challenges, the in-person interpreters in this study used every available contextual and cultural anchor to enrich meaning and minimize confusion especially in subject areas like biology, ICT, or economics.

Another major strategy employed by interpreters involves the use of embodied expression to animate content and clarify syntactic and semantic structure. Several participants noted the importance of using the body to represent characters, processes, or abstract relationships. Participant 1 (Female) described how role-shifting helps narrate colonial history by embodying both the chief and the colonizer, while Participant 2 explained how she "demonstrate" digestion to help students visualize the biological process. These examples reflect the integration of non-manual markers (NMMs) and classifier constructions as core components of interpretation.

According to Guzikova and Gubina (2020), non-manual markers such as facial expressions, head tilts, and gaze are vital for marking sentence types, negations, and boundaries. The data shows that interpreters are well aware of these cues. Participant 11 mentioned using her face to indicate sarcasm, adding emotional nuance and interpretive accuracy that cannot be conveyed through hand signs alone. This supports Pendzich et al. (2022), who demonstrated that conditional clauses in German Sign Language are distinguished by different NMMs applied to antecedents and consequents. GhSL interpreters, while not formally trained in every case, appear to have internalized these distinctions through experience.

Classifier constructions also play a vital syntactic role. As Kimmelman and Khristoforova (2025) observed, classifiers allow signers to depict spatial, morphological, and functional relationships between referents. Participants described using classifiers to represent organs, systems, and technological processes. For instance, Participant 10 used spatial mapping to explain the relationship between the CPU and RAM in a computer, making abstract concepts visually navigable. These actions are consistent with Michael et al. (2011), Hanada (2023), and Gupta & Bhatnagar (2021), who explored computational and multi-modal recognition of classifiers and NMMs, reinforcing the legitimacy of these expressive strategies as syntactic and semantic devices rather than mere gestures.

Beyond their grammatical utility, these embodied strategies significantly enhance learner engagement and comprehension. Participant 7 noted that using space and motion helps students create “a mental map” of information. This suggests that embodied interpretation is not only a linguistic strategy but also a cognitive scaffold, assisting Deaf learners in organizing and retaining academic content.

Several of the technological advancements reviewed further reinforce the importance of chunking and segmentation as strategies for improving syntactic accuracy. Participants described breaking down long sentences into shorter clauses, consistent with chunking strategies observed by Baker (2010), who drew on Vygotsky's theory to argue that chunking allows learners to scaffold and relate new content to existing knowledge. Chunking also plays a critical role in real-time cognitive processing, as confirmed by Colarusso et al. (2023), whose CACHET tool tracked micro-behaviors associated with linguistic segmentation and retention.

Odartey et al. (2019) demonstrated the effectiveness of chunking in machine recognition of GhSL, achieving a 96% accuracy rate by using deep learning and transfer learning techniques. Their findings confirm that segmentation improves performance not only in human cognition but also in AI systems. The same principle underlies Fragkiadakis (2022)'s DistSign tool, which uses OpenPose and Dynamic Time Warping to analyze GhSL movements for semantic equivalence and false cognate detection. These systems reflect human strategies reported in this study where interpreters pause, restructure, and reformulate meaning to maximize clarity and minimize cognitive load for Deaf learners.

Interpreters' use of chunking is also a response to local educational constraints. As noted by Edward and Akanlig-Pare (2021), Ghana's sign language landscape suffers from limited documentation and scarce formal resources, increasing the reliance on interpreter expertise and flexible strategies. The interpreters in this study compensated for systemic gaps through embodied, visual, and interactive strategies highlighting their role not just as language professionals but as instructional co-navigators within the classroom.

4.6.3 Research Question 3: What Supportive Services are Available to Enhance the Interpretation of English into GhSL at Sekondi College?

The findings of this study highlight the multifaceted nature of supportive services in enhancing the interpretation of English–Ghanaian Sign Language (GhSL) in inclusive educational settings. Based on the data collected at Sekondi College, three dominant themes emerged: availability of resources during lessons**,** mentorship programs**,** and digital tool usage. These themes intersect with the broader body of scholarly literature emphasizing the crucial role of interpreter training, community mentorship, and access to technological and linguistic resources in fostering inclusive communication environments for Deaf students.

