

**ANALYSIS OF PHONOLOGICAL ERRORS IN ONLINE TASK-BASED ENVIRONMENTS: THE CASE OF LEARNERS OF ENGLISH AS A SECOND LANGUAGE (ESL) IN UGANDA**

**BY**

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**DECEMBER, 2025**

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I, **Namara Chance**, declare that the content in this dissertation is my original work and that it has not been submitted for a degree examination in any other Institution of Higher learning.

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## **DEDICATION**

I dedicate this work to my ever-present father, Mr. Nagaba Eliabu.

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## ABSTRACT

The study investigates phonological errors made by learners of English as a Second Language (ESL) in online task-based learning environments in Uganda. It identifies, describes, and examines the nature of the phonemic errors based on learner recordings during communicative tasks. Undoubtedly, limited research is available on the learners of English as a second language in Uganda, specifically, in online task-based environments. The study adopts a task-based methodology where learners engage in language use, and their utterances were transcribed using the International Phonetic Alphabet (IPA) via PhoTransEdit. Error description follows Landi's (2008) typology, while Katamba's (1989) phonological framework guides the analysis of the underlying factors. Findings reveal that four of Landi's six error categories: substitution, omission, addition, and blend were identified. Movement and exchange errors were not observed, due to their association with planned rather than spontaneous speech. Substitution errors dominated other categories, particularly the ones involving vowel and consonant sounds such as /i/, /ε/, /aɪ/, /r/, /l/, /h/, and /z/. Notably, the study identifies a novel compound phonemic error, where multiple error processes co-occur within a single lexical item. The study further identifies phonological simplification as the primary factor why most of the identified errors occur. The study concludes Landi's (2008) framework accounts for the majority of errors, and Katamba's (1989) framework fully explains factors why these errors occur in learner speech. Future research should expand the participant base to capture regional variation, evaluate the impact of digital feedback tools on pronunciation improvement, and develop context-sensitive correction strategies tailored to Ugandan learners.

**Keywords:** Error Analysis, phonological errors, task-based learning, online learning, English as a Second Language.

## CHAPTER ONE

### 1.1 INTRODUCTION

English is one of the most widely used global languages, serving political, economic, educational, and sociocultural functions across multilingual contexts. Recent estimates indicate that more than 1.4 billion people use English as either a first, second, or foreign language, reflecting its growing relevance in global communication (Ambele & Boonsuk, 2021; Ethnologue, 2023). In Uganda, English holds an especially prominent role as the medium of instruction from upper primary through tertiary education (Matovu, 2025). National policy further designates English as the language of assessment (Kirunda & Ogavu, 2015) positioning it as a critical tool for academic success.

Despite its centrality, learners' diverse linguistic backgrounds contribute to persistent difficulties in English proficiency and one of these challenges is phonological proficiency. Phonological errors are unintended sound replacements in the learner's attempt to achieve fluency. Learners make several phonological errors in their attempt to make meaning while using English. Research commonly distinguishes between the phonological errors as either interlingual errors which arise from influence of learners' first languages or intralingual errors which stem from developmental challenges within the learning process itself (Carrió-Pastor & Mestre-Mestre, 2014). This study focuses primarily on the latter, as it aims to analyze the learner's awareness of phonemes and phoneme structure in the English language.

Extensive scholarship on learner errors covers grammar, syntax, morphology, and lexis (Alhaysony, 2012; James, 2013; Khejeri et al., 2022). In phonological research, however, the Ugandan context remains comparatively underexplored. Existing works, such as Fisher (2000) and Meierkord (2016), describe pronunciation patterns, while Adokorach & Isingoma (2022) offer a broader profile of Ugandan English phonology. Yet these studies focus primarily on accent variations as compared to the standard rather than segmental errors. Recent studies by Ssempuuma & Isingoma (2021) highlight the need for deeper investigation into learners' phonemic production, reinforcing the value of the present study.

A phonological error is generally defined as the production of an unintended sound in place of a target sound (Derwing & Munro, 2015). For example, Arab learners of English as a Second Language frequently confuse phonemes such as /p/ and /b/, pronouncing "bird" as "pird" and "prison" as "brison" (Hanna, 1986). Landi (2008) categorizes phonological errors into substitution, omission, addition, movement, exchange, and blend errors. Although developed from research on first language acquisition, this taxonomy remains adaptable to second language contexts and provides a suitable analytical framework. Research on speech production further shows that phonological errors are often subconscious and emerge during spontaneous communication (Christine, 2023). This aligns with Selinker's (1972) interlanguage theory, which explains that learners' developing linguistic systems produce systematic deviations. Scholars such as Botley (2015) also argue that the long standing boundary between mistakes and errors is fluid, particularly in naturalistic speech. He emphasizes this by saying that both errors and mistakes represent unsuccessful language use. He challenges the idea that mistakes and errors are mutually exclusive categories. He argues that in practice, the line between mistake and error is blurred and the separation of these ideas is a misleading way to view learner language. So, this study adopts this view to easily deal with the learners' interlanguage.

Extensive research on error analysis focus on learners output in offline contexts and so validates the use of the online context for this research. This research also adopts online task-based learning as a medium of information exchange. Online task-based language learning refers to the design and delivery of meaning-focused tasks in digitally mediated environments, for example, through videoconferencing platforms and Learning Management Systems (LMS). In Online Task-Based Language Learning (OTBLL), tasks are authentic, outcome-oriented, and interaction-rich. Technology is used to enable synchronous and asynchronous interaction, multimodal input, and real-time or delayed feedback. Recent scholarship describes OTBLL as an extension of task-based language teaching (TBLT) that leverages video interaction, shared workspaces, and digital collaboration tools to elicit spontaneous language use and negotiation of meaning (Baralt & Morcillo Gómez, 2017; González-Lloret, 2025). Empirical syntheses also report positive effects on speaking, engagement, and risk-taking, emphasizing that task design in online contexts must prioritize communicative purpose rather than drill-like accuracy work (Bhandari, et al., 2025; Yu, et al.,2024).

Given the noted gaps in Ugandan phonological research, this study seeks to analyze the phonemic errors as produced by learners of English as a second language in online task-based learning environments. By focusing on online interaction, the study contributes to an emerging body of work on phonological challenges in digitally mediated learning, a domain that is increasingly emphasized in contemporary language education (Atibuni et al., 2024).

## **1.2 BACKGROUND TO THE STUDY**

In 2020, Uganda introduced the New Lower Secondary Competency-Based Curriculum (NCBC), marking a significant transformation from traditional teacher-centered approaches toward active, learner-centered instruction (Charles et al., 2023). Under the former curriculum, learners frequently relied on memorization, repetition, and teacher-led knowledge transmission. In contrast, the NCBC positions learners as active constructors of knowledge, emphasizing inquiry, collaboration, and practical application of concepts across disciplines. This reform reflects global shifts in education that prioritize creativity, problem-solving, and adaptability (Atibuni et al., 2024).

A central methodological pillar of the NCBC is Task-Based Learning (TBL), which frames instruction around meaningful, real-world tasks that require learners to apply knowledge in authentic contexts. These tasks encourage spontaneous use of language, negotiation of meaning, and communicative problem-solving. The principles of TBL align closely with Task-Based Language Learning (TBLL), which promotes the acquisition of language through purposeful communication rather than controlled or form-focused drills. TBLL has gained prominence in contemporary language because of its capacity to elicit natural, unrehearsed language use (Ambele & Boonsuk, 2021).

The NCBC further integrates digital learning tools, promoting hybrid and online learning modalities. Online Language Learning (OLL) environments ranging from web-assisted to fully virtual settings have expanded in Uganda alongside global educational technologies. Scholars such as Kalantzis and Cope (2016) argue that digital spaces afford learners opportunities to become reflective producers of knowledge, offering multimodal, interactive, and collaborative avenues for language development. Recent studies also note that digital task-based environments

foster learner autonomy and create conditions for authentic, spontaneous language use (Hockly, 2018).

Phonological error analysis in Uganda, however, has historically taken place in controlled classroom environments where teacher guidance, repetition, and imitation play a dominant role. Such settings mask the spontaneous phonemic errors that arise when learners communicate freely. Online task-based environments, by contrast, require learners to draw on their linguistic resources independently, resulting in more naturalistic speech and, consequently, greater visibility of phonemic challenges. This study therefore introduces an innovative approach by situating phonemic error analysis within online TBLL, providing a new lens through which to examine how Ugandan learners of English as second language handle English phonemes in real-time communication on their journey to acquire English proficiency.

Despite increasing attention to Ugandan English phonology, significant gaps remain. Earlier studies (Fisher, 2000; Meierkord, 2016) primarily document pronunciation and accent variation detailing the description of the linguistic features of the varieties of Ugandan phonology, while more recent work (Adokorach & Isingoma, 2022) describes the broader phonological system of Ugandan accents of English. Yet, analysis of phonemic errors particularly within spontaneous, online interactions remains scarce. Recent research (Ssempuuma & Isingoma, 2021) emphasizes the need for focused investigation of learners' phonemic production, and this reinforces the importance of this study.

Therefore, the current research situates itself at the intersection of phonology, digital language learning, and task-based language learning. By examining phonemic errors within online TBLL environments, the study addresses a crucial gap and contributes to a deeper understanding of how learners of English as a second language in Uganda negotiate the demands of the English language.

### **1.3 STATEMENT OF THE PROBLEM**

Phonological errors continue to pose a significant challenge for learners of English as a Second Language in Uganda, and continue to affect overall communicative competence (Derwing, & Munro, 2022). While many studies have documented such errors in traditional classroom settings where language use is often guided, rehearsed, and heavily influenced by teacher intervention, less is known about how these errors manifest in spontaneous, digitally mediated environments. This is particularly relevant in Uganda, where the introduction of the New Lower Secondary Competency-Based Curriculum (NCBC) in 2020 has fundamentally reshaped the learning landscape (Charles et al., 2023).

However, despite the adoption of Online Task-Based Language Learning in Uganda, the nature of phonemic errors produced within this context remains underexplored. Existing studies on Ugandan English phonology (Adokorach & Isingoma, 2022) provide insights into pronunciation patterns and phonological features, but do not examine phonemic errors within online, task-based environments. Yet, research on digital language learning highlights the potential of online platforms to reveal authentic learner language (Hockly, 2018). This creates a contextual and empirical gap that although Uganda's curriculum shift promotes online task-based learning, there is limited evidence on what phonemic errors emerge or present themselves in these new learning environments.

### **1.4 GENERAL OBJECTIVE**

The general objective of this research is to analyze the phonemic errors made by learners of English as a second language in Uganda in an online task-based environment.

### **1.4.1 Specific Objectives**

Given the persistence of phonological errors among Ugandan learners of English as a second language and the recent shift to learner-centered, technology-supported instruction under the NCBC, this study is guided by the following objectives:

1. To describe the phonemic errors made by learners of English as a Second Language in online task-based environments.
2. To examine the factors that account for the phonemic errors made by learners of English as a second language in online task-based environments in Uganda.

### **1.4.3 Research Questions**

1. What are the phonemic errors made by learners of English as a Second Language in online task-based environments in Uganda?
2. What phonological explanations account for the occurrence of these phonemic errors in learners' spontaneous online task-based speech?

## **1.5 SIGNIFICANCE OF THE STUDY**

This study is significant in the fields of second language learning, phonology, and technology-mediated learning. It contributes to the growing research on the interaction between task-based language learning (TBLL) and computer-assisted language learning (CALL), particularly in under-researched multilingual contexts such as Uganda. Ziegler (2016) suggests that a reciprocal relationship between TBLT and CALL has emerged over the years, with researchers not only examining how technology supports language learning but also using TBLT as a framework to investigate CALL more deeply. In this regard, the current study aims to provide data on how learners in a Ugandan context engage with phonological aspects of English in task-based online environments. By focusing on phonemic errors, an area that remains relatively underexplored in TBLT-CALL research, this study expands the understanding of learner interlanguage and phonological development in technology-enhanced and task based settings.

In practice, the research is important to curriculum developers, policymakers, and English language educators operating in multilingual contexts. Since it is rooted in recent educational reforms in Uganda, particularly the adoption of the new Lower Secondary Competency-Based Curriculum, the study offers insights into the phonemic errors learners make in spoken English. By uncovering specific phonemic errors made by Ugandan learners, the findings will help inform the design of more effective and responsive instructional strategies. Teachers will benefit from a better understanding of the common difficulties their learners encounter, allowing them to adjust approaches to improve pronunciation and overall communicative competence. Policymakers and curriculum designers will also gain valuable data to support English language teaching frameworks, ensuring they are well-aligned with the realities of Uganda's diverse linguistic landscape and the growing role of online learning.

## **1.6 JUSTIFICATION OF THE STUDY**

Although several studies have examined various aspects of Ugandan English, including general pronunciation patterns (Fisher, 2000; Meierkord, 2016) and broader phonological descriptions (Adokorach & Isingoma, 2022), there remains a significant gap in understanding how phonemic errors emerge in spontaneous communication particularly within online task-based learning environments. With the introduction of the New Lower Secondary Competency-Based Curriculum (NCBC), learners are increasingly required to engage in digital tasks, online collaboration, and autonomous meaning-focused communication. However, no existing study has examined how the learners' segmental performance in these environments.

This study is therefore necessary because it provides an account of phonemic-level errors produced by Ugandan learners of English as a second language in online task-based environments. Without such evidence, teachers, curriculum developers, and policymakers cannot adequately understand the challenges that learners face when required to use English spontaneously in digital spaces, spaces that now form part of mainstream instruction. If this study is not conducted, an important dimension of learner phonological competence in the new curriculum context remains undocumented, leaving a critical gap between curriculum expectations and learners' actual linguistic performance.

Additionally, this study contributes methodologically by applying Landi's (2008) framework and Katamba's (1989) phonological explanations to online learner data, an approach not yet explored in the Ugandan context. This integrated methodological perspective strengthens the field by offering new data into the nature, frequency, and causes of phonemic errors among these learners in digitally mediated spaces.

## **1.7 THEORETICAL FRAMEWORK**

This study is primarily guided by Landi's Error Analysis framework, which provides the main lens through which learners' phonemic errors are identified and described. Landi's model forms the backbone of the analytical process by offering clear procedures for tracing what errors occur and how they can be systematically described. Alongside this major framework, Katamba's (1989) framework is used in a supportive role to analyse the phonetic and articulatory reasons behind the errors and patterns observed in the data. Together, the two theories work in a complementary manner to ensure both accurate description and meaningful phonological analysis of the findings.

### **1.7.1 Theoretical View of Phonological Errors**

This study is guided by the theoretical framework advanced by Landi (2008), who observes that phonological errors are not random or chaotic. Even when a learner produces a non-target form, the output is shaped by systematic rules that reflect the learner's developing interlanguage system. This view is supported by earlier work by Fromkin (1971), who demonstrated that even speech slips follow linguistic rules rather than creating illegal forms.

Landi (2008) also emphasizes the role of self-monitoring in speech production. Skilled speakers detect and correct mispronunciations automatically, a process described in Levelt's (1989) model of speech production. However, recognition does not always lead to successful correction for learners speaking spontaneously online, where attention is divided between production, comprehension, and communicative goals. Persistent errors in such contexts reveal areas of phonology that need to be studied.

### **1.7.2 Principles Underpinning the Framework**

This framework draws on Landi's (2008) principles for interpreting phonological errors. She explains that while learner productions may violate English phonotactic patterns, they remain rule-governed within the constraints of the learner's interlanguage grammar. According to Jakobson and Halle (1956), phonological development typically progresses from simpler and more universal structures toward more complex marked forms. Therefore, predictable error patterns can signal normal developmental restructuring rather than linguistic deficiency.

Landi (2008) further distinguishes isolated slips (which occur in fluent speech among competent speakers) from consistent and repeatable error patterns. Repetition indicates a stable underlying rule that is still incomplete. Additionally, Landi notes that many learners can perceive the correct sounds but may not yet reliably produce them under communicative pressure. Dell's (1986) spreading activation model of speech planning also helps explain how similar sounds may compete during production, resulting in substitutions. Taken together, these principles position errors as meaningful, reflecting learners' gradual mastery of English phonology.

### **1.7.3 The Typology of Errors**

To organize the analysis in a systematic way, this study adopts Landi's (2008) typology of phonological errors. Her classification outlines six categories that describe how learner productions deviate from target forms in patterned ways. Furthermore, research has classified errors into substitution, addition, omission, movement, exchange, and blend errors. These classifications are versatile across all branches of linguistics. However, below is an explanation of how they can manifest phonologically, according to Landi (2008), with examples adopted from Christine (2023). Substitution errors occur when one element of the utterance is replaced with another. For example, a learner may say *sink* /sɪŋk/ instead of *think* /θɪŋk/, substituting /θ/ with /s/. Addition errors in phonology involve the insertion of an element into an incorrect location within the utterance. For instance, a learner might say "...love that was shown is an *Eros kinds*" /kaɪndz/ instead of "...*Eros kind*" /kaɪnd/, adding an unnecessary /z/ sound. Omission errors can occur in two ways phonologically. First are *assimilation errors*, where a phonological unit is omitted in the context of another similar string. For example, saying *frien* /frɛn/ instead of *friend* /frɛnd/, omitting the final /d/. Second are *dissimilation errors*, which occur when a planned segment is deleted from one of its intended positions. For instance, saying *probly* /'prɒbli/ instead of *probably* /'prɒbəbli/, omitting a syllable. It is difficult to judge an

error as dissimilation or assimilation because often, both possible sources occur in the utterance. Movement errors involve a combination of omission and either addition or substitution. A learner might say *aks* /æks/ instead of *ask* /æsk/, where /s/ is moved ahead of /k/. Exchange errors occur when two elements switch positions. For example, a learner may say *tough* /tʊ:θ/ instead of *thought* /θɔ:t/, swapping /θ/ and /t/. Blend errors involve two different lexical items planned for the same slot, blending into one form. Landi's system allows the researcher to identify what kind of error has occurred clearly and describe it consistently. However, this typology does not explain why each error arises.

For that purpose, the analysis draws on Katamba (1989), whose work on English phonology explains how features such as markedness, phonotactic constraints, and syllable structure influence the likelihood of specific deviations. Katamba's (1989) explanations assist in identifying whether errors result from unfamiliar segmental contrasts, articulatory complexity, or gaps in learners' understanding of legal sound patterns in English. Katamba (1989) provides a phonological framework that explains why and how second-language learners produce particular segmental errors, especially under spontaneous communicative pressure. His account highlights reasons such as simplification, epenthesis, assimilation, and coarticulation, all of which arise when speakers attempt to manage difficult syllable structures, unfamiliar phonemic contrasts, or rapid articulatory transitions. Processes like final, medial, and initial vowel epenthesis help learners repair complex consonant clusters, while perceptual underspecification particularly with English vowels leads to stable substitution patterns. Katamba also emphasizes the role of contextual influence, showing how neighboring sounds trigger coarticulation or assimilation, resulting in modified or weakened segments. In spontaneous speech, these processes become more pronounced as learners prioritize meaning over accuracy.

These phonological processes offer the explanatory lens through which the present study examines the errors described using Landi's (2008) typology. Through this alignment, Katamba's framework provides an account of the underlying mechanisms driving the phonemic errors that emerge in learners' online task-based speech. In this way, Landi's (2008) classification system and Katamba's (1989) phonological explanations complement one another whereby the former classifies the pattern, while the latter interprets the phonological motivation behind it. Through this theoretical framework, phonemic errors in online task-based learning are interpreted as windows into learners' evolving interlanguage systems. The framework supports

the descriptive approach of the study and positions errors as meaningful indicators of how learners navigate the demands of English phonology in spontaneous communication.

## **1.8 SCOPE OF THE STUDY**

This study investigates phonemic errors made by learners of English as a Second Language in Uganda during online task-based language learning activities. The focus on phonemic errors particularly of vowels and consonants is used because phonemic distinctions form the core in spoken communication and constitute analytically observable errors in spontaneous speech production. Other error types such as grammatical or lexical errors, as well as supra-segmental features (intonation, stress, rhythm), fall outside the purpose of the study and therefore not examined.

The content scope is limited to describing and examining phonemic errors using Landi's (2008) framework and Katamba's (1989) phonological explanations, framed within the Error Analysis approach. Geographically, the study is restricted to Cityland College, Matugga, a secondary school in Uganda where the participants were selected. The findings therefore reflect the phonemic patterns of learners within this educational context and do not claim nationwide generalization, although they offer insights relevant to other multilingual Ugandan settings. The participants are Senior Four learners who were selected because they possess sufficient English exposure to produce analyzable phonemic data. Also, these students have been instructed through the Competency Based curriculum.

The study is therefore confined to phonemic phonological errors produced in real-time, spontaneous online speaking tasks and does not investigate written errors, teacher-learner interactions, or face-to-face classroom pronunciation patterns.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The study of phonological errors among second language learners of English has long been central to understanding how learners develop proficiency in spoken English, particularly in multilingual contexts such as Uganda where English functions as a second language for the majority of learners. The literature broadly acknowledges that phonological errors arise from complex interactions between learners' developing interlanguage systems, their perceptual and articulatory limitations, and the structural properties of the target language. Scholars such as Munro and Derwing (2011) have emphasized that phonological accuracy is highly sensitive to the context of speech production; whether controlled, semi-controlled, or fully spontaneous. When learners are placed in highly teacher-directed environments, the form-focused nature of instruction tends to suppress the natural emergence of phonological errors because learners are guided, corrected, and often rehearsed before producing speech. Hockly (2018) further notes that spontaneous digital communication creates a different type of linguistic pressure that reveals a more authentic picture of a learner's phonological competence.

