

PHONOLOGICAL ADAPTATION OF ENGLISH LOANWORDS IN PASHTO

ZIA UL ISLAM

Supervisor

Prof. Dr. Raja Nasim Akhtar



**A Dissertation Submitted in Partial Fulfillment of the Requirement
For the Degree of MS English Stream**

FOUNDATION UNIVERSITY ISLAMABAD

RAWALPINDI CAMPUS, PAKISTAN

2018

CANDIDATE DECLARATION FORM

I **Zia Ul Islam S/O Wali Rahman**, Registration No. **F131AMSAL-026** candidate of MS Linguistics at Foundation University Rawalpindi campus do hereby present this thesis entitle *Phonological Adaptation of English Loanwords in Pashto* for the partial fulfilment of the requirement of MS English Linguistics degree. I declare the work is on my own endeavour, included no plagiarized content, and has not been submitted as a part of academic assessment at any institution.

Zia ul Islam

Endorses by

Prof. Dr. Raja Nasim Akhter

Supervisor

Certification

The undersigned certify that this thesis entitled Phonological Adaptation of English Loanwords in Pashto submitted by Zia ul Islam Registration # F131AMSLE026 is accepted in its present form by the Department of English, Foundation University Rawalpindi Campus as satisfying the partial requirement for the award of the degree of MS English.

Prof. Dr. Raja Nasim Akhtar
Supervisor

Prof. Ubaidullah Qazi
Internal Examiner

Dr. Abdul Qadir Khan
External Examiner

Prof. Dr. Raja Nasim Akhtar
Head, Department of English

Prof. Dr. Raja Nasim Akhtar
Dean, Faculty of Arts and Social Sciences

Acknowledgements

I am grateful to Almighty Allah, who gave me the competence to undertake this task. It's my pleasure to convey my gratitude to all those who have accompanied me along the journey of working on this dissertation, to my education in general, and to my personal development in particular. Due to many reasons, the accomplishment of the research would have been an impossible task, if I had not been blessed with such kind advisors.

Firstly, I am greatly thankful to my supervisor, **Prof. Dr. Raja Nasim Akhtar**, Dean Faculty of Arts and Social Sciences/ HOD English department (FURC) who guided me and constantly supported me in my research both intellectually and professionally. Our meetings always opened my eyes to new possibilities for gathering data and re-sharpening my analysis. His eagerness to listen to my ideas and help me enrich them further developed all of my work. Sir thanks for giving me such great inspiration.

In addition to my supervisor; I wish to express my gratefulness to **Dr. Abdul Qadir Khan**, who generously offered his valuable advice in a gentle manner to make this dissertation much better, and supported me whenever I felt difficulties and hurdles during the study.

I would like to thank all of my teachers who helped me in the study for their help. I am obliged to them for their valuable contributions, ideas and time.

I am highly indebted to my best friend **Aftab Kazam**, who always believed in me by encouraging me to finish the MS journey and his family, who facilitated me and accepted me as one of their family members. Thank you all.

I humbly express my thanks to my **parents** for their love, support and prayers which made me go on no matter how far the way seemed.

My thanks are also extended to all my siblings for their prayers, care and beautiful memories. They were always there for me, whenever I need them.

Dedication

*This thesis is dedicated to my beloved parents for their long loving supports
who bear every sort of difficulty for me. They fill my life with endless joy
and immeasurable love and inspire me to be a better person*

Abstract

Language contact and the impact of one language on another are extremely regular phenomena. English has impacted different languages globally. Pashto is one of the recipient languages from this source, and shows linguistic components borrowed from it. The aim of this research is to find out the adaptation of English loanwords in Pashto go through the phonological changes according to Pashto sounds and syllable patterns. The data is obtained from the native speakers of Pashto (Yusufzai dialect spoken in Malakand KP) and also from the dictionaries of Pashto. More than 100, most common, loanwords are identified and listed which are recorded from Pashto speakers. Then they are analyzed using Praat software and SPSS. Then monosyllabic, disyllabic and polysyllabic words are also taken from the data for the study of syllable structure of the English loanwords in Pashto. Adaptation in the vowels, diphthongs, triphthongs and consonants sounds of the English loanwords in Pashto are examined. The association of Pashto vowel system with English proves that these are considerably different from each other. The maximum possible Pashto syllable is (C)(C)(C)V(C)(C). The commonly used syllable patterns are CV and CVC. In the light of these Pashto phonological patterns, the structure of English loanwords is described. This description reveals that the English loan words in Pashto are re-structured in accordance with Pashto phonology. For example, the English vowels are replaced with Pashto vowels. The main focus of the investigation is on the syllable structure of English loanwords. It is found that the loanwords maintain their structure if they conform to Pashto syllable patterns. On the other hand, non- conformity results in restructuring in accordance with Pashto syllable templates. This work will initiate further linguistic investigations on Pashto.

TABLE OF CONTENTS

Title page	i
Candidate Declaration Form	ii
Thesis Approval	iii
Acknowledgment	iv
Dedication	vi
Abstract	vii
CHAPTER ONE	I
INTRODUCTION.....	1
1.1 Background	1
1.2. Research Objectives.....	2
1.3. Research Questions	2
1.4. Research Hypothesis.....	2
1.5. Borrowing	3
1.6. Statement of the Problem.....	4
1.7. Theoretical Framework.....	4
CHAPTER TWO	9
AN OVERVIEW OF PASHTO	9
2.1 Introduction.....	9
2.2 The Language Family	9
2.3 Pashto Speakers	10

2.4. Pashto Dialects.....	10
2.5. The Grammar of Pashto.....	11
2.5.1. Syntax.....	12
2.5.2. Case Markers (Clitics).....	12
2.5.3. Phonology.....	14
2.5.4. Morphology.....	14
2.5.5. Nouns in Pashto.....	16
2.5.6. Verbs in Pashto.....	16
2.5.7. Transitive and Intransitive Verbs.....	18
2.6. Sound System.....	19
2.6.1 Pitch and Stress.....	21
2.6.2. Pashto Syllables.....	21
CHAPTER THREE.....	23
REVIEW OF LITERATURE.....	23
3.1. Introduction:.....	23
3.2. Borrowing Words.....	23
3.3. Reasons for Borrowing.....	25
3.4. Loanwords Adaptation.....	28
3.5. Phonology of Loanwords.....	30
3.6. Main Issues in Phonology of Loanwords.....	33

3.6.3. The Agents of Adaptation.....	34
3.6.4. The Nature of the Input.....	34
3.6.5. The Impact of Chronology.....	34
3.6.6. The Structure of the Loanword Phonological System	35
3.7. Epenthesis	35
3.8. The Syllabic Structure of Languages.....	37
3.9. Conclusion	42
CHAPTER FOUR.....	43
RESEARCH METHODOLOGY	43
4. 1. Introduction.....	43
4.2. Research Design.....	43
4.3. Participants:.....	44
4.4 Data Collection Tools.....	44
4.5 Analysis of the data	45
4.6. Research Ethics	46
CHAPTER FIVE	47
THE PHONOLOGY OF LOANWORDS IN PASHTO.....	47
RESULTS AND DISCUSSION	47
5.1. Introduction.....	47
5.1.1. Demographic Analysis.....	47

5.2. Vowel Formants of English	48
5.3. Substitution of Short English Vowels by Pashto Vowels.....	53
5.3.1. Replacement of English Short Vowel /ʊ/ with /a:/	53
5.3.2. Replacement of /æ/ with /e/.....	57
5.3.3. Replacement of /ɪ/ with /ə/.....	60
5.3.4. Replacement of /ʌ/ with /ə/.....	62
5.3.5. The Insertion of /ə/.....	65
5.3.6. The Replacement of /ʊ/ with Pashto /o/.....	69
5.3.7. The Replacement of /ʊ/ with Pashto /o/.....	70
5.4. The Substitution of Long English Vowel /ɔ:/ with Pashto vowel /a:/.....	72
5.4.1. The Long Vowel /i:/ in Loanwords.....	75
5.4.2 Replacement of / ɜ:/ with /ə/.....	76
5.5. Adaptation in English Diphthongs.....	78
5.5.1 Substitution of /ai/ with /I/	78
5.5.2. Substitution of English / iə / Diphthong with Pashto /e/ vowel.....	81
5.5.3. Substitution of English /ei/ Diphthong with Pashto vowel /e/.....	84
5.5.4. Replacement of /əʊ/ Diphthong with /o/.....	87
5.5.5. Replacement of /əʊ/ Diphthong with /o/.....	88
5.6 Adaptation in Trip thongs	90
5.6.1. The Replacement /aɪə/ Trip thong with /e/	90

5.6.2. /auə/ Trip thong with /aw/	91
5.7. Adaptation in Consonants	96
5.7.1. Substitutions of /f/ with /p/	96
5.7.2. Replacement of /v/ with /w/	98
5.7.3. Replacement of /θ/ with /t/	100
5.7.4. Replacement of /ð/ with /d/	101
5.7.5. Articulation of /t/ and /d/	102
5.7.6. Unpredictable Pronunciation of /r/ Consonant	103
5.7.7. The Replacement /p/ as an Alternative of /B/	105
5.7.8. The Insertion of /n/	106
5.7.9. The Deletion of Phonemes for Convenience in Loanwords	107
5.7.10. The Absence of /m/ Nasal in the Onset.	108
5.8. The Syllable	108
5.9. Gemination	110
5.10. Syllable Structure of English Loanwords	110
5.11. Matching Syllables of English Loanwords.	111
5.12. Syllable Structure for English Loanwords (identical)	111
5.13. Syllable Structure for English Loanwords (splitting the clusters)	113
5.14. Onset Clusters	114
5.15. Coda Clusters	115

5.16.1. Demonstration of Restructured Word “Glass”	117
5.17 Presentation of English Monosyllable Word “Bundle”	117
5.17.1 Presentation of Restructured Word “Bundle”	118
5.18. Conclusion	120
CHAPTER SIX	122
CONCLUSION	122
6.1. Introduction	122
6.2. Significance of the Study	125
6.3. Conclusion	126
References:.....	127
APPENDICES:.....	132
Appendix: A	132
List of loanwords in Pashto for recording.....	132
Appendix: B	135
Syllable Structures for English Loanwords (identical)	135
Appendix: C	136
Syllable Structures for English Loanwords (splitting the clusters)	136
Appendix: D; Formant Frequencies of Loanword Vowels.....	137
Appendix: E; Formant Frequencies of Loanword Vowels	139

Chapter One

Introduction

This chapter gives a general introduction of Pashto language and the English loanwords borrowed by Pashto. The research questions and objectives are also specified. It is followed by statement of the problem. Finally, the theoretical framework is discussed.

1.1 Background

Pashto is an Indo European language. Pashto has around forty to fifty million speakers (Lewis, 2009), mainly spoken in Afghanistan and Pakistan as a prominent language. In Afghanistan, it is mostly spoken in the Afghan region (Penzle, 1955) Pashto is also official language of Afghanistan today other than Dari. In Pakistan it is spoken in Balochistan and Khyber Pakhtunkhwa (KP).

Pashto is classified into two major varieties, Southern Variety and Northern Variety. The Yusufzai dialect is found in the Northern Variety. It is the prestigious dialect of KP. The Yusufzai dialect flourished under the government of Pakistan, which is the literary language spoken in schools and media in the KP and nearby tribal regions (Barrt, 2011). Those who speak Pashto call themselves Pashtuns or Pakhtuns, while other Communities call them Pathans. During the government of Muslims in India, the Pashto dialect had borrowed a lot of words of that time from the language of the ruling class. Then British came and settled in India, Pashto started borrowing more words from English language as well. The obvious reason of English language dominancy on Pashto hard dialect is that: after the independence of Pakistan, English language has become an official and academic language in Pakistan. Though there is no cultural and geographical connection, but as it remained a ruling class language for many years, and now

an official language of Pakistan, Pashto language borrowed and borrows a good number of words from English language.

This study investigates the phonological developments that loanwords go through, and the process that emerge when they are adopted from English into Pashto. This study particularly focuses on, the transformation of vowels sounds, consonants sounds and restructuring of syllables. This is only accessible once the Pashto syllable structure and Pashto vowel system are examined and then compared with English syllable structures and its vowel system to identify what sort of difference take place in articulation of English loanwords as per Pashto sound system.

1.2. Research Objectives

- To identify the changes occurred in the adapted English loanwords.
- To find out the syllable structure of English loanwords in Pashto.
- To explicate the phonological restructuring of English loanwords and its effect on the pronunciation of English loanwords used by Speakers of Pashto Yusufzai Dialect (SPYD).

1.3. Research Questions

- Which sounds of English loanwords are replaced with Pashto sound by Pashto speakers?
- What are the syllable structures of English loanwords in Pashto?
- What type of syllable restructuring takes place in English loanwords adapted in Pashto?

1.4. Research Hypothesis.

- The English loan words, adapted by SPYD, experience phonological changes according to Pashto sound system and syllable patterns.

1.5. Borrowing

Hock (1986) defines borrowing as the adaptation of individual words or even larger set of vocabulary stuff from another language (Khan, 2011: 61). Languages borrow words and other linguistic forms in different circumstances. However, other linguistics forms such as syntax and inflectional morphology can be borrowed from one language into another in the case only if these two languages are closely connected geographically or by any other means or share some experience.

The phenomenon; “Language contact” occurs when speakers of different languages communicate with each other. Language contact comprises some observable facts, which are borrowing, language convergence, and relexification (a mechanism of language change). Various linguistic phenomena as code switching and the creation of pidgin and creoles take place as a result of Language contact.

According to Holms (2006), borrowing is relatively different from code switching; a speaker does not have it in mind to use another language while using borrowed words. When borrowing, the lexical items from other varieties, the speakers do not intend to use those languages. In order to study borrowing investigation of its reasons, kinds, adaptation, causes and outcomes are required. Looking for reasons of borrowing the sources of borrowing is needed. Thus, borrowing occurs since, new technologies and inventions take place throughout the world, whereas the low resource languages do not have a particular word for that latest thing (Holms, 2006).

Investigating kinds of borrowing is associated with identifying how borrowing may apply to different linguistic levels. When studying adaptation of the borrowed words, most of the researches examine what differences and changes take place for certain borrowed words within

the different linguistic levels. Some recent researches look into the integration of borrowed words within the linguistic structure of the recipient language, which will be discussed in the following study.

Like other languages, Pashto has history of borrowing from other languages. It has adopted bulk of words from foreign origins. It has mainly borrowed from Persian, Arabic, Urdu, Sanskrit and English. Language contact is a common phenomenon. Language contact causes language change. There are number of reasons for language contact like trade, commercial, cultural, political, technological and geography of the people. Almost every language borrows words from the other languages furthermore filling the gap in their language. According to Trask,(2007) Borrowing means the taking over of “loanwords” and words is the like the borrowed words in the receiving language. Thus, in a language like Pashto, the phenomenon of loanword borrowing is an important object of study.

1.6. Statement of the Problem.

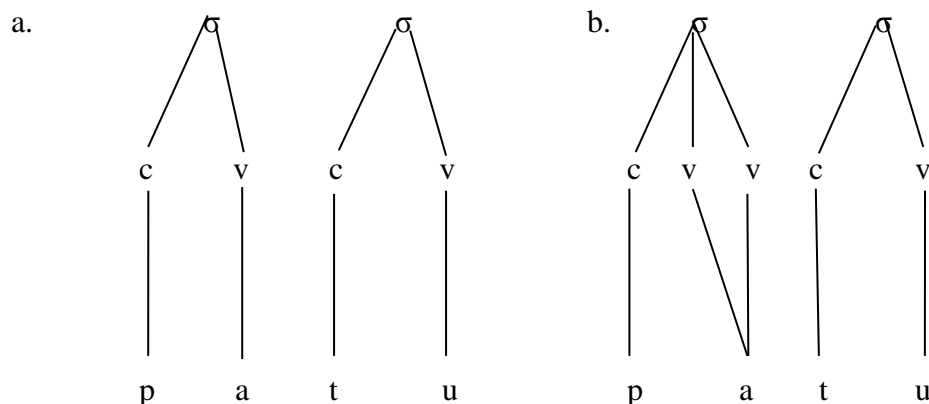
Despite the fact that various studies have been done on Pashto phonology, very little work has been done on Pashto loanword phonology. In the current study, the researcher investigates the English loanwords in Pashto Yusufzai dialect in district Malakand, KP Pakistan. Subsequently, the present study is a preliminary investigation of loanwords phonology in Pashto using the Praat and SPSS softwares, and drawing syllable templates for loanwords to find out what kind of structural changes English loanwords undergo in the process of adaptation.

1.7. Theoretical Framework

This study was a challenge to make stronger the concept that the loanwords, when adopted are restructured in the receiving language according to its phonological structures. In

this manner, keeping in mind the end goal to examine the phonological structures of English loanwords in Pashto, the study of syllable structures is needed.