A significant challenge highlighted by seven out of eleven participants is the inconsistent availability of resources to support English–GhSL interpretation during classroom instruction. While some teachers in practical subjects like mathematics improvise with Teaching and Learning Materials (TLMs), such efforts are not standardized or sustained across subjects. Participant 4 emphasized how the availability of geometric tools during mathematics lessons facilitated visual interpretation for Deaf learners. In contrast, Participant 3, interpreting English literature, lamented the lack of adapted literary texts, compelling her to read and interpret materials at home to make them accessible.

This uneven resource landscape underscores the institutional gap in accommodating Deaf learners and their interpreters. As observed by Senayah et al. (2018), the absence of adequate interpretive resources reflects broader systemic inequalities that marginalize persons with disabilities, particularly in educational and healthcare settings. Similarly, Abire (2020) noted that lexical gaps and the absence of bilingual materials compound difficulties in English–GhSL interpretation. These limitations necessitate improvisation and self-reliance, as seen in Participant 2's use of mobile

phones to search for information during lessons, reflecting the adaptive ingenuity interpreters employ to bridge communication gaps.

Comparable patterns are evident in other global contexts. Hilario-Acuapan et al. (2025), for instance, emphasized the importance of culturally relevant datasets in developing support tools for Mexican Sign Language, suggesting that inclusive learning environments require more than physical resources they demand resources tailored to the linguistic and cultural needs of local Deaf communities. At Sekondi College, the reported emergence of a basic resource room (Participant 5) is a promising but limited step, reinforcing the call made by Fobi et al. (2022) for policy-driven efforts to embed sign language support into school infrastructure and curricula.

Mentorship emerged as another critical theme, although most participants described it as irregular or inadequate. Nine out of eleven interpreters had attended occasional workshops, while others relied primarily on personal training, internet-based learning, and informal peer networks to improve their interpretive skills. Participant 4 referred to both internal and external training opportunities, while others, like Participant 2 and Participant 6, highlighted the absence of institutional mentorship, instead cultivating their skills through self-study and online exploration.

The reliance on informal learning pathways reflects a broader trend identified in interpreting literature. Friedner (2018) observed that interpreting students often navigate professional identity through peer-driven strategies and relational mentorship within the Deaf community. While institutional mentorship may be limited, interpreters still construct legitimacy and expertise through relational networks and community feedback. This resonates with the findings of MacDougall (2015), whose study of Yucatec Mayan Sign Language illustrated how Deaf individuals learn and transmit sign

language through family and social embeddedness, rather than through formal programs alone.

Despite the challenges, the participants' experiences reflect a form of community-based professional development. Hardy (2018) found that Deaf youth mentoring others creates a culture of empowerment and shared expertise. Similarly, Ballentine (2024) emphasized that mentorship programs incorporating Deaf interpreters foster inclusivity and better career progression. This perspective aligns with Listman (2013), who warned that traditional interpreter training programs often overlook community knowledge. The present study supports this by showing how Sekondi College interpreters often rely on lived experience and peer support to navigate their roles, compensating for the lack of structured mentorship.

Furthermore, Huyck et al. (2021) and Lynn et al. (2020) emphasize that Deaf and Hard-of-Hearing individuals benefit significantly from peer mentorship, especially in environments where institutional supports are weak. Although the interpreters in this study are not themselves Deaf, they operate within Deaf education spaces and rely heavily on these kinds of informal knowledge exchanges. Thus, promoting mentorship not only enhances professional competence but also builds a more inclusive, collaborative learning environment.

The use of digital tools in interpretation was the third major theme, revealing a complex and uneven relationship between technology and classroom practice. Ten out of eleven participants confirmed using digital resources to support their interpretive duties, often relying on personal smartphones due to the unavailability of institutional devices. Participant 1 described using a sign language app and global content platforms to supplement vocabulary and prepare for lessons.

These accounts mirror broader global concerns regarding digital divides in sign language education. Hayford and Twum (2025) evaluated a GhSL web application and found it useful but constrained by high data usage and lack of offline capabilities limitations echoed in the participants' complaints about the reliance on personal internet access. Nanaware et al. (2018) similarly reported that Indian Sign Language learners benefited from interactive app features but struggled with technical barriers such as limited access and network dependence.

Interestingly, technological challenges are not just about device availability but also lesson planning and collaboration. Participant 3 described the unpredictability of lesson content due to limited coordination with teachers, which undermines pre-lesson preparation and the integration of appropriate digital tools. This observation correlates the findings of Fobi et al. (2022), who contend that strengthening collaboration between interpreters and educators especially through joint lesson planning and co-development of digital resources is essential for enhancing inclusive teaching practices.