Because the current study examines segmental errors (specifically at the phonemic level), it is important to consider how vowel and consonant production has been conceptualized in second-language contexts globally, regionally, and locally. Segmental errors are analytically significant because they affect proficiency and provide measurable evidence of how learners map the phonemic categories of English onto their internal interlanguage representations. In Uganda, where English serves not only as a medium of classroom instruction but also as the language of formal assessment, learners' ability to produce vowels and consonants accurately is especially critical. Yet, as several scholars (Fisher, 2000; Meierkord, 2016; Adokorach & Isingoma, 2022) point out, studies of Ugandan English have tended to focus on variety formation and accent rather than systematic description of phonemic errors.

With the rise of Task-Based Language Learning (TBL/TBLL) particularly within the framework of Uganda's New Lower Secondary Competency-Based Curriculum (NCBC), learners are increasingly required to participate in communicative tasks where rehearsed patterns are replaced

by spontaneous meaning-focused production. The shift towards hybrid and fully online learning has further introduced new communicative spaces where learners interact through videoconferencing and digital platforms. These environments remove many of the formal constraints of traditional classrooms and instead place learners in situations requiring real-time communicative negotiation. Such conditions provide fertile ground for analyzing phonological errors because learners prioritize meaning, not form, revealing the underlying structure of their developing interlanguage.

## **2.2 Error Analysis and Interlanguage Frameworks**

Error Analysis (EA) views errors not merely as indicators of failure, but as crucial windows into the learner's underlying linguistic system. Corder (1974) argued that learners actively construct hypotheses about the target language, and their errors reflect the rules and constraints governing their developing system. This position represents a significant departure from earlier behaviorist perspectives that equated errors with bad habits. Instead, EA recognizes learner errors as systematic, meaningful, and developmentally informative.

Corder (1974) proposed five key steps for analyzing errors: collecting data, identifying errors, describing errors, explaining errors, and evaluating errors. The first step, data collection, involves selecting an elicitation method that triggers natural language use. Scholars such as Ellis & Yuan (2004) note that the type of task chosen can profoundly influence the kind of language forms learners produce. For example, spontaneous oral tasks often yield more phonological errors because learners prioritize meaning. Corder emphasized that identifying errors requires careful interpretation of learner intention so that researchers compare the learner's actual utterance with a reconstructed 'correct' version. James (1998) expands on this by noting that accurate identification of errors requires a deep understanding of the learner's context, intended message, and the target language system.

The step of describing errors involves classifying them into meaningful categories. Corder stresses that classification is a crucial stage because it organizes error patterns in ways that make theoretical interpretation possible. In phonology, description often includes identifying whether an error is a substitution, omission, epenthetic insertion, or structural simplification

In the explanation stage, researchers evaluate why an error has occurred. Corder identifies several possible sources of errors: Interlingual transfer, where first language influences second language structures, Intralingual transfer, where the learner overgeneralizes second language rules, Developmental errors, which arise from universal processes of interlanguage development and Induced errors, resulting from misleading instructional materials or teaching methods.

The final step, evaluation, considers the seriousness or communicative weight of each error. While some errors (particularly segmental substitutions) may minimally affect intelligibility, others like extensive deletion of consonants may significantly hinder comprehension. Although this study does not focus on error correction, the evaluative component of EA helps determine which error types are most pervasive and potentially problematic for learners interacting in online contexts.

### **2.2.1 Interlanguage (Selinker, 1972)**

Selinker's (1972) theory of interlanguage complements EA by framing the learner's linguistic system as a dynamic, rule-governed body of knowledge that evolves in predictable ways. Interlanguage is intermediate not identical to the mother tongue, and not identical to the target language. Rather, it is a systematic system in its own right. Selinker identifies processes such as language transfer, transfer of training, strategies of second language learning, strategies of second language communication, and overgeneralization as key contributors to interlanguage formation. This theory is directly relevant to phonology because segmental errors often reveal the boundaries and limitations of the learner's current interlanguage.

### **2.2.2 Error Analysis (EA) in different Contexts**

Although EA has been extensively used worldwide, its application has predominantly been in grammatical contexts rather than phonological ones. For example, Horney (1998, as cited in Chen, 2006) observed that the highest frequency of article errors among Taiwanese students was due to the structural differences between Mandarin and English. Hsin (2003, as cited in Chen, 2006) examined run-on sentences and attributed them to the influence of Mandarin's topic-comment structure conflicting with English's subject-predicate system. Lixin (2015) documented word-class errors among Chinese learners and found that the majority resulted from structural discrepancies between English and Chinese. These studies highlight the powerful diagnostic value of Error Analysis.

Similarly, in East Africa, EA research often concentrates on grammar-based written tasks. Khejeri et al. (2022) in Kenya analyzed article misuse, while Matovu (2025) in Uganda explored grammatical errors among secondary learners. While these contributions are valuable, they do not address segmental phonology. Furthermore, because these studies rely on written data, they do not capture the types of phonemic errors that arise during spontaneous oral communication.

EA is therefore a suitable system to work through this research because it aligns with the study's objectives: to describe errors using established typologies and majorly one by Landi (2008), and to examine them using phonological explanations grounded in Katamba (1989). Unlike studies using scripted oral reading or written compositions, the present study applies EA to spontaneous online speech, allowing the real structure of learner interlanguage to surface under communicative pressure.

### **2.3 Theoretical Classifications of Phonological Errors**

Understanding phonological errors requires engaging with theoretical perspectives that describe how such errors are categorized and why they occur. While the literature contains various classification systems for phonological deviations, this study adopts Landi's (2008) typology because it provides a clear, adaptable, and comprehensive structure for categorizing phonemic errors in second language spoken data. Other scholars, such as Jaeger (2005), delve into the nature of slips-of-the-tongue and error patterns in natural speech. Jaeger's (2005) work provides a helpful background for understanding the complexity of natural speech errors. According to Jaeger (2005), these slips fall into two key classifications:

Contextual vs. non-contextual errors: Contextual errors emerge from within the utterance itself like when a sound shifts position within a word. Non-contextual errors introduce sound units with no basis in the linguistic context, for example, substituting a sound that isn't present elsewhere in the utterance

Paradigmatic vs. syntagmatic errors: In paradigmatic errors, both the intended unit and the error share properties from the same linguistic category (e.g., two phonemes competing for the same slot). Syntagmatic errors, by contrast, involve disruption of linear order—anticipations, perseverations, exchanges, or telescoping across the speech stream.

Jaeger's classification provides a detailed way to analyze how phonological errors occur in real speech, distinguishing whether they come from planning stages or from interactions between linguistic units during execution. This framework remains highly relevant for error analysis in second-language learning.

## **2.4 Evidence on Phonemic Errors in English as a Second Language**

Phonemic errors have been widely documented across diverse linguistic backgrounds, and global literature consistently demonstrates that learners of English, regardless of first language, experience systematic challenges with certain consonant and vowel categories. These challenges stem from the structural complexity of English phonology, cross-linguistic phonemic mismatches, perceptual limitations, and universal tendencies in speech production. Understanding these global patterns is essential for situating the phonological behavior of Ugandan learners in online task-based environments, because many of the tendencies observed worldwide may manifest similarly in African and Ugandan contexts, even where the linguistic profiles differ.

Research has consistently shown that English consonants which are articulatorily complex or cross-linguistically rare are particularly vulnerable to substitution. The most documented examples involve the English interdental fricatives /θ/ and /ð/. Studies conducted across Europe, Asia, and the Middle East show that learners frequently substitute: /θ/ → /s/ or /t/ and /ð/ → /d/, /z/, or /t/. Moreton (2002) explains these universal tendencies through the lens of markedness theory, arguing that dental fricatives are rare cross-linguistically and thus present both perceptual and articulatory challenges. Derwing and Munro (2015) support this view by demonstrating that many learners cannot reliably perceive the place or manner features of these fricatives, making accurate production significantly more difficult.

Beyond fricatives, learners of English as a second language also struggle with liquids, particularly the /l-/r/ distinction. Iverson & Evans (2019) note that learners whose first languages do not distinguish between these phonemes tend to assimilate them into a single category, resulting in substitutions such as /l/ for /r/ or vice versa. These substitution patterns illustrate the role of phonological categorization, where learners map multiple second language contrasts onto first language categories.

The complexity of the English vowel system poses substantial challenges to learners of English as a second language because many languages have fewer vowel distinctions than English. Guion (2017) and Iverson & Evans (2019) document recurrent substitution patterns across diverse linguistic backgrounds, including: Tense–lax confusions, such as /ɪ/ vs /i:/, where learners often neutralize the contrast by producing a single high front vowel. Mid-vowel substitutions, where /ɛ/ may shift toward /e/ or /ə/, reflecting learners’ difficulty with subtle distinctions in vowel height and tenseness. Diphthong simplification, where learners replace English diphthongs with monophthongs, for example producing /e/ instead of /eɪ/. Moreton (2002) argues that such strategies reflect universal tendencies toward maximally simple syllable shapes.

Compared to global studies, African research on segmental phonology is still emerging. However, some available work provides insights relevant to Ugandan learners. In Tanzania, Mohamed, (2020) conducted an analysis of phonological errors among Kimakunduchi learners of English and found problems with dental fricatives (/θ/ and /ð/), cluster simplification, and vowel substitutions. She concluded that both phonotactic constraints and perceptual limitations contributed to these errors. Similarly, Mramboa, (2022) noted that primary-school learners in Tanzania had persistent difficulties distinguishing short and long vowels, which affected intelligibility.

In Kenya, a phonological-error study among Grade Four learners (Wangui, 2019) found that learners struggled with consonant clusters, final consonants, and English front vowels such as /æ/ and /ɛ/. These challenges were attributed to the phonological structures of local Kenyan languages, which share similarities with many Ugandan languages. Work by Schmied, (2018) on East African English phonology highlights common vowel changes (e.g., raising of /ɛ/, merging of diphthongs) across Kenya, Uganda, and Tanzania. These African and East African studies show that phonemic errors are present and measurable. However, none of them examines phonemic errors in online communicative contexts. This study fills that gap.

## **2.5 Phonological Studies in Uganda**

Ugandan phonological research has largely focused on variety formation, accent profiling, and intelligibility patterns, rather than on the systematic description of phonological errors produced

by learners of English as a second language. Scholars such as Fisher (2000), Meierkord (2016), and Adokorach & Isingoma (2022) have contributed valuable descriptions of Ugandan English, but these studies do not analyze learner phonological errors at segmental level. Instead, they document how Ugandan English has developed as a distinct variety shaped by multilingual linguistic influences, local phonotactic preferences, and sociolinguistic identity.

Fisher (2000) provided one of the earliest detailed examinations of Ugandan English, identifying features such as vowel centralization, reduced diphthongization, and the extension of syllable-timed rhythmic patterns. Fisher's work demonstrates that Ugandan English exhibits structural tendencies that differ from Standard British English, but his work is variety-descriptive rather than error-focused.

Meierkord (2016) expanded this line of inquiry by comparing phonological patterns across new Englishes in East Africa. She found systematic variation in the realization of diphthongs, particularly /eɪ/ and /oo/, which are frequently monophthongised in Ugandan English. Meierkord's analysis also highlights the influence of indigenous languages on English pronunciation, showing that speakers may transfer both segmental and prosodic features into their English speech. However, like Fisher, Meierkord does not classify these as errors but as varietal features of a legitimate local English variety.

More recently, Adokorach & Isingoma (2022) examined pronunciation homogeneity and heterogeneity among Ugandan speakers. Their findings demonstrate that Ugandan English, while showing some shared phonological tendencies (such as the fronting of /u:/ to resemble /ʉ/), is not monolithic. Pronunciation varies depending on regional exposure, educational background, and multilingual repertoire. Their work shows the complexity of Ugandan English phonology but again does not examine the phonological errors at segmental level in learner speech.

A major gap in Uganda-specific literature arises from the lack of research focused on spoken phonemic errors produced during spontaneous communication. Most existing studies draw on scripted oral reading, word lists, or teacher-controlled environments. These methodologies suppress the emergence of natural speech errors.

## **2.6 Task-Based Language Learning (TBL/TBLL)**

Task-Based Language Learning (TBL) represents a shift from traditional, form-focused instruction to meaning-focused, communicative, and learner-driven learning experiences.

Scholars such as Nunan (1989), Willis (1996), and Skehan (1998) define tasks as goal-oriented activities that require learners to use the target language to achieve an outcome. These tasks differ from exercises because they emphasize message over form, compelling learners to draw upon their existing linguistic resources under communicative pressure.

In TBL contexts, learners typically engage in tasks such as describing a picture, narrating a sequence, giving directions, participating in role plays, or collaboratively solving a problem. These tasks are rich in spontaneous speech, making them fertile ground for observing naturalistic phonological behavior. Ellis and Yuan (2004) show that during spontaneous task performance, learners shift their attention away from accuracy and toward fluency and meaning, resulting in increased linguistic risk-taking. This shift often leads to the surfacing of phonemic errors that may not appear in controlled or rehearsed speech.

TBL is particularly relevant in the Ugandan educational context through its alignment with the Competency-Based Curriculum (NCBC). The NCBC explicitly encourages teachers to facilitate learning experiences where students engage in inquiry-based activities, problem-solving tasks, and collaborative communication. Kidega et al. (2023) emphasizes that Ugandan teachers are now expected to employ digital learning platforms and communicative tasks that foreground learner autonomy. In such environments, learners frequently produce unrehearsed speech that provides authentic insight into their phonological development. Munro and Derwing (2011) note that this reduced monitoring facilitates the emergence of “true” phonological patterns, as learners default to the most accessible articulatory forms under pressure. Consequently, TBL provides the methodological foundation for capturing the naturalistic phonemic errors examined in this study.

## **2.7 Online Language Learning**

Online learning has expanded steadily across Uganda. Goodfellow & Lamy (2009) and Blake (2011) outline how online environments support synchronous and asynchronous interaction, allowing learners to speak more freely. Digital spaces also support multimodal meaning-making, which scholars like Kalantzis and Cope (2016) link to higher learner autonomy and creativity.

Although online language learning has been studied globally, African research remains limited. Pierson (2015) explored technology-mediated tasks in Swaziland and reported improved learner participation. In Uganda, curriculum reviews show increasing emphasis on digital learning

(Kidega et al., 2023), but little empirical work has examined actual learner language produced in online contexts. Current global work on online TBLL (Baralt & Morcillo Gómez, 2017; Yu et al., 2024) shows that digital tasks can encourage more spontaneous speech. However, phonemic accuracy within such online tasks has not been investigated in Uganda. Therefore, this study in Uganda is to examine phonemic errors revealed during online TBLL, plugging a clear research gap.

Although a considerable amount of work has been done on English phonology and error analysis both globally and within Africa, the literature shows clear gaps that justify this study. Most error-analysis research in East Africa focuses on written grammar, leaving spoken phonemic errors largely unexamined. Existing African phonological studies reveal that learners struggle with vowels, consonant clusters, and specific English sounds, yet these studies rarely provide a structured classification of such errors or connect them to a broader analytical framework. In Uganda, the available research mainly describes features of Ugandan English as a variety rather than analyzing the actual phonemic errors made by secondary-school learners.

Furthermore, while task-based and online learning have gained prominence under the new curriculum, studies on online task-based language learning to investigate phonemic performance are scanty. This creates a significant gap because online tasks elicit spontaneous speech that exposes genuine challenges. For these reasons, a study that describes and examines the phonemic errors produced by Ugandan learners of English as a Second language in an online task-based environment is necessary. It addresses clear gaps in local and regional scholarship and provides evidence that can inform pronunciation teaching, online learning, and curriculum implementation in Uganda.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter outlines the research methodology used to investigate phonemic errors made by Ugandan secondary school learners of English as a second language in an online task-based

learning environment. It describes the research design, approach, study area, participants, data collection tools and procedures, as well as the methods of data analysis. Ethical, gender, and quality control considerations are also addressed to ensure the credibility and reliability of the research process.

### **3.2 Research design**

In this research, a descriptive design was used to describe the phonemic error phenomenon as it occurred. This design is preferred for this study since it includes a description of language use as naturally as it occurs and therefore helps to maintain the natural setting and authenticity of the data collected in the task-based online setting.

### **3.3 Research approach**

This study adopts a qualitative research approach, given its emphasis on collecting, describing, and examining non-numerical data. Such an approach is particularly suited to this research as it allows participants to produce language in naturalistic settings and express themselves in their own words. This facilitates a deeper understanding of phonemic patterns of language use among L2 learners.

### **3.4 Respondents in the study**

The study involved fifteen Senior Four learners aged between 14 and 17 years as respondents in the task based activity. This is because at this level, students are expected to have acquired considerable exposure to English language. Selecting fifteen participants allowed for enough variation in phonemic realizations to reveal recurring error patterns, while still keeping the data volume practical for detailed IPA transcription and analysis. However, although the study aimed at engaging fifteen respondents, only eight were able to participate fully in the online task and produce complete Zoom recordings. This reduction resulted mainly from practical constraints such as unstable internet connection, and incomplete recordings, which often occur in school-based online activities. While the reduced number narrowed the breadth of speaker representation, it did not compromise the depth or reliability of the findings because the major phonemic error patterns were evident and consistent. To mitigate any potential effect of the smaller sample, the study maintained uniform task instructions for all learners, used a consistent

IPA transcription procedure supported by PhoTransEdit, a transcription software that supports both received pronunciation and General American English and included only full end-to-end recordings. As a result, the eight complete responses still provided sufficient data for meaningful analysis of the phonemic errors made by learners of English as a second language in an online task-based environment.

The participants came from diverse linguistic backgrounds, with the majority being bilingual or multilingual. Most of them spoke a local language as their first language (L1) and used English as a second or additional language (L2). None of the participants were native speakers of English, which made them suitable subjects for analyzing second language (L2) phonemic errors in an online task-based learning context.

### **3.5 Data collection**

#### **3.5.1 The task**

This research employs the task-based learning and teaching approach as a method through which data was collected. The learners were given a task to accomplish under this framework. It is from this task that the primary data was collected. Under this framework, the researcher has particular roles as to the participants as well. The researcher is to (1) select and sequence tasks; (2) prepare learners for tasks; and (3) consciousness-raising (Richards and Rogers, 2001). This means that the researcher chose and designed the task to fit the learners' needs.

#### **3.5.2 The materials**

The materials used in this study were carefully selected to support an online task-based language learning environment and to facilitate the collection of phonological data. Participants accessed the TripAdvisor website using computers in the school's computer laboratory, all of which were connected to the internet. This website was chosen for its interactive and rich travel content. To ensure consistency and reduce variability in task execution, all participants were given a written and verbal instructions before beginning the task. These instructions guided them on how to navigate the website. In addition to the computers, audio recorders were used to capture the participants' spoken responses during the task. This allowed for a detailed phonemic analysis of their speech. Internet connectivity played a central role, not only in providing access to the website but also in enabling the use of Zoom, which was employed as a presentation space.

### **3.5.3 Procedure**

The participants were briefed on the objectives of the research and then the administration consent was obtained. The participants were then directed to the Trip Advisor website and instructed to plan a trip to a destination of their choice, including making a reservation for accommodation or an activity. The learners were required to present the information got from the website orally through an online meeting (zoom) and an audio-visual recording of their presentations was obtained.

### **3.6 Limitations to the study**

This investigation was qualitative in nature and involved a relatively small sample. While the findings offer useful insight into the phonemic development of the participating learners, they cannot be generalized to the wider population of English language learners in Uganda or beyond.

The study relied on technological devices such as audio recorders and computers for data collection. The accuracy and reliability of such devices may be affected by technical malfunction or sound distortion. To minimize this risk, multiple devices were used, and more than one recording of each learner's presentation was obtained and securely stored.

The research focused specifically on segmental errors in English phonology. Grammatical and suprasegmental features such as stress and intonation were excluded. As a result, the findings do not represent all possible challenges faced by learners of English as a Second Language in Uganda.

Finally, artificial intelligence based editing tools were used to support clarity and formatting of written sections of this dissertation. However, all data analysis, interpretation, and academic decisions remain the independent work of the researcher.

### **3.7 Data Analysis**

The researcher carefully listened to the data and identified errors. The errors were then transcribed using the PhoTransEdit software obtained from [www.PhoTransEdit.com](http://www.PhoTransEdit.com) website because it uses the standard IPA symbols, it also outputs texts in Unicode which means that the phonetic symbols can be copied and pasted into a word processor without format loss and importantly, it is easy to access from anywhere since it is web based. The transcribed data is then analyzed and explained. The traditional paper-based error-elicitation and analysis tools were not used. Instead, the transcription and reference process relied on PhoTransEdit, an online IPA application that generates standardized Unicode phonemic transcriptions. This tool was selected because it offers a consistent and replicable basis for analyzing spontaneous learner speech. PhoTransEdit provides target pronunciations based on British English Received Pronunciation (RP), which served as the reference model for this study. Using RP ensured uniformity in evaluating phonemic deviations, as it is widely recognized in linguistic research for its stable and well-documented segmental inventory.

The data collected for this study are the phonemic errors made by learners of English as a second language recorded during online tasks. The recordings are audio visual. The error types are described using Landi's (2008) typology that includes substitution, omission, blend, exchange errors. A qualitative analysis of the error patterns, types and occurrence is done.

### **3.8 Quality Control**

To ensure the quality of the data, several control measures were put in place throughout the study. In terms of validity, which is what an instrument measures and how well it does so. (Ahmed et al. 2021), the study ensured this by clearly defining phonological errors at the segmental level and describing them using Landi's (2008) typology. Target pronunciations were obtained from PhoTransEdit to provide a consistent IPA-based reference point, ensuring that judgments about errors were grounded in an accepted pronunciation model. The use of a meaning-focused online presentation task also enhanced validity because it generated natural, spontaneous speech rather than rehearsed or isolated word lists.

On the other hand, Bolarinwa (2015) defines reliability as the extent to which an experiment, test, or any measuring procedure yields the same result on repeated trials. In terms of reliability, all learners undertook the same online task under uniform instructions, and only full, uninterrupted Zoom recordings were included in the analysis to maintain consistency in the

dataset. The same transcription workflow and IPA conventions were applied across all recordings. Backup recordings were made to minimize the risk of losing speech data due to technological interruptions. These measures helped ensure that the description and examination of phonemic errors were dependable and consistent across the data.