In the phonological presentation of words, “segments are structured into syllables” (Gussenhove . Jacobs. 1998) which distinguishes that syllables do not directly dominate segments. It implies there is another level of presentation between the two. This is called “CV-tier” (Gussenhove and Jacobs 1998). It was projected by Clements and Keyser in (1983) intending to demonstrate the “segmental duration” and the “designation of syllabicity”. In their view consonants and vowels are connected with single slot where as geminate consonants and long vowels occupy two slots at skeletal (CV) tier. For example, the Tamil words “patu” and “pa:tu” (Gussenhove and Jacobs 1998) will have the succeeding representations respectively:

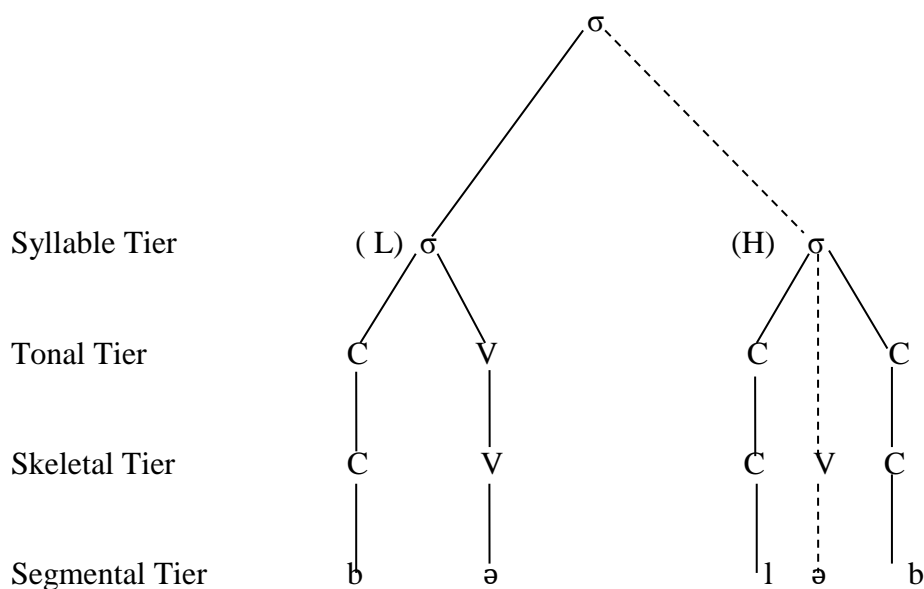


The main syllable in "b" demonstrates that it contains the long vowel /a/, thus, it is displayed by connecting it with two V-slots. Initially, the autonomous status of CV-level was proposed by McCarthy (1980) while portraying the morphology of Arabic. He found that Arabic morphemes are specified as far as strings of skeletal slots, referred to as templates' (Gussenhove and Jacobs, 1998). Primarily, McCarthy broadened the model of “Autosegmental Phonology”,

which was first proposed by Goldsmith in 1976, to portray the non-concatenative morphology of Arabic. "Template" in Phonology is utilized to allude to a "generalized phonological pattern", like CCVC where the "C" remains for "consonant" and "V" remains for "vowel" (Carr, 2008). It is in this sense, i.e. phonological example; the word template is to be utilized as a part of this work. This section sequencing of syllables in Pashto will be dealt with as syllable templates.

The theoretical framework of auto-segmental phonology is being applied. Goldsmith (1990), who is the originator of auto-segmental phonology holds that it is an immediate descendent of the theory of generative phonology, which was exhibited in "the sound pattern of English" (SPE) by Chomsky and Halle (1968). The theory of Auto-segmental phonology is that phonological depictions consist of various independent, parallel tiers. In this way, it gives legitimate methods for depicting these autonomous levels/tiers and demonstrating how they make bond with each other. At first, this model was utilized to depict tone merely yet later it was reached out to portray other phenomena even infixational morphology also. Subsequently, applying the system of Auto-segmental Phonology the reconstructed syllable pattern for the word 'pencil' is depicted below.

There are four stages of demonstration; they are syllable tier, tonal tier, skeletal tier and segmental tier. The syllable tier illustrates the English and the restructured syllabification, the tonal tier shows if any extra phonemes added in the syllable. The skeletal tier point out the English and restructured template while the segmental tier put on display the sections including the addition done for the purpose of restructuring. The dotted lines reveal the new relations that arise as an outcome of reformation.



This demonstration illustrates that the monosyllabic word ‘Bulb’ which includes two consonant clusters at coda position. It is transformed into disyllabic word due to the additional coda cluster ‘lə b’. The de clustering is done by untying the consonants and adding /ə / between /lb/ to implement the requirement of Pashto syllable structure. This creates an extra syllable resulting from restructuring. This framework confirms that the words are re structured from monosyllabic to disyllabic words and from disyllabic to monosyllabic words.

The study is divided into six chapters. The discussion begins in the first chapter with an introduction to the study and an overview of the sociolinguistic background of Pashto. Statement of the problem and theoretical frame work is given. The research questions and objectives are also specified. Chapter 2 gives the detail introduction of Pashto language and its grammar. Chapter 3, focuses on the literature review the works of the other writers in the same area is discussed. The chapter introduces the meaning of borrowing and the different types of it. It discusses how the study of borrowing changed by time. Chapter 4 mainly talks about the research methodology employed during this study. It also elaborates the study’s background and

introduces participants of the study with the reader. It is also include the procedures of data collection as well as data analysis. Chapter 5 focuses mainly on data analysis through spectrograms, tabulation of the data through SPSS (percentile) and adaptation of vowels and consonants sounds in Pashto. It also discusses the syllable structures of Pashto and English loanwords followed by the theory applied on the adopted loanwords. The chapter 6 draws some conclusions, provide a summary of the discussion made in the thesis, findings of the research and the implications of the study.

Chapter Two

An Overview of Pashto

2.1 Introduction

This section presents a general introduction to the study, An Overview of Pashto Language, providing a brief description of its grammar necessary for understanding the phenomenon under study, and the background to the present research.

2.2 The Language Family

There are two subgroups of the Indo-European language family: Western Iranian and Eastern Iranian. Pashto is one of the East Iranian groups of languages (McKeever, 2011). Pashto is the national language of Afghanistan and a regional language of Pakistan: spoken in North-West Frontier Province (current name is Khyber Pakhtunkhwa). It is spoken natively by over half the population of Afghanistan, an estimated 7,500,000, and by about 90 percent of the population in the KP province of Pakistan, an estimated 14,000,000 (Tegey, 1996). Pashto is also spoken commonly in Baluchistan, province of Pakistan directly south of central Afghanistan; there is a community of about two million people in Karachi who speak Pashto as their 1st language and there are about 50,000 native speakers in Iran (Tegey, 1996, p.1).

Pashto: a well known language of Pakistan, Afghanistan and Iran. It is a branch of the Eastern Iranian languages, mainly spoken in Afghanistan and Pakistan as well as by the Pashtun communities around the world. It belongs to an Indo-European family. It is known as Pashtu, Pushtu, Pakhto or Pukhto. In Afghanistan it is also called Afghani, it is also acknowledged as one of the two national and official languages of Afghanistan.

According to linguists Michael M. T. Henderson & James Darmesteter Pashto is 'descended from Avestan' (an ancient Iranian language) but Georg Morgenstierne does not agree with them

and says these languages are just closely linked. Abdul Hai Habibi (1967) says that because of the close contact with Pashto speakers, the people borrowed the Pashto words that are present in Rabatak Inscription.

2.3 Pashto Speakers

Individuals who communicate in Pashto call themselves Pashtuns (pronounced pashtunz), in Pakistan and India, they are alluded to as Pathans; (pronounced patanz) by non Pashtuns. Other ethnic groups, for example, westerners, have generally called Pashtuns Afghan; when King Ahmad Shah built up a political state in the sixteenth Century, he called it Afghanistan-the nation of the Afghans, i.e., Pashtuns. It is just in the most recent fifty years or so that the term Afghan has come to allude to any inhabitant of Afghanistan, paying little respect to ethnic foundation. Presently the term Pashtun appears to have been embraced by westerners (despite the fact that Pashtuns in Pakistan are still called Pathans). At the point when the idea is examined of a free Pashtun state, for instance, the state is generally called Pashtunistan (Tegey, 1996).

The Khattak tribe living in Kohat- the tribe that effectively established the Pashto literary tradition- speaks Kandahar Pashto, and the neighboring Wazir have some of the Kandahar characteristics in their dialect, notably the same set of retroflex consonants. Speakers of the Central or Kabul dialect live mostly in Kabul, Logar, Ghazni and Parwan provinces. Speakers of the Eastern or Ningrahar dialect live in the Northeast sections of Afghanistan, and in the NWFP of Pakistan (Tegey, 1996, p.6).

2.4. Pashto Dialects

There is a controversy in the identification of exact number of Pashto's dialects. According to Mckeever (2011), there are two major dialects and two minor dialects in Pashto. The major dialects are Eastern Pashto: spoken in North Eastern Pakistan, and Western Pashto:

spoken in Afghanistan in the city of Kabul. While the minor dialects are Southern Pashto: spoken in, western Pakistan (Baluchistan) and Iran, and central Pashto: is spoken in Northern Pakistan (Waziristan).

Like any other language, Pashto has dialects and sub-dialects. These dialects have not been grouped or concentrated on to any incredible degree by western grammarians, and most Pashtuns themselves are touchy just to the undeniable contrasts in pronunciation and vocabulary. There are three noteworthy dialects of Pashto: the Kandahar or Western dialects, the Kabul or Central vernacular, the Ningrahar or Eastern dialects. Speakers of the Kandahar dialects live for the most part in Southwest Afghanistan and in Baluchistan. Pashto has five main dialects discovered by Rehman (2012) are given below.

1. North-Eastern Dialect (Yusufzai)
2. North-Western Dialect (Central)
3. South-Eastern Dialect (Quetta)
4. South-Western Dialect (Kandahar)
5. Middle Tribal Dialect.

The focus of this study is the ‘North-Eastern (Yusufzai) Dialect’ spoken by the residents of Wartair Malakand.

2.5. The Grammar of Pashto

This section presents a concise account of Pashto syntax, case markers, sound system, morphology and its syllable structure, essential to understanding the subject under investigation. Though, the debate is partial to some significant features as the purpose is to present a review of Pashto language. Moreover, giving the proper focus and space, any detailed explanation will take

us far away from the topic. The structure of Pashto is similar to a number of other Indo-Aryan languages like Urdu, Hindi, Punjabi, and so on.

2.5.1. Syntax

The sentence structure of Pashto is subject-object-verb (SOV) as opposed to English subject-verb-object (SVO) word order. Pashto and English both have subject-verb (SV) word order in intransitive sentences where there is no object. e.g. '*zo zam*' (I go).

In Pashto, however, all modifiers go before the verb while in English most of the verbal modifiers follow the verb.

2.5.2. Case Markers (Clitics)

Clitics in Pashto need close observation, for reasons suggested in the literature, however hardly ever discovered. Just like Bulgarian, Pashto is having two kinds of clitics which are **second position clitics** and **verbal clitics**, sometimes used in a single sentence. The grammar must recognize between these two kinds. In Pashto, The second position clitics comprises pronominals, modals, and adverbials, and it's examples given below.

a. Pronominal (ergative, accusative, genitive)

me- 1sg

de - 2sg

ye - 3sg, 3pl

am- 1pl, 2pl

mo- 1pl, 2pl

b. Modals

ba- may, might, will, should, must

de- had better, should, let

c. Adverbials

xo- really, indeed, of course

no- then (Tegey, 1977: 81)

d. Verbal Clitics:

Verbs in Pashto agree in number and person with the subjects or objects of sentence. In particular tense construction suffixes (clitics) follow the verb stem which specify person and number. The following table will explain the endings of verbs in Pashto present tense.

Ending:

Examples:

1 st S. (-ə m)	I am dancing	[gəḍéḡə m]
2 nd S. (-e)	You are dancing	[gəḍéḡe]
3 rd S. (-i)	He/she is dancing	[gəḍéḡi]
1 st P. (-u)	We are dancing	[gəḍéḡu]
2 nd P. (ə y)	You- all are dancing	[gəḍéḡə y]
3 rd P. (-i)	They are dancing	[gəḍéḡi]

Habibullah & Barbara (1996),

The following table will display the endings of verbs in Pashto past tense

Ending:

Examples:

1 st S. (-ə m)	I was dancing	[gəḍedə m]
2 nd S. (-e)	You were dancing	[gəḍedé]
3 rd SM. (-ə)	He was dancing	[gəḍedə]
3 rd SF. (-a)	She was dancing	[gəḍedá]
1 st P. (-u)	We were dancing	[gəḍedú]
2 nd P. (-ə y)	You- all were dancing	[gəḍedə y]

3 rd PM. (-ə)	They (m) were dancing	[gadedə lə]
3 rd PF. (-e)	They (f) were dancing	[gadedél]

Habibullah & Barbara (1996),

2.5.3. Phonology

Pashto has various fluctuations between past and present verb stems, /gadég/ dance and /gaded/ danced. Pashto has a quite complex lexical phonology with variations such as /də ŋg/, tall male, and /də ŋga/, tall female, /Xog/ sg, and pl / Xwagə / for sweets. Its lexical phonology appears to consist mostly of oral instability because long vowels get shortened once unstressed, like in /plaar/ father, and /plarúna/ fathers. (M.T. Henderson 1998)

2.5.4. Morphology

a. Pronouns

Pronouns are noun substitutes. There are many kinds of pronouns in Pashto: strong pronouns, weak pronouns, demonstrative pronoun and interrogative pronouns etc.

b. Strong Pronouns

Strong pronouns in Pashto function like nouns. There are three possible forms in the singular rather than two. One set of singular is used in subject position, one in direct and one in object of preposition. The third person singular pronouns take two forms. One which near to the speaker is “insight” and the other faraway is “out of sight”.

Singular forms	Subject	Object	Obj. of prep.
1 st S. (I, me)	[zə]	[mā]	[mā]
2 nd S. (you)	[tə]	[tā]	[tā]
3 rd S. (insight) m. (he, him)	[day]	[day]	[də]

f. (she , her)	[dā]	[dā]	[de]
3 rd S. (out of sight)			
m. (he, him)	[aghá]	[aghá]	[aghá]
f. (she , her)	[aghá]	[aghá]	[aghé]

Habibullah & Barbara (1996),

There is only one form, used in all position, per person, in plural pronouns.

Plural forms	All positions
1 st P. (we, us)	[mung]
2 nd P. (you)	[tāsa]
3 rd P. (insight) (they, them)	[duy]
3 rd P. (out of sight) (they, them)	[aghúy]

Habibullah & Barbara (1996),

c. Weak Pronouns

The Pashto weak pronouns and the English personal pronouns I, she, it, you, they, he are much similar in meaning, but there is big difference between the Pashto and English pronouns as where it is used in a sentence.

Person/ number	Direct/ possessive	Oblique (Obj. of prep)
1 st S. (I, my, me)	[me]	[rā]
2 nd S. (you, your, you)	[de]	[də r]
3 rd S. (he/she, his/her, him/her)	[ye]	[wə r]

1 st P. (we, our, us)	[mo/am]	[rā]
2 nd P. (you all, your, you)	[mo/am]	[də r]
3 rd P. (they, their, them)	[ye]	[wə r]

Habibullah & Barbara (1996),

2.5.5. Nouns in Pashto

Nouns are an Open class in Pashto, that's why new words can be added whenever needed. Almost in every language the class of nouns is possibly unbounded, because of the new scientific discoveries, new items are produced, and new names are given. In the modern age new technological discoveries are made and new nouns and new verbs come into existence. Anna B. David (2014). For instance: *Mobile phone, laptop, Internet, email, computer, face book, upload, download, share, copy, paste, reboot* etc. Adjective and demonstrative pronouns agree with the nouns they modify in gender

2.5.6. Verbs in Pashto

Most of the verbs are a closed class in Pashto; in this case, the light verb construction (LVC) is the only way of making new verbal forms. It is similarly utilized as a method for adapting loanwords, and filling the gaps in Pashto with the borrowed word. Pashto has a strong system of light verb constructions, two-word expressions that are semantically interpretable as a single predicate e.g. /kar kawə l/ to work. Anna B. David (2014)

Anna (2014) clarifies that the verbs /kawə l/ 'to make; to do' and /kedə l/ 'to become', which we refer to as the intransitive and transitive verb maker, when they act as light verbs, Pashto uses the verbs /axistə l/ 'to take', /wahə l/ 'to beat', /niwə l/ 'to seize; to grasp', and /istə l/ 'to throw out' as light verbs, as in the following examples. [sā] = 'breathing, respiration' so, 'to breathe' = [sā axistə l] [t̪ el] = push, shove', so, 'to push, = [t̪ el wahə l]

According to Tegey, Habibullah; Robson, Barbara (1996), there are two groups of verbs in Pashto; Simple verbs and Derivative verbs.

a. Simple Verbs

Simple perfective stems are formed by adding the prefix [wə -] to the imperfective stem, while their past perfective stems by adding the suffix [-ə l-], the following table shows the construction.

Simple verb construction for the word tie [taɽ]

Present. Imperfective	[taɽ-]
Present. Perfective	[wə taɽ-]
Past. Imperfective	[taɽə l]
Past. perfective	[wə taɽə l]

b. Derivative Verbs

The derivative verbs in Pashto are mostly open class. They can be formed from nouns and adjectives. They add auxiliary verbs [kaw/ kawə l] or (keg/ kedə l] to the stem of nouns or adjectives. Tegey, Habibullah; Robson, Barbara (1996).The feminine form is mostly used in derivative verbs, when the adjectives are irregular.

Adjective	Masculine	Feminine	Derivative verb
Warm	[tod]	[tawda]	[tawdawə l]
Cold	[soɽ]	[saɽə]	[saɽə wə l]

c. Prefixed (directional) Verbs

In prefixed verbs, when the directional pronouns [rā], [də r], [wə r] are used with a verb, the meaning of the verb changes accordingly. For example (To take = wɾə l)

To bring (to me/ us)	[rā -wɾə l]
To bring (to you)	[də r- wɾə l]
To bring (to him/her/it/them)	[wə r-wɾə l]

2.5.7. Transitive and Intransitive Verbs

All verbs whose infinitives end in [kedə l] are intransitive in Pashto.

The verbs that end in [wə l] are transitive, and those that end in [-l] could either be transitive or intransitive, *Habibullah & Barbara (1996)*, Derivative verbs that end with [kawə l] are transitive and those that end with [kedə l] are intransitive.

a. Transitive Verbs

A transitive verb transmits action to direct object. For example

I read a book = [za kitab lwə lə m]

I eat food = [za doḡai xoram]

b. Intransitive Verbs

An intransitive verb requires only the subject and the verb itself like English.