Advancements in sign recognition and educational tools also support these insights. Fragkiadakis (2022) developed the "DistSign" tool using OpenPose to track hand movement paths and analyze linguistic cognates. While experimental, such tools highlight the growing potential of digital support systems in sign language processing. Similarly, Wong et al. (2024) introduced Sign2GPT, a gloss-free translation system that uses pre-trained vision-language encoders to improve automatic sign language interpretation. While such models are not yet tailored for GhSL, they provide a technological blueprint that could be adapted to the Ghanaian context.

Yet, as Fox et al. (2023) stress, sign language technology must involve Deaf users and communities in its development. Without participatory design, these tools risk misrepresenting or under-serving real user needs. At Sekondi College, interpreters' use

of international content and apps underscores the lack of locally developed or culturally specific digital tools. This absence limits the potential impact of technology, particularly for low-resource languages like GhSL that lack robust datasets, as pointed out by Mishra et al. (2024) and Hermawan & Subono (2025).

The findings of this study reinforce the need for policy frameworks that prioritize inclusive support services for Deaf education. Access to technological tools, mentorship structures, and linguistic resources is not merely a logistical issue it is a matter of equity and systemic inclusion. As Neidle et al. (2023) demonstrate through the ASLLRP, large-scale linguistic datasets and open-access tools have transformative potential for sign language education and recognition systems. However, these tools often favor dominant sign languages like ASL, leaving local languages like GhSL marginalized. Beckmann (2022) and Modern (2025) both argue that linguistic access is tightly interwoven with sociopolitical recognition and cultural identity a point reinforced in the Ghanaian context by Edward and Akanlig-Pare (2021), who noted the threat of language contact and under-documentation to indigenous sign languages.

To that end, schools must invest not only in tools and training but in participatory ecosystems that include Deaf communities, interpreters, educators, and researchers. Interpreter training programs should embed community-based mentorship, joint lesson planning, and content localization into their curriculum. As Lev-Ari et al. (2025) note, larger sign language communities exhibit greater iconicity in signs, aiding comprehension; smaller communities, by contrast, benefit more from visual and narrative elaboration. At Sekondi College, interpreters are already employing these strategies intuitively through culturally grounded analogies, embodied signing, and improvisation with digital content yet without institutional support, their efforts remain constrained.

4.6.4 Research Question 4: What Strategies can be implemented to improve the Interpretation of English into GhSL at Sekondi College?

This chapter discusses the findings from interview data concerning strategic interventions for improving English into Ghanaian Sign Language (GhSL) interpretation, particularly in inclusive educational settings such as Sekondi College. Drawing from the voices of interpreters, three key themes emerged: Instructional Support Strategies**,** Collaborative and Experiential Strategies, and Bilingual Fluency and Subject Knowledge Competencies. Each of these themes aligns closely with ongoing academic discourse on interpreter education, multilingual pedagogy, and technological integration in sign language communication. These findings underscore the need for systematic, experience-driven, and culturally informed strategies that extend beyond mere language proficiency to include cognitive, visual, and collaborative capacities.

Interview responses revealed that interpreters rely heavily on pre-lesson preparation, visual aids, vocabulary extension, and the use of American Sign Language (ASL) resources to enhance English–GhSL interpretation. Eight out of eleven participants emphasized that strategic instructional supports are indispensable for managing the complexities of translation and ensuring Deaf students' comprehension. Participant 1 noted the value of ASL as a linguistic reference, given its structural relationship to GhSL, while others such as Participants 2 (Male) and 4 (Female) discussed their efforts to meet with subject teachers prior to lessons, prepare visual materials, and simplify post-lesson content for clarity.

These practices closely align the findings Shaw et al. (2004), who emphasize the transition from language learning to interpreting as a critical challenge that requires scaffolded strategies and real-world engagement. Just as interpreter students in Austria and the U.S. reported difficulty translating theoretical language knowledge into

interpretive practice, interpreters at Sekondi College develop tools like pre-lesson meetings and text dissection to bridge the gap between knowledge and application. These strategies also align with McDermid et al. (2023), who emphasize "explicitation" where interpreters make active choices to insert, restructure, or reframe language for comprehensibility, rather than aim for word-to-sign equivalence.