### **3.9 Ethical Considerations**

All participants were fully informed about the purpose of the study, the procedures involved, and their right to withdraw at any time and how the data be used. This research anonymizes the participants and their personal information and the data collected was only accessible to the researcher. This research did not use procedures that could cause harm in any way to the participants.

Participation in this research was completely voluntary and the learners were at liberty to withdraw from the study without any negative consequences.

### **3.10 Gender Considerations**

This research ensures that the study includes a representation of male and female participants and the findings will be generalizable across genders. Gender-neutral language is used in all communication and documentation related to the research.

## **CHAPTER FOUR**

### **PRESENTATION AND DISCUSSION OF FINDINGS**

#### **4.1 INTRODUCTION**

This chapter presents findings on phonemic errors made by learners of English as a second language in Uganda. The chapter includes the errors, their description, and also examines why

and how these errors occur. The description is based on Landi’s (2008) typology of errors, while the explanation is grounded in Katamba’s (1989) phonological explanations.

## 4.2 PHONEMIC ERRORS OF ESL LEARNERS IN UGANDA

This section presents the phonemic errors identified in the learners’ spoken English during the online task-based activities. The errors are categorized using Landi’s (2008) typology of phonological errors. Four main error types were identified in the data, namely substitution, addition, omission, and blend errors. In addition to these established categories, the analysis also revealed a compound phonemic error, where more than one phonemic error occurs within a single lexical item. This category is treated separately in this chapter as the dual phonemic error.

Each error type is presented in its own subsection and illustrated using representative learner examples transcribed in the International Phonetic Alphabet (IPA). The target pronunciations and corresponding learner realizations are displayed in tables, followed by descriptive accounts of how the learner forms differ from the standard pronunciations as given by PhoTransEdit. This organization allows for a clear and systematic presentation of the phonemic errors observed in the data before further explanation in subsequent sections.

### 4.2.1 SUBSTITUTION ERRORS

The data presented shows ways in which learners substitute one or two sounds during the articulation of both vowels and consonants. Specifically, the description is organized into two separate tables to clearly illustrate these phenomena. The first table documents instances where a single phoneme is replaced by another, indicating common substitution errors at the segmental level. The second table captures occurrences where learners simplify more complex sound sequences by replacing two sounds with a single sound.

**Table 1: Single sound substitutions of consonants and vowels**

No.	Phoneme class	English word(s)	Target pronunciation	Learner pronunciation	Substitution
1	Consonants Approximants	Aeroplane	/ˈɛərəpleɪn/  /ɪˈspɛʃəli/	/ˈɛərəpreɪn/ “eropreɪn ”	/l/ → /r/

		especially		/i'speʃəri/ “ispeshari”	
		hotel	/,həʊ'tel/	/'wəʊ'tel/ “wotel”	/w/ ← /h/
		restaurant	/'restɹɒnt/	/'restɒlɒnt/, “restolant”	/r/ → /l/
		arrive	/ə'raɪv/	/ə'laɪv/ “alive”	
		means	/mi:nz/	/mi:lz/ “meels”	/l/ ← /n/
2	Fricatives	thousand	/'θaʊznd/	/'θaʊθand/ “thauthand”	/z/ → /θ/
3	Nasals	climbing	/'klaɪmɪŋ/	/'klaɪbɪŋ/ “claibing”	/m/ → /b/
4	<b>Vowels</b>  Diphthong	prices	/'praɪsɪz/	/'preɪsɪz/ “preessiz”	/aɪ/ → /ɪ/
		itinerary	/aɪ'tɪnərəri/	/ɪ'tɪnərəri/ “eetinereri”	
		hiking	/'haɪkɪŋ/	/'hɪkɪŋ/ “eetinereri,”	
5		observe	/əb'zɜ:v/	/ɒb'zɜ:v/ “obzav”	/ə/ → /o/
6		gems	/dʒɛmz/	/dʒɪmz/ “jimz”	/ɛ/ → /ɪ/
		twelve	/twɛlv/	/twɒlv/ “twolv”	/ɛ/ → /o/
		challenges	/'tʃæləndʒɪz/	/'tʃæləndʒɛz/ “challeng-ez”	/ɪ/ → /ɛ/

Based on Table 1, the approximant substitutions observed in the data involve changes in airflow direction, tongue placement, and, in some cases, voicing, resulting in distinct articulatory

outcomes. In the substitution of l with r, (/l/ → /r/), the target /l/ is a voiced alveolar lateral approximant, articulated with the tongue tip against the alveolar ridge and airflow directed laterally along the sides of the tongue. This is replaced by /r/, a voiced postalveolar central approximant, produced with the tongue slightly retracted and airflow directed centrally along the midline, as in aeroplane /'ɛərəpleɪn/ → /'ɛərəpreɪn/ (“eroprein”) and especially /ɪ'speʃəli/ → /ɪ'speʃəri/ (“ispeshari”).

In the substitution of h for w, (/h/ → /w/), the voiceless glottal fricative /h/, produced at the glottis with turbulent airflow and no supraglottal constriction, is replaced by the voiced labio-velar approximant /w/, articulated with lip rounding and raising of the back of the tongue toward the velum, introducing voicing and shifting the place from glottal to dual labio-velar, as in hotel /,həʊ'tel/ replaced by wotel /'wəʊ'tel/ in learner utterances.

The substitution of r and l, /r/ → /l/, involves replacing the voiced postalveolar central approximant /r/, which allows central airflow with slight tongue retraction, with the voiced alveolar lateral approximant /l/, which directs airflow laterally with the tongue tip at the alveolar ridge, as in restaurant /'restrɒnt/ → /'restɒlɒnt/ (“restolant”) and arrive /ə'raɪv/ → /ə'laɪv/ (“alive”).

Finally, the substitution of n with l, /n/ → /l/, the voiced alveolar nasal /n/, articulated with alveolar closure and nasal airflow via a lowered velum, is replaced by the voiced alveolar lateral approximant /l/, articulated at the same place but with oral lateral airflow and a raised velum, as in means /mi:nz/ → /mi:lz/ (“meels”).

The fricative substitution identified involves a change in both place and manner of articulation features while remaining within the fricative category. In the case of /z/ → /θ/, the target /z/ is a voiced alveolar fricative, produced by positioning the tongue close to the alveolar ridge, creating a narrow constriction that generates turbulent airflow while maintaining voicing. This is replaced by /θ/, a voiceless dental fricative, articulated with the tongue tip placed lightly against the upper teeth, allowing the airstream to pass through the narrow gap to produce turbulence. The substitution results in a shift from alveolar to dental place of articulation, from voiced to voiceless, and a slight adjustment in tongue placement from behind the teeth to between or against them, as observed in thousand /'θaʊzənd/ realised as /'θaʊθənd/ (“thauthand”).

The nasal-to-plosive substitution involves a complete manner change from a resonant sound to an oral stop. In the case of /m/ → /b/, the target /m/ is a voiced bilabial nasal, articulated by bringing both lips together to block the oral cavity while allowing air to pass through the nasal cavity via a lowered velum. The substitute /b/ is a voiced bilabial plosive, produced with the same bilabial closure but with the velum raised to block nasal airflow, releasing the oral closure abruptly to create a burst. This substitution maintains the bilabial place of articulation but eliminates nasal resonance, replacing it with a stop burst. This can be seen in climbing /'klaɪmɪŋ/ realised as /'klaɪbɪŋ/ (“claibing”).

The vowel substitutions observed involve systematic changes in tongue height, tongue advancement, and lip rounding, producing distinct vowel qualities in the learners’ speech. In the substitution /ə/ → /o/, the mid central unrounded vowel /ə/ (schwa), articulated with the tongue in a neutral central position and lips unrounded, is replaced by the mid back rounded vowel /o/, where the tongue is retracted toward the back of the oral cavity and the lips are rounded, as in observe /əb'zɜ:v/ realised as /ɔb'zɜ:v/ (“obzav”).

The substitution /ɛ/ → /i/ involves raising the tongue from the mid front unrounded vowel /ɛ/ to the high front unrounded vowel /i/, while maintaining front placement and unrounded lips, as seen in gems /dʒɛmz/ realised as /dʒɪmz/ (“jimz”).

In /ɛ/ → /o/, the mid front unrounded vowel /ɛ/ is replaced by the mid back rounded vowel /o/, resulting in both retraction of the tongue from front to back and the introduction of lip rounding, as in twelve /twelv/ realised as /twolv/ (“twolv”).

Conversely, the substitution /i/ → /ɛ/ lowers the tongue from the high front unrounded vowel /i/ to the mid front unrounded vowel /ɛ/ while maintaining frontness and unrounded lips, exemplified in challenges /'tʃæləndʒɪz/ realised as /'tʃæləndʒɛz/ (“challeng-ez”). These vowel substitutions collectively illustrate how learners modify tongue height, advancement, and lip configurations, resulting in shifts that significantly alter vowel quality in their spoken English.

The description of diphthong production in the learners’ speech reveals a pattern of substitution in which the target diphthong /aɪ/, a complex vowel characterized by an initial low-front tongue position gliding to a high-front position, is replaced by the high-front monophthong /ɪ/. This reduction is evident in words such as prices /'praɪsɪz/ → “preessiz,” itinerary /aɪ'tɪnərəri/ → “eetinereri,” and hiking /'haɪkɪŋ/ → “hɪkɪŋ.” Phonetically, the substitution involves eliminating

the initial low-front tongue target /a/, shortening the overall duration of the vowel, and producing a centralized, high-front articulation that removes the dynamic glide characteristic of /aɪ/. The error occurs in stressed syllables where the diphthong carries lexical prominence. This monophthongization affects both tongue height and advancement, reduces the temporal and spectral complexity of the vowel.

Learners' speech exhibits phonemic substitutions across approximants, fricatives, nasals, plosives, vowels, and diphthongs, reflecting changes in tongue placement, airflow, voicing, and lip configuration. Frequent approximant substitutions, such as /l/ → /r/ and /r/ → /l/, occur in initial, medial, and final positions (aeroplane → "eroprein," restaurant → "restolant"), while /h/ → /w/ in initial positions (hotel → "wotel") introduces voicing and shifts articulation from glottal to labio-velar, and /n/ → /l/ in final positions (means → "meels") replaces nasal with lateral oral airflow. Less frequent substitutions include /z/ → /θ/ (thousand → "thauthand") and /m/ → /b/ (climbing → "claibing"). Vowel changes involve tongue height, advancement, and lip rounding (/ə/ → /o/, /ɛ/ → /i/, /i/ → /ɛ/, /ɛ/ → /o/), while diphthongs (/aɪ/ → /ɪ/) reduce glide complexity in stressed syllables (prices → "preessiz").

In summary, the substitutions found in the learners' speech show that they are still developing control over English sounds. Many of the changes they make follow clear patterns, where an easier or more familiar sound replaces a more difficult one. Consonant substitutions often involve small shifts in where and how the sound is made, while the vowel changes show that learners adjust tongue and lip positions to produce sounds that feel more comfortable. The reduction of diphthongs into single vowels also shows a move toward simpler pronunciation. These substitution patterns therefore give a clear picture of how the learners are working toward correct English pronunciation.

The consonant substitution patterns observed in this study strongly align with the phonological tendencies described by Katamba (1989) and further confirmed in Derwing and Munro (2015). The frequent alternation between /l/ and /r/ confirms Katamba's observation that liquids are among the most unstable consonants in second-language phonology because they share place of articulation but differ subtly in manner and airflow direction. The substitutions /n/ → /l/ and /m/ → /b/ further reflect what Derwing and Munro (2015) describe as manner instability in resonant consonants under spontaneous speech pressure, where learners replace nasals with oral

consonants that share the same place but differ in airflow control. Similarly, the substitution /z/ → /θ/ supports their claim that voicing contrasts in fricatives are especially vulnerable in real-time speech, requiring precise glottal control that learners often fail to maintain.

The substitution of /h/ with /w/ observed in this study also confirms Katamba's (1989) description of /h/ as a marginal and weakly specified phoneme that lacks strong oral constriction and clear acoustic identity. This explains why learners replace it with a more perceptually salient and structurally anchored approximant such as /w/. Similar patterns of replacing weak consonants with stronger glides are reported in Derwing and Munro (2015), who argue that learners often select sounds with clearer articulatory and auditory structure when target segments are perceptually fragile.

The vowel substitutions observed in this study closely reflect patterns reported in Guion (2017) and Derwing and Munro (2015), particularly the neutralisation of vowel height and central–peripheral contrasts. The systematic shifts /ə/ → /o/, /ɛ/ → /i/, /i/ → /ɛ/ and /ɛ/ → /o/ confirm their observation that learners often rely on broader vowel categories rather than maintaining fine-grained phonemic distinctions, especially in spontaneous speech. The monophthongisation of /aɪ/ → /ɪ/ further confirms Guion's (2017) finding that English diphthongs are highly vulnerable in L2 speech because they require coordinated tongue movement and temporal control. Additionally, Schmied (2018) reports similar diphthong reduction patterns in East African English varieties, and the present study extends this observation by showing that such reductions also operate as learner-level phonemic errors, not only as stable regional pronunciation features.

Taken together, the substitution patterns observed in this study strongly confirm earlier findings by Katamba (1989), Derwing and Munro (2015), Guion (2017), and Schmied (2018) that second-language learners experience persistent instability in liquids, weak consonants, voicing contrasts, vowels, and diphthongs. However, the present study extends this literature by demonstrating that these well-documented substitution tendencies are intensified within an online task-based speaking environment, where learners operate under simultaneous communicative, cognitive, and articulatory pressure. While previous studies describe these errors mainly in classroom or laboratory speech, the current findings show that the same phonological vulnerabilities remain active and dynamically interact during spontaneous digital communication. This confirms that

substitution errors in the learners' speech are phenomena shaped by both phonological structure and real-time speech demands, rather than isolated pronunciation mistakes.

**Table 2: Substitution of two sounds by a single sound**

No.	Complex phoneme	Word	Target pronunciation	Learner pronunciation	Substitution
1	consonant cluster	security	/sɪ'kjʊərɪti/	/sɪ'tʃʊərɪti/ "sichurity"	/kj/ → /tʃ/

In the above table, Table 2, the learner produces a substitution in which the consonant cluster /kj/ in the word security is replaced by the single affricate /tʃ/, resulting in the pronunciation /sɪ'tʃʊərɪti/ ("sichurity"). The original cluster /kj/ is a complex segmental sequence comprising a voiceless velar stop /k/ followed by the palatal glide /j/, which spans two articulatory gestures and contributes to the medial syllable's structure. In contrast, the affricate /tʃ/ is a single phonemic unit that combines a voiceless postalveolar stop with a fricative release, effectively merging the articulatory characteristics of the two-segment cluster into one segment. This replacement modifies the internal structure of the medial syllable by reducing the number of consonantal gestures while maintaining the syllable count of the word. The substitution affects both the timing and coordination of the tongue's movement, resulting in a more compact articulatory execution. Phonetically, the change also alters the manner of articulation, shifting from a sequence of a stop plus glide to an affricate, while retaining palatalization features in a single segment. Overall, the learner's pronunciation demonstrates single-segment substitution.

Based on the data presented in Tables 1 and 2, the substitution errors observed reveal consistent patterns in the phonemic production of Ugandan learners of English as a Second Language. Among consonants, the most affected sounds are approximants, with frequent interchange between the lateral approximant /l/ and the central approximant /r/, as well as substitutions involving the voiced labio-velar approximant /w/ and the voiceless glottal fricative /h/. These substitutions are reciprocal in some cases, indicating persistent variability in articulatory realization. Additional consonant substitutions, including the replacement of the alveolar nasal

/n/ with /l/, the alveolar fricative /z/ with the dental fricative /θ/, and the nasal /m/ with the plosive /b/, further illustrate the systematic modifications in learners' speech. These patterns are consistent with recent findings in L2 phonology, where similar substitution trends are documented among learners whose L1 phonological inventories differ from English (Zhang, L., & Wang, 2023).

Vowel substitutions are similarly systematic, with the mid front unrounded vowel /ɛ/ frequently replaced by both the high front unrounded vowel /i/ and the mid back rounded vowel /o/. Other shifts include the replacement of the high front unrounded vowel /i/ with /ɛ/ and the mid central unrounded vowel /ə/ (schwa) with the mid back rounded vowel /o/. These substitutions reflect consistent alterations in tongue height, advancement, and lip rounding, patterns that align with cross-linguistic vowel substitution tendencies reported by (Huang, 2023).

The simplification of complex phonemes is also evident. Diphthongs such as /aɪ/ are reduced to a single near-high front unrounded vowel /i/, as observed in learner pronunciations of words like “prices,” “itinerary,” and “hiking.” Similarly, consonant clusters like /kj/ are simplified into single affricates such as /tʃ/, exemplified by the substitution in the word “security.” These reductions demonstrate a clear pattern of segmental condensation, reflecting systematic adjustments in articulatory planning.

The substitution errors identified in this study show both points of convergence and divergence with findings from earlier research on second-language phonology. The frequent fluctuation between /l/ and /r/ observed in the learners' speech echoes patterns reported among L2 learners in other contexts, where liquids are consistently described as unstable sounds in interlanguage systems (Derwing & Munro, 2015; Iverson & Evans, 2019). At the vowel level, some of the shifts observed in this study, including changes involving /ɛ/, /i/, and /ə/, resemble the general tendency reported in global studies for learners to simplify tense–lax contrasts and reduce vowel distinctions (Moreton, 2002; Guion, 2017).

However, the specific combinations of substitutions observed in this study such as /ɛ/ → /o/, /z/ → /θ/, and /m/ → /b/ are less frequently documented in both global and East African literature. While studies in Tanzania and Kenya report persistent difficulties with front vowels, consonant clusters, and English diphthongs (Mohamed, 2020; Wangui, 2019), the present study reveals additional substitution patterns that emerge specifically within an online task-based speaking

environment, a context that is largely absent from existing regional research. Furthermore, while Schmied (2018) describes vowel and diphthong changes as features of emerging East African English varieties, the current findings demonstrate that similar patterns also operate at the learner-error level, under spontaneous online communicative pressure.

Overall, the substitution errors documented in this study highlight the phonemic challenges faced by learners of English as a second language in Uganda. They affect not only individual phonemes but also more complex phonemic sequences, including clusters and diphthongs, providing a detailed account of the learners' phonological variability. Comparisons with recent literature suggest that these patterns are not isolated but resonate with cross-linguistic phonological trends observed in other L2 learning contexts, thereby reinforcing the relevance of these findings for understanding L2 phonology. These substitution patterns reveal the phonemic challenges faced by learners as they navigate the articulatory demands of English phonemes. The examples provided not only highlight the nature of these errors but also demonstrate the specific articulatory adjustments made in their effort to achieve fluency.

#### 4.2.2 ADDITION ERRORS

In this study, addition errors appear consistently in learners' oral production, affecting both vowel and consonant segments. These additions modify the original syllable structure by creating extra syllables, altering consonant clusters, or introducing new syllable onsets. The patterns of addition are classified according to the type of sound added, its articulatory properties, and the resulting learner pronunciation. Table 3, provides an overview of the additions, showing the added sounds, their manner and place of articulation, and the modified learner forms with corresponding glosses.

**Table 3: Additions of consonants and vowels**

No	Phoneme class	Sound Added	Manner of Articulation	Word	Target Pronunciation	Learner Pronunciation
1.	Vowels Unrounded	/i/	High front vowel	transport	/træns'pɔ:t/	/træns'pɔ:ti/ "transporti"
				airport	/'ɛəpɔ:t/	/'ɛəpɔ:ti/ "airporti"
				present	/pri'zɛnt/	/pɔri'zɛnti/ "purizenti"
		/a/	Low front vowel	thousand	/'θaʊznd/	/'θaʊθand/ "thauthand"
				and	/ænd/	/ænda/ "anda"
				marvellous	/'mɑ:vləs/	/'mɑrə:vələs/ "maravlous"
		/e/	Mid front vowel	authentic	/ɔ:'θɛntɪk/	/ɔ:'θ,ɔnetɪk/ "othonetik"
2.	Rounded	/u/	High back vowel	present	/pri'zɛnt/	/pɔri'zɛnti/ "purizenti"
		/o/	Mid back vowel	restaurant	/'restrɒnt/	/'restɒlɒnt/ "restolant"

				sparkling	/ˈspɑ:kɪŋ/	/ˈspɑ:kɔɪŋ/ “sparkoling”
3.	<b>Consonants</b> Approximant	/j/ /r/	Palatal glide Alveolar	there  marvellous	/ðeə/  /ˈmɑ:vləs/	/ðejə/ "theya" /ˈmɑræ:vləs/ “maravlous”
4.	Fricative	/h/	Glottal fricative	ours	/ˈaʊəz/	/ˈhaʊəz/ "hawaz"

In the data provided in Table 3, several vowel additions are observed in the production of words by the learners. For the high front unrounded vowel /i/, words such as transport /trænsˈpɔ:t/, airport /ˈɛəpɔ:t/, and present /prɪˈzɛnt/ show the addition of /i/ at the end of the words. These additions result in the creation of an additional syllable, producing forms like /trænsˈpɔ:ti/ (“transporti”), /ˈɛəpɔ:ti/ (“airporti”), and /pʊrɪˈzɛnti/ (“purizenti”).

The final consonant clusters are modified into open syllables, and each word’s syllable count is increased by one. For the low front vowel /a/, words such as thousand /ˈθaʊznd/, and /ænd/, and marvellous /ˈmɑ:vləs/ display vowel additions either within medial consonant clusters or at the word-final position. In thousand, the vowel /a/ appears within the cluster, creating /ˈθaʊθænd/ (“thauthand”), which splits the original cluster into two syllables. In and, the final /a/ generates an additional syllable, resulting in /ænda/ (“anda”). In marvellous, medial insertions of /a/ modify the consonant sequence, producing /ˈmɑræ:vləs/ (“maravlous”), which again increases the number of syllables.