I wake up = [zə pātségə m]

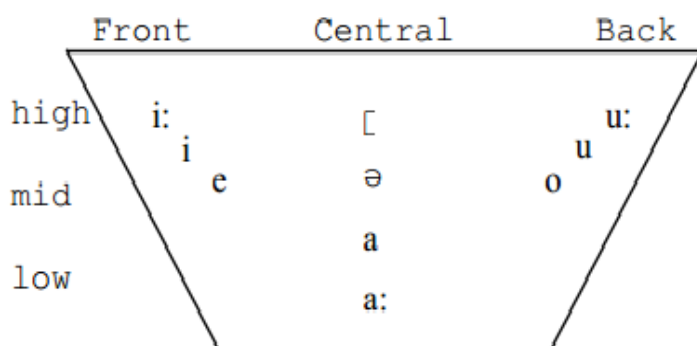
I get up = [zə pātsédə m]

I sit down = [zə kenāstə m]

2.6. Sound System

a. Vowels

There is no exact information about Pashto vowel sounds. But different linguists have mentioned different numbers of it. There are seven short vowels in Pashto Yusufzai dialect: /i/, /e/, /a/, /ə /, /ə̞/, /u/, /o/, and three long vowels /i:/, /a:/, /u:/ (Ijaz, 2009)



(Ijaz, 2009: 85)

In Pashto vowels /i:/ is a high front un-rounded vowel, it is generally originated in borrowed words from other languages. /e/ is a mid-front vowel. It is also found in loanwords. /i/ is a mid-high front vowel; it is very rare in Pashto and frequently found in loanwords. The vowel /ə̞/ is not found in other languages of its family. /ə̞/ is a mid-high central vowel. It is uttered just like /ə / however there is no great lip movement. It frequently comes at the end in words like [zra] = ‘heart’, [mra] = ‘oh man’. /ə / is a middle central vowel. It rarely appears in word first place. /a/ is a low central vowel. /a:/ is also a low central vowel similar to /a/ but it is significantly longer in articulation. /o/ is a mid back rounded vowel not often found in final position. /u:/ is a high-back rounded vowel and, /u/ is a middle-high back rounded vowel. (Ijaz, 2009, p.85).

In English there are twelve vowels sounds: seven vowels /i/, /e/, /æ/, /ɒ /, /u/, /ə /, /ʌ / are considered short vowels, and five vowels /i:/, /a:/, /ɔ :/, /u:/, and /ɜ :/ are considered long vowels.

Ijaz (2009), has mentioned four diphthong in Pashto language, in her research; /ey/, /ay/, /oy/ and /aw/, whereas in English language there are eight diphthongs: /eə /, /uə /, /iə /, /ə i/, /ei/, /ɔ i/, /ə u/ and /ai/.

b. Consonants in Pashto

Different linguists on different dialects of Pashto have distinguished distinctive number of consonant phonemes. There are twenty-six consonants phonemes in Pashto vernacular or Yusufzai tongue (Rahman, 2012, p. 697). The accompanying table demonstrates the consonantal frameworks of both dialects. In Pashto Yusufzai dialect there are twenty six consonants. The following table 2.1 shows the consonant sounds of Pashto Yusufzai dialect.

Table: 2.1 Consonants of Pashto.

	bilabial	Dente d	alveolar	Retroflex	Post- alveolar	Palatal	velar	uvular	Glottal
Plosives	P b	ṭ ḍ		ṭ ḍ			k g	q	
Fricative			s z		ʃ		x ɣ		h
Affricate					tʃ dʒ				
Nasals	m		n		ɳ		ŋ		
Lateral			l						
Trill			r						
Flap				ɾ					
Glides	w					j			

Rahman, 2012: 697

2.6.1 Pitch and Stress.

Stress is contrastive in some cases: /kenə ʻm/ ‘I will be sitting’ distinctive from /keʻnə m/ ‘I will sit’. But various affixes just like /aan/ “animate plural/ and /una/ “inanimate plural” always take the focal word stress, and others, such as the first person singular /-ə m/ appear to take focal stress when attached to stems with short vowels, as in /kawə ʻm/ “I do” unlike /waʻiə ʻm/ “I call”.

Pitch in Pashto is used to distinguish questions from statements, which are otherwise grammatically indistinguishable: rising tone indicates a question /keʻnə m/ ‘shall I sit’, while falling pitch is a statement /kenə ʻm/ ‘I am sitting’. (Henderson 1998)

2.6.2. Pashto Syllables

Pashto syllables may only have one vowel, or along with three consonants in onset position, and two ‘CC’ following at coda position. The ‘C’ letter stands for consonant and ‘V’ for vowel. The following table will explain it.

VC	V	VCC
CVC	CV	CVCC
CCVC	CCV	CCVCC
CCCVC	CCCV	CCCVCC

Habibullah & Barbara (1996)

Like many other languages, Pashto also has some restrictions for consonants to occur at certain position, like; the /h/ consonant will only occur at the onset of a syllable. The retroflex /n/, and /ə y/ diphthong will only occur at the coda position.

Unlike other languages of indo-European family, Pashto allows rather complex CC onsets such as /sk/, /sp/, /st/, as well as /ts/, /ps/, /zm/. Due to restrictions, the only possible way for making cc onset is that one consonant in the cluster has to be the combination of stop and fricative or affricate. Some of the CCC onsets in Pashto may consist of affricate, initial nasal or labialization /ndr/, /xwl/, /w/ /xwj//ndz/. M. T. Henderson (1998).

The codas of Pashto are more limited than the onsets. Two vowels can fill a nucleus, but they can be the same only in case of the low vowel /a/; otherwise one must be /u/ or /i/, with the syllabic height on the other: /ai/, /aa/, /au/, and /ə i/ are also acceptable VV nucleus. There are also some restrictions in codas, CC clusters, as they are allowed, but with little choice unlike the onsets. They are /lx/, /ks/, /tʃ/, /dʒn/, /st/, /sp/, /sk/, /rk/, /rd/, /rg/, and /nd/. So the basic structure of Pashto syllables is (C)(C)(C)V(V)(C)(C), with the limitations given above. M. T. Henderson (1998).

It was discovered that Pashto language, spoken in the region Malakand, has been an eager borrower as it happily acknowledges words from different languages including English. The principle motivator for acquiring English words in Pashto is to fill its semantic gap that exists in each field of life.

Chapter Three

Review of Literature

3.1. Introduction:

Borrowing is a common trend among languages. Due to various reasons, almost every language borrows from other languages. Borrowing words, from other languages, is attractive because when borrowed, the borrowed words go through a series of variation from its original structure. The focus of this section is to provide a detailed overview of the literature interrelated to the topic of borrowing words and the syllable structures of different languages.

3.2. Borrowing Words

The words that are borrowed from one language to another are called “Loanwords”, and the process through which loanwords are obtained is called Borrowing. Some speakers of the borrowing language know enough of the source language, and how to use the words phonologically correct. Most of the time educated communities borrow (loanwords which are missing in their language) while speaking the foreign language. Slowly and gradually more speakers of the uneducated communities get familiar with new foreign words (loanwords). Therefore, the communities, who know very little or even nothing of the source language, recognize, and utilize those new foreign words in their daily conversations. This development is called borrowing. A loanword is a word borrowed from a donor language and integrated into a recipient language.

Linguists have divided borrowed words in different categories. According to Hughes (2000), it can be divided in four categories: guest words, foreign words, loanwords, and calques. Words that keep their original pronunciation, spelling, and meanings are called guest words; they are simply taken into the language as they are, without change in their form. Foreign words on

the other hand are partially assimilated and are harder to be recognized as borrowings. Loan words become a virtual native and can hardly be identified for bishop and street borrowed by English. Calques are loan translation from other language (Hughes, 2000).

Hockett (1985) classifies borrowed words in a different way. According to him, there are three categories of borrowed words: loanwords, loanshift and loantranslation, and each borrowed word come under one of these three categories. In the case of loanwords, speakers possibly will adopt the thing or idea and the source language word for all. The borrowed variety is a loanword. These forms now function in the usual grammatical processes, with nouns taking plural or possessive forms of the new language and with verbs and adjectives receiving native morphemes in addition. Loan-shift is another process in which native words are adapted to the new meanings. A good example from the early Christian period in England is Easter, which had earlier been used for a pagan dawn goddess festival.

Different loan-shifts in English incorporate God, Heaven and Hell. Advance interpretation or Calque happens when the local dialect utilizes a thing for-thing local variant of the first. "Loanword" itself is a loan-translation of the German lehnwort, another case from the most punctual Christian time is gospel, from (good and spella (story; book), (Hockett, 1985,)

El-Khalil (1983) examined the English loanwords in Jordanian composed Arabic at the phonological, morphological, syntactic and semantic levels. The information was gathered from sixty issues of two day by day Jordanian daily papers: Al-Ra'i and Al-Dostour, along the time of tree years. At that point the credit words were gathered, ordered, interpreted and broke down, and contrasted with Arabic structures. He endeavored to distinguish the reasons and the reasons for English to Arabic getting and also to give a phonetic investigation to them. The discoveries demonstrated that loanwords happened in the accompanying ranges: cutting edge developments,

sustenance (sandwich/sandwish) sports (football) callings sciences and solution (vitamin/fitami: n) He additionally endeavored to make sense of the impacts of these words on Arabic dialect at the phonological, morphological and semantic levels. Be that as it may, he expressed "it was found that the determination of loanwords is once in a while seen in composed Arabic as a result of the inclination of Arab etymologists to cleanse the composed dialect from outside words. Be that as it may, uncommon cases of such verbs are seen in communicated in Arabic."

3.3. Reasons for Borrowing

There are about 7000 languages spoken all over the world (Hock, 1986; Kachru, 1982,). It is a well known phenomenon that when languages come into contact, there is occurring transfer of words from one language to another, particularly from the dominant language to the non dominant language (Hock, 1986; Kachru, 1982,).

Hudson (1989) considers four ways through which languages contact with one another: 'Borrowing', 'Cod-switching', 'Pidgin' and 'Creole'. When two languages are closely connected in terms of geography and culture, they can share their experiences in any of the above four ways. Those languages which are not closely connected by means of geography and culture, they use borrowing and cod-switching during their contact (Hudson, 1989). The South Asian languages are classified into two main groups, Indie and Iranian in the central, eastern, western, and northwestern regions of the subcontinent, and in Sari Lanka and Nepal; and Dravidic in the south and south-east, including parts of Sari Lanka. The Iranian group includes Balochi and Pashto; the Dravidic group comprises Tamil, Telugu, Malayalam, and Brahvi. The Indie contains Dardic, consisting of Shina, Kafiri, and Kashmiri.

There has no immediate contact between, the South Asian languages and English. English and the languages of South Asia have developed in various directions; the Germanic

gathering has created affected by Roman Christianity; and the Indo-Iranian, bearing likenesses to Sassanian, Pahlavi and Sumerian from one viewpoint, and Persian and Arabic under Islamic impacts then again. In this manner, until the development of provincial forces into Asia lands in the seventeenth Century, however successful with the eighteenth, there were no direct contacts between the European and Asian phonetic gatherings (Baumgardner, 1992).

The reasons of borrowing are manifold. Katamba (1994) gives remark in this perspective that there is no entirely linguistic reason for borrowing. In his view, no limit exists to the number of words that can be generated in any language (p.195). But yet, when the need for a new term arises, because of the contact between people from different cultures, the formation of neologism, composed of elements of the own language, is not often done. One reason for borrowing a proper word from another language is the need to find a term for an unfamiliar thing, animal, or cultural device. Then borrowing looks like to be the easiest solution to this problem. Another reason for just borrowing a term may also be the question of identity and honor of one-self. This is specially the case with bilingual speakers who, by using foreign elements in their speech, make a statement about their own self-perception (Katamba, 1994, p.195). Moreover, often underestimated reason for borrowing is prestige. He comments here that people have “always liked to show off”.

Wilton (2003) has mentioned some other causes for taking a term from another language and to absorb it in one’s own language. Mostly, borrowing results from need: when a language is lacking the appropriate word or expression for describing a particular item, objet and idea. It also results when there is no equivalent translation for the expression of a particular mood or feeling. The dominancy of one culture on other can also result in borrowing in some cases. Another reason is the contact between the speakers of different languages. The last reason mentioned by

Wilton is emphasizing one's standing: people use words taken from other language to show and to define their social status.

There are many factors involved which are causing substitution in the sounds of loanwords. Lacking of opportunity to practice English pronunciation is the main issue in learning proper English pronunciation. The success in learning and teaching English depends on students' ability and exposure.

Pashto language has been borrowing words from other languages of the world since its existence. Initially, Pashto language borrowed a large number of words from Arabic language. The influence of Arabic language on Pashto language has been most profound like those countries where their languages are subjugated by Islam or Islamic power. Arabic is a main resource of vocabulary for languages such as Armenian, Kurdish, Berber, Persian, Swahili, Pashto, Urdu, Turkish, Hindi, Bengali, Indonesian, and Malay, and also other languages in countries where these languages are spoken. Most religious terms which are utilized by Muslims over the world have been obtained from Arabic. Those dialects which are not specifically in contact with Arabic dialect, they are frequently intervened from Arabic loanwords by different dialects as opposed to being exchanged straightforwardly from Arabic. For instance, a large amount of Arabic loanwords in Urdu came from Persian. Thus, Arabic has its antiquated and predominant impact on Pashto. Not just the composition arrangement of Pashto is gotten from Arabic in the sixteenth Century, however a substantial number of Pashto words have been obtained from Arabic.

Pashto not only borrows words from its neighboring languages, but it also borrows words from English. English language is a language which has its international significance, and is considered to be a source of trade and a tool of international communication. Therefore, most

languages of the world started to borrow its different features: phonetics feature, morphological feature, syntactic feature, semantic feature, and Phonological feature. As for as Pashto is concerned; there is not possible direct contact with English language in terms of geography and culture, in this case Pashto language has only borrowed lexical items from it. The great influence of English language came on Pashto language during the colonization of British in India, that time KP (former name was Northwest Frontier Province) was a part of British India. After the colonization of India by British, we see a rapid process of borrowing in Pashto language from English language such as political agent, police, captain etc.

3.4. Loanwords Adaptation

Whenever, a new word comes in to the corpus of a recipient language, through interaction and communication with the native speakers of a donor language. Subsequently, that word is used in the daily conversations, of the speakers, of the recipient language. With the passage of time that word loses its original pronunciation and as a result, adapts a new pronunciation of the target language.

Sometimes adaptation takes place even when there is no obvious illegal structure in need of repair – a condition called as “unnecessary repair” Peperkamp (2003).

McManus, H. E. (2008) explored the adaptation of English words in Australian indigenous dialects (Martu Wangka, Gamilaraay and Warlpiri dialects). The study depended on Jennifer L. Smith's methodology, source comparability model of loanwords adaptation. Notwithstanding, the study concentrated on the phonological likenesses as opposed to the morphological ones.

Hudson (1989) has significantly pointed out to this phenomenon by quoting Bynon (1977): “the question is whether there are any features of language which cannot be borrowed

from one language into another. The answer appears to be that there are not". So, when there is no geographical and cultural connection between the speakers of two languages in that case only vocabulary is borrowed, especially from the dominant language.

There are various methods of acquiring: First, at the point when a specific word is acquired straightforwardly with a slight, or no change (loanword), second, when the loanwords are converted into words which exist in the language (loan translation), third, the loanword is joined with formally accessible word in the dialect (loan blend). Khan (2011),

Kenstowicz (2006) evaluated the aftereffects of an investigation of loanwords from English into Thai of eight hundred word corpus and considered their pertinence for models of loanword 16 Morphological Analysis of English Loanverbs in Jordanian communicated in Arabic adaptation. The attention was on the correspondences between the voiceless suctioned, voiceless unaspirated, and voiced stops of the two dialects.

Major (2001) argues that errors in phonology arises when the speaker's first language and second language have different linguistic systems. These errors are because of shift of the native language phonology to the second language. The English language has the phoneme [θ] in the start of the word "think", yet neither Brazilian Portuguese speakers nor German speakers have this sound in their phonology. Consequently, when a speaker of either dialect tries to communicate in English without having mastered the articulation of this sound, they will translate the sound through their local phonological and will replace it with a well-known sound.

As German and Brazilian Portuguese have varied phonologies, every speaker will roll out an alternate improvement to the English word. Brazilian Portuguese speakers will generally replace [t] for [θ], articulating "tink" rather than 'think', whereas German speakers will generally replace [s], such as 'sink'. This represents the impact of shift in second language acquisition. In

Brazilian Portuguese, speakers concentrate on place of articulation, and *sin* [t] is a dental consonant, it is preferred to [s], an alveolar, as an alternate for [θ] since [θ] is inter-dental. On the other hand, in German speakers will concentrate on the mode of articulation, and [s] is a fricative similar to [θ], so it is preferred as a substitution on the grounds that [t] is a plosive.

One of the areas of study of language contact is loan phonology. Loanwords are lexical items borrowed from a foreign language into a recipient language. The literature relating to loan words and language contact depicts loan phonology as the consequence of phonotactics and methodologies utilized by speakers to adjust the foreign phonological framework to their local dialect. In language contact conditions, lexical items are by far the prime focus of borrowings. These loanwords may have sounds that are absent in the phonology of the recipient language, in this way they will probably experience adaptations to make the lexical items sound more local and less foreign (Major, 2001).

3.5. Phonology of Loanwords

Researchers underwriting a "phonetic approximation" perspective of loanword adaptation essentially conceive that perceptual (and, accordingly, acoustic) similarity is responsible of the way L2 structures are mapped onto L1 forms. Despite the fact that a few studies may suggest something else, phonology is not irrelevant under this view. Despite what might be expected, it is accurately the perceptual inclinations from the L1 phonological system that are generally thought to bring about unfaithful view of L2 structures. More or less, under this view changes happen in loanwords opposite the first L2 shapes in light of the fact that borrowers are not the native speakers of the L2 who hear the L2 shapes variably. Charles. B (2008)

In Some cases there are loanwords matching stricter structural requirements than the native phonology, such that the foreign input is altered to an unmarked form, even when there is

apparently more faithful licit structure existing in the language. Kenstowicz (2006) refers to such cases as retreat to the unmarked.

Loanword phonology reveals the structure by which speakers having one phonological framework observe, apply native representational limitations on, and eventually deliver structures which have been produced by an alternate phonological framework. While loanwords from a target language come into a borrowing language, they might be adapted to adjust to borrowing language phonology. This occurrence, acknowledged as loanword adaptation, has long been viewed as a source of proof about the phonological grammar of the borrowing language. This sort of adaptation influences the phonological structure of the borrowing language, and mirrors the segmental, phonotactic, suprasegmental and morphophonological limitations of the borrowing language. In rule-based phonology, loanwords adaptations introduce one peculiarity: given that borrowed words mostly include illicit structures that are missing from original structures in the native phonology, novel standards ought to be added to the syntax to manage their adjustments. This undesirable element is missing from constraint-based phonology, in which the changes in loanwords are driven by constraint that is already part of the sentence structure. Silverman (1992)

Silverman (1992) and others Studies within Optimality Theory have a tendency to reflect on both phonology and phonetics as significant (e.g. Kenstowicz and Suchato, 2006), but not giving an explanation for which type of adaptation is expected to occur when recently, there has been a higher interest in the study of loanword phonology. One motive for this is that the study of loanwords can give much insight on phonological systems. Loanword phonology involves at least two phonological systems: one in the beneficiary language and the other in the target language.