Furthermore, interpreters' efforts to build personal sign vocabularies where gaps exist in GhSL are consistent with Wang's (2021) emphasis on cognitive flexibility and improvisation in high-pressure interpreting contexts. The proactive creation of visual and linguistic supports echoes the interpreter-centered design philosophy behind tools like TerpTube (Hibbard et al., 2020), where learners benefit from video feedback, dialogic interaction, and mentorship. These personalized strategies underscore the need for adaptive learning tools and interpreter education models that promote both linguistic creativity and subject-aligned content familiarity.

Nine out of eleven participants affirmed that classroom collaboration particularly through discussion methods, group work, and experiential teaching significantly enhances interpretation quality. Interpreters found that when teachers used interactive and visual-based pedagogies, Deaf students were more engaged and interpretation became smoother. Participants noted that these settings foster peer support, reduce social isolation of Deaf learners, and create opportunities for interpreters to better contextualize content. Participant 6 stated that discussion-based classes enabled Deaf students to contribute meaningfully, which in turn enriched the interpreter's own performance.

These experiences affirm what McKee and Napier (2002) described as the interpreter's role as a "cultural and linguistic mediator," especially in informal, hybridized language contexts such as International Sign. In such settings, interpreters rely on inferencing,

relevance theory, and shared context skills also employed in interactive classrooms, where meaning must be dynamically negotiated across Deaf and hearing students interactions. Similarly, Braem (2024) chronicled the development of team-based sign language research, showing how collaboration fosters both data richness and communication efficacy. This is evident in Sekondi College, where interpreters' collaboration with subject teachers during lesson planning supports lesson coherence, visual demonstration, and real-time improvisation.

Moreover, these collaborative methods are echoed in Shakele et al.'s (2022) work in Zambia, which demonstrated how dialogical, tactile, and gestural interactions between deafblind children and family members led to improved expressive capacity. Although operating in a different modality, the principle of co-constructing communication through lived interaction and mutual adjustment applies equally to classroom interpreting. Interpreters at Sekondi College often function as co-facilitators of knowledge, responding not only to linguistic cues but also to visual, emotional, and pedagogical dimensions of student learning.

In the technological domain, Walsh et al. (2025) stressed the importance of team-based data modeling in low-resource sign language environments. Their SignGAN and SignSplat tools illustrate how interpreter teams and computational linguists can synthetically augment signer data for better model training. Such collaborative models highlight the importance of shared knowledge creation, a practice informally echoed by Sekondi interpreters who work together to improve signs, discuss lesson difficulties, and refine classroom strategies.

The third and most recurring theme in the interviews was the critical importance of bilingualism and subject matter expertise. Ten out of eleven interpreters reported that the challenges of English–GhSL interpretation go far beyond knowing the signs they

require strong vocabulary, familiarity with subject-specific concepts, and cognitive skills such as memory and processing speed. Participant 1 (Female) described the task of interpretation as "two-sided," requiring fluency in both English and GhSL. Others stressed the need for developing an expansive English vocabulary to keep pace with classroom instruction and maintain interpretive accuracy.

These challenges are well documented in linguistic and interpreting scholarship. Mensah et al. (2023) and Adjei et al. (2022) found that interpreters often struggle with technical content, syntactic density, and fast-paced speech, especially when they lack prior subject familiarity. Adade et al. (2022) similarly reported a widespread lack of institutional training and materials for interpreters in Ghana, forcing them to rely on self-study and peer guidance. The accounts of Sekondi interpreters mirror this situation, where personal initiative and adaptive learning have become the primary pathways to interpreter development.

The cognitive strain associated with simultaneous interpretation is significant. Wang (2021) found that interpreters working from Auslan to English had to sustain high levels of cognitive load, manage variation in regional signs, and uphold formal language registers all of which apply in the Ghanaian context as well. As participants in this study attested, they are frequently tasked with interpreting across subject areas without specialized background, echoing Adu-Gyamfi's (2023) observation that interpreters in Ghana are often assigned to multiple departments without consideration of their subject expertise.

This cognitive and linguistic overload is further complicated by the informal nature of interpreter education in Ghana. Kaula (2023) emphasized that professional growth for interpreters is largely self-driven, with no nationally standardized certification or training pathway. In contrast, Grbic's (2014) study in Austria demonstrated how formal

interpreter education and continuous professional development programs led to enhanced syntactic handling and message coherence. Applying such structured models in Ghana could significantly improve interpreter proficiency, reduce burnout, and promote higher academic achievement among Deaf students.