In the case of the mid front vowel /e/, the word authentic /ɔ:ˈθɛntɪk/ exhibits addition within the medial consonant cluster, yielding /ɔ:ˈθɔnetɪk/ (“othonetik”). This addition breaks up the original cluster, creating a new syllable in the medial position.

For rounded vowels, the high back vowel /u/ is observed in the word present /prɪˈzɛnt/. Learners add /u/ in the word present to ake /pʊrɪˈzɛnti/ (“purizenti”). This insertion occurs word-medially, immediately before the stressed syllable, and creates an additional syllable. The final consonant

cluster is modified into an open syllable, increasing the overall syllable count of the word. For the mid back vowel /o/, words such as *restaurant* /'restrɒnt/ and *sparkling* /'spɑ:kliŋ/ show similar addition patterns. In *restaurant*, /o/ is inserted into the medial cluster, yielding /'restolɒnt/ (“restolant”), thereby breaking up the original consonant sequence and forming a new syllable. In *sparkling*, the mid back vowel is inserted before the final cluster, producing /'spɑ:kolɪŋ/ (“sparkoling”), which also creates an additional syllable. In both cases, the original consonant clusters are split by the inserted vowel, and the syllable structure of the words is expanded.

For consonants and in particular approximants, the palatal glide /j/ is observed in the learner production of the word *there* /ðeə/. In the modified form /ðejə/ (“theya”), the palatal glide is inserted immediately after the mid front vowel /eə/, creating an additional syllable. This insertion changes the original syllable from a single nucleus /eə/ into a sequence of two syllables /e.jə/, effectively splitting the diphthong and adding a medial consonantal onset to the newly formed syllable. For fricatives, the glottal fricative /h/ is observed in the word *ours* /'aʊəz/. In the learner-produced form /'haʊəz/ (“hawaz”), /h/ is added at the word-initial position, creating a new onset for the first syllable. This insertion adds an extra segment at the beginning of the word, thereby increasing the overall phoneme count and changing the original syllable onset from null to /h/.

The data on vowel and consonant additions in learner speech reveal a pattern of syllable expansion and segmental modification across different word positions. Among vowels, the high front unrounded /i/ occurs frequently in word-final positions, as seen in *transport* /træns'pɔ:t/ → /træns'pɔ:ti/ (“transporti”), *airport* /'eəpɔ:t/ → /'eəpɔ:ti/ (“airporti”), and *present* /pri'zent/ → /pori'zenti/ (“purizenti”), resulting in an additional syllable and the conversion of final consonant clusters into open syllables. Low front /a/ additions appear in words such as *thousand* /'θaʊznd/ → /'θaʊθaŋd/ (“thauthand”), and *and* /ænd/ → /ænda/ (“anda”), and *marvellous* /'mɑ:vləs/ → /'mɑ:ræ:vələs/ (“maravulous”), with vowels appearing either within medial consonant clusters or at word-final positions, splitting clusters and increasing syllable count. The frequency of high front /i/ and low front /a/ additions is particularly notable, while medial and word-initial consonant additions occur as well in their respective positions. These observations align with the work of Al-Abdullah and Almutairi (2024), which documents similar patterns of vowel epenthesis and syllable expansion in learner speech.

Mid front /e/ insertion occurs in authentic /ɔ:'θentɪk/ → /ɔ:'θɔnetɪk/ (“othonetik”), where the vowel breaks up a medial consonant cluster to create an additional syllable. Rounded vowels show similar patterns: high back /u/ appears in present /prɪ'zent/ → /pʊrɪ'zenti/ (“purizenti”), inserted word-medially before the stressed syllable, and mid back /o/ occurs in restaurant /'restɹɒnt/ → /'restɔlɒnt/ (“restolant”) and sparkling /'spɑ:kɪŋ/ → /'spɑ:kɔɫɪŋ/ (“sparkoling”), both breaking up medial consonant clusters to form new syllables.

Consonant additions are also evident, with the palatal glide /j/ appearing in there /ðeə/ → /ðejə/ (“theya”), creating a medial syllable and splitting the original diphthong nucleus, and the glottal fricative /h/ being inserted word-initially in ours /'aʊəz/ → /'hɑʊəz/ (“hawaz”), producing a new onset and increasing the segmental count. Across the dataset, vowel and consonant additions consistently result in syllable creation, modification of consonant clusters, and increased phonemic complexity. Overall, the dataset demonstrates a clear, use of both vowel and consonant additions that affect syllable structure, segmental sequences, and the overall phonotactic profile of the words produced.

### 4.2.3 OMISSION ERRORS

Omission errors emerge as a frequent pattern in the speech of the learners analyzed in this study. The dataset provides a detailed account of these errors in learners' oral production of English, encompassing vowels, consonants, syllabic consonants, and diphthongs. The errors are categorized according to phoneme class, the specific sound omitted, its manner of articulation, the target word pronunciation, and the form produced by the learner. Vowel omissions are recorded across unrounded and rounded vowels of different heights and positions, while consonant omissions are documented across various manners of articulation, including fricatives, stops, nasals, approximants, and syllabic consonants. Diphthong omissions are also included, offering a comprehensive view of segmental reduction in learner speech. This structured compilation allows for systematic analysis of omission patterns across phonemic categories and syllable structures.

**Table 4: Omissions of vowels and consonants**

No.	Phoneme class	Sound Omitted	Manner of Articulation	Word	Target Pronunciation	Learner Pronunciation
1.	<b>Vowels</b>	/i/	High front vowel	going	/'gəʊŋ/	/'gəʊŋ/ “gong”
	Unrounded			activities	/æk'tɪvətɪz/	/æk'tɪvtɪz/ “activtiz”
				destination	/,dɛstɪ'neɪʃn/	/,dɛstneɪʃn/ “destination”
				detailed	/'di:tɛɪld/	/'di:tɛld/ “diteld”
				city	/'sɪti/	/'sɪt/ “sit”
				ninety	/'nɑntɪ/	/'nɑnt/ “ninet”
				seventy	/'sevntɪ/	/'sevnt/ “sevent”
				very	/'vɛri/	/'vɛr/ “ver”
				thirty	/'θɜ:tɪ/	/'θɜ:t/ “that”
				twenty	/'twɛntɪ/	/'twɛnt/ “twent”
	forty	/'fɔ:tɪ/	/'fɔ:t/ “fot”			

2.	Rounded	/a/	Low front vowel	according about	/ə'kɔ:diŋ/ /ə'baʊt/	/'kɔ:diŋ/ "cording" /'baʊt/ "bout"
		/u/	High back vowel	education	/,ɛdʒʊ'keɪʃn/	/,ɛd'keɪʃn/ "edkation"
3.	<b>Consonants</b> Fricatives	/f/	Voiceless labiodental	fifteen	/,fɪf'ti:n/	/'fi'ti:n/ "fiteen"
4.	Stops	/t/	Voiceless alveolar stop	that next	/ðæt/ /nekst/	/ðæ/ "tha" /neks/ "neks"
5.	Nasals	/m/	Bilabial nasal	premium	/'pri:mɪəm/	/'pri:mɪə/ "primiya"
6.	Approximant	/l/	Alveolar lateral	place cold will	/'pleɪs/ /kəʊld/ /wɪl/	/'peɪs/ "pace" /kəʊd/ "code" /wʊ/ "woo"
7.	<b>Syllabic consonants</b>	/əl/	Syllabic consonant	international	/,ɪntə'næʃnəl/	/,ɪntə'næʃn/ "internation"
		/əl/	Syllabic consonant cluster	caramelized	/'kerəməlaɪzd/	/'kerəmaɪzd/ "caramized"
8.	<b>Diphthong</b>	/ai/	diphthong	itinerary	aɪ'tɪnərəri/	ɪ'tɪnərəri/ "itinerary"
				I	/'aɪ/	/'a/ "a"

The omitted errors identified in the data in Table 4 reveal patterns across both vowel and consonant phonemes, with certain sounds proving more susceptible to deletion due to their phonetic properties and positional occurrence. Among the vowels, the high front unrounded vowel /i/ emerged as the most frequently omitted sound. This vowel, articulated with the tongue raised towards the hard palate and without lip rounding, is often deleted in medial and final unstressed syllables, as seen in going /'gəʊɪŋ/ realised as /'gəʊŋ/ ("gong") and activities /æk'tɪvətɪz/ produced as /æk'tɪvtɪz/ ("activtiz"). Similar omissions occur in destination, very, and forty, where /i/ reduction leads to syllable loss. The low front vowel /a/, produced with the tongue low and lips unrounded, is also omitted, particularly in unstressed syllables at the

beginning of words, as in according /ə'kɔ:dɪŋ/ → /'kɔ:dɪŋ/ (“cording”) and about /ə'baʊt/ → /'baʊt/ (“bout”). The high back rounded vowel /u/, articulated with the tongue close to the velum and rounded lips, is deleted in medial weak syllables, as in education /,ɛdʒʊ'keɪʃn/ → /,ɛd'keɪʃn/ (“edkation”). In all these cases, the vowels occur in weak positions, making them vulnerable to omission during rapid or simplified speech.

Consonant omissions also show consistent patterns. The voiceless labiodental fricative /f/, produced by bringing the lower lip into contact with the upper teeth, is omitted in medial clusters, as in fifteen /,fɪf'ti:n/ → /,fi'ti:n/ (“fiteen”). The voiceless alveolar stop /t/, articulated with complete closure at the alveolar ridge, is dropped in final or cluster positions, as in that /ðæt/ → /ðæ/ (“tha”) and next /nekst/ → /neks/ (“neks”). The bilabial nasal /m/, produced with both lips closed and air passing through the nasal cavity, is omitted in final syllables, as in premium /'pri:mɪəm/ → /'pri:mɪə/ (“primiya”). The alveolar lateral approximant /l/, articulated with the tongue tip touching the alveolar ridge and air flowing along the sides of the tongue, is also dropped in coda position, as in place /'pleɪs/ → /'peɪs/ (“pace”), cold /kəʊld/ → /kəʊd/ (“code”), and will /wɪl/ → /wʊ/ (“woo”). Syllabic consonants such as /əl/ and /əl/ are also omitted, resulting in reduced syllable counts, as in international /,ɪntə'næʃnəl/ → /,ɪntə'næʃn/ (“internation”) and caramelized /'kerəməlaɪzd/ → /'kerəmaɪzd/ (“caramized”). These structures are relatively rare cross-linguistically and may be reanalysed by learners as deletable elements.

Diphthong omission was also observed, particularly with /aɪ/, which involves a gliding movement from the low central vowel /a/ to the high front vowel /ɪ/. Learners often simplified this diphthong to a monophthong, omitting the glide entirely, as in itinerary /aɪ'tɪnəri/ → /ɪ'tɪnəri/ (“itinerary”) and I /'aɪ/ → /'a/. Overall, the data indicate that omission errors are more likely in unstressed syllables, complex consonant clusters, syllabic consonants, and diphthongs; contexts which demand higher articulatory precision.

The vowel and consonant omission patterns observed in this study align with, but also extend, findings from earlier research on second-language phonology. The frequent deletion of the high front vowel /i/ in unstressed syllables, as seen in forms such as going → “gong” and activities → “activtiz”, reflects a widely reported tendency for learners to reduce or delete vowels in weak syllables. Similar patterns of vowel reduction and deletion have been documented in global L2 studies, where unstressed vowels are shown to be especially vulnerable in spontaneous speech

(Derwing & Munro, 2015; Guion, 2017). Moreton (2002) also notes that learners often simplify syllable structure by eliminating weak vowels in order to ease articulatory effort.

The omission of the low front vowel /a/ in according → “cording” and about → “bout” corresponds with findings from East African studies which show that learners frequently drop initial unstressed vowels, especially schwa and low vowels (Mohamed, 2020; Wangui, 2019). These scholars attribute such patterns to the instability of weak syllables in fast or informal speech. Similarly, the deletion of the high back vowel /u/ in education → “edkation” reflects a process of medial vowel loss that has also been reported among Tanzanian learners of English (Mramboa & Ligembe, 2022), especially in longer polysyllabic words.

At the consonant level, the omission of sounds such as /f/ in fifteen → “fiteen”, /t/ in that → “tha” and next → “neks”, as well as /l/ in place → “pace” and cold → “code”, mirrors earlier findings that word-final and cluster-related consonants are particularly prone to deletion among ESL learners (Schmied, 2018; Mohamed, 2020). These studies show that learners often avoid complex word endings by removing one segment of the cluster. However, the present study further shows that such omissions also affect syllabic consonants, as seen in international → “internation” and caramelized → “caramized”, a pattern that is less frequently emphasized in previous regional studies.

The omission of the diphthong /ai/ in itinerary and even in the isolated pronoun I → “a” also adds an important dimension to existing literature, since most previous studies focus more on diphthong substitution than full diphthong deletion. This suggests that in online, spontaneous task-based speech, learners may apply stronger reduction strategies than those reported in classroom-based studies. Overall, while many of the omission patterns observed in this study confirm findings from earlier global and East African research, the range of vowel, consonant, and syllabic deletions documented here highlights the added phonological pressure created by real-time online speaking tasks.

#### **4.2.4 BLEND ERRORS**

This section explores blend errors, a distinct phonemic error type observed among the learners of English in the context of this study. Blend errors occur when two or more words are merged through the deletion of one or more phonemes, resulting in a modified, often compressed word

form. These errors are not merely accidental or momentary slips, but instead indicate consistent phonological patterns shaped by learners' attempts to improve fluency and articulation ease often at the cost of segmental accuracy. Such errors are especially evident in contexts involving high-frequency collocations or function word sequences.

Table 5 presents representative instances of blend errors identified in the data. Each example shows the words involved, their original target pronunciations, the specific sound(s) deleted during blending, and the resulting blended form produced by the learner. The table therefore provides a clear phonemic record of how connected speech processes operate in the learners' spoken output across different grammatical and lexical environments.

**Table 5: Blends involving different utterances**

No.	Words Involved	Original Pronunciation(s)	Sound(s) Deleted	Blend Formed	Word
1	number + of	/ˈnʌmbər/ + /ɒv/	/ər/	/ˈnʌmbɒv/	
2	will + be	/wɪl/ + /bi/	/l/	/w bi/	
3	two + hundred	/ˌtuː/ + /hʌndrəd/	/u/, /h/	/ˌtʰwʌndrəd/	
4	way + of	/ˈweɪ/ + /ɒv/	/eɪ/	/ˈw ɒv/	
5	in + the + morning	/ɪn/ + /ðə/ + /ˈmɔːnɪŋ/	/ð/	/ɪn ə ˈmɔːnɪŋ/	
6	it has	/ɪt hæz/	/h/	/ɪtæz/	
7	in + the	/ɪn/ + /ðə/	/ð/	/ɪnə/	
8	I + will	/aɪ/ + /wɪl/	/ɪ/	/ˈawu/	

The blend errors identified in the data involve the merging of two or more words into a single, altered form through the deletion of one or more sounds. The resulting forms compress the original sequence, altering its syllable structure and reducing segmental content. In ‘number of’, the deletion of the unstressed syllable-final /ər/ from number yields the blend /ˈnʌmbɒv/, with the following preposition attaching directly to the preceding bilabial consonant.

Similarly, in ‘will be’, the loss of the final /l/ from will produces /w bi/, creating a reduced and less distinct boundary between the two words. In ‘two hundred’, two deletions occur: the vowel /u/ from two and the initial /h/ of hundred. These omissions collapse the phrase into /,t'wʌndrəd/, with the velarized /w/ now directly preceding the stressed syllable of hundred. The phrase ‘way of’ exhibits the deletion of the diphthong /eɪ/, resulting in /'w ɒv/, which both shortens and alters the expression.

For ‘in the morning’, the initial dental fricative /ð/ of ‘the’ is removed, yielding /ɪn ə 'mɔ:nɪŋ/ and producing a smoother but less articulated transition. A similar process is seen in ‘it has’, where the initial /h/ of has is deleted, resulting in /'ɪtæz/, and in ‘in the’, where the same /ð/ deletion produces /ɪnə/. Then in ‘I will’, the vowel /ɪ/ from will is omitted, producing the form /'awu/, which fuses the pronoun and auxiliary into a single, shortened unit.

The blend errors observed in this study show both overlap and contrast with findings from earlier second-language phonology research. Derwing and Munro (2015) note that second-language speakers often apply connected-speech reductions inconsistently, sometimes deleting segments in ways that go beyond native-speaker patterns. This tendency is clearly reflected in the present data, where learners delete sounds at word boundaries in sequences such as in the → /ɪnə/ and it has → /ɪtæz/.

Regionally, Mohamed (2020) reports that Tanzanian learners of English frequently over-reduce vowels and consonants in fast speech, leading to compressed forms that weaken word boundaries. Wangui (2019) similarly observes excessive boundary weakening among Kenyan learners, especially in auxiliary and prepositional phrases. These patterns closely resemble the blend formations found in the present study, particularly in phrases such as number of, will be, and two hundred.

These forms reflect a process of phonetic reduction through segment deletion at word boundaries, resulting in blended structures that differ from the canonical forms in both segmental composition and syllable patterning. However, in this study these reductions are counted as blend errors rather than ordinary speech simplification because they occur outside English’s licensed reduction environments and therefore extend beyond what native connected-speech patterns typically allow. In addition, the resulting merged forms compromise lexical integrity by collapsing word boundaries in ways that obscure the identity of the original items, making them

qualitatively different from normal fluent-speech reductions, which preserve recognisability. This loss of boundary clarity and disruption of lexical form justifies treating them as blend errors within this framework

#### **4.2.5 THE DUAL PHONEMIC ERROR**

While Landi's (2008) typology has been instrumental in describing phonemic errors among learners of English as a second language, the present study uncovered a recurring phenomenon that falls outside her established categories. This newly observed pattern, referred to here as the Dual Phonemic Error, is characterized by the simultaneous occurrence of two distinct processes: substitution and omission within an utterance. In Landi's framework, substitution and omission are treated as separate, mutually exclusive categories, with each error type analyzed in isolation. However, the data from this study revealed clear instances where these processes overlapped within the same utterance, forming a single, dual event.

The most illustrative example of this phenomenon was found in the recurrent mispronunciation of the high-frequency auxiliary **will**. Across multiple instances and by a notable number of participants, the high front unrounded vowel /ɪ/ was replaced with the high back rounded vowel /u:/, producing a vowel substitution. At the same time, the final lateral approximant /l/ was omitted, eliminating the final consonant from the word. This resulted in the production [wu:], a form that diverges from the target both in vowel quality and consonant presence.

This dual error, vowel substitution combined with consonant omission, was not an isolated or accidental slip, but a patterned occurrence observed in different speakers and speech contexts. Its recurrence in a high-frequency function word shows its prominence as a distinct error type worthy of separate categorization. By capturing both processes within a single label, the term Dual Phonemic Error provides a more precise analytical tool for describing multi-layered phonemic modifications that existing typologies, such as Landi's, do not explicitly address.

### **4.3 FACTORS FOR THE OCCURRENCE OF PHONEMIC ERRORS**

#### **4.3.1 INTRODUCTION**

This section undertakes an examination of the phonemic errors identified in the learners' spontaneous online task-based speech. The discussion is guided by Katamba's (1989) explanation, which provides a framework for understanding how articulatory and perceptual factors shape learner production. The examination explores how phonetic and phonological patterns such as place and manner of articulation, vowel height and backness, voicing contrasts, and articulatory ease contribute to the deviations observed in the dataset. Through this approach, the study seeks to account for the underlying mechanisms that influence learner production rather than merely describing surface-level errors.

In presenting the findings, the discussion is organized around three primary factors that explain why these phonemic errors occurred. First, the most pervasive cause is simplification, where learners modify syllable structures, clusters, or individual phonemes to reduce articulatory effort. Second, the analysis considers coarticulatory anticipation, which arises when upcoming sounds influence the realization of preceding segments during rapid, spontaneous speech. Third, the discussion addresses perceptual underspecification, where learners' limited discrimination of certain phonemic contrasts leads to stable substitution patterns. By framing the discussion around these three explanatory sources, the analysis provides a coherent and principled account of how and why these phonemic errors emerged in the learners' interlanguage.

### **4.3.2 SIMPLIFICATION**

Phonological simplification serves as a fundamental underlying factor influencing a wide range of phonemic errors observed among the learners of English as a second language in this study. These processes reflect learners' efforts to reduce the articulatory demands involved in producing 'complex' sound sequences. The majority of substitution errors can be attributed to simplification strategies, where learners replace unfamiliar or difficult sounds with phonetically or articulatorily simpler alternatives within their existing sound inventories. Beyond substitutions, simplification also manifests through omission errors, in which learners systematically delete phonemes especially unstressed vowels, consonants in coda positions, or sounds requiring intricate articulatory gestures to ease speech production. Similarly, addition errors often arise when learners insert sounds, such as epenthetic vowels, to break up complex clusters or syllable structures that are challenging to articulate. Blend errors further exemplify phonemic simplification as learners merge adjacent words by omitting or altering sounds to

produce smoother, more fluent utterances. Collectively, these error types show a tendency among learners to streamline speech by minimizing phonological complexity. This simplification is a means the learners use to achieve fluency. The different ways and environments in which the learners made errors through simplification are as follows;

#### **4.3.2.1 Substitution for Simplification**

##### **Substitution of the nasal bilabial /m/ for the voiced bilabial plosive /b/**

This substitution occurs in the word climbing /'klaɪmɪŋ / to make / 'klar'biŋ. This substitution replaces the nasal bilabial consonant /m/ with the voiced bilabial plosive /b/. Both segments share produced at the same place of articulation, meaning they are produced with both lips. However, they differ in manner: /m/ is a nasal, which involves airflow through the nasal cavity due to the lowered velum, while /b/ is a stop, produced by completely blocking and then releasing oral airflow.