According to Davis (2006), one advantage from the study of loanword phonology is that in an unknown language, inner constraints in the borrowing language can be revealed by a distinctive pattern of loanwords; therefore, loanwords can be used as a porthole for looking at a phonological system of the recipient language.

Odlin (1989) suggests that borrowing relates largely to lexical items, particularly words in the fields of government, technology, commerce, and education. He states that even when a language engages in a considerable lexical borrowing, cross-linguistic pressure may bring in changes to the sentence structure of the recipient language, but will possibly not change the phonetics and phonology of the recipient language. Major (2001) does not agree with him and says that this occurs because native language shift take over loan phonology. The speaker will try to reshape the borrowed word into his native phonological system. For instance, Japanese speakers may borrow words from English having complex syllables but they will add vowels as required to break up prohibited consonant clusters and to conform to the Japanese phonological system and to their syllables structure.

Van Coetsem (1988) illustrates somehow different point of view on loan phonology. He specifies that all lexical borrowing does not include phonological borrowing. When a foreign word is borrowed but undergoes adaptation to adjust in the recipient language phonology, then lexical loan has occurred. Phonological loan, as a result, take place when the speaker intentionally copy the foreign pronunciation of the borrowed lexical item. He argues that speakers will attempt to save their phonology and articulatory habits in light of the fact that these are the more stable areas of a language, in this manner engaging more frequently in lexical borrowing than in phonological borrowing. From the viewpoint of van Coetsem (1988), loan phonology is not about the changes that the recipient language will cause on the pronunciation of

the loan word. Or maybe loan phonology is formed from the impact that the foreign sounds may have upon the recipient language.

3.6. Main Issues in Phonology of Loanwords

According to CB Chang (2003) there are a numerous factors related to the phonology of loanwords, which are stated below.

3.6.1. The Level of Representation

CB Chang (2003) says that the most important factor in loanword phonology is the level of representation to which the input and output relate. It remains an inquiry whether the mapping of input to output segments is done on a phoneme-to-phone basis, phoneme-to-phoneme basis, phone-to-phone basis or phone-to-phoneme basis. He argues that, is it just information that is phonemic in the target language that is picked up in constructing the input to the loanword phonology, or some other phonetically relevant details included also? What's more, from the other point of view, do speakers just take care of data in a given sequence of foreign input that is phonemic in their native language? As a final point, whatever the perceptual information is that ultimately mapped onto merely phonemes of the borrowing language, or are non-phonemic allophones of the borrowing language open too?

3.6.2. The Source of Input

Another issue in loanword adaptation is the source of the input. To begin with, are words borrowed through speech or writing? If the last mentioned, there is probably going to be a few, if not substantial, impact from orthographic representations. Second, from whom the input comes from, the native speakers of the source language or speakers who use the source language as L2 like teachers? If it is coming from the teachers then there will be some differences in the input. Also, it ought to be remembered that the input is coming from the source language specifically or

through a transitional language. The state of a loanword that gets through a chain of transmission is probably going to indicate impacts of the transitional languages in the chain. CB Chang (2003)

3.6.3. The Agents of Adaptation

The Specialists of the adaptation clearly have a significant effect on the form of loanwords, and they might be balanced bilinguals, unbalanced bilinguals, or monolinguals with no knowledge of the source language phonology. Balanced bilinguals approach the hidden interpretations of the source language, so phoneme-to-phoneme or phoneme-to-phone mapping will probably be conceivable, while monolinguals can just depend on the phonetic input of the speech signal without phonological structure. CB Chang (2003)

3.6.4. The Nature of the Input

Yet another issue that ought to be discussed is what level of phonetic detail is available in the input. That is to say, does the input contain quick, informal discourse, in which some portions are at risk to vanish in articulation, or moderate, careful discourse, in which a few components may really be misrepresented? Related to this most important issue is that, when a trait that is expected in the output is omitted, is this because that trait was removed or because it was not perceptually important enough to be processed in the input in the first place?

3.6.5. The Impact of Chronology

The impact of chronology should also be recognized. Older loanwords may look strange from the modern loanwords for various reasons. Since the impact of the native L1 phonology on loanwords may have been distinctive in the past on the grounds that the L1 phonology itself was different. Furthermore, older loanwords may have been uncovered to great changes in the language because of their longer presence in the language, and they may presently be liable to more native phonological constraints on account of more profound integration into the language,

existing nearer deeply instead of the edge of the lexicon. Further aspects may change over time also. For example, the most well-known source of input may vary across two inaccessible time periods with distinct social and educational conditions.

3.6.6. The Structure of the Loanword Phonological System

We ought to consider that the practice of loanword adaptation may come about because of the impact of the phonology native to the borrowing language, from general principles of Universal Grammar, or from a self-governing “inter-language” system that may join elements of both. The structure of the grammar dealing with loanwords will obviously affect loanword adaptation. If the loanword phonology is basically the same as the native L1 phonology, then phonological changes applied to loanwords are relied upon to be inspired by patterns and rules of the L1 phonology. Then again, if UG assumes control with loanwords, at that point the output is expected to show the appearance of unmarked features not necessarily present in L1. (Broselow, 1998 & Shinohara, 2000).

3.7. Epenthesis

Epenthesis means adding one or more sounds to a word, particularly to the internal of a word. In Pashto loanword phonology, epenthesis takes place both, inside and outside the consonant cluster. Epenthesis can be divided into two types: excrescence, for adding a consonant, and anaptyxis for adding a vowel Tanushree Sarkar (2012). It is also called insertion process. In Pashto loanword phonology, a long vowel replaces short vowel sounds. Vocalic epenthesis classically occurs when words are borrowed from a language that has consonant clusters or syllable codas that are not allowed in the borrowing language; however this is not always the case.

Mwita (2009) directed an imperative based study that —shows the procedures that loanword experience when they are adjusted from Arabic into Kiswahili. It was the first to utilize the OT. The procedures that Kiswahili uses to mend the nonconforming syllables of the obtained words which are:

- Vowel epenthesis like *stempu* /stɛ .mpu/ —stampˁ *sulta:n* → *sultani*/
- Consonant deletion *ammar* → *amiri* /a.mi.ri/ (begin)
- Cluster tolerance *unwan*→ *anwani* /a.nwa.ni/ (address) *amr*→ *amri* /am.ri/ (command)
- Feature change *waqf* → /q/ → [k] *wakfu* /wak.fu/ (religious endowment) *ibri:q* → *birika* /bi.ri.ka/ (kettle)

The study demonstrated that Kiswahili has two fundamental epenthetic vowels, /u/ and /i/, which is by all accounts relevantly unsurprising. Loanwords have constrained Kiswahili to take up shut syllables so as not to disregard the vibrancy pecking order inside the syllable.

Galal (2004) talked about the instance of Cairene Arabic (Egyptian Arabic) and his study went for noting why CA chooses epenthesis as a system of adjusting loanwords. The study utilized the Optimality theory structure by McCarthy and Prince (1993). The information was gathered from previous works, and also from surveys with local speakers, and every one of the thing was taken from CA (Afro-Asiatic, Semitic). The paper was separated into two principle segments: information area which introduced and depicted the things under study (Arabic: *firizar* → English: *firizar*) (*bustiman* → *postman*). The investigation area broke down the information and talked about the limitations for vocalic epenthesis as far as three fundamental focuses: "1. The requirements in charge of vowel epenthesis when all is said in done, i.e. epenthesis versus deletion as a technique picked by CA; 2. Diverse positions of epenthetic vowel as far as OT requirements (*isbiit* → *speech*) ; 3. The variables, representing the nature of the epenthetic

vowels, especially, that few vowels are chosen with the end goal of epenthesis as opposed to others (istub → stop, kilash→ conflict, furuut → fruit".

Islam (2011) concentrated on loan words in Urdu which originated from Arabic\Persian and English. For instance a solitary Urdu word, e.g. lai lmi =unawareness' can be broken into three morphemes, i.e. the Arabic prefix la =un', Arabic stem l lm =knowledge/awareness' and local Urdu postfix - i. Arabic and Persian loanwords are more established than English loanwords, so they are dealt with like Urdu local words. The study utilized a descriptive approach and manages the attributes of the morphological structures of Arabic, Persian and English. The center of the study was on gender, number and case orphology, and inference of by affixation and by compounding.

Baker and Brew (2008) said that dialects contain problematic words excluded in lexicons. These words originate from various sources, "obscure words are basically boundless appropriate names, specialized language, outside borrowings, recently made words, etc. It proposes that such words can't be ignored and worth more examination. His study was working on this issue of English loanwords in Korean.

3.8. The Syllabic Structure of Languages

Many researches like (Stampe and Donegan 2004, Fenk and Fenk-Oczlon 2005, Kuwana and Tokizaki 2012) believe that there is a firm correlation between syllable structure and word order. They state that the syllable structure of an SOV language always have a tendency to be straightforward as (CV).

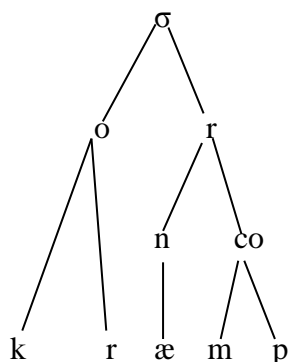
According to Khan (2012), Pashto syllables range from a single vowel to (V, e.g. ao `yes') to the maximum of three consonants in the onset and two in the coda positions (CCCVCC, e.g. [fxwan I] `chew'). There is the possibility of a total of twelve syllabic patterns in Pashto.

Pashto syllable have at least one vowel as crest in the nucleus which could go before or followed by consonants. In Pashto the nucleus is always filled by a vowel because the language does not have any syllabic consonant. The nucleic vowel may be preceded by three and followed by two consonants to the maximum.

In (2008) Duanmu believes the phonetic meaning of the syllable as notoriously difficult'. Despite the fact that language specialists have worked hard with the issue of characterizing a syllable yet the idea of syllable is respected tough or hard to characterize by them. In any case, there is an accord among them that the recognition of syllables by the local speakers is an apparent marvel. "In spite of the fact that everyone can recognize syllables, practically no one can characterize them" (Ladeforged, 2001). The deficiency of capability to characterize phonetically a syllable is additionally recognized by Davenport and Hannahs (2005) as 'there is no broad accord on a reasonable phonetic record of the syllable'. They treat syllable essentially at its fundamental level as 'made of vowel fragments' which might be gone before or taken after by at least zero consonants. Jones (1950) views a syllable as a prominence peak in a word that is shaped by the vowels. Roach (2001) sees the demonstration of distinguishing proof of syllables as a representation of the significance of this regarding discourse rhythm. In spite of the fact that any correct phonetic definition has not been produced yet there are small number of definitions of the term syllable that is worth noticing. Stetson (1928) claims that each syllable is started by a chest beat. In this sense, the solid constriction in chest compares to the creation of a syllable.

In order to describe syllables, Giegerich (2005) separates a syllable into two sections. These are beginning "onset" (O) and 'rhyme'(R). The rhyme is additionally isolated into core "nucleus" (N) and coda (Co). Any consonant before rhyme frames the onset. The vowel in

rhyme frames the core and any consonant after nucleus shapes coda. As per this, "cramp" will have the accompanying structure:



Syllables are additionally viewed as phonological units on the ground that these shape the space to which stress is allocated. A few syllables are stressed while others are unstressed. The significance of syllable is "illustrated" by the consideration paid to its written work. Long time ago, ever, 'anyone devised an alphabetic composition framework in which syllables were deliberately part into segments' (Ladeforged 2001). As indicated by Ladeforged, there was an alteration by Greek 4000 years back when 'the Semitic syllabary' was spoken to as 'consonants and vowels by isolated images'. From that point forward, a similar tradition has been engaging.

The inspection of various languages uncovers the phenomenon that various languages show distinctive syllable structures. It is by and large acknowledged that core/ nucleus is mandatory in all languages. To the extent onset is concerned, it is discretionary in some languages while others require it compulsorily. Be that as it may, the coda can alternatively happen in numerous languages. The essential typology of syllable in various languages is given by Zec (2007) like:

Onset	Coda	Onset cluster	Coda cluster	Inventory Templates	Source Language
R	O	O	O	(C) CV(C)(C)	Totonak
			X	(C) CV (C)	Dakota
		X	O	CV(C) (C)	Klamath
			X	CV(C)	Temiar
R	X	O	-	(C) CV	Arabela
		X	-	CV	Senufo
O	O	O	O	(C) (C) V(C)(C)	English
			X	(C) (C) V(C)	Spanish
		X	O	(C)V(C)(C)	Finnish
			X	(C) V(C)	Turkish
O	X	O	-	(C) (C) V	Pirahã
		X	-	(C) V	Pirahã

‘The Syllable’ by Zec (2007:97)

R = required.

O= optional.

X = banned.

This table demonstrates that English display onset, coda and clusters as discretionary. It shares this trademark with Finnish, Spanish, and Turkish yet varies in this regard from them in the selection of clusters. Turkish does not concede any kind of clusters; Finnish permits just coda clusters and Spanish allows just onset clusters. Interestingly, English permits both onset and coda

clusters. The fundamental syllable typology is the way to syllable formats as it decides the conceivable syllable formats. For instance, English typology permits V, CVC, VC, CCVCC formats be that as it may, Takota does not shape VC structure as onset is required, Fijian does not utilize CVC in light of the fact that coda is restricted in it, Turkish syllable format cannot be CCVCC as its typology forbids clusters both at onset and coda positions.

This phenomenon expects essential significance when languages borrow words from other language. The loanwords that don't accommodate at the level of syllable structures in the recipient language experience changes to modify as indicated by the phonology of the host dialect. This phenomenon said above was contemplated by Hall-Lew (2002). He composed a thesis on 'English Loanwords in Mandarin Chinese'. The analyst examined borrowing by investigating morphosyntactic, phonological, semantic and sociolinguistic factor. Phonologically, it is accounted for that English loanwords experience changes to modify with Chinese phonological system as given beneath:

English Sound	Change to Chinese	Examples
CVC	CV	ba <u>r</u> /ba
CVC	CV.CV	jeep/ji <u>p</u> u
CCV	CV	pi <u>z</u> za/bi <u>s</u> a
CCV	CV.CV	mi <u>c</u> ro/mai <u>k</u> e

From these progressions a generalization is drawn by the investigator that English syllable formats CVC or CCV change to CV.CV or CV. The propelling power behind the change is the Chinese syllable system that does not permit clusters and considers onset compulsory while English permits clusters and treats onset as discretionary.

This study is related with the Yusufzai dialect of Pashto. In the current study; the researcher makes an attempt to identify that during the borrowing of words from English to Pashto, which sounds of English borrowed words are replaced by which sounds of Pashto language. This study is concerned to analyze the phonological adaptation of English loanwords in Yusufzai dialect of Pashto, in district Malakand. Basically, the English loanwords come from the speech of educated people and then they become common in the conversation of uneducated people. With the passage of time these loan words adopt the phonology of Pashto. The present study is focused on those loanwords which have changed their original form and have adapted new form of pronunciation under the phonology of Pashto.

3.9. Conclusion

The study of borrowing demonstrated that it is an across the board phenomenon as practically every language of the world including Pashto profits by this. Up until now, borrowing has been studied widely from the perspective of syntactic, semantic, sociolinguistic and phonological changes. A large portion of the studies done are phonological and reveal that the loanwords are changed by the sound frameworks of host languages as the words from different languages into English and English words in Chinese had been adjusted.

Chapter Four

Research Methodology

4. 1. Introduction

This section sums up the research methodology and introduces the participants of the study. Procedures of data collection as well as data analysis are also presented. The chapter concludes with a brief discussion of the limitations and delimitations of the work. Assessment of trustworthiness too, makes an essential section of the present chapter.

4.2. Research Design

The current study made use of both the qualitative and quantitative method for examination. The blend of these two approaches in this study exists as it includes elements of both types (Creswell, 2009).The researcher preferred mixed-method approach for this study. This approach gives complementary and comprehensive research findings data which would allow a proper inspection of the issue (Westat, 1997). The aim of this research is to find out the adaptation of English loanwords in the phonology of Pashto. Following is a framework for the present study.



4.3. Participants:

This research was conducted in district Malakand. The population size of the research was both educated and uneducated people. The literacy ratio is about 40% in the district Malakand (taken from census board of Pakistan, 2012), which is very low. A total of 12 Participants were selected for the study of loanwords. They are from a well-known village ‘Wartair’ in Malakand District KP Pakistan. All were native speakers of Pashto Yusufzai dialect. Six participants were male and six were female of different ages from 11 to 55.

4.4 Data Collection Tools

The data collection tools were an audio recorder (Smart phone), unstructured interviews and a list of words (Appendix: A). The list was given to the participants to pronounce. First of all English loanwords were collected, and their transcriptions were taken from English Oxford dictionary. The loanwords were obtained from the local speakers of Pashto and also from the dictionaries of Pashto (M. Gul, 1938, and Khan, 1990).

The data were collected from the subjects by asking them to read the written words, and each word was pronounced three times. At the same time, the words were recorded through audio-recorder. Those who were uneducated and were unable to read the selected words, the actual items were brought before them and were asked about the names of the things, and some time the researcher helped them by uttering the words himself. They were also informed to practice the words, before recording, to make sure the words and their sequence for each sound. Some of them wrote the words in Pashto and read them out, following the given sequence. The total of 516 audio, tokens, were recorded. The example, of some of these audios, is given in the (Appendix: A).

4.5 Analysis of the data

An acoustic study of vowels in English loanwords was performed by using a quantitative approach. The data were recorded on an audio recorder app of a smart phone, and then converted to wave form through audio converter. The collected data were analyzed using Praat software by observing formants, pitch and intensity of sounds through spectrogram to discover phonology of loanwords. Spectrograms of each word were produced, showing the time durations, first formant (F1) and the second formant (F2) of the vowels. The data were then quantified using SPSS (percentile) to make the results authentic. In the data, some monosyllabic, disyllabic and polysyllabic words were also examined to discover the syllable structure of loanwords in Pashto.