Importantly, participants also underscored the need for cultural knowledge and emotional intelligence when interpreting. As Mweri (2010) warned, interpreters must be culturally attuned to avoid misrepresentation, especially in sensitive contexts. Foster (1996) and Hulme et al. (2022) likewise emphasized that service delivery for Deaf communities requires more than linguistic access it demands cultural responsiveness and respect for Deaf identity. Interpreters at Sekondi College echoed these sentiments, describing their role not simply as linguistic but also educational, emotional, and relational.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Study

This chapter presents the summary, conclusion and recommendations for the study. The purpose of the study was to explore sign language interpreters' experiences in interpreting English into Ghanaian Sign Language (GhSL) at Sekondi College in the Western Region of Ghana. Four research questions were derived from the objectives to guide the study. There were, interpreter's experiences influencing the interpretation of English syntax into Ghanaian Sign Language, strategies interpreters adapt to overcome syntactic error when interpreting English into Ghanaian Sign Language, supportive services available to enhance the interpretation of English into GhSL at Sekondi College and strategies that can be implemented to improve the interpretation of English into GhSL. The study used a descriptive case study research design. Eleven (11) interpreters comprising seven (6) female interpreters and five (5) male interpreters were purposively selected from a population of eleven (11) at Sekondi College. Data were collected through a semi-structured interview guide using focus groups and the responses were coded and analysed according to emerged themes.

5.2 Summary of the Major Findings

5.2.1 Analysis of Interview Data of Research Question One: How Interpreter's Experiences Influence Interpreting of English into GhSL at Secondi College

1. More experienced interpreters' demonstrated greater ability to restructure complex English sentences into simple, visual GhSL equivalents. They shifted from word-for-word translation and focused on conveying meaning through simplification, anticipation, and contextual modification.

2. The majority of interpreters gained fluency in GhSL and cultural sensitivity through family, church, or community exposure before they received formal training. This experiential learning provided strong foundation skills in language and cultural congruence with Deaf students.

3. Experienced interpreters adapted more readily to teaching styles. They found that visual and student-centered teaching styles reduced cognitive tension and improved interpretation quality, while teacher-centered styles increased mental fatigue and meaning transfer challenges.

4. Although personal connection to the Deaf community strengthened interpreters' professional identity, institutional lack of support and recognition eroded their feelings of effectiveness and worth in mainstream classrooms with inclusive

5.2.2 Analysis of Interview Data of Research Question Two: the Strategies Interpreters Adapt to Overcome Syntactic Error when Interpreting English into Ghanaian Sign Language

1. Interpreters simplify complex English syntax into comprehensible, visual, action-based GhSL structures for ease of understanding.

2. When there are no direct translations, interpreters use examples that are locally relevant (e.g., local food, daily routines) to convey abstract or unfamiliar concepts.

3. Interpreters use body language, facial expressions, spatial mapping, and classifiers to visually convey meaning and clarify syntactic structures.

4. Lengthy or complicated English sentences are broken down into shorter, bite-sized pieces to reduce cognitive load and facilitate easier interpretation.

5.2.3 Analysis of Interview Data for Research Question Three: Availability of Supportive Services when Interpreting English into GhSL

1. Interpreters reported sporadic availability of support materials such as Teaching and Learning Materials (TLMs), adapted textbooks, and classroom resources. While there was a degree of improvisation by educators in certain subjects such as mathematics,

others such as English literature lacked such available materials, compelling interpreters to rely on individual effort in lesson preparation.

2. Formal mentorship and professional development opportunities for interpreters are scarce. Most depend on occasional workshops, self-study, or peer learning groups to build skills. This reflects overall gaps in institutional support for interpreter training and continuing development.

3. Due to limited institutional provision of technology, interpreters depend heavily on personal mobile devices and digital applications to support vocabulary development and lesson planning. Lack of pre-class consultation with teachers and paucity of GhSL-specific digital resources also deter effective digital integration.

4. The lack of policy frameworks that are structured, digital infrastructure, and locally adapted tools for GhSL interpretation is a reflection of systemic exclusion. Despite interpreters' resourcefulness and coping strategies, the lack of institutional support limits their effectiveness and sabotages equal access to education for Deaf students.

5.2.4 Analysis of Interview Data for Research Question Four: Strategies can be implemented to improve the Interpretation of English into GhSL

1. Interpreters emphasized pre-lesson planning, visual support, and access to ASL resources to enable more accurate and clearer English–GhSL interpretation. Collaborative planning with teachers and simplification after classes were also noted as helpful methods to clarify Deaf students' comprehension.