The production of /m/ requires simultaneous closure of the oral cavity and the opening of the nasal passage via velum lowering. According to Katamba (1989), nasals involve the coordinated activity of the velum and oral articulators, which makes them more complex in terms of timing than stops. On the other hand, plosives like /b/ involve a straightforward closure and release mechanism. Therefore, this substitution may reflect difficulty in coordinating the lowering of the velum while maintaining bilabial closure. When this coordination fails, the learner may default to an oral closure alone, resulting in a plosive rather than a nasal. As Katamba explains (p. 25), such articulatory timing errors can lead to segmental substitutions where manner features are misrepresented.

### **Substitution of the voiced alveolar approximant /r/ for the voiced alveolar lateral approximant /l/**

This substitution occurs in the words / 'restrɒnt / and / ə'raɪv / to make / 'restɒlɒnt/ and /ə'lɑɪv/ respectively. This substitution entails the replacement of /r/, a voiced alveolar approximant, with /l/, a voiced alveolar lateral approximant. While both /r/ and /l/ are classified as liquids, they differ in articulatory manner. The sound /r/ is produced by positioning the tongue close to the alveolar ridge without touching it, creating an approximant with minimal obstruction of airflow. In contrast, /l/ is articulated by raising the tongue tip to make firm contact with the alveolar ridge while allowing air to flow along the sides of the tongue, giving it a lateral quality.

Katamba (1989) discusses how consonants that share similar articulatory zones such as /l/ and /r/ at the alveolar place can be prone to confusion when learners have difficulty coordinating the manner dimension. The substitution of /r/ for /l/ here suggests a reduction in featural complexity, with the learner treating both consonants as part of a unified category, possibly approximants at the alveolar ridge, and failing to preserve the lateral versus central airflow distinction. Also, the /r/ sound is considered articulatorily complex, partly because it lacks a stable contact point and may involve retroflexion of the tongue, depending on dialectal variation. Katamba (1989) explains that such segments demand more refined lingual movement and precise control of tongue tension and posture. The learner, therefore, may find it more accessible to substitute this sound with /l/, which has a more predictable point of articulation at the alveolar ridge. In this sense, the error reflects a phonological simplification strategy, whereby a segment requiring fine motor control is replaced with one involving more stable and consistent articulation.

Similar /r/–/l/ substitution patterns have been widely reported in second-language phonology research. Derwing and Munro (2015) identify liquid consonants as among the most persistently unstable sounds in L2 speech due to their fine articulatory demands. Iverson and Evans (2019) likewise observe that learners frequently collapse /r/ and /l/ into a single category when their perceptual and motor control of the contrast is still developing

### **Substitution of the diphthong /aɪ/ for the high front lax vowel /ɪ/**

This substitution occurs in the words / 'praɪsɪz /, /aɪ'tnərəri/, / 'haɪkɪŋ / to make / 'prɪsɪz /, /ɪtnərəri/, and / 'hɪkɪŋ / respectively. This substitution involves replacing the diphthong /aɪ/ with the monophthong /ɪ/, leading to a simplified vocalic structure. The diphthong /aɪ/ is articulated with a smooth glide that starts with a low central tongue position and rises to a high front position. In contrast, /ɪ/ is produced with a stationary high front tongue position and is much less dynamic. Producing /aɪ/ requires a coordinated movement, transitioning from a relatively open mouth posture to a more closed one. By substituting /aɪ/ for /ɪ/, the learner eliminates the complexity associated with the glide, favoring a static and articulatorily simpler vowel.

This process can be referred to as diphthong reduction. The learner achieves this by producing a single vowel rather than executing the glide movement that characterizes a diphthong. Such substitutions are consistent with phonological processes that reduce syllabic complexity and are discussed by Katamba (1989) as part of broader articulatory simplification tendencies. Structurally, this substitution may be a case of syllable simplification

Diphthong reduction of this kind is widely reported in second-language phonology. Derwing and Munro (2015) note that learners frequently simplify English diphthongs into short vowels during spontaneous speech, especially under fluency pressure. Guion (2017) likewise reports that English diphthongs such as /aɪ/ are particularly vulnerable to monophthongisation in L2 speech due to their dynamic articulatory demands. Regionally, Schmied (2018) also documents reduced diphthongisation across East African varieties of English. The present findings therefore support both global and regional evidence that /aɪ/ is commonly reduced to a simpler vowel in second-language pronunciation.

### **Substitution of the consonant–glide sequence /kj/ for the voiceless postalveolar affricate /tʃ/**

This substitution occurs in the word /sɪ'kjʊəri/ to make /sɪ'tʃʊəri/. This reflects a phonological restructuring in which a consonant–glide sequence is replaced by a postalveolar affricate. This error likely arises from the learner's misinterpretation of the coarticulated glide /j/ following the voiceless velar stop /k/, resulting in the production of a single affricate /tʃ/ instead of the intended consonant-glide sequence. Phonetically, /kj/ involves two distinct articulatory gestures: a velar closure followed by a palatal glide, which requires precise timing and coordination. For learners

who are still acquiring such complex articulatory sequences, particularly those not common in their phonological inventory, there is a tendency to simplify the sequence into a more familiar or perceptually salient segment such as /tʃ/, which shares acoustic and articulatory characteristics with /kj/. Both /kj/ and /tʃ/ involve high-frequency energy and palatal-like articulation, but /tʃ/ is produced with a single, compressed motion rather than a sequential articulation, making it easier to produce fluently.

In wider second-language research, Derwing and Munro (2015) report that learners frequently collapse multi-segment clusters into single consonants during spontaneous speech, especially where the cluster involves palatal or glide elements. Regionally, Wangui (2019) and Mohamed (2020) both document similar cluster simplification strategies among Kenyan and Tanzanian learners of English, where learners reduce complex consonant groupings into single, more stable segments. Although these studies mainly focus on final and medial clusters, the present study extends this pattern to consonant–glide sequences in online spoken English.

The substitution of /kj/ with /tʃ/ in this study therefore reflects a broader tendency toward segmental compression and articulatory economy, while also highlighting how learners restructure unfamiliar coarticulated sequences into perceptually prominent and easier-to-produce affricates during real-time online communication.

### **Substitution of the high front lax vowel /ɪ/ for the mid front lax vowel /ɛ/**

The substitution occurs in the word / 'tʃæləndʒɪz / to make / 'tʃæləndʒɛz /. This substitution involves a vowel height adjustment, where the high front lax vowel /ɪ/ is replaced with the mid front lax vowel /ɛ/. Both vowels are unrounded and fronted in the vowel space, but they differ in tongue height: /ɪ/ is produced with the tongue closer to the hard palate, while /ɛ/ involves a slightly lower tongue position. This substitution could also reflect articulatory effort regulation. In a polysyllabic word like *challenges*, the final syllable may be produced with less articulatory energy. If the learner perceives the unstressed final syllable as requiring less phonetic precision, they may substitute a more “neutral” mid vowel like /ɛ/ instead of maintaining the higher /ɪ/, even though /ɪ/ is expected for native-like pronunciation.

These substitution errors among the learners commonly emerge as strategic simplifications to reduce the articulatory demands of producing complex or unfamiliar speech sounds. Learners

frequently replace sounds that require intricate tongue gestures, coordinated airflow, or dynamic vocalic transitions with phonetically similar but articulatorily simpler alternatives (Trofimovich & Baker Smemoe, 2006). Such substitutions often occur between sounds sharing the same place of articulation but differing in manner or complexity, reflecting a universal tendency to optimize ease of production while maintaining intelligibility (Setter, 2017). For instance, nasals requiring simultaneous oral closure and velum lowering are often replaced by oral stops, while liquids with complex tongue shaping, such as /r/, may be substituted by laterals like /l/. Similarly, diphthongs with their dynamic gliding articulations are frequently simplified into monophthongs to ease motor planning (Munro, 2011). Complex consonant clusters or sequences may be reduced to simpler affricates or single consonants, streamlining production without significantly hindering comprehension. These patterns highlight how phonological simplification serves as an adaptive mechanism balancing the learner's emerging phonetic knowledge with their developing motor control and perceptual sensitivity (Iverson, & Evans, 2019).

#### **4.3.2.2 Addition for Simplification**

Learners in this study also produced errors involving the insertion of additional segments. Such additions are a common phonological repair strategy where speakers modify the target word's structure in order to align it with more familiar or unmarked syllable shapes. Katamba (1989) explains that epenthesis, glide insertion, and onset creation are widely used strategies by learners to simplify articulation, avoid marked structures such as syllabic consonants or consonant clusters, and achieve smoother transitions in speech. The following kinds of addition errors were observed:

##### **Final Vowel Epenthesis (Paragoge)**

Paragoge refers to the insertion of a vowel at the end of a word, usually to transform a closed syllable into an open one (Katamba, 1989). Learners frequently inserted a vowel at the end of a word, thereby converting a closed syllable into an open syllable (CV structure). This strategy reflects a preference for unmarked syllable shapes, which Katamba identifies as universally easier to articulate. The examples from the data are:

*Transport* /træns'pɔ:t/ → /træns'pɔ:ti/

*Airport* /'ɛəpɔ:t/ → /'ɛəpɔ:ti/

*Present* /prɪ'zɛnt/ → /pɹɪ'zɛnti/ (with both prothesis and final epenthesis)

*And* /ænd/ → /ænda/

In these examples, the addition of vowels such as /i/ or /a/ facilitates smoother articulation by avoiding abrupt final closures or consonant clusters. For instance, the /nd/ cluster in *and* requires rapid transition from a nasal to a plosive, which can be simplified by adding /a/. Similarly, the final plosive /t/ in *transport* is released into an added /i/, allowing the syllable to end openly rather than with a complete closure.

### **Prothetic Vowel Insertion (Onset repair)**

Prothesis is the insertion of a vowel (or consonant) at the beginning of a word to break up a complex onset or to avoid 'onsetless' syllables (Katamba, 1989). This is seen in the following examples;

*Present* /prɪ'zɛnt/ → /pɹɪ'zɛnti/

*Hours* /'aʊəz/ → /'haʊəz/

The insertion of /u/ in the consonant cluster /pr/ reflects an attempt to break up a complex onset, which Katamba (1998) notes is often avoided by learners. The bilabial plosive /p/ transitions naturally into the rounded vowel /u/, making it a preferred support vowel. Additionally, the choice of /u/, a rounded and back vowel, may stem from a natural articulatory transition from the bilabial plosive /p/, where the lips are already closed. Moving into a rounded vowel from that position requires minimal adjustment, making /u/ an accessible support vowel. Similarly, in *hours*, the addition of /h/ provides a consonantal onset where none exists, reflecting the learner's hypercorrection or the need for syllables to begin with a consonant.

### **Medial Vowel Epenthesis (Cluster simplification within words)**

Medial vowel epenthesis occurs when a vowel is inserted within a word, usually to simplify consonant clusters or to replace syllabic consonants with more regular vowel-based syllables (Katamba, 1989). This strategy was observed whereby learners inserted vowels between

consonants, particularly in medial positions or before syllabic consonants. This reduces articulatory difficulty by separating segments that would otherwise require rapid and precise transitions. This is evidenced in the following examples;

*Thousand* /'θaʊzɪnd/ → /wʌn 'θaʊθaɪnd/ (insertion of /a/ between /θ/ and /ɪ/)

*Restaurant* /'restrɒnt/ → /'restɒlənt/ (insertion of /o/ between /t/ and /l/)

*Sparkling* /'spɑ:kɪŋ/ → /'spɑ:kolɪŋ/ (insertion of /o/ before syllabic /l/)

In *thousand*, the sequence /θzɪ/ involves a fricative, a voiced fricative, and a syllabic nasal, all are marked elements. Learners resolved this by inserting /a/, thereby avoiding the syllabic consonant and restructuring the word into a more typical CV pattern (Katamba, 1989). In *restaurant*, the /t/ and /l/ sequence in /'restrɒnt/ involves a transition between a voiceless plosive and a lateral approximant, an articulatorily demanding combination that learners may struggle to produce directly. By inserting the mid-back rounded vowel /o/, the learner creates a more accessible CVCV pattern between the consonants, easing the articulatory load. In the word *sparkling*, the learner inserts a mid-back rounded vowel /o/ between the /k/ and /l/ sounds. The resulting form, /'spɑ:kolɪŋ/, introduces an extra syllable in the word. This is an example of intra-syllabic vowel epenthesis, where a vowel is inserted to separate consonants that usually occur together. In the original form, the /l/ is syllabic (a syllabic consonant), meaning it functions as the nucleus of the syllable without a following vowel.

### **Glide insertion (Diphthong modification)**

Glide insertion refers to the addition of a semivowel (such as /y/ or /w/) within a diphthong or between vowels to make transitions clearer (Katamba, 1989). In the dataset, learners also modified diphthongs by inserting an additional glide to make the vowel shift more explicit for example;

*There* /ðeə/ → /ðejə/

In this case, the palatal glide /y/ was inserted into the diphthong /eə/, effectively transforming it into a disyllabic sequence. According to Katamba (1989), diphthongs are inherently dynamic, and learners sometimes attempt to stabilize them by introducing glides that segment the

transition. The addition of /y/ makes the diphthong feel more anchored, even though it disrupts the natural fluidity of English diphthongs. The palatal glide /y/ is often used as a transitional element in other contexts and may be overgeneralized here. Its insertion transforms the diphthong into what sounds like a disyllabic sequence, introducing a clearer consonant-vowel boundary. This reflects a learner's strategy to clarify the glide movement or to make the vowel shift more explicit, especially when the original diphthong is unfamiliar or seems vague in its acoustic shape. In this case, the addition of /y/ disrupts the natural glide of the diphthong, but from the learner's perspective, it may create a clearer and more stable vocalic transition.

### **Over-segmentation and hypercorrection**

Over-segmentation or hypercorrection occurs when learners insert extra sounds (sometimes more than one) due to unfamiliarity with reduced forms or approximant transitions. This often leads to restructuring of the word into more pronounceable chunks (Katamba, 1989). There was a case where a learner inserted multiple sounds into the middle of a word, reflecting over-segmentation or hypercorrection.

*Marvelous* /'mɑ:vləs/ → /'mɑræ:vləs/ (insertion of /r/ and /a/)

The addition of /r/ and /a/ between /ɑ:/ and /v/ suggests an attempt to break what the learner perceives as an unstable or difficult transition. The sequence /vl/ is relatively marked and may feel unstable without a supporting vowel to cushion the glide from the vowel /ɑ:/ to the consonant /v/. Katamba (1989) describes this type of repair as a strategy to achieve articulatory fluency when faced with dense clusters or approximants. Here, the learner effectively re-chunked the word into smaller units, producing an extra syllable that is easier to pronounce.

The addition errors made by the learners, often manifesting as epenthesis or glide insertion, represent a widespread and strategic phonological repair mechanism whereby they modify complex or marked syllable structures to facilitate articulation and enhance fluency. Consistent with Katamba's (1989) foundational observations, recent research corroborates that learners insert vowels or glides to break up consonant clusters, create preferred syllable onsets, or transform closed syllables into open ones, phonotactic patterns more aligned with universal tendencies favoring CV (consonant-vowel) structures (Trofimovich, P., & Baker, 2020). For instance, final vowel epenthesis (paragoge) commonly appears as learners add unstressed vowels

to avoid challenging codas or consonant clusters, smoothing transitions and easing articulatory load (Derwing, T. M., & Munro, 2015). Similarly, prothetic vowel or consonant insertion is frequently employed to repair onset clusters unfamiliar to learners' native phonologies, with the choice of inserted segments often motivated by articulatory ease and phonetic similarity (Iverson, P., & Evans, 2019). Medial vowel epenthesis, which splits difficult clusters internally, aligns with cross-linguistic patterns documented by (Guion, 2017) and reflects learners' attempts to preserve segmental integrity while simplifying motor demands. Glide insertion within diphthongs or vowel sequences, documented by (Munro, M. J., & Derwing, 2011), further illustrates learners' efforts to clarify complex vocalic transitions by inserting transitional semivowels, effectively segmenting continuous glides into more manageable units. Notably, over-segmentation or hypercorrection errors, involving multiple insertions, reveal learners' heightened sensitivity to perceived phonotactic constraints, sometimes leading to restructuring words into smaller, more pronounceable syllabic units (Bradlow et al 2015). Comparatively, these addition processes contrast with substitution errors by actively increasing segment count to facilitate production rather than replacing segments, yet both serve the shared purpose of reducing articulatory difficulty and aligning learner output with phonological patterns within their developing interlanguage systems.

### 4.3.2.3 Omission for Simplification

Omission errors are a common feature in the speech of second language learners and involve leaving out sounds or syllables that appear in the correct form of a word. These errors typically happen when learners simplify pronunciation to make speaking easier, especially with sounds in unstressed syllables, complex consonant clusters, or vowel combinations like diphthongs. This section examines different types of omission errors identified in the learners' speech, such as vowel deletion in unstressed syllables, dropping of entire weak syllables, reduction of consonant clusters, simplification of liquid sounds, deletion of final consonants, and diphthong reduction. Using Katamba's (1989) phonological insights, the analysis explores why these omissions occur and how they affect the clarity and meaning of the words spoken by learners.

#### **Omission due to Vowel Elision in unstressed syllables**

Vowel elision is the process where vowels, especially in unstressed syllables, are omitted to simplify pronunciation.

##### Omission of /i/

This omission occurs in the words /'gəʊŋ/, /æk'tɪvətɪz/, /,dɛstɪ'neɪʃn/, /'di:tɛɪld/, /'sɪti/, /'nɑnti/, /'sevnti/, /'veri/, /'θɜ:ti/, /'twenti/, /'fɔ:ti/ to make /'gəʊŋ/, /æk'tɪvɪz/, /,dɛstneɪʃn/, /'di:tɛld/, /'sɪt/, /'nɑnt/, /'sevnt/, /'vɛr/, /'θɜ:t/, /'twent/, /'fɔ:t/ respectively

The omission of the high front vowel /i/ in the unstressed syllable of "going" results in a more compact form, /'gəʊŋ/, where the diphthong is followed directly by the velar nasal /ŋ/. This is a typical case of vowel elision in weak syllables. Katamba (1998, p. 138) explains that unstressed vowels are particularly prone to deletion in casual or fluent speech, especially when followed by a nasal consonant. The transition from /i/ to /ŋ/ requires tongue movement and vocal tract coordination, and removing the vowel simplifies this sequence. By omitting /i/, the learner reduces the word to a single syllable, which may appear more fluent but sacrifices grammatical clarity and lexical precision, particularly in formal or slow speech contexts.

The learner omits the unstressed vowel /i/ in the second syllable of "destination(s)," reducing the four-syllable structure to three. This is an example of vowel syncope, a process where medial unstressed vowels are deleted in polysyllabic words. Katamba (1989) highlights that in fluent or casual speech, especially with long words, speakers may unconsciously eliminate weak syllables

to streamline pronunciation. The dropped /ɪ/ lies between two stronger syllables, which increases the likelihood of it being suppressed due to its low prominence and articulatory lightness. Though this omission makes the word shorter and potentially easier to say, it may possibly lead to miscommunication or reduced lexical clarity.

In the word ‘managed’, the learner omits the unstressed vowel /ɪ/ between the nasal /n/ and the affricate /dʒ/, resulting in the compressed form /'mændʒd/. This is another clear case of vowel elision in unstressed syllables, specifically within a medial position. The presence of a nasal followed immediately by an affricate creates a dense cluster that the learner may find challenging to coordinate. Omitting the intervening vowel simplifies the articulatory sequence, though at the cost of lexical clarity. The resulting word may sound rushed or clipped and it risks being misunderstood or sounding unnatural, especially in formal contexts.

The learner omits the final vowel /i/ in the words “twenty, city, ninety, seventy, very, thirty, forty.” This is unstressed vowel deletion, particularly involving final high front vowels in weak syllables. As Katamba (1989) explains, unstressed vowels especially those occurring in final syllables are susceptible to deletion in rapid, casual, or unmonitored speech as part of a fluency-driven reduction strategy. In addition, learners may simplify syllable structures during acquisition by omitting weak final syllables to arrive at more manageable CV(C) forms, especially when the vowel does not carry lexical weight. The final /i/ in such words is particularly short and low in auditory salience, and learners with underdeveloped phonemic awareness may fail to perceive or encode it in speech. Some learners may also overgeneralize reductions observed in casual English speech to contexts where such reduction compromises intelligibility, as in “twenty” becoming “twent.”

The learner omits the final vowel /i/ in the word “city,” resulting in /'sɪ/. This deletion significantly alters the word, converting a disyllabic noun into a monosyllabic verb with a completely different meaning. While the omission may reflect an attempt at fluency or reduced articulatory effort, it causes a lexical substitution, changing the intended noun into another word entirely. This makes the error particularly disruptive in contexts requiring semantic accuracy.

### **Omission due to unstressed syllable deletion**

Unstressed syllable deletion is the process where entire weak or unstressed syllables are dropped from words to simplify speech.

#### Omission of /əl/

This omission occurs in the word /,ɪntə'næfɪnəl/ to make /,ɪntə'næfɪn/. In this case, the learner omits the final syllable /əl/, resulting in a compressed version of the word that ends on the syllabic nasal /n/. The /əl/ segment forms part of an unstressed syllable, and its omission leads to a shorter and less rhythmically balanced version of the word. This reflects a process of unstressed syllable deletion, commonly observed in long, polysyllabic words. Katamba (1989) notes that in rapid speech or when attempting to simplify complex forms, speakers may drop entire syllables—particularly those that carry weak stress and involve liquids or schwas. The /l/ sound, being a lateral approximant, also requires fine motor control of the tongue, which increases articulatory effort. By omitting /əl/, the learner simplifies both the articulatory sequence and the syllable count of the word.