A distinctive format of a spectrogram is a graph with two geometric measurements. The horizontal axis in a spectrogram displays the time and the vertical axis shows frequency. The frequencies, start from 0 Hz to 5000 Hz. A third aspect representing the amplitude of a specific frequency at a specific time is demonstrated by the intensity (a narrow yellow line going up and down) or dark shade of each point in the image. The pitch of a sound is represented by the bold blue line. The graph is then annotated into text grid in the bottom window of a spectrogram. After the annotations of every audio word tables are drawn for the convenience.

It was analyzed that whether or not there was any substitution in the vowel sounds (both pure vowels and gliding vowels). If yes, then which vowel sound is replaced by which sound. There are more consonant sounds in Pashto language as compared to English language. It was found that English loan words, which become a part of Pashto language, are also having substitution in the consonant sounds. If there is any replacement then which sound is replaced which Pashto sound.

The data was tabulated, such as the sound adapted in monosyllabic words and the sound adapted in disyllabic or polysyllabic word. The difference is shown by quantifying the data through SPSS to show whether the difference is significant or not.

To find the syllable structure of loanwords, initially the entire syllable structure of Pashto was studied and the possible syllable template for Pashto was prepared. (Ch: 5) The collected data were depicted in terms of syllables. A list of fifty English loanwords was prepared from the recordings. The list includes monosyllabic, disyllabic and polysyllabic loanwords of English that are further separated into two tables. One included the identical structures for loanwords by SPYD, and the other consisted of the non-identical syllable templates by the SPYD (discussed in chapter 5). The syllable templates for English loanwords are also given in Appendix B and C.

4.6. Research Ethics

- Inconvenience
- Personal safety
- Deceit
- Privacy

The ethical issues that apply to this research work are followed by the researcher. In order to avoid inconvenience, the participants/ informants were visited according to their convenience. For personal safety, the researcher always informed the department before going out to collect data. To stay away from deception, the procedure, nature and purpose of the activity was explained to the informants before requesting them to participate in the study. In order to maintain privacy, the names of the informants were replaced by numbers.

Chapter Five

The Phonology of Loanwords in Pashto

Results and Discussion

5.1. Introduction

This research is conducted to identify the adaptation and phonological restructuring of English loan words in Pashto in terms of vowels, diphthongs, consonants and syllable pattern. The collected data were analyzed using Praat software and SPSS software. By observing pitch, intensity and formant frequency of sounds through spectrograms, the phonological analysis of English loan words is provided to show up their vowel and syllable patterns after they experience change in terms of Pashto sound system and syllable pattern. The desire is to see what sort of sound changes take place in the borrowed words and if there is a standard pattern being followed. The statistics and values are shown through tables drawn by SPSS (percentile).

Particularly, the main focus of this study is to expose and examine that what type of syllabic changes take place in the loanwords and, what are the reasons for this change.

5.1.1. Demographic Analysis

The purpose of this part is to get background information of the participants. It was asked from the participants regarding their background, education and age.

Demographic Data Results

Table 5.1: shows the age, education and gender of total 12 respondents. The minimum age is 11 years and the maximum age is 55 years. The mean age is 22.67 and the median is 17.50 which show that most of the respondents are adults. The mean of education is .50 which shows that six participants are educated and six are uneducated. In the respondents 6 were male and 6 were females for obtaining best results and sampling. The following table gives the statistics.

Statistics

		Age	Education	Gender
N	Valid	12	12	12
	Missing	0	0	0
Mean		22.67	.50	1.50
Median		17.50	.50	1.50
Mode		11	0 ^a	1 ^a
Std. Deviation		14.086	.522	.522
Variance		198.424	.273	.273
Minimum		11	0	1
Maximum		55	1	2
Percentiles	25	12.25	.00	1.00
	50	17.50	.50	1.50
	75	27.75	1.00	2.00

a. Multiple modes exist. The smallest value is shown

Table 5.1

5.2. Vowel Formants of English

Formant of a vowel is a focus of sound force around a specific frequency in the speech wave. There are numerous formants, with unusual frequencies, generally one in 1000Hz bands. Every formant corresponds to a tone in the vocal tract. We differentiate one vowel from the other by the variations in these overtones. In view of Lagefoged (2006), every vowel comprises three formants, which are three overtone pitches. The first formant (F1) is indirectly related to vowel

height. The second formant (F2) is related to the degree of back position of a vowel. The formants can be noticed in a spectrogram as dark bands.

A **Spectrogram** is a visual demonstration of the three dimensions of sounds through graph or picture showing sound frequencies in black vertical lines. Time is represented on the x-axis in a spectrogram and frequency on the y-axis. The intensity of a sound is represented by the virtual darkness of the frequencies. In order to study the vowels of English two figures are given demonstrating the spectrograms of American English vowels as well as the British English vowels. These two figures will assist in analyzing the spectrograms of English loanwords used by Pashto speakers.

The Spectrograms of American English Vowels

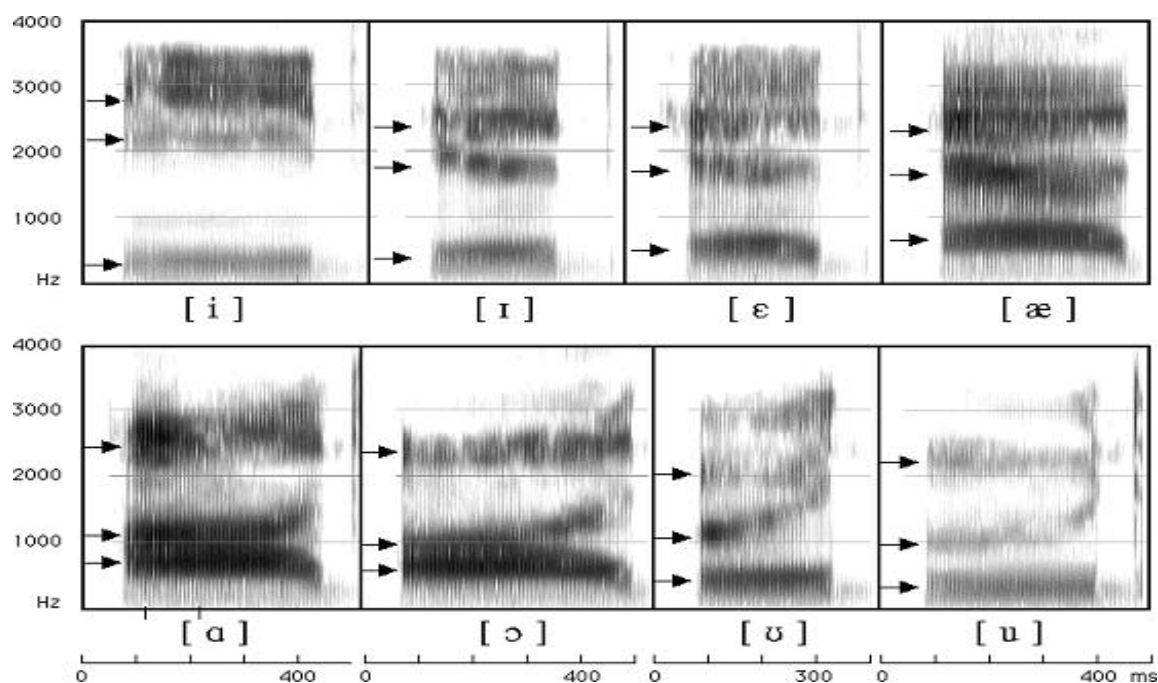


Fig: 5.1

Ladeforged 2006:185-187

The Spectrograms of British English Vowels

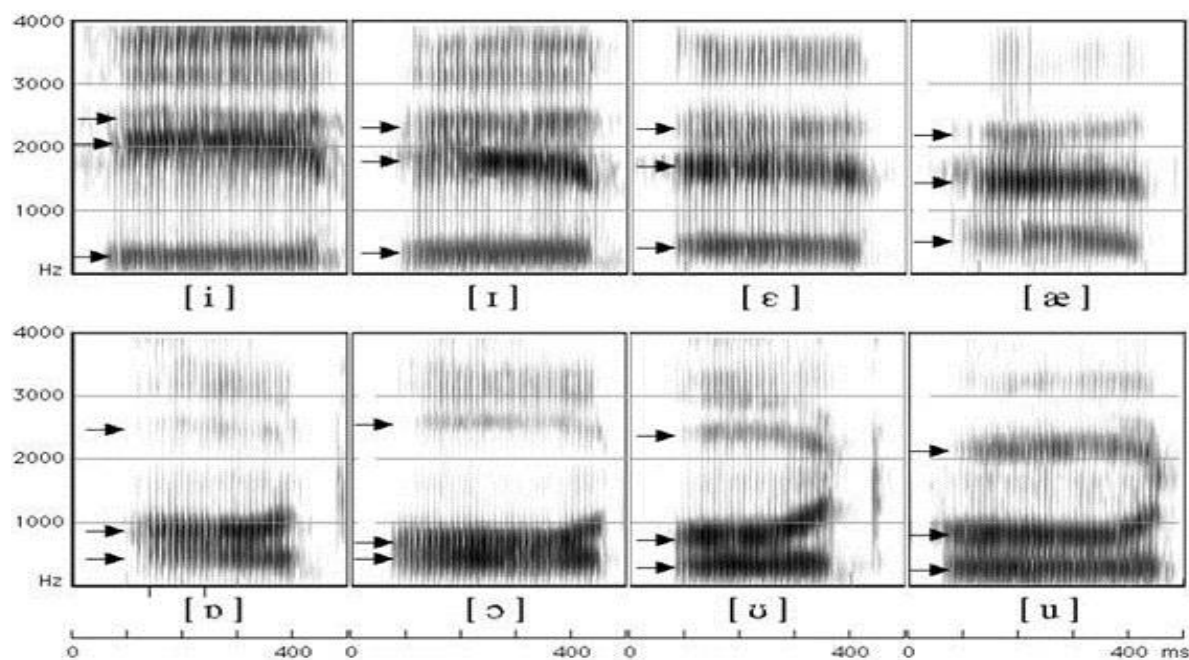


Fig: 5.2

Ladeforged 2006:185-187

The spectrograms given in Fig.5.5.1 and Fig.5.5.2 demonstrates only front and back vowels excluding the middle ones, articulated in the American and British accents. There are two scales given in both figures. The horizontal scale showing the time and the vertical scale shows frequency. The F1 in vowels, shown by the bottom arrow, is indirectly related to vowel height that is to say the higher the formant frequency, the lower the vowel height and the lower the formant frequency, the higher the vowel height. The F2 in vowels, shown by the middle arrow, is rather related to the degree of backness of vowel that is to say the more the vowel is front, the more the F2 is high.

The spectrograms of both figures almost share similar frequencies with a slight variation which occurs due to different accents. In this study after finding the F1 and F2 of the vowels, we will notice these vowels occurring in English loanwords adopted by the speakers of Pashto Yusufzai dialect.

a. The Spectrograms of English Loanwords in Pashto

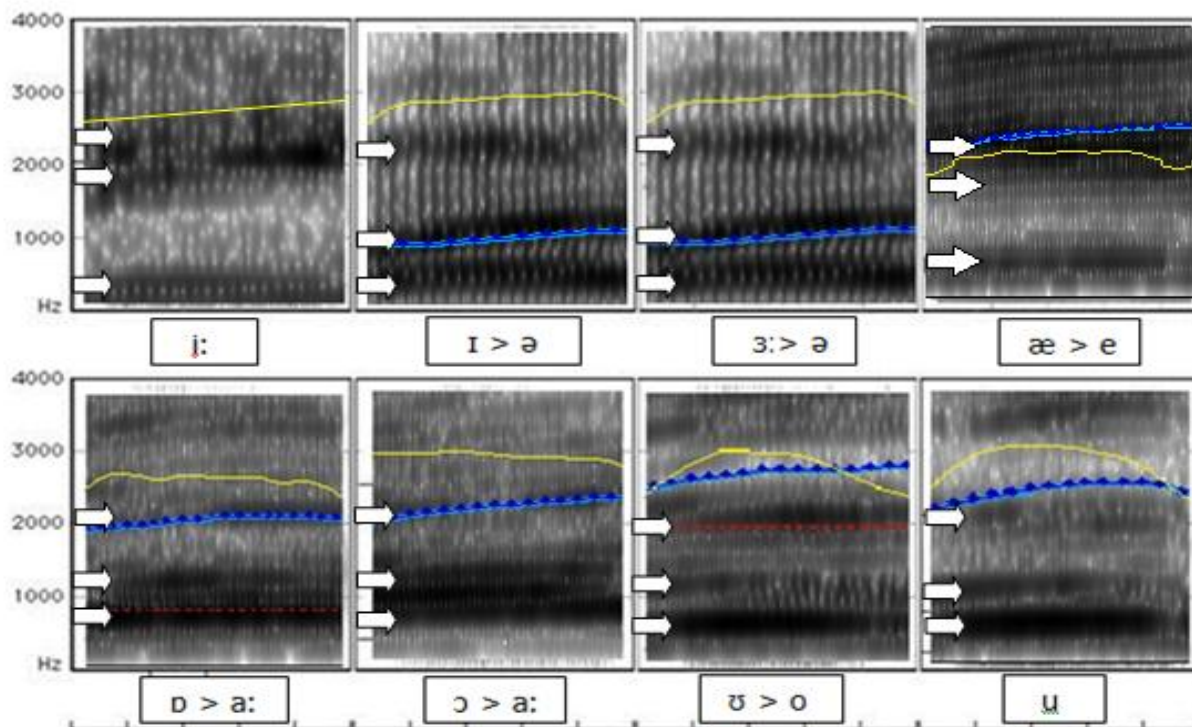


Fig. 5.3

The above given Fig.5.5.3 illustrates the Spectrograms of the words, briefcase, engine, first, tax, block, call, face book, bogus. The vowels in the loanwords are compared with the English vowels given in Fig.5.5.1 and fig 5.2 by Ladeforged to find that either they are similar or different from each other. After examining the frequencies of these vowels in the loanwords a great deal of variation was found indicated by the arrows in each spectrogram. The frequencies of the long vowel /i:/ are somehow identical, while the vowels /ɪ / and /ɜ : / are replaced by the /ə / vowel. The vowel /æ/ is replaced with /e/ vowel. The English vowels /ɒ / and /ɔ / is replaced by Pashto long vowel /a:/. Where the vowel /u/ is replaced with Pashto vowel /o/, the frequencies of the vowel /u/ remain unchanged. The following figure will explain this in more detail, by highlighting the F1 and F2 of each vowel with different colors and making them more visible for the readers.

b. The Spectrograms of English Loanwords in Pashto

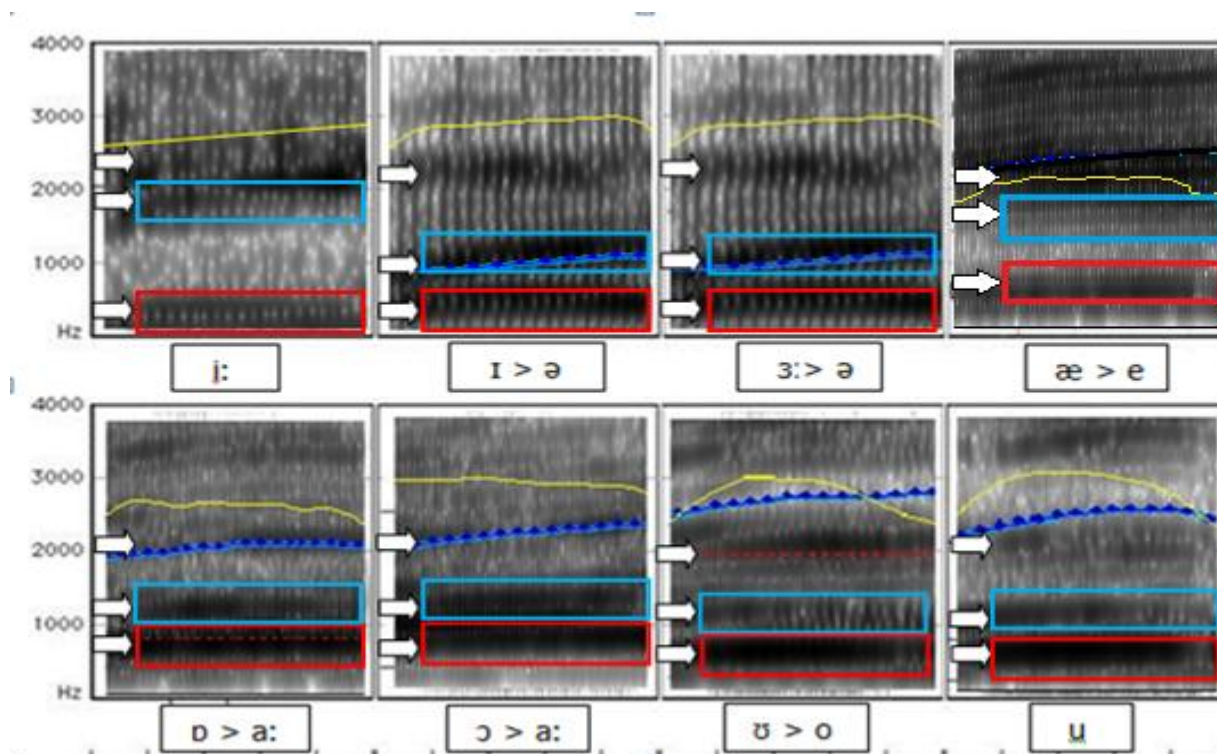


Fig.5.4

As discussed earlier the F1 in vowels, highlighted by the red rectangle in the bottom, is indirectly related to vowel height that is to say the higher the formant frequency, the lower the vowel height and vice versa. The F2 in vowels, exposed by the blue rectangle given above, is somewhat related to the degree of backness of vowel that is to say the more the vowel is front, the more the second formant is high.