2. Discussion, group, and hands-on instructional methodologies significantly improved interpretation quality and student engagement. Interpreters benefited when classrooms emphasized interactive learning, which allowed peer support, contextual understanding, and smoother interpretation.

3. Effective interpretation involves more than sign language fluency it demands strong English vocabulary, subject matter-specific knowledge, and cognitive abilities like

memory and processing. Interpreters asked for structured training to build both linguistic and academic content fluency.

4. Participants stressed the need for formal interpreter training programs, certification, and continuing professional development. Current self-directed models of learning placed too much cognitive and emotional pressure on interpreters. Structured programs, as in Austria (Grbic, 2014), were recommended to promote long-term interpreter competency and prevent burnout.

5.2.5 Implications for the Study

Studies on the process experiences of sign language interpreters in interpreting English into Ghanaian Sign Language (GSL) are gradually beginning to appear in African and global linguistic scholarship. Interpreting from a spoken language like English, replete as it is with high-level syntactic structure, into a visual-gestural language like GSL presents numerous challenges, particularly in terms of structure, semantics, and culture. Among the general findings of several studies is that sign language interpreters' lived experience plays a significant role in their interpretive choices, confidence, and competence. In a study conducted by Adade, Appau, Mprah, Fobi, and Marfo (2022), issues with speedy delivery of speech, insufficient preparation time, and the mental effort of simultaneous interpreting were often cited as problems facing the interpreters. These interpreters expressed that they were being over-worked, especially when interpreting syntactically complex content, such as technical talks or legal documents, into GSL. The lack of standardization in training sign language linguistics and the unavailability of textbooks in English as well as GSL also contribute to their complexities. Parallel to this, Adade et al. (2022) found that previous exposure to Deaf culture, consistent practice within actual settings, and personal motivation were key

factors in determining the quality of communication with Deaf clients. More experienced Broaders were more dynamic and sensitive to situation demands.

Syntactic complexity is likely the most long-standing challenge for interpreters. English syntax involves embedded clauses, passive voice sentences, conditions, and idioms that are not explicitly equivalent to GSL items. Syntactic complexity, Adade et al. (2022) argue, prevents sign language interpretation services in Ghana because of a lack of formally trained interpreters, misconceptions regarding the interpreter's role, and inadequate institutional support, including minimal legal and organizational protection of practitioners. For instance, English passive voice sentences are often reworded into active visual-spatial ones in GSL to render them intelligible. De Vos and Pfau (2015), even though they are writing about rural sign languages, provide valuable remarks regarding the efforts of interpreters to minimize complex syntax, confirming that restructuring and visual modeling are common accommodations. Mapson (2015) continues that pragmatic features, such as politeness and modality, are also syntactically challenging when attempting to make direct translations from oral to sign modes. These findings further reinforce that interpreting syntax is not just a linguistic process but also a cognitive and cultural process.

The lack of support facilities for the interpreters remains a sharp weakness for Ghana and similar countries. In the view of Adade et al. (2022), the majority of Ghanaian interpreters have no access to glossaries, computerized resources, or standard reference books, with the result that both accuracy and consistency of interpretation are negatively impacted. Institutional apathy means that interpreters tend to have to rely on peer-informal learning or independent study. In Zambia, it was found by Deneke (2017) that universities did not provide satisfactory interpreting services, with the majority of Deaf students missing lectures on a regular basis. Adu-Gyamfi (2023), investigating

interpreter experiences at the University of Education, Winneba, also noted that interpreters were sometimes allocated across departments without regard to specialization in topics, leading to undue cognitive loads and inconsistent quality. With inadequate support such as mentoring, thematic training, and feedback on assessment, interpreters are under-recognized and under-resourced.

In spite of these constraints, interpreters implement diverse improvement strategies to develop their skills. According to Asare (2022), Deaf students in Ghana highly believe that the quality of interpretation affects their performance in academics and thereby recommend interpreter certification and policy integration. Kaula (2023) noted that sign language interpreter professional development in most African countries, including Ghana, is largely self-directed, relying mostly on peer practice, reflective practice, and community participation since there are no organized national training or certification initiatives. While the informal mechanisms provide some level of support, they are not sufficient to ensure long-term professional development. On the other hand, Grbić (2014), in his study of Austria's training models, showed how formalized training of interpreters and continuous professional development (CPD) lead to improved syntactic control and smooth delivery consistency. These models are a valuable point of reference for Ghanaian institutions looking to institutionalize interpreter training.