#### Omission of /ə/

This omission occurs in the word /ə'kɔ:diŋ/ to make /'kɔ:diŋ/, /ə'baʊt/ to make /'baʊt/. Here, the learner omits the initial schwa /ə/ from the first syllable of the word “according,” producing /'kɔ:diŋ/. This results in the loss of the unstressed prefix making it begin abruptly with the stressed syllable. This is an instance of initial syllable elision, commonly found in polysyllabic words. Katamba (1989) points out that weak initial syllables, especially those involving the schwa /ə/, are frequently dropped when learners simplify speech patterns to reduce articulatory effort. The schwa is low in acoustic prominence and requires minimal jaw and tongue movement, which makes it especially vulnerable to omission.

In the word ‘about’, the learner omits the initial schwa /ə/ as well, resulting in the shortened form /'baʊt/. This omission eliminates the weak syllable that functions as a prefix or preposition marker in the word “about.” The reduction simplifies the word’s onset and makes it easier to articulate, but it removes an essential functional component. The resulting form, /'baʊt/, corresponds to a completely different lexical item (“bout”), which can lead to confusion in interpretation.

## **Omission due to consonant cluster simplification**

### Omission of /f/

This omission occurs in the word /,fɪf'ti:n/ to make /,fi'ti:n/. Here, one occurrence of /f/ in the consonant cluster /f+f/ is dropped, producing the simplified form /,fi'ti:n/. The deletion occurs within a stressed syllable and eliminates a portion of the word's core structure. This reflects a case of consonant cluster simplification, where adjacent identical or similar consonants are simplified to ease pronunciation. Katamba (1989) explains that when clusters contain repeated articulatory gestures, learners may reduce them for articulatory efficiency, especially under pressure to speak fluently. The simplification removes redundancy but also distorts the number word, which can be particularly problematic in contexts requiring numerical precision.

### Omission of /t/

In the word 'next', the learner omits the final voiceless plosive /t/, resulting in the form /neks/ instead of /nekst/. As explained above, this is also an example of final consonant deletion. This omission affects the final consonant in a complex cluster and simplifies the articulation of the word "next." In /nekst/, the cluster /kst/ involves a sequence of three consonants with different articulatory demands, increasing the complexity. Omitting /t/ reduces the articulatory burden and thus becomes a learner's go-to remedy in speech.

## **Omission due to liquid simplification**

### Omission of /el/

This error occurs in the word /dɪ'veləpmənt/ to make /dɪ'vəpmənt/, /'kerəməlaɪzd/ to make /'kerəmaɪzd/. This error could stem from the learner's attempt to simplify complex consonant and syllable structures, particularly those involving unstressed medial syllables that contain liquid consonants like /l/. In the given examples, the /el/ sequence occurs within a weak syllable, which is both unstressed and phonetically subtle, making it vulnerable to deletion. According to Katamba (1989), such simplifications reflect natural tendencies in speech to reduce articulatory effort, especially when the syllable in question does not carry primary stress or essential semantic weight. The combination of a weak vowel /ə/ followed by the lateral /l/ involves precise tongue placement and coordination, which may be phonologically and articulatorily difficult. As a result, learners may unconsciously omit the /el/ cluster as a way to maintain speech fluency and ease of pronunciation.

### Omission of /l/

This occurs in the words /'pleɪs/, /kəʊld/, /wɪl/ to make /'peɪs/, /kəʊd/, /wʊ/ respectively. In the word 'cold', the learner omits the lateral approximant /l/ from the coda of the word producing /kəʊd/. The /l/ here follows a diphthong and precedes a voiced plosive /d/, forming a common English consonant cluster. This omission is an instance of liquid consonant deletion, particularly in coda position. According to Katamba (1989), /l/ can be vulnerable in clusters, especially when its articulation involves lateral tongue movement and coordination with adjacent plosives. In rapid or casual speech, /l/ is often reduced or dropped altogether, especially in environments where it follows a diphthong and precedes another consonant. While this reduction simplifies the cluster, it can significantly change the word's identity "cold" becomes phonologically similar to "code" and therefore affects both pronunciation accuracy and listener comprehension. In the word 'will', the learner omits the final /l/ consonant in the auxiliary verb resulting in the form /wʊ/. This changes both the phonological and grammatical identity of the word. This is an instance of final liquid deletion, specifically targeting the lateral /l/ in a monosyllabic function word. The loss of /l/ simplifies articulation by avoiding the tongue-tip movement required for lateral closure, especially when preceded by a high back vowel like /ʊ/. This omission affects not just the phonetic form but also the syntactic clarity of the sentence. In auxiliary verbs, final consonant loss can confuse the tense or mood being expressed, especially in rapid speech where context may not be sufficient to clarify the intended word.

### **Omission due to final consonant simplification**

#### Omission of /m/

This error occurs in the word /'pri:mɪəm/ to make /'pri:mɪə/. The learner omits the final consonant /m/, turning "premium" into /'pri:mɪə/. The omission leads to a loss of the bilabial nasal that functions as part of the final syllable, leaving a weakened or incomplete ending. This is an example of final consonant deletion, specifically affecting a nasal sound. Katamba (1989) notes that nasals, though generally perceptible, can still be dropped when they occur in unstressed syllables or require precise bilabial closure. The production of /m/ demands full lip closure and nasal airflow, and omitting it may reflect a simplification strategy to avoid articulatory complexity.

### Omission of /t/

In the word that, the learner omits the final voiceless plosive /t/ from the word “that,” reducing it to /ðæ/. This alters a short function word by deleting the final consonant. This is an example of final consonant deletion, a process commonly observed in rapid or informal speech. Katamba (1989) notes that voiceless plosives like /t/ are especially prone to omission in coda position, as they require a complete closure and sudden release, making them relatively effortful. In high-frequency function words, this effort may be unconsciously minimized by learners seeking speech economy.

### **Omission due to diphthong reduction**

#### Omission of /i/ (ai)

This occurs in the word /'aɪ wɪl/ to make /'a wʊl/. In this error, the learner omits the high front vowel /i/ from the pronoun “I,” resulting in /a/ instead of /aɪ/. The contracted form affects the overall clarity of the pronoun and modifies the structure of the phrase “I will.” This is a case of diphthong reduction, where a diphthong is shortened into a single vowel. Katamba (1989) explains that diphthongs are inherently dynamic, requiring a shift in tongue position to glide between two vowels. When this shift is incomplete, one of the components often the off-glide is omitted, simplifying articulation. In this case, the /i/ portion of /aɪ/ is lost, reducing the perceptual distinctiveness of the pronoun.

Omission errors are a strategy employed learners to simplify the articulation of complex or marked phonological sequences, particularly within unstressed syllables, consonant clusters, liquids, and diphthongs. This process reflects a natural tendency to reduce articulatory effort and enhance fluency by deleting segments that are less salient perceptually or more demanding motorically (Derwing & Munro, 2015). Consistent with Katamba’s (1989) earlier insights, recent studies confirm that vowels in unstressed syllables, especially high front vowels like /i/, are highly prone to elision, often resulting in syllable reduction or syncope that streamlines polysyllabic words (Trofimovich & Baker, 2020). Similarly, entire unstressed syllables, such as schwas or liquid-containing syllables, are frequently omitted as learners prioritize rhythmic ease and prefer open syllable structures (Iverson & Evans, 2019). Consonant cluster simplification

through omission, particularly of codas and liquids like /l/, is well documented as a cross-linguistic phenomenon to alleviate complex articulatory transitions (Guion, 2017). The deletion of final consonants such as nasals and voiceless stops (/m/, /t/) further exemplifies efforts to avoid challenging articulatory closures, especially in rapid or casual speech contexts (Munro & Derwing, 2011). While these omissions ease production, they often compromise lexical clarity, prosodic rhythm, and intelligibility, underlining the delicate balance learners negotiate between fluency and accuracy.

#### **4.3.2.4 Phonological blend errors for simplification**

Blend errors occur when two or more words are joined together in a way that alters their original sound patterns. In most cases, learners reduce, omit, or merge sounds in order to produce speech more quickly and smoothly. While this often makes pronunciation easier, it also changes the clarity of the intended words. The following examples illustrate how blend errors arise through connected speech simplification, the weakening of function words, and the shortening of vowel sounds.

##### **Blend errors because of connected speech simplification**

Blended "number" and "of" (/ˈnʌmbər/ + /ɒv/ → /ˈnʌmbɒv/).

In this blend error, the student omits the final /r/ in "number" and directly attaches the preposition "of" to the base word, creating the fused form /ˈnʌmbɒv/. The /r/ is an alveolar approximant, and its deletion reduces the articulatory transition between the two words, resulting in a smoother but less distinct pronunciation. This is an example of connected speech simplification through elision. According to Katamba (1989), speakers often drop final consonants when the following word begins with a vowel, in order to reduce articulatory effort and increase fluency. The omission of /r/ facilitates the glide into /ɒ/, but it also results in the loss of a key segment that contributes to word boundary distinction.

Blended "will" and "be" (/wɪ/ + /bi/ → /w bi/).

Here, the student omits the /l/ sound in the auxiliary verb "will," resulting in /w bi/ instead of /wɪbi/. The deletion of /l/ alters the structure of the blend and makes the onset of "be" more abrupt. Katamba (1989) notes that liquids such as /l/ are vulnerable to deletion, especially when they occur in syllabic form and are immediately followed by another word that begins with a strong consonant or vowel. The syllabic /l/ in "will" is particularly marked, requiring careful articulation with a lateral tongue gesture that may be skipped for ease.

The omission simplifies the transition between "will" and "be," but it also reduces grammatical clarity and affects rhythm, especially in contexts where auxiliary verbs carry tense or agreement features.

### **Blend errors due to weakening of function words**

Blended three words /ɪn/ /ðə/ /'mɔːnɪŋ/ to form one word /ɪnə 'mɔːnɪŋ/

In this blend, the student reduces the phrase "in the morning" by omitting the voiced dental fricative /ð/ in "the," resulting in /ɪnə 'mɔːnɪŋ/. The definite article is reduced to a schwa, and the phrase becomes phonetically more compact. This error demonstrates the use of function word reduction and assimilation in connected speech. Katamba (1989) discusses how unstressed grammatical words, such as determiners and prepositions, are often weakened or merged into neighboring words. The omission of /ð/ reflects an effort to simplify articulation by removing a marked consonant that interrupts the flow between two vowels.

### **Blend errors due to shortening of vowel sounds**

Blended the words /'aɪ/ and /wɪl/ by deleting the last sound in /'aɪ/ to make the blend /'awu/

Here, the learner omits the off-glide /ɪ/ from the diphthong /aɪ/ in "I," resulting in the modified blend /'awu/. This compresses the auxiliary phrase "I will," creating a smoother but less distinct sequence. This is an instance of diphthong truncation and vowel merging. Katamba (1989) notes that diphthongs involve gliding movements between two vowel positions. When one component

is dropped usually the off-glide the diphthong becomes a monophthong or collapses into an adjacent vowel, especially when followed by a semivowel like /w/. This blend reflects a phonological shortcut aimed at fluency but leads to reduced clarity.

Phonological blend errors, involving the merging or fusion of adjacent words, were relatively common primarily arising as a strategy to facilitate smoother and faster speech production. These errors typically occur through connected speech processes such as elision, assimilation, and reduction of weak function words, as well as truncation of vowel sounds within diphthongs (Smith, & Nelson, 2020). Learners often omit or weaken consonants at word boundaries especially liquids like /l/ and approximants such as /r/—to reduce the articulatory complexity inherent in rapid transitions between words (Derwing & Munro, 2015). Function words, which are usually unstressed and acoustically less prominent, frequently undergo reduction or complete merging with neighboring words, resulting in blends that obscure syntactic boundaries (Byrd, 2019). The prevalence of blend errors is thus linked to the learners' developing phonological system and their balancing of ease versus accuracy in speech.

#### **4.3.2.5 The Dual Phonemic Error**

The Dual Phonemic Error represents a complex phenomenon whereby two distinct processes substitution and omission occur simultaneously within a single lexical item. This dual occurrence challenges Landi's (2008) typology which treats substitution and omission as independent and mutually exclusive error types.

In this study, the error manifests primarily through the interaction of vowel substitution and consonant omission within high-frequency auxiliary verb *will*. Specifically, the high front unrounded vowel /ɪ/ in *will* is replaced by the high back rounded vowel /u:/, demonstrating a vowel substitution process. This substitution involves a shift from a front to a back vowel, and from unrounded to rounded articulation, reflecting a significant change in vowel quality. This entails altering the tongue position from a high front (close to the hard palate) to a high back (towards the soft palate/velar region), alongside rounding of the lips. Simultaneously, the final consonant /l/, a lateral approximant, is omitted in pronunciation. The lateral approximant /l/

requires precise tongue placement along the alveolar ridge with lateral airflow, a relatively complex articulatory gesture. Its omission suggests a simplification strategy by learners to reduce articulatory complexity or avoid challenging consonant codas. The convergence of these two processes vowel substitution and consonant omission within a single word results in the form [wu:], which is markedly different from the standard pronunciation /wɪl/. This dual error is not merely additive but reflects an integrated phonological modification where both segments are affected in the same lexical item. The fact that this error recurs across different learners, particularly in a high-frequency word, indicates its systematic nature rather than an incidental misarticulation. By recognizing the Dual Phonemic Error, the present study advances a more detailed analytical approach that captures overlapping phonological processes.

Overall, the errors analyzed in this section show that simplification is the most dominant reason why the learners in this study produced the kinds of phonemic errors they did. Whether the learners substituted one sound for another, added support vowels, dropped weak syllables, or blended words together, the pattern was the same, they were trying to make speech easier and quicker to produce. Katamba's (1989) explanation of natural phonological occurrences helps us understand why this happens: when a sound or sequence feels too demanding, speakers naturally adjust it to something that is easier for them to control. The learners were therefore not simply making random mistakes, they were actively reshaping difficult English forms to fit what they could manage comfortably in spontaneous speech.

What is important is that these tendencies are not unique to this group of Ugandan learners. Recent work in second language pronunciation shows the same patterns across a wide range of languages and learning contexts. Scholars such as Derwing and Munro (2015), Levis (2018), and Trofimovich and Baker (2020) note that when learners speak under real-time pressure especially in communicative tasks, they often simplify clusters, shorten diphthongs, weaken unstressed vowels, or remove sounds that require precise tongue or lip movements. Similar findings from Iverson and Evans (2019), Lawson et al. (2018), and Kang, Thomson, and Moran (2018) show that learners frequently reduce sounds they cannot perceive clearly or control confidently. At the same time, researchers also remind us that simplification is only one part of a bigger picture. In some contexts, perceptual challenges or prosodic influences may outweigh simplification as the main source of error. However, in this study, where learners were speaking spontaneously in an online task-based environment, the pressure to communicate meaning quickly seemed to amplify

simplification more than anything else. In summary, the findings in this section show that simplification is a strategy for learners who are still developing control over English sounds.

### 4.3.3 PERCEPTUAL UNDERSPECIFICATION OF SOUNDS

#### Substitution of the glottal fricative /h/ for the voiced bilabial–velar approximant /w/

This substitution occurs in the word /,həʊ'tel/ to make /'wəʊ'tel/. This substitution involves replacing the glottal fricative /h/ with the voiced bilabial-velar approximant /w/. /h/ is produced at the glottis with no significant oral constriction; it relies on the flow of air through open vocal folds, with the shape of the following vowel influencing its formant pattern. /w/, in contrast, is an approximant that requires simultaneous rounding of the lips and a back tongue gesture toward the velum.

The production of /w/ demands coordination across two separate articulatory zones; labial and velar making it structurally more complex than /h/. However, in this substitution, the learner appears to replace the glottal fricative /h/, which lacks strong oral gesture, with the more perceptible glide /w/. Katamba (1989) describes /h/ as a marginal sound in phonological structure, often lacking a clear segmental identity. Because /h/ is produced without a strong articulatory arrangement and relies on voiceless airflow alone, it is more vulnerable to omission or replacement, especially in word-initial, unstressed positions. Therefore, learners may perceive /h/ as acoustically weak and attempt to replace it with a segment that provides clearer articulatory and auditory structure in this case, /w/.

#### Substitution of the mid front lax vowel /ɛ/ for the high front lax vowel /ɪ/

This substitution occurs in the word / dʒɛmz /to make / dʒɪmz /. This substitution involves changing the mid front lax vowel /ɛ/ to the high front lax vowel /ɪ/. Both vowels are unrounded and fronted, but they differ in tongue height. /ɪ/ is higher in the oral cavity. /ɛ/ is produced with the tongue in a mid-front position, while /ɪ/ involves raising the tongue closer to the hard palate, with slightly less jaw opening. The learner's substitution results in a height-raising process, thereby reducing movement required. According to Katamba (1989), vowels are differentiated primarily by tongue height and frontness, and when this contrast is weakened, the distinctiveness between phonemes is lost.

Therefore, this substitution can be interpreted as a case of phonemic underspecification where the learner does not fully realize the phonological necessity of maintaining a mid-front vowel and replaces it with a nearby, more familiar high front vowel. Katamba notes that learners may “collapse” distinctions among vowels that occupy similar articulatory space, especially when under pressure to produce fluent speech (p. 85).

#### Substitution of the voiced alveolar nasal /n/ for the voiced alveolar lateral approximant /l/

This substitution occurs in the word / mi:nz / to make / mi:lz/. This substitution involves replacing the voiced alveolar nasal /n/ with the voiced alveolar lateral approximant /l/. Both segments share the same place of articulation — the alveolar ridge — and are produced with the tongue contacting or approaching this region of the oral cavity. However, they differ in their manner of articulation. The nasal /n/ is produced by lowering the velum to allow air to pass through the nasal cavity, whereas /l/ is produced by directing the airflow laterally around the sides of the tongue while the tip contacts the alveolar ridge, with the velum remaining raised. Thus, although the two sounds are both voiced and alveolar, they use different airflow mechanisms resulting in distinct acoustic and perceptual characteristics.

This error can be described as a confusion between segments from two different classes — nasals and liquids. According to Katamba (1989), such cross-category substitutions are less common than substitutions within a single class but can occur when segments share certain articulatory features. In this case, both /n/ and /l/ are coronal consonants that involve tongue-tip placement at the alveolar ridge. This physical similarity may lead to what Katamba describes as feature underspecification (p. 34), where the learner fails to fully encode or distinguish the defining features of the target segment, particularly in rapid or unrehearsed speech. In summary, the substitution of /l/ for /n/ in the word "means" involves the replacement of a nasal consonant with a lateral approximant that shares place of articulation but differs in manner. This error can be attributed to perceptual under specification. As Katamba (1989) explains, such substitutions are indicative of how learners reshape phonological forms based on articulatory feasibility and acoustic familiarity, even at the expense of phonemic and morphological clarity.

#### Substitution of the voiced alveolar fricative /z/ for the voiceless dental fricative /θ/

This substitution occurs in the word / 'θaʊzɪnd / to make / 'θaʊθaɪnd/. This substitution involves replacing the voiced alveolar fricative /z/ with the voiceless dental fricative /θ/ in the second syllable of *thousand*. The substitution is marked by changes in both place of articulation (alveolar → dental) and voicing (voiced → voiceless). The learner's production results in a voiceless sound where a voiced one is required, and in a different articulatory location.

Katamba (1989, p. 24) explains that the production of fricatives depends on maintaining a narrow constriction somewhere in the vocal tract, allowing turbulent airflow. /z/ is articulated with the tongue close to the alveolar ridge, and it involves vocal fold vibration. /θ/, on the other hand, is produced with the tongue placed lightly against the upper teeth and no vocal fold vibration. This substitution signals difficulty with maintaining voicing during fricative articulation, especially following a diphthong (/aʊ/). Sustaining voicing during frication is demanding: it requires precise control over airflow and glottal vibration. Katamba notes that voicing contrasts are vulnerable in such environments because of the timing required to transition smoothly between voiced and voiceless segments (pp. 132–133). In this case, the learner may fail to maintain voicing, defaulting to a voiceless fricative that is easier to produce in rapid speech.

#### Substitution of the schwa /ə/ for the mid back rounded vowel /ɔ/

This substitution occurs in the word /əb'zɜ:v/ to make /ɔb'zɜ:v/. Here, the reduced vowel /ə/ is replaced with the mid-back rounded vowel /ɔ/. This is likely an instance of hypercorrection or avoidance of schwa, which is weakly articulated and acoustically underspecified. Katamba (1989) states that schwa, being central and unstressed, is often vulnerable to replacement by more perceptually salient vowels. Learners might feel the need to pronounce initial syllables more distinctly and replace the neutral /ə/ with a more rounded and backed vowel like /ɔ/. The learner may also be influenced by the spelling of the word, misjudging the pronunciation based on orthographic cues.

The errors in this section show that some of the learners' substitutions did not happen because the sounds were difficult to articulate, but because the learners did not fully perceive or encode the phonological features needed to distinguish one sound from another. In other words, the problem here is not mainly articulatory simplification, but perceptual underspecification. As the

examples demonstrate, sounds that are acoustically weak or carry low perceptual salience such as /h/, schwa /ə/, or subtle vowel height contrasts were either replaced, collapsed into nearby categories, or reinterpreted through more familiar sounds. Katamba's (1989) discussion of poorly specified features and marginal segments helps explain why sounds like /h/ or schwa are so vulnerable: they simply do not provide learners with strong enough cues to anchor stable categories during spontaneous speech. What emerges clearly is that these errors mirror what recent research also reports about second language perception. Scholars such as Escudero (2015) and Levis (2018) note that when the acoustic cues that separate two phonemes are subtle, learners often fail to register the difference and instead rely on broader or more familiar perceptual categories. This explains why height contrasts such as /ɛ/ versus /i/ are frequently neutralized, or why voicing contrasts within fricatives break down in fast or pressured speech. Studies show that learners often "fill in" weak or ambiguous sounds with more salient ones, especially when dealing with schwa, liquids, or coronal consonants, patterns that closely reflect the substitutions observed in this dataset.