As mentioned in chapter 2, Fig.5.4 also demonstrates that, the vowel /i:/ is a high front un-rounded vowel, as it starts with the higher the formant frequency (F2) 1653 Hz and the vowel height (F1) 411 Hz, which is low. It is commonly originated in words borrowed from other languages. /ɪ / is a middle high front vowel; it is very rare in Pashto and frequently found in loanwords that's why often replaced with a mid central vowel /ə /, (F1 542 Hz and F2 1236 Hz). It rarely occurs in word first place. /ɜ : / is not found in Pashto phonology so it is replaced with a

mid front vowel /e/, (F1 514 Hz and F2 1473 Hz). The vowels /ɒ / and /ɔ :/ are not common in Pashto so they are replaced with /a:/, (F1 751 Hz and F2 1208 Hz) a low central vowel just like /a/ but it is considerably longer in articulation. The vowel /ʊ / is not found in Pashto as a result replaced with /o/, (F1 500 Hz and F2 941 Hz), a mid back rounded vowel and /u/, (F1 444 Hz and F2 913 Hz) a mid-high back rounded vowel.

5.3. Substitution of Short English Vowels by Pashto Vowels

While studying vowels in English loanwords a great deal of variation was found in the study. The phonological changes occur in loanwords similarly as phonemic substitutions, insertions, deletions, and syllable structure as per the phonological systems of the receiving languages. The data reveal that there are some Pashto vowels that replace English vowels in English loanwords to achieve the purpose. If there is any replacement of vowels in the words that are borrowed from English to Pashto, then which of the English vowel replaces with Pashto vowel? So it is concluded from the findings and subsequent analysis, that, the substitution of English vowels with Pashto vowels mostly happens in the loanwords, which are not available in Pashto linguistics system.

5.3.1. Replacement of English Short Vowel /ɒ / with /a:/

Pashto native speakers replace the English vowels /ɒ /, and /ɔ :/ with Pashto long vowel /a:/ in the words like “*block*”, “*socket*” and “*call*”. This is also conformed through the Praat software. Each phonemic sound is analyzed in monosyllabic, disyllabic and polysyllabic words for better understanding of the phenomenon. The following table demonstrates the replacement of /ɒ / vowel with Pashto /a:/ vowel in *monosyllabic words*.

S.No	loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.1(a)	Block(n)	/blɒ k/	/bla:k/	/bla:k/
Aud.1(b)	Rod(n)	/rɒ d/	/ra:d/	/ra:d/
Aud.1(c)	Plot(n)	/plɒ t/	/pla:t/	/pla:t/

Table 5.2

The spectrograms for some of the above given words are presented as under.

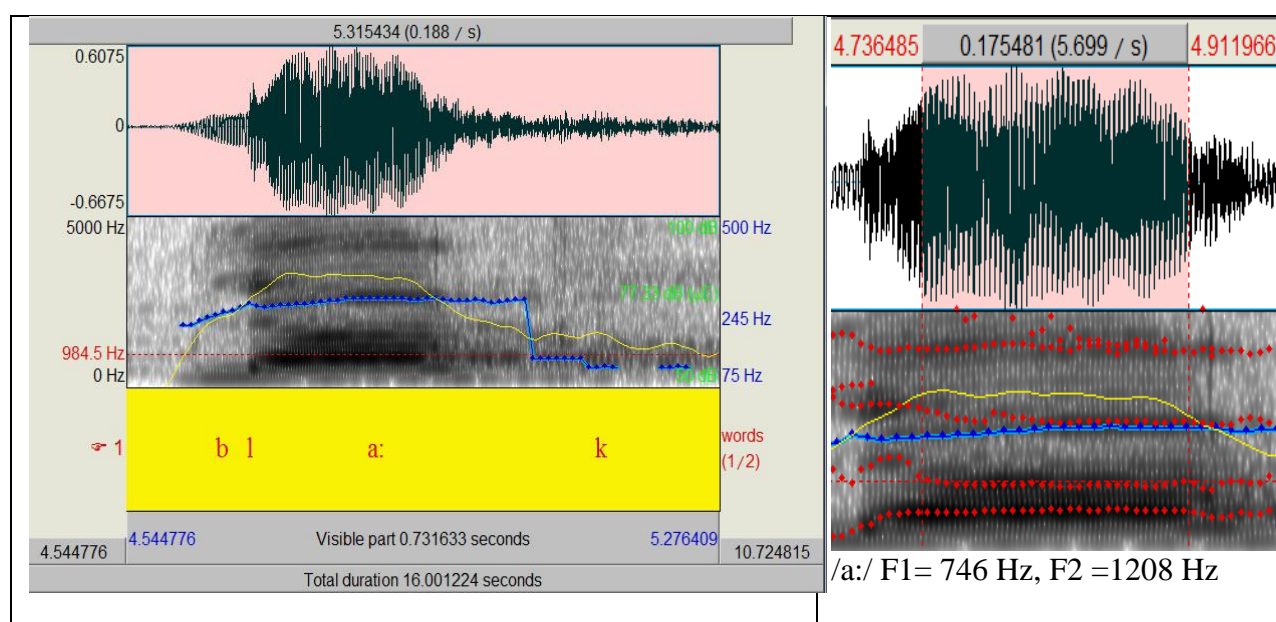


Fig. 5.5

This above given spectrogram of figure 5.5 displays the existence of the Pashto long vowel /a:/ in the word “Block”. The time line on horizontal axis shows the duration of the vowel a: which is 0.175-seconds. The vertical axis shows the frequencies, starting from 0 Hz to 5000 Hz. The darker the color the more of that frequency is featured; this is the vibration of the vocal cords. So the first formant (F1) of vowel a: is 746 Hz and the second formant (F2) is 1208 Hz. The height F1 indicates that the vowel is low while on the other hand F2 is low showing that the vowel is back. The vowel a: has the highest intensity as shown by the decibel line in yellow. The

pitch is shown by the blue line that varies with vibration. Though, this change of vowel does not change the syllable structure of the word ‘*Block*’ = CCVC, as it remains the same.

While the following Table give an idea about the replacement of /ɒ/ vowel with Pashto /a:/ vowel in *disyllabic and polysyllabic words*.

S.No	loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.2(a)	Socket(n)	/sɒ kit/	/sa:kə t/	/sa:kə t/
Aud.2(b)	Copy(n)	/kɒ pɪ /	/ka:pɪ /	/ka:npɪ /
Aud.2(c)	Laboratory(n)	/lə bɒ rtri:/	/leba:tri:/	/leba:tri:/

Table 5.3

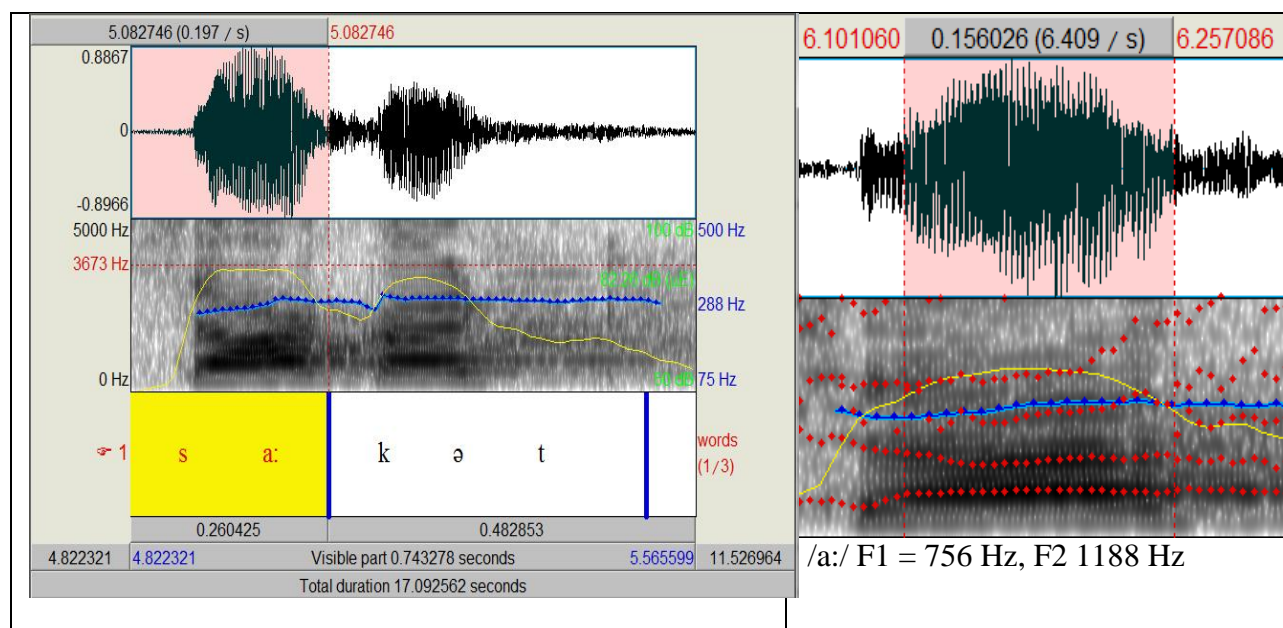


Fig. 5.6

The spectrogram given in figure 5.6 highlights the existence of the Pashto long vowel /a:/ in *disyllabic* word “Socket”. The duration of this vowel is 0.156 sec, F1 is 756 Hz which is also high and F2 is 1188 Hz giving the frequency of long vowel /a:/. Though, here also the syllable template CV.CVC for the word ‘Socket’ remains unchanged.

The spectrograms of the above given loanwords were analyzed through SPSS to get the values of F1 and F2 of the vowel /ɒ/. The mean of F1 and F2 is given in the following table 5.4. The average formant frequencies of the loanword vowels were then located in the quadrilateral to know the position of the vowels in Pashto phonological system. The F1 and F2 of the vowels is given in the Appendix D and E.

Frequencies /ɒ/	Total Numbers N	Mean	Standard Deviation
F1	72	753	36.8
F2	72	1207	31.4

Table 5.4

Analysis: the descriptive statistics of table 5.4 shows the overall result of the English loan vowel /ɒ/. Total 72 spectrograms were analyzed of this vowel, produced by each independent variable, giving the mean of 753 Hz for F1 with standard deviation 36.8 and 1207 Hz mean for F2, with (31.4) standard deviation. The F1 and F2 of this vowel show that this is Pashto long vowel /a:/ rather than /ɒ/. The replacement of this vowel occurred since there is no vowel like /ɒ/ in Pashto phonological system.

The following table gives the statistics for the replacement of short vowel /ɒ/ with Pashto long vowel /a:/ by the speakers of Pashto Yusufzai Dialect.

Key	Replaced /ɒ/ with /a:/	Didn't Replace /ɒ/	Replaced /ɒ/ with other	Total
Frequency	174	42	0	216
Percentage	80.5	19.4	0	100

Table.5.5

Analysis: In Table 5.5 the total frequencies for the vowel sound in the loanwords are given 216. Each participant out of 12 was given six words to pronounce three times each $12 \times 6 \times 3 = 216$. We can see a big difference here as 80.5% percent words were affected while only 19.4 percent were uttered correctly. It was also noted that the educated speakers struggled to make less mistakes. It shows that the majority of the speakers tend to use Pashto long vowel /a:/ in order to fill the gap. To conclude we can say that the speakers will more likely use their own adopted pronunciation.

The above tables, prove that the speakers of Pashto Yusufzai dialect replace English /ɒ/ short vowel with the Pashto /a:/ long vowel like in words “block”, “rod”, “cotton”, “socket”, “copy” and “laboratory. So from the above tables we can generalize the following adaptation practice.

Practice No. (a) /ɒ/ → /a:/

5.3.2. Replacement of /æ/ with /e/

Table.5. 6, Demonstrate the substitution of /æ/ vowel with Pashto /e/ vowel in monosyllabic words by Pashto native speakers.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.5(a)	Tax(n)	/tæks/	/teks/	/teks/
Aud.5(b)	Bat(n)	/bæt/	/bet/	/bat/
Aud.5(c)	Catch(n)	/kætʃ /	/ketʃ /	/kɪ tʃ /

Table.5. 6

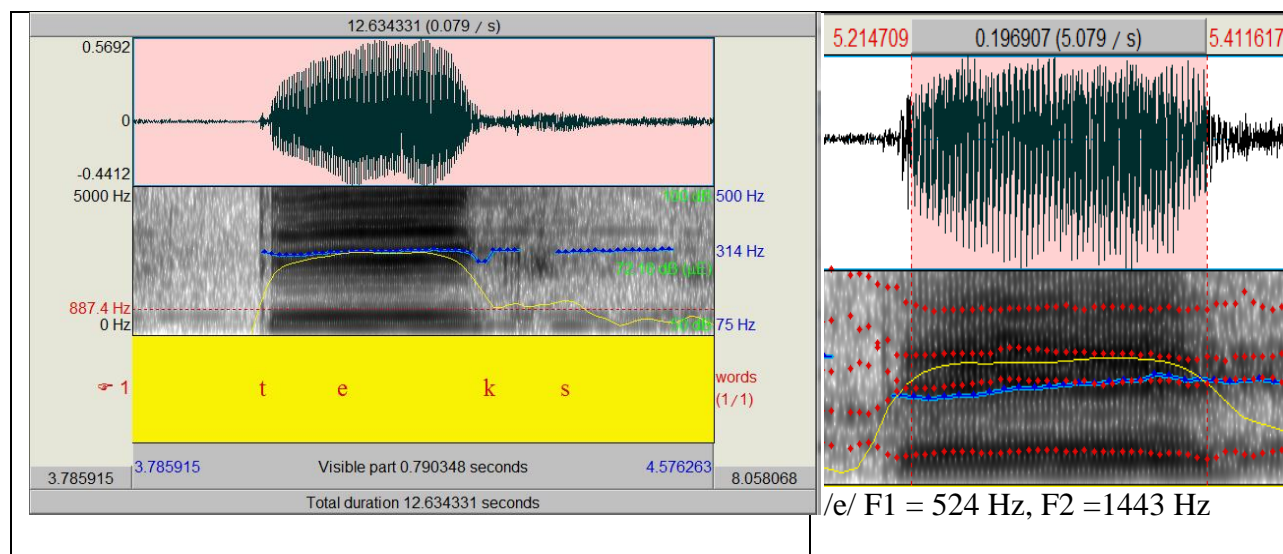


Fig. 5.7

The spectrogram specified in figure 5.7 indicates the existence of the Pashto short vowel /e/ in monosyllabic word. The time line shows the duration of the vowel /e/ which is 0.196 sec. The vertical axis highlights that, F1 is a bit low as 524 Hz making it a middle vowel. The F2 of that frequency is marked 1443 Hz, which is very high, showing that the vowel is front. The intensity of the vowel /e/ is not much higher as shown by the decibels line in yellow. Although, this change of vowel also, does not change the syllable structure of the word 'tax' = CVCC as it is also the same.

The table.5.7, demonstrate the replacement of /æ/ vowel with Pashto /e/ vowel in *disyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.6(a)	Traffic(n)	/træfɪ k/	/trepɪ k/	/trepek/
Aud.6(b)	Tractor(n)	/træktə (r)/	/tektə r/	/tektar/
Aud.6(c)	Factory(n)	/fæktɪ /	/pakɪ /	/pekɪ /

Table.5. 7

The speakers replace the English short vowel /æ/ with Pashto short vowel /e/.

Frequencies /æ/	Total Numbers N	Mean	Standard Deviation
F1	72	512	35.4
F2	72	1418	37.5

Table.5. 8

Analysis: Table.5. 8 gives the descriptive statistics of the English loan vowel /æ/. Total 72 spectrograms were analyzed for this vowel, the mean of F1 for this vowel is 512 Hz with 35.4 standard deviation and its F2 mean is 1418 Hz, with (37.5) standard deviation. The F1 and F2 of this vowel show that this is Pashto short vowel /e/. This vowel is also replaced with the nearest vowel in Pashto phonological system.

Key	Replaced /æ/with /e/	Didn't Replace /æ/	Replaced /æ/with other	Total
Frequency	165	51	0	216
Percentage	76.3	23.6	0	100

Table.5. 9

Analysis: Table.5. 9, explains that the majority of the speakers changed the English short vowel /æ/ with Pashto short vowel /e/. It shows huge influence of Pashto on English loanwords. On the other hand only 24 percent does not show any impact. It remained unchanged. The vowel /æ/ was not replaced with any other sound in the table. The above tables reflect that Pashto speakers of Yusufzai dialect replace English /æ/ short vowel with Pashto /e/ long vowel like in words “tax”, “bat”, “catch”, “traffic”, “tractor” and “factory”. Hence from these given tables we can generalize the following amendment.