5.3 Conclusion

The study uncovered sign language interpreter's experiences in interpreting English into Ghanaian Sign Language at Sekondi College in the Western Region of Ghana. The findings show issues that were faced in interpreting English into Ghanaian Sign Language (GhSL) in an inclusive learning environment at Sekondi College, focusing particularly on Influence of interpreters experiences on interpreting English-GhSL syntactic, Strategies adapted to Overcoming Syntactic Errors in English-GhSL

interpretation, The support service for Enhancing English-GhSL Interpretation, Strategic approaches to improving English into GhSL interpretation.

The findings of the research uncovered a nationwide disparity in national policy and institutional commitment. Lacking the regulated environment to direct interpreters' professional development, recruitment, and integration, their work becomes devalued and under-funded. Interpreters must endure much adversity interpreting English into GhSL which calls for intervention.

First, the study found that interpreter experience plays a vital role in improving syntactic transfer from English to GhSL. More experienced interpreters demonstrated enhanced cognitive flexibility, semantic sensitivity, and anticipatory processing skills, allowing them to restructure complex English syntax into clear, accessible GhSL expressions. This transformation is often guided by the principle of functional equivalence prioritizing meaning over literal word order. These findings support the Interpreter Advantage Hypothesis (García, 2014) and mirror existing literature which links interpreter training to improved executive functions such as shifting and updating (Nour et al., 2020). Participants confirmed that over time, they developed intuitive strategies for handling passive constructions, abstract language, and conditional tenses, resulting in more coherent interpretations for Deaf learners.

Secondly, the research highlights that interpreters employ a diverse range of adaptive strategies to overcome syntactic and lexical challenges. These include syntactic reframing, cultural analogy, and embodied expression. Participants frequently used visual metaphors and culturally familiar concepts to clarify abstract or idiomatic English expressions. Embodied expression including facial expressions, spatial mapping, and classifier use was another prominent technique. These strategies allowed interpreters to bridge the modality gap between spoken English and visual-spatial

GhSL. The effectiveness of such approaches is reinforced by prior studies on classifier use, non-manual markers, and chunking strategies in various sign languages (Guzikova & Gubina, 2020; Pendzich et al., 2022). Interpreters in this study, while often lacking formal linguistic training, demonstrated strong applied knowledge through their creative and flexible adaptations.

Thirdly, the study identified gaps in the availability and effectiveness of supportive services, particularly with regard to instructional materials, mentorship, and digital tools. While some interpreters benefited from resourceful teachers and peer collaboration, others had to rely heavily on personal devices and self-developed materials. Formal mentorship programs were largely absent, with most interpreters pursuing personal learning through online platforms and informal peer networks. This points to a systemic shortfall in interpreter support at the institutional level. The findings echo the broader literature on the limitations of sign language education in low-resource settings (Abire, 2020; Fobi et al., 2022), and emphasize the urgent need for investment in interpreter resources, bilingual materials, and locally relevant digital tools.

Finally, the study shows that improving English–GhSL interpretation requires a strategic, institutionally supported framework. Interpreters recommended structured training programs, access to subject-specific materials, pre-lesson collaboration with teachers, and official recognition of interpreter roles in the educational system. Bilingual fluency and subject knowledge were highlighted as essential competencies. Without consistent training and systemic support, interpreters face emotional and cognitive burdens that may reduce the effectiveness of inclusive education for Deaf learners. As several scholars have argued (Kaula, 2023; Grbic, 2014), formal interpreter

education and continuous professional development are necessary to sustain quality interpretation in educational contexts.

In summary, the findings of this study demonstrate that English–GhSL interpretation is a deeply skilled and cognitively demanding task that goes far beyond simple translation. It is influenced by interpreter experience, shaped by pedagogical practices, supported (or hindered) by resource availability, and dependent on both linguistic and cultural fluency. Despite systemic gaps, interpreters at Sekondi College have demonstrated ingenuity, resilience, and a strong commitment to inclusive education. However, to ensure sustainable and equitable communication access for Deaf learners, there is a pressing need for policy action, investment in resources, and formalization of interpreter training structures. If these gaps are addressed, the educational outcomes and social inclusion of Ghana's Deaf learners will be significantly improved.