The substitutions attributed to perceptual underspecification in this study strongly confirm Katamba's (1989) argument that sounds with weak phonemic specification are highly unstable in learner speech. The replacement of /h/ with /w/ and schwa /ə/ with /ɔ/ directly reflects Katamba's description of /h/ and /ə/ as marginal segments that lack strong acoustic anchoring. Similarly, the neutralisation of the vowel contrast between /ɛ/ and /i/ in gems → "jimz" mirrors Katamba's claim that learners collapse neighbouring vowel categories when fine-grained perceptual contrasts are not firmly encoded. The present findings therefore support Katamba's position that these substitutions arise from impoverished phonemic representation rather than articulatory incapacity.

The perceptual confusions observed in this study also align closely with Derwing and Munro's (2015) findings that L2 learners frequently fail to maintain subtle voicing, vowel height, and fricative contrasts in spontaneous speech. The /z/ → /θ/ substitution in thousand reflects their observation that voicing contrasts within fricatives often collapse under processing pressure. Likewise, the /n/ → /l/ substitution supports their claim that learners confuse segments that share place of articulation when manner distinctions are not perceptually stabilised. Guion (2017) further reports that learners systematically map weak or ambiguous sounds onto stronger

perceptual categories, which directly parallels the schwa replacement patterns observed in this study.

While Katamba (1989), Derwing and Munro (2015), and Guion (2017) largely describe perceptual underspecification using laboratory or classroom speech, the present study extends these findings into a real-time online task-based environment. The persistence of schwa loss, /h/ replacement, vowel-height neutralisation, and voicing collapse in live digital interaction demonstrates that perceptual fragility becomes even more pronounced when learners must process meaning, planning, and pronunciation simultaneously. This confirms that perceptual underspecification is not limited to controlled speech settings, but remains a core source of phonemic error in spontaneous online communication among Ugandan ESL learners.

#### 4.3.4 ANTICIPATORY CO ARTICULATION

##### Substitution of the mid front unrounded vowel /ε/ for the mid back rounded vowel /o/

This substitution occurs in the word /'twɛlv/ to make /'twolv/. This substitution involves the replacement of the vowel /ε/, a mid-front unrounded vowel, with /o/, a mid-back rounded vowel. Articulatorily, these two vowels differ along three key dimensions: tongue height, tongue advancement, and lip rounding. The /ε/ sound is produced with the tongue positioned in the mid-lower region of the oral cavity and advanced toward the front, with the lips unrounded. In contrast, /o/ is produced with the tongue placed in the mid-to-high region but retracted toward the back of the mouth and with the lips rounded. Thus, the learner's substitution reflects a shift not only in tongue position but also in vocal tract configuration due to the added lip rounding in /o/.

This substitution can also be explained through the lens of vowel backing and rounding. The learner appears to simplify the mid-front unrounded vowel by replacing it with a more backed and rounded counterpart. Producing front vowels like /ε/ requires muscular control to maintain an unrounded state, which can be particularly demanding when embedded in consonantal frames that already require complex articulatory coordination. The substitution of /o/ thus allows the learner to reduce the articulatory load by favoring a more relaxed tongue posture and simultaneously introducing lip rounding.

It is also worth noting that the word "twelve" begins with a complex consonant cluster /tw/, which may contribute indirectly to the substitution. The glide /w/ introduces rounding early in the syllable, potentially influencing the learner's anticipation of rounding in the upcoming vowel. This kind of anticipatory coarticulation can affect vowel production. Katamba (1989) emphasizes the importance of coarticulatory context in shaping phonetic outcomes, especially in connected speech or in the presence of complex onsets.

Here, some of the substitutions made by the learners did not arise from simplification or perceptual gaps alone, but from anticipatory co-articulation, where features of an upcoming sound influence the production of the current one. In the example analyzed, the rounding and backness associated with the glide /w/ in the onset of twelve appear to spill over into the vowel that follows, resulting in /ε/ being produced as the rounded, back vowel /o/. Katamba's (1989)

explanation of co-articulatory overlap helps account for this: sounds are rarely produced in isolation, and learners often anticipate the posture or rounding required for the next sound, especially when dealing with tight clusters or rapid speech. Research by Jang et al. (2023) and Lawson et al. (2018) confirms that second language learners often allow rounding, voicing, or tongue-backing from adjacent consonants to influence the vowels that follow, especially when the transitions are fast or the onset clusters are complex. These studies observe that co-articulation can “pull” vowels toward neighboring articulatory settings, leading to substitutions that would not occur if the vowel had been produced in isolation. In contexts where the articulatory demands are high, the learners appear to prioritize smoother transitions, even when this shifts the vowel away from its target quality. This makes co-articulation a meaningful contributor to the segmental deviations observed in the data, complementing the patterns already identified under simplification and perceptual underspecification. The anticipatory rounding observed in the substitution of /ɛ/ with /o/ in twelve directly supports Katamba’s (1989) explanation that sounds are shaped by neighbouring articulatory contexts rather than being produced as isolated phonemic targets. The presence of the labio-velar glide /w/ in the onset cluster /tw/ appears to trigger premature lip rounding and tongue backing, which then spreads into the vowel. This confirms Katamba’s position that co-articulatory overlap is structurally motivated and capable of reshaping phonemic output, especially in complex onset environments.

This finding also aligns with Schmied’s (2018) observations that East African English varieties frequently exhibit vowel backing and rounding effects in the vicinity of labial and labio-velar consonants. Schmied shows that such features often extend beyond their expected segmental domains, affecting adjacent vowels. Guion (2017) similarly reports that L2 learners display stronger co-articulatory spill-over than native speakers, especially when dealing with consonant clusters that require simultaneous gestures. The present substitution in twelve therefore confirms that anticipatory co-articulation is amplified in L2 speech, particularly in environments of high articulatory coordination.

Unlike Schmied’s (2018) work, which focuses on established regional varieties of English, the present study demonstrates that anticipatory co-articulation operates actively at the learner error level, not only at the level of stable accent formation. The rounding influence of /w/ on the vowel in twelve shows that learners are restructuring phonemic targets dynamically during real-time online speech production. This extends earlier findings by demonstrating that co-articulation

functions as an active error-generating mechanism in spontaneous digital communication, where speed, cognitive load, and articulatory coordination interact more intensely than in classroom speech.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS, AND FURTHER RESEARCH DIRECTIONS

#### 5.1 INTRODUCTION

This chapter synthesizes the findings of the study, presenting comprehensive conclusions aligned with the research objectives. The study sought to describe and examine the phonemic errors made by learners of English as a second language in online task-based environments in Uganda. Drawing on Landi's (2008) error typology and Katamba's (1989) phonological framework, the analysis in Chapter Four revealed not only the dominant error types but also their underlying causes and patterns of occurrence. The conclusions below address each objective while also reflecting on the significance of these findings.

This study's methodology was intentionally designed within the framework of task-based language learning (TBLL) to explore the phonemic errors produced by learners in an online learning environment, reflecting the contemporary shift in language teaching. TBLL emphasizes authentic, meaningful communication through interactive tasks that promote natural language use, which aligns with the online task-based activities deployed in this study. The online context, shaped by digital platforms, presented unique affordances and challenges that influenced learners' phonological output, including factors such as not having immediate feedback. By employing a qualitative approach grounded in detailed analysis of recorded oral tasks completed through zoom, the study was able to capture the real-time phonemic errors that the learners of English as a second language make. This contextual and methodological synergy provided rich insights into the specific error types emerging in such environments.

#### 5.2 SUMMARY

This study aimed to describe the phonemic errors produced by learners of English as a second language during online task-based learning activities. Analysis revealed five error types; four from Landi's (2008) six-part typology: substitution, omission, addition, and blend errors and a novel error; the dual phonemic error. Substitution emerged as the most dominant type, with particularly high incidences in vowel sounds such as the high front unrounded /i/, mid-front /ɛ/,

and diphthong /aɪ/, alongside consonants like /r/, /l/, /h/, and /z/. Common patterns included /l/↔/r/ alternations (e.g., aeroplane → eroprein, arrive → alive), /h/→/w/ substitutions (hotel → wotel), and mid-front to mid-back vowel shifts (twelve /twɛlv/ → twolv). Omission errors ranked second, with frequent deletion of high front /i/ in unstressed syllables (going → gong, activities → activtiz), loss of final consonants (place → pace, cold → code), and reduction of diphthongs (itinerary → itinereri). Addition errors were largely epenthetic, with high front /i/ or low front /a/ inserted to break consonant clusters (transport → transporti). Blend errors were least common but consistent in certain combinations like (number of → numbov, in the → ina).

The predominance of substitutions reflects a reliance on articulatory familiarity, suggesting learners prioritize phonemes from their existing inventories when faced with marked or less familiar sounds. The second-place ranking of omissions indicates a tendency toward reduction strategies, especially in weak syllable contexts, supporting Katamba's (1989) observation that unstressed positions are highly susceptible to elision. The relative scarcity of blend errors suggests that connected speech modification, while present, is less central to learners' error profiles in this context. The absence of movement and exchange errors supports the notion that these are more characteristic of planned speech or writing, rather than spontaneous oral production in communicative tasks.

This study also identified another error type, the dual phonemic error. It is a complex phenomenon where two or more errors co-occur simultaneously within a single utterance, creating a layered effect that hinders accurate pronunciation. Unlike isolated substitution, omission, or addition errors, the dual phonemic error involves the interaction of these processes, such as a substitution combined with an omission. This pattern was observed frequently among learners in the study especially with the auxiliary 'will'. Learners substituted the /i/ with /u/ and simultaneously omit /l/. This error suggests that learners may apply multiple phonological simplifications concurrently as a way to ease articulation, especially in more complex or unfamiliar vocabulary. The occurrence of the dual error highlights the interconnected nature of second language phonemic errors, calling for teaching strategies that consider how multiple error types interact, rather than addressing them separately.

This study also sought to explain why and how these errors occurred, drawing on articulatory and phonological principles and not first language interference. Across all five error types, phonological simplification emerged as the dominant cause. Substitution errors often reflected a shift toward phonetically simpler segments for example /m/ replaced with /b/ due to reduced velum-lowering coordination demands, /ɾ/ replaced with /l/ or vice versa due to similar places of articulation but differing tongue configurations. Omission errors were frequently the result of vowel elision in unstressed syllables, consonant deletion in complex codas, and reduction of diphthongs into monophthongs. Addition errors arose from vowel epenthesis (e.g., prothetic /i/ or medial vowel insertion) to repair onset clusters or break up syllable complexity. Blend errors typically occurred in high-frequency collocations, where learners deleted boundary consonants or vowels to produce smoother speech transitions. The dual error occurred when a learner simultaneously substituted and omitted phonemes in the same lexical item.

Substitution was not only the most frequent but also the most varied in its manifestations, appearing in both vowel and consonant categories. Omission was strongly linked to syllable position where medial and final positions were especially vulnerable. Additions were relatively predictable, targeting consonant clusters. Blends were linked to rapid speech and lexical familiarity, indicating that fluency pressure encourages connected speech processes even when phonological precision suffers. The data indicate that in spontaneous, meaning-focused oral production, certain error types may be negligible. The identification of the Dual Phonemic Error highlights the fact that real-life speech production does not always neatly fit categorical models; instead, multiple processes can co-occur within a single utterance.

Katamba's (1989) framework provides a robust explanation for these processes, particularly the tendency toward articulatory economy. The findings also support the notion of phonological under specification, where certain features (e.g., vowel height distinctions) are more likely to be neutralized.

### 5.3 CONCLUSIONS

The findings of this study clearly demonstrate that the learners' spoken output in the online context is shaped by patterns of segmental modification rather than random or isolated mistakes. Across the dataset, five major categories of phonemic errors emerged; substitution, omission, addition, blend errors, and the Dual Phonemic Error revealing a consistent and recurrent profile of phonemic behavior among the learners.

In this study, the phenomena identified were treated as phonemic errors because they involved segmental modifications that altered the target forms of English words in ways that fall outside accepted patterns of English phonology. Although learners often employ coping mechanisms during spontaneous speech such as reduction, assimilation, or casual-speech shortcuts, the deviations observed here consistently exceeded the boundaries of English's licensed phonetic or phonological processes.

Unlike natural reductions that native speakers produce predictably in specific prosodic or conversational contexts, the learners' productions frequently resulted in loss of phonemic contrast, disruption of lexical integrity, creation of unintended syllable structures, and the emergence of forms that do not correspond to any established variant of English. These characteristics indicate that the deviations were not merely performance-based coping strategies, nor simple systematic alterations, but genuine phonemic errors illustrating gaps in the learners' internalized phonemic representation of English. Treating these patterns as errors, therefore, allows for a more accurate account of how learners restructure, reinterpret, or mis-specify phonemic categories during acquisition, and provides a clearer basis for explaining why these deviations occur within their developing interlanguage

The study's first major conclusion is that substitution errors are the most dominant category, particularly involving approximants (/l/, /r/, /w/), the glottal fricative /h/, nasals such as /m/, and several vowel contrasts. These substitutions reflect predictable articulatory pressures, especially when learners encounter marked sounds that require fine motor coordination or complex tongue gestures. Omission errors were most common in unstressed syllables, diphthongs, and final consonants, while addition errors frequently involved epenthesis to repair clusters or stabilize syllables. Blend errors showed how learners manage connected speech by compressing adjacent words, and the Dual Phonemic Error demonstrated that learners may employ more than one

simplification strategy simultaneously within a single lexical item. Together, these error patterns form a coherent picture of structured phonological behavior in spontaneous speech.

The second major conclusion is that three broad phonological reasons account for these errors: phonological simplification, co-articulatory anticipation, and perceptual misidentification. Learners simplified sounds and structures that imposed high articulatory demands, ranging from liquids and diphthongs to consonant clusters and syllabic consonants. Co articulatory influences contributed to vowel shifts and segmental adjustments, while perceptual limitations led to the collapsing of contrasts that require fine acoustic discrimination. These explanations show that the learners' deviations arise from principled phonetic and phonological processes aligned with established second language phonology research.

The study also concludes that online task-based learning provided an effective elicitation context. The communicative and meaning-focused nature of the task made it possible for phonemic errors to surface naturally, revealing how learners actually manage real-time speech rather than how they perform under controlled drilling. While online TBLL was not the central focus of the study, the method contributed significantly to the authenticity of the data and the visibility of error patterns.

Overall, the findings contribute to second language phonology research in Uganda by offering an account of segmental errors grounded in articulatory explanation and supported by real-time spoken data. The identification of the Dual Phonemic Error represents a noteworthy addition to existing error classifications, and the study's phonetic explanations enrich our understanding of how Ugandan learners of English as a second language negotiate complex English sound patterns. These insights provide a foundation for further research and present implications for English pronunciation teaching in online environments.

## 5.4 DIRECTIONS FOR FURTHER RESEARCH

Building on the findings this study, several areas present themselves as valuable pathways for further research. First, future studies could broaden the participant base to include a larger and more regionally diverse sample of Ugandan learners of English as a second language. Because this study drew data from a relatively small group, expanding the demographic and geographic spread would make it possible to examine whether the phonological patterns observed here particularly substitution patterns among approximants, vowel reductions, and the Dual Phonemic Error hold across different learner populations in Uganda. Such work would contribute to a more generalizable understanding of segmental difficulties among the learners of English as a second language in Uganda.

Second, given that this study relied on naturally occurring speech in an online, task-based setting, future research may probe how different types of online tasks influence phonemic accuracy. Comparative studies could examine whether varying task complexity, communicative pressure, or response time affects the frequency or nature of phonological errors. Such work would deepen our understanding of how task design in digital learning environments shapes spoken performance.

Third, the role of real-time or delayed digital feedback in shaping learners' phonological development deserves further inquiry. Although online learning facilitated naturalistic data collection in this study, it did not incorporate feedback mechanisms. Future research could examine how tools such as automated pronunciation analysis, phonetic visualization models, or AI-based corrective feedback influence the reduction of phonological errors over time.

Finally, the emergence of the Dual Phonemic Error in this study points to a complex interaction between phonological processes that has not been documented in Landi's typology. Future research could investigate this phenomenon more deeply across larger datasets or alternative learning contexts, to determine whether it represents a broader pattern among the learners or a context-specific outcome of online task-based performance. Such investigation could refine or extend existing phonemic error typologies.

## REFERENCES

- Adokorach, M., & Isingoma, B. (2022). Homogeneity and heterogeneity in the pronunciation of English among Ugandans: A preliminary study. *English Today*, 38(1), 15–26. <https://doi.org/10.1017/S0266078420000152>
- Ahamed, I., et al. (2021). Reliability and validity: Importance in medical research. *Journal of Ayub Medical College*, 33(3), 438–442.
- Al-Hamzi, A. M. S., Nababan, M., Santosa, R., Djatmika, Sumarlam, & Yustanto, H. (2023). Frequent linguistic errors in the writing of Yemeni EFL Arabic-speaking learners. *Studies in English Language and Education*, 10(1), 350–368. <https://doi.org/10.24815/siele.v10i1.26022>
- Alhaysony, M. (2012). An analysis of article errors among Saudi female EFL students: A case study. *Asian Social Science*, 8(12), 55–66. <https://doi.org/10.5539/ass.v8n12p55>
- Ambele, E. A., & Boonsuk, Y. (2021a). Task-based language learning in digitally mediated environments: Pedagogical implications for L2 development. *Journal of Language Teaching and Research*, 11(2), 550–560.
- Ambele, E. A., & Boonsuk, Y. (2021b). Task-based language learning in digitally mediated environments: Pedagogical implications for L2 development. *Journal of Language Teaching and Research*, 12(4).
- Atibuni, D. Z., Capuc, F. O., & Muzaale, T. (2024). The challenges of and strategies for competency-based assessment by Uganda National Examinations Board. June. <http://www.journal.ncdc.go.ug>
- Baralt, M., & Morcillo Gómez, J. (2017). Task-based language learning in online environments. *Language Learning & Technology*, 21(3), 28–43.
- Bhandari, L. P., Dahal, N., Awasthi, J. R., & Dhungana, S. (2025). Technology-mediated task-based language teaching: A systematic review. *Taylor & Francis Online*, 12(1).
- Blake, R. J. (2009). The use of technology for second language distance learning. *Modern Language Journal*, 93(Suppl. S1), 835–882.

- Blake, R. J. (2011). Current trends in online language learning. *Annual Review of Applied Linguistics*, 31, 19–35. <https://doi.org/10.1017/S026719051100002X>
- Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*, 22(4), 195–201.
- Botley, S. P. (2015). Errors versus mistakes: A false dichotomy. *Malaysian Journal of ELT Research*, 11(1), 81–94.
- Bradlow, A. R., Pisoni, D. B., & Tash, J. (2015). Speech production in second language learners: Insights from phonetic studies. *Annual Review of Applied Linguistics*.
- Byrd, D. (2019). Function word reduction and speech fluency in second language learners. *Language and Speech*. <https://doi.org/10.1177/0023830918806990>
- Carrió-Pastor, M. L., & Mestre-Mestre, E. M. (2014). Lexical errors in second language scientific writing: Some conceptual implications. *International Journal of English Studies*, 14(1), 97–108. <https://doi.org/10.6018/ijes/14/1/154361>
- Charles, K., Song, P., Zheng, & Khaing, T. (2023). Factors affecting the implementation of competency-based curriculum in lower secondary schools in Uganda: A systematic literature review. *North American Academic Research*, 6(9).
- Chen, L. L. (2006). The effect of L1 and CAI on grammar learning: An error analysis of Taiwanese beginning EFL learners' English essays. *Asian EFL Journal*, 9(2), 1–19.
- Christine, V. P. (2023). Common speech errors in L2: Categorization, analysis, and implication. *International Journal of Contemporary Applied Researches*, 10(4).
- Corder, S. P. (1974). Error analysis. In *The Edinburgh course in applied linguistics* (Vol. 3, pp. 122–131).
- Corder, S. P. (1981). *Error analysis and interlanguage*. Oxford University Press.
- Dell, G. S. (1986). A spreading-activation theory of retrieval in sentence production. *Psychological Review*, 93(3), 283–321.

- Demont-Heinrich, C. (2008). American triumphalism and the "offensive" defensiveness of the French: French as a foil for English in U.S. prestige press coverage of the global hegemony of English. *Journal of Communication Inquiry*, 32(3), 271–291.
- Derwing, T. M., & Munro, M. J. (2015). *Pronunciation fundamentals: Evidence-based perspectives for L2 teaching and research*. John Benjamins Publishing.
- Derwing, T. M., & Munro, M. J. (2022). Pronunciation learning and teaching. In T. M. Derwing, M. J. Munro, & R. I. Thomson (Eds.), *The Routledge handbook of second language acquisition and speaking* (pp. 147–159). Routledge.
- Dulay, H., Burt, M., & Krashen, S. (1982). *Language two*. Oxford University Press.
- Ellis, R. (1997). *Second language acquisition*. Oxford University Press.
- Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.
- Ellis, R., & Yuan, F. (2004). The effects of planning on fluency, complexity, and accuracy in second language narrative writing. *Studies in Second Language Acquisition*, 26(1), 59–84.
- Ethnologue. (2023). *Statistics on global language use*. SIL International.
- Fisher, A. E. C. (2000). Assessing the state of Ugandan English. *English Today*, 16, 57–61. <https://doi.org/10.1017/S0266078400011470>
- Flege, J. E., & Bohn, O.-S. (2021). The revised speech learning model (SLM-r): Accounting for L2 speech learning across the lifespan. *Journal of Second Language Pronunciation*, 7(3), 306–343.
- Fromkin, V. A. (1971). The non-anomalous nature of anomalous utterances. *Language*, 47(1), 27–52.
- González-Lloret, M. (2025). Task-based language learning in CALL environments. In *The Palgrave Encyclopedia of Computer-Assisted Language Learning*.
- Guion, S. G. (2017). Consonant cluster acquisition in L2 learners: Simplification and repair strategies. *Journal of Phonetics*.