Practice No (b) /æ/→/e/

5.3.3. Replacement of /ɪ / with /ə /

Pashto native speakers replace the English /ɪ / vowel with Pashto /ə / vowel, as this sound is very rare in Pashto and often borrowed from other languages. Table.5.10, demonstrates the replacement of /ɪ / vowel with Pashto /ə / vowel in *disyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.7(a)	Engine(n)	/endʒɪ n/	/ɪ ndʒə n/	/endʒə n/
Aud.9(a)	Budget(n)	/bʌ dʒɪ t/	/bə dʒə t/	/bə dʒə t/
Aud.7(c)	Cricket(n)	/krɪ kɪ t/	/krɪ kə t/	/ki:rkə t/

Table.5. 10

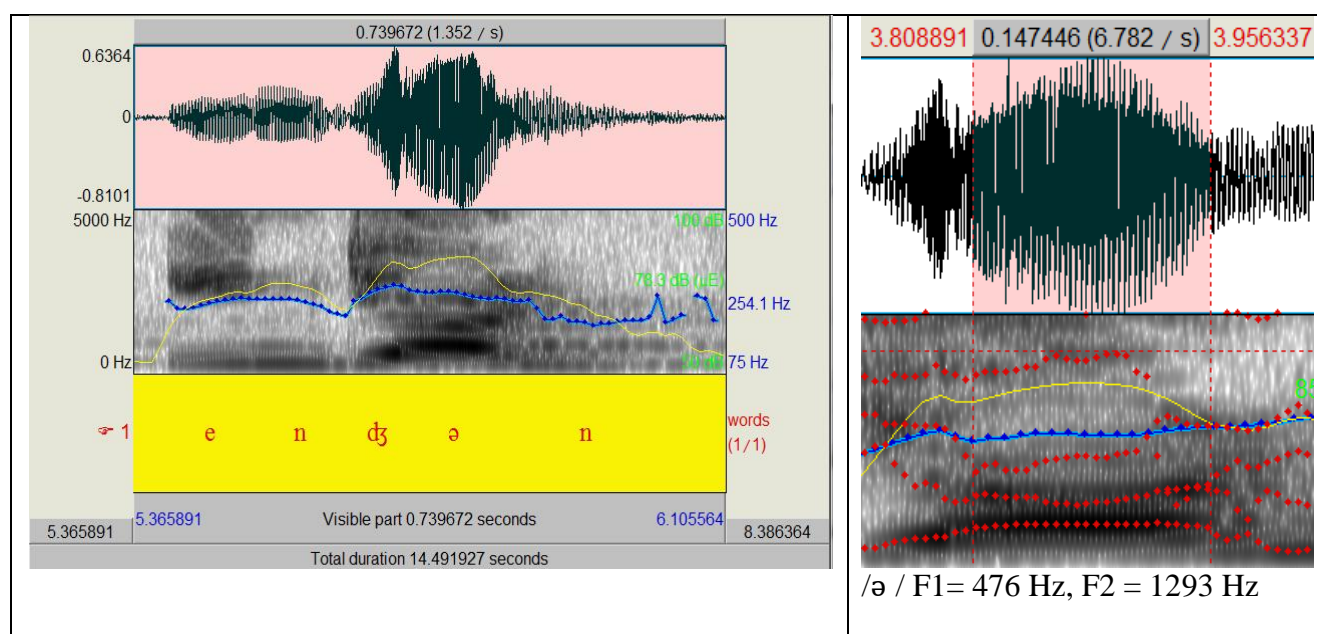


Fig.5.8

The spectrogram in Fig.5.8 shows the Pashto short vowel /ə / in monosyllabic word. On the time line, the duration of this vowel is 0.147. The vertical axis highlighting F1 576 Hz and the frequency of F2 is 1193 Hz, neither very high nor low, making it the central middle vowel.

The intensity of the vowel /ə / is high as shown by the yellow line. While, this change of vowel does not bring any change in the syllable pattern of the word ‘Engine’ VCC.VC.

The replacing of vowel /ɪ / with /ə / in monosyllabic words is not found in the English loan words, recorded from Pashto native speakers. The table explains that the replacement occurred in the coda of the disyllabic words like “engine”, budget” and “cricket”. The following tables present the statistics for the replacement of short vowel /ɪ / with Pashto short vowel /ə /.

Frequencies /I/	Total Numbers N	Mean	Standard Deviation
F1	36	457	32.3
F2	36	1360	49.5

Table.5.11

Analysis: This table gives the statistics for the English loan vowel /ɪ/. Total 36 spectrograms were analyzed for this vowel, the average F1 for this vowel is 457Hz with 32.3 standard deviation and its F2 is 1360 Hz, with (49.5) standard deviation. The F1 and F2 of this vowel show that this is Pashto short vowel /ə /. This vowel is sometimes replaced with Pashto nearest vowel.

Key	Replaced /ɪ / with /ə /	Didn't Replace /ɪ /	Replaced /ɪ / with /e/	Total
Frequency	69	24	15	108
Percentage	63.8	22.2	13.8	100

Table 5.12

Analysis: In Table 5.12 the total frequencies are 108, each participant was given three words to pronounce three times $12 \times 3 \times 3 = 108$. The table simplifies that the most of the speakers

replaced the vowel /ɪ / with Pashto short vowel /ə /. The 22 percent of the words were not influenced while in the other 14 percent words vowel are changed to the vowel /e/.

So from the above tables we can conclude the following variation.

Practice No. (c) /ɪ / —→ /ə /

5.3.4. Replacement of /ʌ / with /ə /

The English short vowel /ʌ / is also replaced with the Pashto short vowel /ə / by the Pashto speakers in *truck*, *clutch*, and *plug*. This happens because of the Pashto vowel system. This replacement also does not bring any change in the syllable structure. The following table demonstrates the alternation of /ʌ / vowel with Pashto /ə /, vowel in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.8(a)	Clutch(n)	/klʌ tʃ /	/klə tʃ /	/klə tʃ /
Aud.8(b)	Truck(n)	/trʌ k/	/trə k/	/trə k/
Aud.8(c)	plug(n)	/plʌ g /	/plə g/	/plə g/

Table 5.13

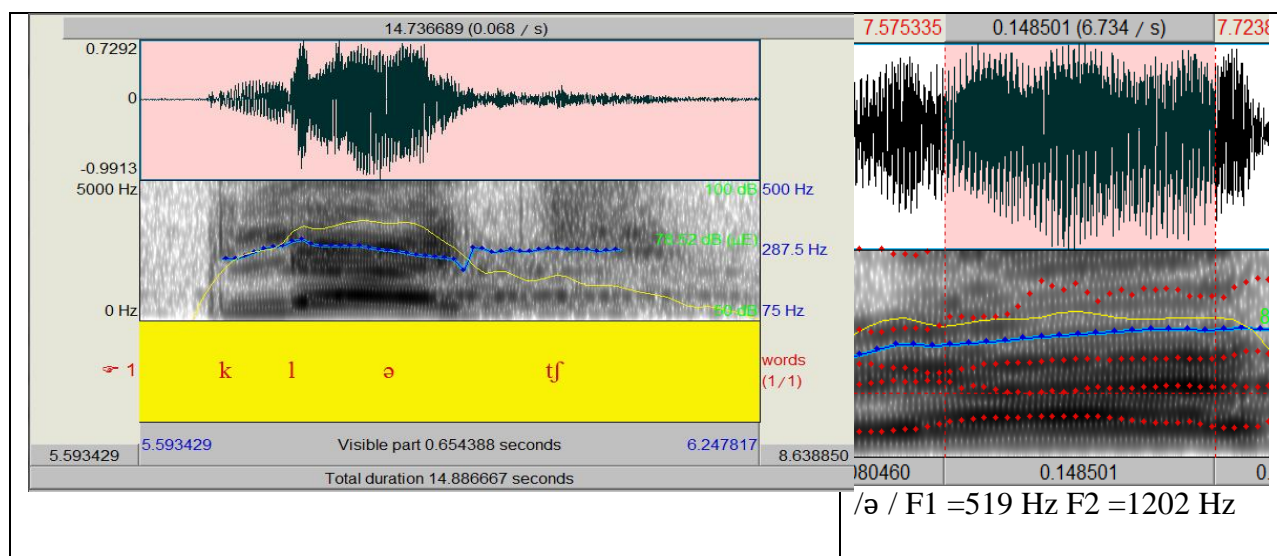


Fig.5.9

The spectrogram given in Fig.5.9 highlights the Pashto short vowel /ə/ in *monosyllabic* word articulated by the Pashto speaker. The duration taken by this vowel is 0.148 sec. The F1 this vowel is 519 Hz and the F2 is 1202 Hz. The frequencies given by the graph illustrates that this is the short central vowel /ə/ occurred in the place of English vowel /ʌ/. Here the syllable structure CCVC for the word ‘Clutch’ is also the same.

Table 5.14; demonstrate the substitution of /ʌ/ vowel with Pashto /ə/ vowel, vowel in *disyllabic and polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.9(a)	Budget(n)	/bʌ dʒɪ t/	/bə dʒə t/	/bə dʒə t/
Aud.9(b)	Bumper(n)	/bʌ mpə (r)/	/bə mpə r/	/bampar/
Aud.9(c)	Motherboard	/mʌ ðə bɔ :d/	/mə ðə rbod/	/madə rbod/

Table 5.14

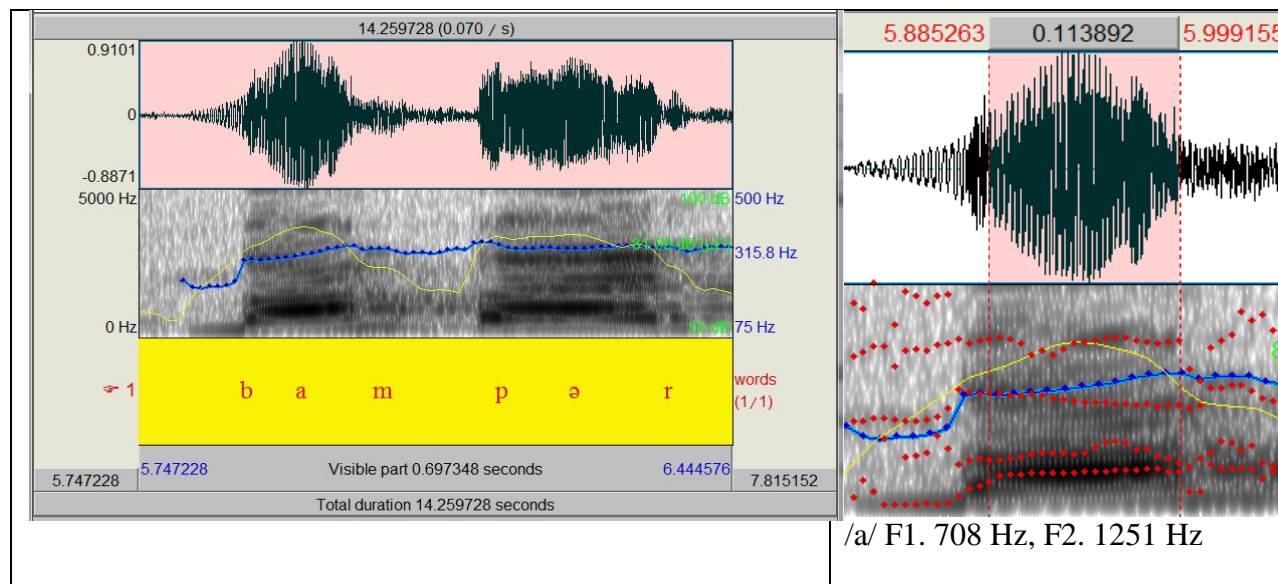


Fig.5.10

The spectrogram given in Fig.5.10 highlights the existence of the Pashto short vowel /a/ in *disyllabic* word pronounced by one of speakers of Pashto. The time taken by this vowel is 0.113 sec. The F1 is 708 Hz which is high making it low vowel and its F2 is 1251 Hz making it central vowel of Pashto. As it clear from the frequencies of /a/ and /ə / which are different from one another. This proves that in this Fig.5.10 /Λ / is replaced with /a/. Though, here the syllable template is CVC.CVC for the word ‘Bumper’ as the speaker pronounces the phoneme /r/.

The following tables give the statistics of the substitution of /Λ / with /ə /

Frequencies /Λ /	Total Numbers N	Mean	Standard Deviation
F1	72	537	34.8
F2	72	1112	40.2

Table 5.15

Analysis: the descriptive statistics of Table 5.15 shows the result of the English loan vowel /Λ /. Total 72 spectrograms were examined for this vowel, produced by each speaker, giving the mean of 537 Hz for F1 with standard deviation 34.8 and 1112 Hz mean for F2, with 40.2 standard deviation. The frequencies of this vowel show that this is Pashto short vowel /ə / rather than /Λ /. The replacement of this vowel occurred because there is no vowel /Λ / in Pashto phonological system.

Key	Replaced /Λ / with /ə /	Didn't Replace /Λ /	Replaced /ɔ :/with other	Total
Frequency	189	27	0	216
Percentage	87.5	12.5	0	100

Table 5.16

Analysis: Analysis of the findings in Table 5.16 indicates that 87.5 percent of the frequencies have a vowel changed from /ʌ/ to /ə/. The other 12.5 percent remain the same having no vowel substitution. The distinction in the percentage is to a great extent. To conclude it is obvious that most of the speakers will transform /ʌ/ to /ə/ in any loanwords they found.

The above tables 13,14, 15 and 16 indicate that the Pashto speakers of Yusufzai dialect replace English /ʌ/ short vowel with Pashto /ə/ or /a/ short vowels like in words “clutch”, “plug”, “truck”, “budget”, “bumper” and “motherboard”. The other noticeable thing is that most of the educated speakers of Pashto substitute the sound /ʌ/ with /ə/ and the uneducated speakers some time replace it with /a/ sound of Pashto. So from the above tables, we can conclude the following Practices.

Application: No. (d) /ʌ/ → /ə/

5.3.5. The Insertion of /ə/

Pashto native speakers insert /ə/ vowel sound in the cluster of consonants on the onset and coda position of the syllable. This insertion break up the consonants clusters in English loanwords. The upcoming tables will explain it on both positions.

Table 5.17: Insertion of /ə/ vowel sound in the onset position of the consonant cluster

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.36(d)	Program	/prə ʊ g ræm/	/pə rogra:m/	/pə rogra:m/
Aud.24(C)	Driver(n)	/draivə (r)/	/də rewə r/	/də rewər/
Aud.27(c)	Drama(n)	/dra:mə /	/dra:mə /,	/də ra:mə /

Table 5.17

The confirmation of /ə / addition in CC clusters is also done by the Praat software, by the recordings of the participants. The following spectrograms, of Fig.5.11 and Fig.5.12, examine the pronunciations of these words exhibit the occurrence of ə -epenthesis.

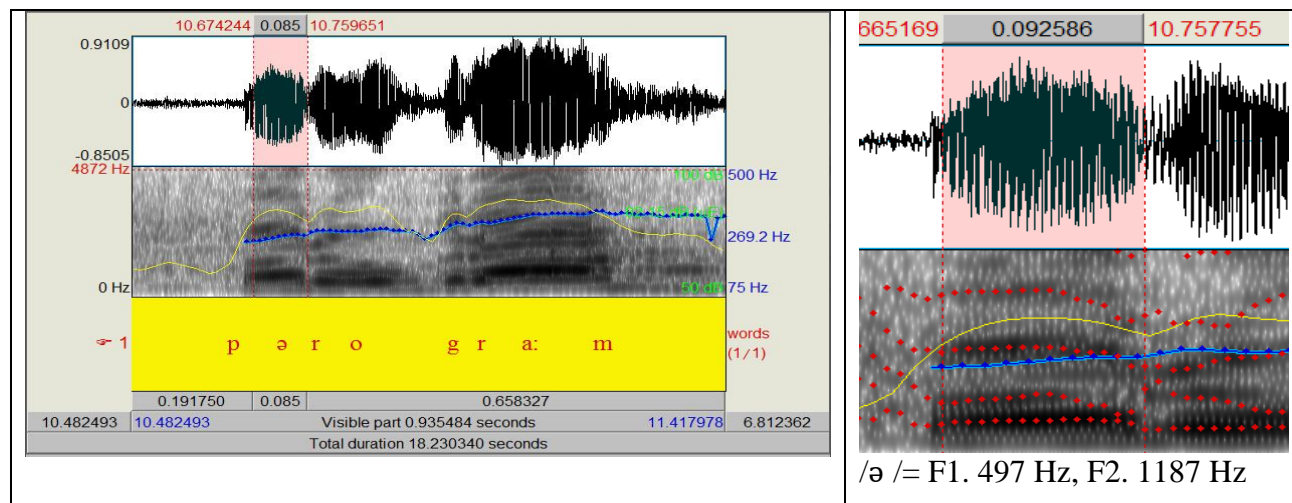


Fig.5.11

Fig.5.11 demonstrates the insertion of vowel sound /ə / in the onset position of the consonants and break up the consonants clusters in English loanwords. The frequency of F1 is 497 Hz and F2 is 1187 Hz while time duration is 0.093 sec. These are the frequencies of short vowel /ə / found in the onset of “program”.

The following tables also verify the insertion of /ə / sound in the coda position of English loan words in monosyllabic, disyllabic and polysyllabic words. Table 5.18; demonstrate the insertion of Pashto /ə / sound in the coda cluster of consonants in the monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.10(a)	Bulb(n)	/bʌ lb/	/bə lə p/	/balə p/
Aud.10(b)	Fashion(n)	/fæʃ n/	/peʃ ə n/	/peʃ ə n/
Aud.10(c)	Bundle(n)	/bʌ ndl/	/bandə l/	/bandal/

Table 5.18

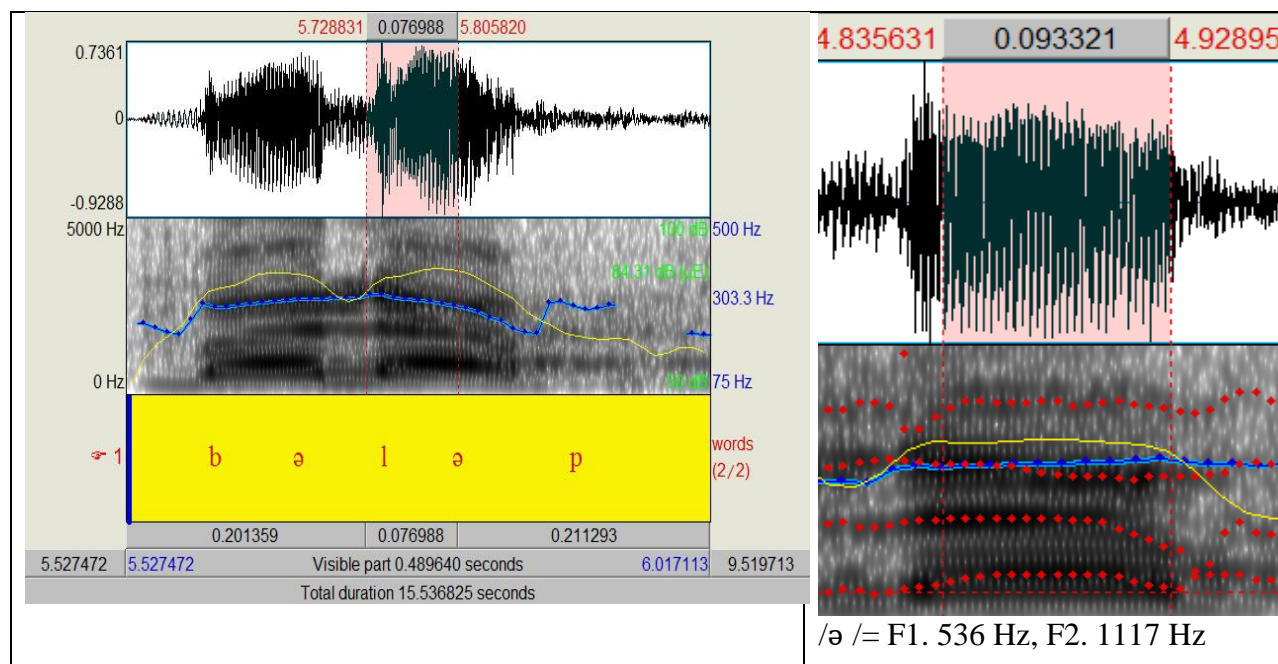


Fig.5.12

The above given spectrogram for the word Bulb shows the insertion of /ə / between the consonant sounds /l/ and /p/. The frequency featured in F1 is 463 Hz and in F2 is 1217 Hz. The time duration is 0.093 sec. This confirms without any suspicion that the speakers inserted the short vowel /ə / as an epenthetic vowel breaking the coda clusters in English loanwords. This insertion of /ə / is exercised consistently by almost all the speakers in pronouncing these words.