5.4 Recommendation

1. Lead Sign language interpreter in collaboration with Special Education Coordinator should develop formal peer mentoring programs whereby less experienced interpreters are paired with seasoned professionals. Through this, novice interpreters will be able to learn adaptive strategies such as syntactic restructuring, anticipatory visualization, and context-sensitive reframing through collaboration, feedback, and observation.

2. Special Education Coordinator in collaboration with Head of Department (Home Economics) should include training modules on syntactic chunking, cultural analogy use, and embodied expression skills. Practical workshops must be developed to allow interpreters to practice interpreting complex English sentence structures (e.g., passives, idioms, technical jargon) into clear GhSL equivalents.

3. Schools Head in collaboration with other stakeholders should invest in institutional digital support (e.g., tablets, localized sign language software), bilingual educational

materials, and standardized sign language TLMs. Schools must also provide pre-lesson planning time between interpreters and teachers for the purposes of interpretive readiness and resource alignment.

4. Ghana Educational Service in collaborations with National Council for curriculum and Assessment NSCCA and relevant stakeholders should work together In order develop a national sign language interpreter training curriculum, encompassing bilingual fluency, subject matter interpretation, cultural competency, and ethical practice. Ongoing professional development and licensure mechanisms should be put in place to maintain quality and consistency of interpreter services**.**

5.5 Suggestions for further studies

1. A study should be conducted on how curriculum can be adapted to suit the bilingual needs (English and GhSL) of deaf students will enhance inclusivity.

2. A study should be conducted using a different research design, for example (quantitative or mix-method) in a different geographical area.

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APPENDICES

INTERVIEW GUIDE

APPENDIX A

SEMI-STRUCTURED INTERVIEW GUIDE FOR INTERPRETERS AT SEKONDI COLLEGE ON THEIR EXPERIENCES IN INTERPRETING GHANAIAN SIGN LANGUAGE INTO ENGLISH LANGUAGE

I want to thank you for agreeing to participate in this study. I am Daniel Narh Addo, an M. Phil student at the University Of Education, Winneba. I am conducting a research on sign language interpreter's experiences in interpreting English into Ghanaian Sign Language (GhSL). The purpose of this study is to explore sign language interpreter's experiences in interpreting English into Ghanaian Sign Language (GhSL). I would be glad to have your experience to enable this work to be completed. This is purely for academic purpose and responses will be solely for that purpose. Participant's confidentiality is assured as there is no name/identity contained. I will be grateful if you spend few minutes of your schedule to assist me in the interview.

Time: …….. Date:…….

Venue: ……..

Duration:……..

Section A : Bio-Data of Participants Question Response
Personal number (optional)
Age
Gender
Role
Years of Experience in Deaf/Interpretation

Research Question 1. How do interpreters experience influence the interpretation of English syntax into Ghanaian Sign Language at Sekondi College?

i. How would you describe your experience in interpreting English syntax into GhSL in inclusive classroom?

ii. Tell me about your journey to becoming a sign Language (GhSL) interpreter.

iii. How does teaching style affect your interpreting experience?

Research Question 2. What strategies do interpreters adapt to overcome syntactic errors when interpreting English into Ghanaian Sign Language (GhSL)?

1. Describe a difficulty time you encountered when interpreting an English syntax into GhSL and how you resolve it?

2. How do you handle English expressions structures that have no direct equivalent in GhSL?

3. Describe any strategy (e.g., rephrasing, role-shifting, classifiers) to convey meaning accurately when interpreting? Please give examples.

Research Question 3. What supportive services are available to enhance the interpretation of GhSL into English language at Sekondi College?

i. What are the available resource's for effective interpretation between English and Ghanaian Sign language? If no, how do you interpret for deaf students to understand and if yes, how do you use them to enhance the interpreting

ii. Are there mentorship programs to enhance interpreter's skills in English to GhSL interpretation? If yes, how has it enhance your experience, if no, what strategies do you use to enhance your interpreting skills?

iii. Are there digital tools available to aid in English to GhSL interpretation? If yes, how often do you use it, if no, how does it affects your interpretation?

Research Question 4. What strategies should be implemented to improve the interpretation of GhSL into English language at Sekondi College?

i. Which strategies would you developed to enhance your interpreting experience?

ii. Describe the teaching methods have been most effective in improving English interpretation?

iii. What proficiencies do interpreters need to acquire in order to accurately interpret into English language into Ghanaian sign language (GhSL)?