- Hockly, N. (2018). Artificial Intelligence in English Language Teaching: An overview. *ELT Journal*, 72(4).
- Iverson, P., & Evans, B. G. (2019). Cross-language phonetic influences on speech production and perception. *Language Learning*.
- Jaeger, J. J. (2005). *Kids' slips: What young children's slips of the tongue reveal about language development*. Lawrence Erlbaum Associates.
- Jakobson, R., & Halle, M. (1956). *Fundamentals of language*. Mouton.
- James, C. (1998). *Errors in language learning and use: Exploring error analysis*. Longman.
- James, C. (2013). *Errors in language learning and use: Exploring error analysis* (C. Candlin, Ed.). Routledge.
- Jang, J., Kim, S., & Cho, T. (2023). Prosodic structural effects on non-contrastive coarticulatory vowel nasalization in L2 English by Korean learners. *Language and Speech*, 66(2), 381–411. <https://doi.org/10.1177/00238309221108657>
- Kalantzis, M., & Cope, B. (2012). *New learning: Elements of a science of education* (2nd ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9781139248532>
- Kang, O., Thomson, R., & Moran, M. (2018). Which features of accent affect understanding? Learner speech, comprehensibility, and accentedness. *TESOL Quarterly*, 52(4), 915–943.
- Katamba, F. (1989). *An introduction to phonology*. Longman.
- Khejeri, M., Omulando, P. C., Barasa, P. P., & Khejeri, M. (2022). The systematic errors of English L2 among Luhya L1 learners in the course of English article system acquisition. *Himalayan Journal of English Language*, 1(July), 29–40. <https://doi.org/10.47310/hjel.2022.v03i01.015>
- Kidega, C., Zheng, S., & Khaing, T. (2023). Factors affecting the implementation of competency-based curriculum in secondary schools in Uganda: A systematic literature review. *North American Academic Research*, 6(9), 84–102. <https://doi.org/10.5281/zenodo.10058421>
- Kirunda, R. F., & Ogavu, T. (2015). May\_2015\_1431700364\_\_56. May, 190–193.

- Ladefoged, P., & Johnson, K. (2014). *A course in phonetics* (7th ed.). Cengage Learning. <https://www1.udel.edu/linguistics/courses/Ing632/reading/ladefogedjohnson2014.pdf>
- Landi, S. N. (2008). To "err" is human: The nature of phonological "errors" in language development.
- Lawson, E., Stuart-Smith, J., & Scobbie, J. M. (2018). The role of articulatory setting in L2 speech: Insights from ultrasound tongue imaging. *Journal of the Acoustical Society of America*, 144(2), 1234–1246.
- Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. MIT Press.
- Levis, J. M. (2018). *Intelligibility, oral communication, and the teaching of pronunciation*. Cambridge University Press.
- Lin, Z. (2009). Task-based approach in foreign language teaching in China.
- Lixin, X. (2015). An error analysis of the word class: A case study of Chinese college students. *International Journal of Emerging Technologies in Learning*, 10(3), 42–45.
- Matovu, K. (2025). Grammar and its effect on learners' academic performance in English subject in secondary schools in Uganda: A case of Luwero District. January.
- Meierkord, C. (2016). Diphthongs in Ugandan English: Evidence for and against variety status and interactions across Englishes. In C. Meierkord, I. Bebwa, & S. Namyalo (Eds.), *Ugandan English: Its sociolinguistics, structure and uses in a globalizing post-protectorate* (pp. 121–147). Benjamins. <https://doi.org/10.1075/veaw.g59.06mei>
- Mohamed, S. A. (2020). Phonological errors among Kimakunduchi learners of English in Zanzibar. *East African Researcher*, 4(2), 44–56.
- Moreton, E. (2002). Structural constraints in the perception of English stop-sonorant clusters. *Cognition*, 84(1), 55–71. [https://doi.org/10.1016/S0010-0277\(02\)00014-8](https://doi.org/10.1016/S0010-0277(02)00014-8)
- Mourssi, A. (2013). The efficacy of error analysis on second language learners' written accuracy: An empirical study in the context of Arab learners of English. *International Research Journals*, 4(3), 249–256.

- Mramboa, A., & Ligembe, N. N. (2022). Challenges pupils face in learning phonological skills: A case of Bunda District, Tanzania. *East African Journal of Education and Social Sciences*, 3(1), 49–60. <https://doi.org/10.46606/eajess2022v03i01.0145>
- Munro, M. J. (2011). Intelligibility: Buzzword or buzzworthy? Simon Fraser University, 7–16.
- Munro, M. J., & Derwing, T. M. (2011). *Intelligibility in second language speech*. John Benjamins Publishing.
- Nunan, D. (1989). *Designing tasks for the communicative classroom*. Cambridge University Press.
- Politzer, R. L., & Ramirez, A. G. (1973). An error analysis of the spoken English of Mexican-American pupils in a bilingual school and monolingual school. *Language Learning*, 23(1), 39–61.
- Reed, M., & Levis, J. (Eds.). (2015). *The handbook of English pronunciation*. Wiley-Blackwell
- Richards, J. C. (2014). *Error analysis: Perspectives on second language acquisition*. Routledge.
- Richards, J. C., & Rodgers, T. S. (2001). *Approaches and methods in language teaching*. Cambridge University Press.
- Richards, J. C., & Schmidt, R. (2010). *Longman dictionary of language teaching and applied linguistics* (4th ed.). Pearson Education.
- Schmied, J. (2018). East African English: Phonology. In R. Mesthrie (Ed.), *The Cambridge Handbook of World Englishes* (pp. 341–360). Cambridge University Press.
- Schmidt, R. (2010). Attention, awareness, and individual differences in language learning. In W. M. Chan et al. (Eds.), *Proceedings of CLaSIC* (pp. 721–737).
- Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics*, 10, 209–231.
- Setter, J. (2017). T. M. Derwing and M. J. Munro. Pronunciation fundamentals: Evidence-based perspectives for L2 teaching and research (*Language Learning & Language Teaching* Vol. 42). *Applied Linguistics*, 38(3), 430–433. <https://doi.org/10.1093/applin/amw041>
- Shutter, Z. W. (2004). *Slips of the tongue: What errors in speech reveal*. [Unpublished manuscript]. Retrieved July 14, 2020.

- Skehan, P. (1998). Task-based instruction. *Annual Review of Applied Linguistics*, 18, 268–286.
- Smith, J., & Nelson, C. (2020). Connected speech processes and L2 learner pronunciation. *TESOL Quarterly*. <https://doi.org/10.1002/tesq.543>
- Stemberger, J. P. (1989). Speech errors in early child language production. *Journal of Memory and Language*, 28, 249–273.
- Trofimovich, P., & Baker Smemoe, W. (2006). Learning second language suprasegmentals: Effect of L2 experience on prosody and fluency characteristics of L2 speech. *Studies in Second Language Acquisition*, 28, 1–30. <https://doi.org/10.1017/S0272263106060013>
- Trofimovich, P., & Baker, W. (2020). *Second language speech learning: The role of input, experience, and perception*. Routledge.
- Wan, I.-P. (2007a). Mandarin speech errors into phonological patterns. *Journal of Chinese Linguistics*, 35(1), 185–220.
- Wan, I.-P. (2007b). *A phonological investigation in speech errors and aphasic speech in Mandarin*. Crane Publishing.
- Wangui, J. (2019). *Analysis of phonological errors made by Grade Four learners in Kenya*.
- Wei, Y. H. (2004). *A teaching research on task-based approach*. East-China Normal University Publisher.
- Willis, J. (1996). A flexible framework for task-based learning. In J. Willis & D. Willis (Eds.), *Annual Review of Applied Linguistics*, 36, 136.
- Zafar, A. (2016). Error analysis: A tool to improve the English skills of the students of graduation. *Procedia - Social and Behavioral Sciences*, 217, 697–705.
- Zhang, Q. (2010). A study of Chinese learning of English tag questions. *Journal of Language Teaching and Research*, 1(5), 578–582.
- Ziegler, N. (2016). Taking technology to task: Technology-mediated TBLT, performance, and production. *Annual Review of Applied Linguistics*, 36, 136.

## APPENDICES

### APPENDIX 1: TASK DESCRIPTION

As part of the study, this research will work on the topic of travel, students will participate in a task to plan a trip to an area they aspire to visit. They will then present their findings through a zoom recorded call.

Using the Trip Advisor website ([www.tripadvisor.com](http://www.tripadvisor.com)), students will:

1. Select a specific destination they are interested in visiting.
2. Plan a detailed itinerary for a three-day trip to explore the area. The itinerary should include:
  - Accommodation: Research and select a hotel or other lodging options, considering factors like cost and location.
  - Meals: Plan where they will eat each day, considering affordability and variety of options.
  - Transportation: Research local transportation options for navigating the area (e.g., taxis, buses, or walking).
  - Activities: Choose at least three activities or places to visit that reflect key aspects of the destination (e.g., job centers, schools, cultural landmarks).

Students will present their findings in a structured format, detailing:

- Their reasons for choosing the destination.
- The budget for the trip, broken down by accommodation, meals, transportation, and activities.
- Observations about the destination's opportunities (e.g., jobs, education, life style) and challenges (e.g., cost of living, crowding).

## **APPENDIX 2: SAMPLE TRASCRIPTIONS**

### **Student A**

My name is ..... I'm here to present my itinerary of a three day trip to South Korea. My destination is Seoul in South Korea.

Accommodation: hotel .....Cost; 99 dollars

#### Meals

I'm going to have my meals, I will have my meals at..... Restaurant. The meals are French fries, uhmm burger

#### Transport

From Entebbe to South Korea. I'm going to use an aeroplane. From the airport to the hotel, a taxi.

The activities are I'm going to, to, uhm the national museum of Korea, seoul University, the night market food.

The cost is 73 dollars.

#### Reasons for choosing the destination

It has a number, the hotel has a number of reviews. The destination is my favourite, my favourite destination.

#### Observations about the destination's opportunities

#### Availability of jobs

They have good education service.

The challenges are, the cost of living is very high for example the prices.

## STUDENT A

mai neim z ..... aim hiə tu ,preznt mai ar'tinərəri əv ə θri: 'dei tri:p tu ,saʊθ kə'riə |  
mai ,destɪ'neɪʃn z səʊl ɪn ,saʊθ kə'riə |  
ə ,kɒmə'deɪʃn |  
,həʊ'tel ..... |  
kɒst |  
'nɑnti nɑm 'dɒləz |  
mi:lz |  
aim ,gəʊɪŋ tu həv mai mi:lz |  
'aɪ ,wi:l həv mai mi:lz æt ... |  
'restrɒnt |  
ðə mi:lz ə frentʃ fraɪz |  
uhmm 'bɜ:ɡə |  
træns'pɔ:t |  
frəm ,en'teɪbi tu ,saʊθ kə'riə |  
aim ,gəʊɪŋ tu 'ju:z ən 'eərəpleɪn |  
frəm ði 'eəpɔ:t tu ðə ,həʊ'tel |  
ə 'tæksi |  
ði æk'tɪvətɪz ə aim ,gəʊɪŋ tu: |  
tu: |  
uhm ðə 'næʃnəl mju: 'ziəm əv kə'riə |  
səʊl ,ju:nɪ'vɜ:sɪti |  
ðə naɪt 'mɑ:kɪt |  
  
| fu:d |  
ðə kɒst s 'sevnti θri: 'dɒləz |  
'ri:zənz fə 'tʃu:zɪŋ ðə ,destɪ'neɪʃn |  
'ɪt 'hæz ə 'nʌmbə |  
ðə ,həʊ'tel 'hæz ə 'nʌmbər əv rɪ'vju:z |  
ðə ,destɪ'neɪʃn z mai 'feɪvərɪt |  
mai 'feɪvərɪt ,destɪ'neɪʃn |  
,ɒbzə'veɪʃnz ə ,baʊt ðə ,destɪ'neɪʃnz ,ɒpə'tju:nɪtɪz |

ə ,veɪlə'biləti əv dʒɒbz |

'ðeɪ həv ɡʊ ,edʒʊ'keɪʃn 'sɜ:vɪsɪz |

ðə 'tʃæləndʒɪz ɑ: |

ðə kɒst əv 'lɪvɪŋ z 'veri ,haɪ fər ɪɡ'zɑ:mpəl ðə 'praɪsɪz |

# APPENDIX 3: INTERNATIONAL PHONETIC ALPHABET (IPA) CHART

## THE INTERNATIONAL PHONETIC ALPHABET (revised to 2015)

CONSONANTS (PULMONIC)

© 2015 IPA

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks	Voiced implosives	Ejectives
◌ ʘ Bilabial	◌ ɓ Bilabial	◌ ʼ Examples:
◌ ǀ Dental	◌ ɗ Dental/alveolar	◌ ɓ' Bilabial
◌ ǃ (Post)alveolar	◌ ɟ Palatal	◌ ɗ' Dental/alveolar
◌ ǃ̥ Palatoalveolar	◌ ɡ Velar	◌ ɟ' Velar
◌ ǁ Alveolar lateral	◌ ɠ Uvular	◌ ɟ' Alveolar fricative

OTHER SYMBOLS

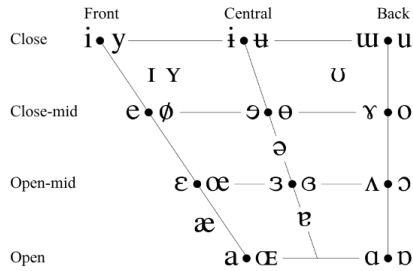
◌ ɱ Voicelesslabial-velar fricative	◌ ʑ Alveolo-palatal fricatives
◌ ɰ Voiced labial-velar approximant	◌ ɺ Voiced alveolar lateral flap
◌ ɥ Voiced labial-palatal approximant	◌ ɺ Simultaneous ʃ and x
◌ ʜ Voiceless epiglottal fricative	Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.
◌ ʢ Voiced epiglottal fricative	
◌ ʡ Epiglottal plosive	

DIACRITICS Some diacritics may be placed above a symbol with a descender, e.g. ɲ̄

◌ ɔ Voiceless	◌ ɲ̄ ɖ̄	◌ ɔ Breathy voiced	◌ ɓ̄ ɗ̄	◌ ɔ Dental	◌ ɲ̄ Apical	◌ ɲ̄ ɖ̄
◌ ɔ Voiced	◌ ʂ̄ ʐ̄	◌ ɔ Creaky voiced	◌ ɓ̄ ɗ̄	◌ ɔ Laminar	◌ ɲ̄ Nasalized	◌ ɲ̄ ɖ̄
◌ ɔ Aspirated	◌ ʈ̄ ɖ̄	◌ ɔ Linguolabial	◌ ɲ̄ ɖ̄	◌ ɔ Nasal release	◌ ɲ̄ ɖ̄	◌ ɲ̄ ɖ̄
◌ ɔ More rounded	◌ ɔ̄	◌ ɔ Labialized	◌ ɲ̄ ɖ̄	◌ ɔ Lateral release	◌ ɲ̄ No	◌ ɲ̄ ɖ̄
◌ ɔ Less rounded	◌ ɔ̄	◌ ɔ Palatalized	◌ ɲ̄ ɖ̄	◌ ɔ audible release	◌ ɲ̄	◌ ɲ̄ ɖ̄
◌ ɔ Advanced	◌ ɲ̄	◌ ɔ Velarized	◌ ɲ̄ ɖ̄			◌ ɲ̄ ɖ̄
◌ ɔ Retracted	◌ ɲ̄	◌ ɔ Pharyngealized	◌ ɲ̄ ɖ̄			◌ ɲ̄ ɖ̄
◌ ɔ Centralized	◌ ɲ̄	◌ ɔ Velarized or pharyngealized	◌ ɲ̄ ɖ̄			◌ ɲ̄ ɖ̄
◌ ɔ Mid-centralized	◌ ɲ̄	◌ ɔ Raised	◌ ɲ̄ ɖ̄ (ɲ̄ = voiced alveolar fricative)			
◌ ɔ Syllabic	◌ ɲ̄	◌ ɔ Lowered	◌ ɲ̄ ɖ̄ (ɲ̄ = voiced bilabial approximant)			
◌ ɔ Non-syllabic	◌ ɲ̄	◌ ɔ Advanced Tongue Root	◌ ɲ̄ ɖ̄			
◌ ɔ Rhoticity	◌ ɲ̄ ɖ̄	◌ ɔ Retracted Tongue Root	◌ ɲ̄ ɖ̄			

Typefaces: Doulos SIL (metatext); Doulos SIL, IPA Kiel, IPA LS Uni (symbols)

VOWELS



Where symbols appear in pairs, the one to the right represents a rounded vowel.

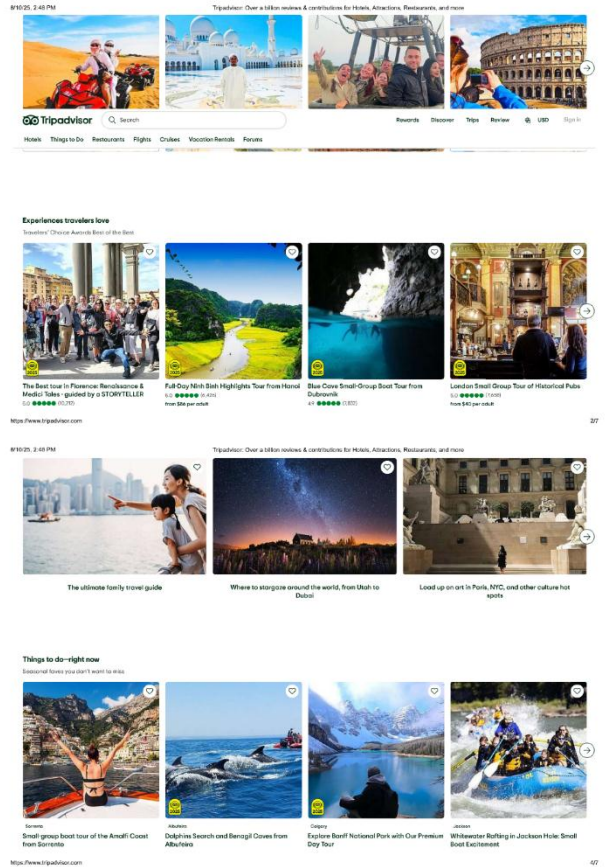
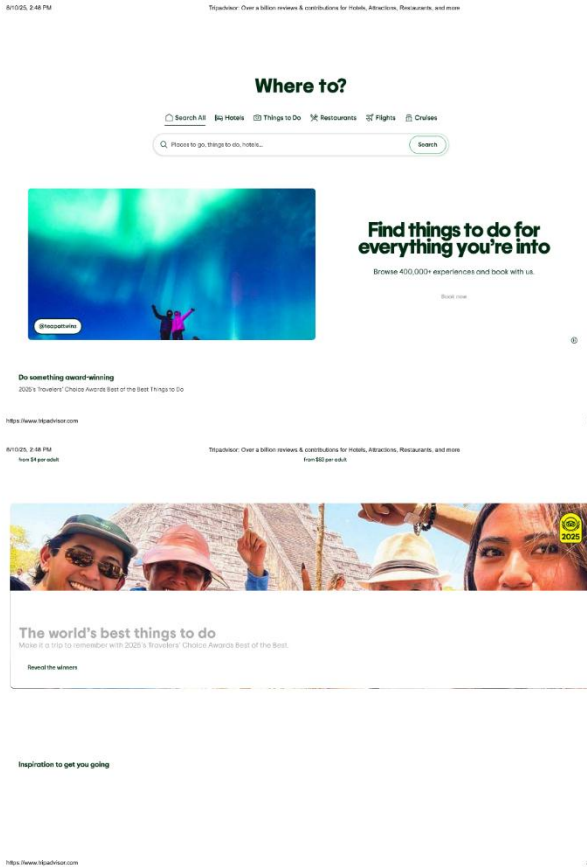
SUPRASEGMENTALS

◌ ˈ Primary stress	ˈfounˈdʰɪʃən
◌ ˌ Secondary stress	
◌ ː Long	eː
◌ ˑ Half-long	eˑ
◌ ˘ Extra-short	ɛ̘
◌   Minor (foot) group	
◌    Major (intonation) group	
◌ . Syllable break	ˌi.ækt
◌ ◌ Linking (absence of a break)	

TONES AND WORD ACCENTS

LEVEL	CONTOUR
◌ ˥ High	◌ ˥ or ˨ Rising
◌ ˥ High	◌ ˥ or ˨ Falling
◌ ˨ Mid	◌ ˥ High rising
◌ ˨ Low	◌ ˥ Low rising
◌ ˨ Extra low	◌ ˥ Rising-falling
◌ ↓ Downstep	◌ ↗ Global rise
◌ ↑ Upstep	◌ ↘ Global fall

# APPENDIX 4: INTERFACE OF THE TRIPADVISOR WEBSITE



## APPENDIX 5: INTERFACE OF THE PHOTRANSEEDIT WEBSITE

### PhoTransEdit

PhoTransEdit is a set of free applications aimed at just helping you save your time when writing English transcriptions. It provides automatic phonemic transcriptions, output customization and edition, export transcriptions to several formats and many other functionalities.

<b>Online</b>
<a href="#">Text to Phonetics</a> /'tekst tə fə'netɪks/
<a href="#">Phonetic keyboard</a> /fə'netɪk 'ki:bɔ:d/
<b>Desktop</b>
<a href="#">Download</a> /,daʊn'ləʊd/
<a href="#">Desktop help</a> /'desktp help/

### Online or Desktop?

#### Functionality matrix

Functionality	Online	Desktop
Automatic phonemic transcription	✓ (maximum 500 characters)	✓ (no limit)
Phonetic keyboard	✓	✓
Phonemic variations in connected speech		✓
Update database	✓	
Export phonetic transcriptions to X-SAMPA	✓	✓
Export phonetic transcription to HTML code numbers	✓	✓
Export to Braille	✓	✓
Word Rhymes		✓
Sound wildcards		✓