Table 5.19 demonstrates the insertion of Pashto /ə / sound in the coda cluster, of consonants, in the *disyllabic and polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.11(a)	Election(n)	/ɪ lekʃ n/	/ɪ lekʃ ə n/	/ɪ lekʃ ə n/
Aud.11(b)	Cycle(n)	/sɪ ɪ kl/	/sekə l/	/saykə l/
Aud.11(c)	Double bed(n)	/dʌ blbed/	/də bə lbed/	/dabalbed/

Table 5.19

The words of the above tables, such as “bulb”, “fashion”, “bundle”, “election”, “cycle” and “double bad” show that the Pashto speakers of Yusufzai dialect insert /ə / short vowel sound in the last syllable of the words to break up the coda clusters in English loanwords in a cluster of consonants. The analysis of words like “program”, “driver” and “drama” show the insertion of /ə / short vowel sound in the first syllable of the words to break up the Onset clusters in English loanwords like “pə r, də r, and də r”.

Frequencies / ə /	Total Numbers N	Mean	Standard Deviation
F1	72	536	33.4
F2	72	1115	44.6

Table 5.20

Analysis: the statistics of this table shows the outcome of the Pashto vowel / ə /. Total number of spectrograms examined for this vowel is also 72, giving the mean of 536 Hz for F1 with standard deviation 33.4 and 1115 Hz mean for F2, with 44.6 standard deviation. The formant frequencies of this vowel show that this is Pashto short vowel /ə /.

Key	Insertion of	No Insertion	Insertion of	Total
	/ə /	of /ə /	other	
Frequency	192	24	0	216
Percentage	88.8	11.1	0	100

Table 5.21

Analysis: The study of Table 5.21 identifies the answers, if any insertion of vowel /ə / has been occurred in the pronunciation of loan words. We can see that 89 percent of the

frequencies show the insertion of /ə / in the given data. The other 11 percent of the frequencies does not show any insertion of vowel which is very little percentage.

So from the above words mentioned in the tables, table.5.18, 19, 20 and table: 21 we can generalize the following change.

Practice No. (e) /cc/—>/cə c/

5.3.6. The Replacement of /ʊ / with Pashto /o/

The Pashto sound system does not have /ʊ / sound that's why they swap it with other near sound to fill the gap. Table 5.22 demonstrates the replacement of /ʊ / vowel with Pashto /o/ vowel in monosyllabic words

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.40(b)	Hook	/hʊ k/	/hok/	/hok/
Aud.40(c)	Book	/bʊ k/	/bok/	/bok/

Table 5.22

Here this Table 5.23 also exhibits the replacement of /ʊ / vowel with Pashto /o/ vowel in the onset of *disyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.33(c)	Window	/wɪ ndə ʊ /	/wɪ ndo/	/wɪ ndo/
Aud.29(d)	Face book	/feɪ sbʊ k/	/pesbok/	/pesbok/

Table 5.23

For further clarification of this phenomenon a spectrogram analysis is also specified in the following Fig.5.13.

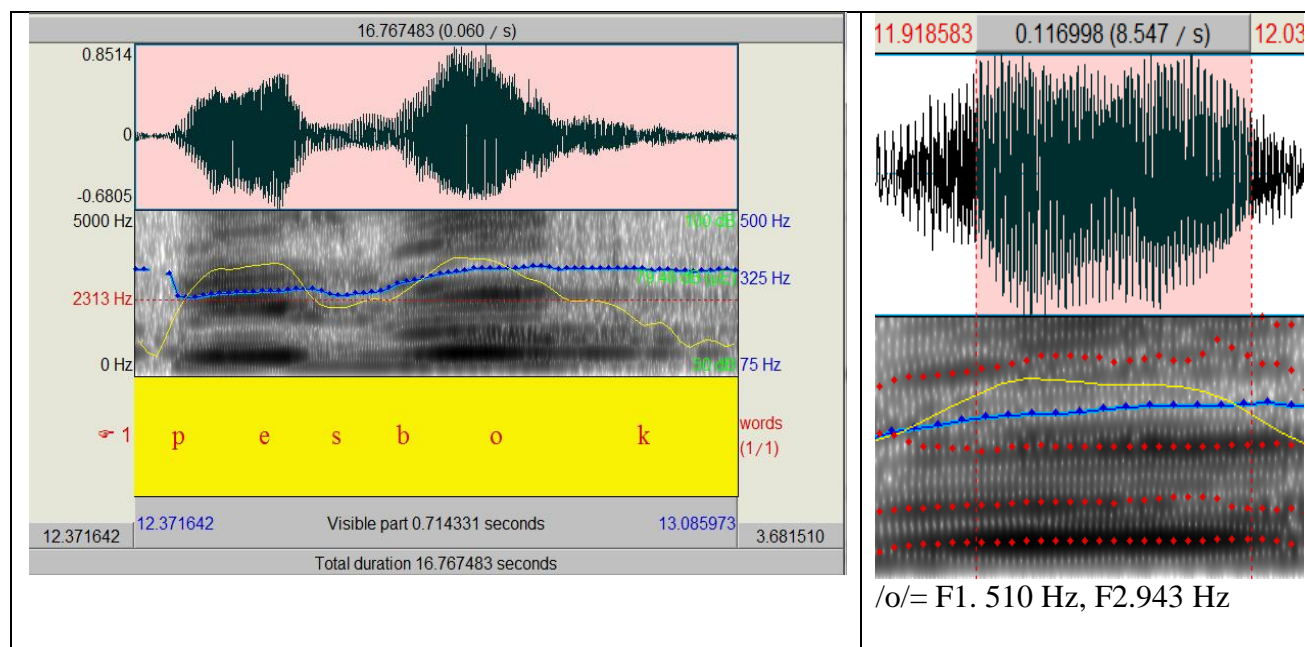


Fig.5.13

The spectrogram in Fig.5.13 highlights the Pashto short vowel /o/ in disyllabic word ‘face book’. The duration of the vowel /o/ is 0.116 sec, on time line. The vertical axis shows that, the F1 frequency is marked 510 Hz which is a bit low so the vowel is also a bit high and the F2 is 943 Hz that is also low showing that the vowel is back. This is close to the English vowel /ʊ/ which is not found in the Pashto phonology so it is replaced by the nearest vowel of Pashto. The intensity of the vowel /o/ is the same like /e/ as shown by the decibels line in yellow.

5.3.7. The Replacement of /ʊ/ with Pashto /o/

Table 5.24 demonstrates the replacement of /ʊ/ vowel with Pashto /o/ vowel in the coda of *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.30(b)	Bogus	bə ʊ g ə s	/bəkə s/	/bəkə s/
Aud.36(d)	Program	prə ʊ g rəm	/pə rogra:m/	/pə rogra:m/

Table 5.24

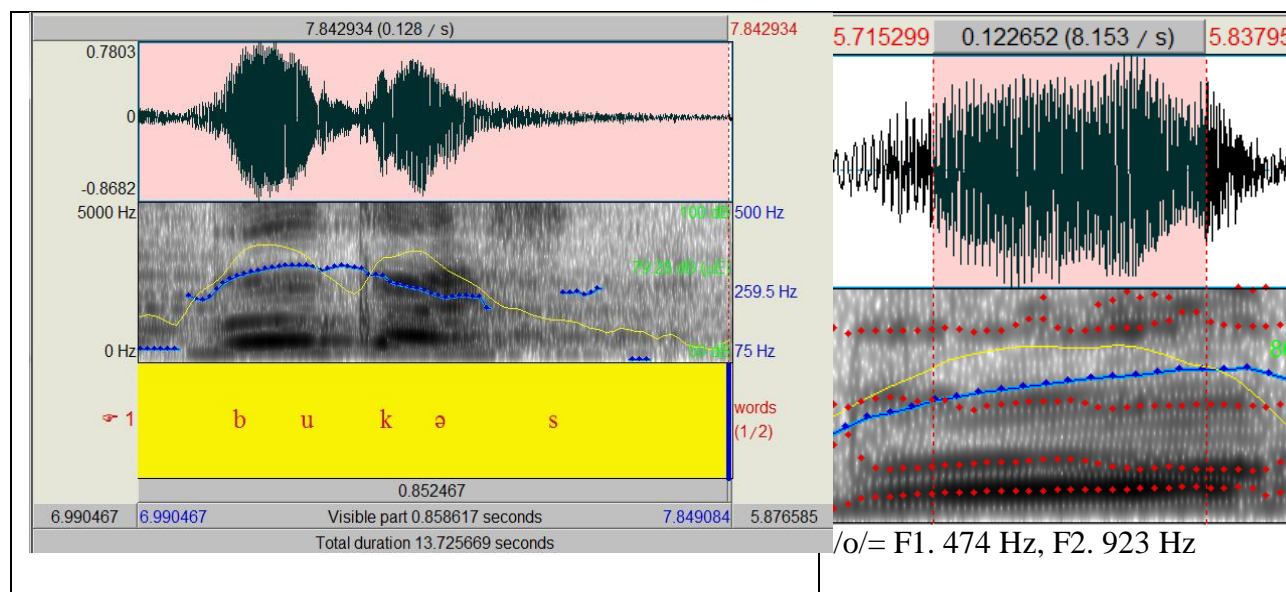


Fig.5.14

The spectrogram in Fig.5.14 displays the Pashto short vowel /u/ in disyllabic word bogus. The duration of the vowel /u/ is 0.122 sec. The vertical axis highlights that, little frequency is marked. The F1 474 Hz which is very low so the vowel is high and the F2 is 923 Hz this is also very low telling that the vowel is back. This tells us that this is the Pashto mid-high back rounded vowel /u/. Though, the intensity of the vowel /o/ is a bit high than the vowel /ə / as shown by the decibels. An interesting thing happened in the second syllable as the voiced /g/ phoneme is also replaced with voiceless /k/ sound.

The following tables show The Replacement of /u / with Pashto /o/.

Frequencies / u /	Total Numbers N	Mean	Standard Deviation
F1	72	484	40.6
F2	72	934	53.0

Table 5.25

Analysis: Table 5.25 gives the descriptive statistics of the English loan vowel /ʊ/. Total 72 spectrograms were analyzed for this vowel, the mean F1 for this vowel is 484 Hz with (40.6) standard deviation and its F2 mean is 934 Hz, with (53.0) standard deviation. The F1 and F2 of this vowel show that this is Pashto vowel /o/. This vowel is also replaced with the nearest vowel in Pashto phonological system.

Key	Replaced /ʊ/ with /o/	Didn't Replace /ʊ/	Replaced with other	Total
Frequency	157	0	59	216
Percentage	72.6	0	27.3	100

Table 5.26

Analysis: in Table 5.26 the total frequencies are given 216; six words were given to each participant for speaking, $6 \times 3 \times 12 = 216$. The frequencies for the replacement of /ʊ/ with Pashto /o/ come out 157 with 72 percentages, where as the frequencies of the substitution of /ʊ/ with other appear only 59 with 27 percentages. This shows that the speakers are possibly more inclined to use Pashto vowel /o/ as an alternative to English vowel /ʊ/.

Consequently, from the above mentioned words in the tables: 23, 24, 25 and table: 26 we can generalize the following adaptation strategies.

Adaptation Practice No (f) /ʊ/ → /o/ sound.

5.4. The Substitution of Long English Vowel /ɔ:/ with Pashto vowel /a:/

The following Table 5.27 also demonstrates that the long English vowel /ɔ:/ is replaced with Pashto long vowel /a:/ in *monosyllabic words*. This happens because Pashto linguistic system does not have the English long vowel /ɔ:/.

S.No	loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.3(a)	Call(n&v)	/kɔ :l/	/ka:l/	/ka:l/
Aud.3(b)	Ball(n)	/bɔ :l/	/ba:l/	/ba:l/
Aud.39(a)	Horn	/hɔ : n/	/a:rə n/	/a:rə n/

Table 5.27

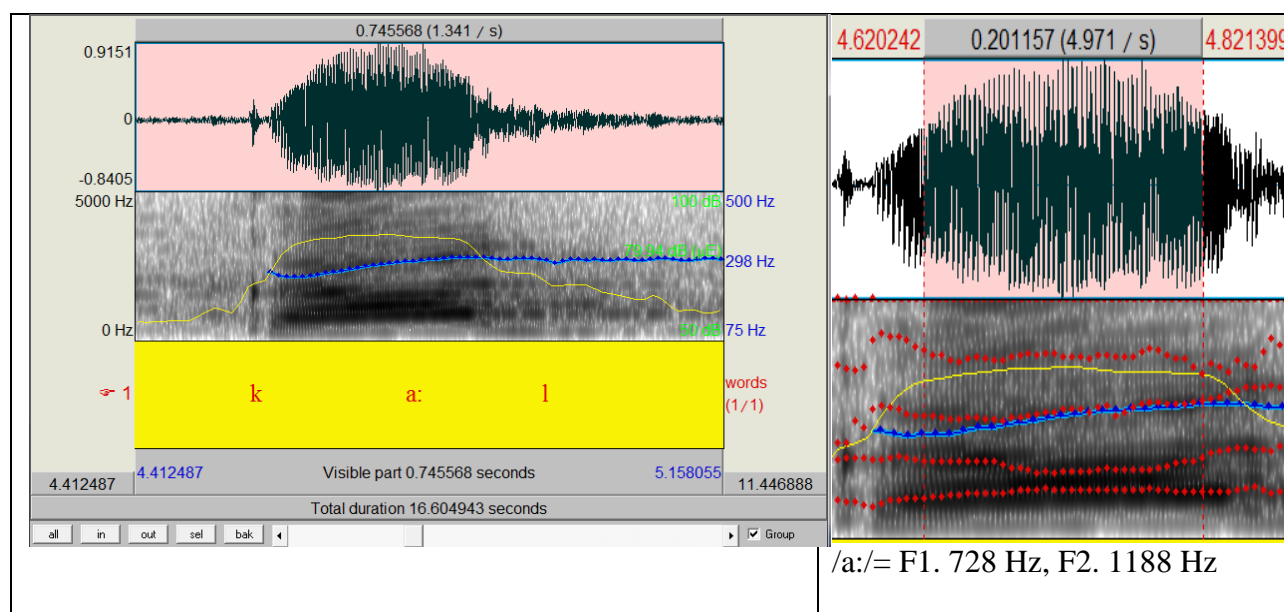


Fig.5.15

The spectrogram in Fig.5.15 shows the Pashto long vowel /a:/ in monosyllabic word “call”. The time duration of this vowel is 201 sec. The first formant of “call” is F1 728 Hz which is very high as a result making this vowel low. While, it’s F2 is 1188 Hz, neither very high nor low, thus making it central long vowel /a:/. This replacement of vowel also does not bring any change the syllable pattern of the word ‘call’ which remains as CVC.

Table 5.28 demonstrates the replacement of /ɔ :/ vowel with Pashto /a:/ vowel in *disyllabic and polysyllabic words*.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.3(c)	Record(n&v)	/rekɔ :d/ /rɪ kɔ :d/	/reka:d/	/ri:ka:d/
Aud.4(a)	Football(n)	/futbɔ :l/	/putba:l/	/putba:l/
Aud.4(b)	Volleyball(n)	/vɒ lɪ bɔ :l/	/wa:lɪ ba:l/	/wa:lɪ ba:l/

Table 5.28

The above tables, confirm that the Pashto speakers of Yusufzai dialect replace English /ɔ :/ long vowel with Pashto long vowel /a:/. Words of the tables 27 and 28 such as “call”, “ball”, “Horn”, “record”, “football” and “volleyball” show the replacement of /ɔ :/ with Pashto /a:/. The following table provides the statistics for the replacement of long vowel /ɔ :/ with Pashto long vowel /a: /

Frequencies / ɔ : /	Total Numbers N	Mean	Standard Deviation
F1	72	753	36.8
F2	72	1207	31.4

Table 5.29

Analysis: Table 5.29 gives the descriptive statistics of the English loan vowel /ɔ :/. Seventy two (72) spectrograms were studied for this vowel, giving the mean of 753 Hz for F1 with (36.8) standard deviation and F2, 1207 Hz, with (31.4) standard deviation. The F1 and F2 values of this vowel confirm that this is Pashto long vowel /a: /. This vowel is also replaced with the nearest Pashto vowel in Pashto phonological system.

Key	Replaced /ɔ :/with /a: /	Didn't Replace /ɔ :/	Replaced /ɔ :/ with other	Total
Frequency	186	30	0	216
Percentage	86.1	13.8	0	100

Table 5.30

Analysis: Table 5.30 shows that the majority of the speakers tend to use Pashto long vowel /a:/ as a substitute of /ɔ :/. In the total frequencies of 216 words only 30 remained unchanged while the rest were altered by the speakers.

86 percent speakers were using /a:/ though only 14 percent used it correctly. The Pashto phonological system has a strong hold on borrowed phonology. It shows that the speakers are prone to use their own adopted pronunciation. So from the above tables we can generalize the following adaptation practice.

Practice No. (g) /ɔ :/→/a:/

5.4.1. The Long Vowel /i:/ in Loanwords

Table 5.31, demonstrates the existence of /i/ vowel in the loan words. The sounds that are available in Pashto sound system are not altered. As the sound u: which exist before in Pashto phonology does not change in pronunciation of the word ‘goal’. Hence, the next table gives an idea about it. The Pashto speakers do not change the vowel /i/ into any other sound.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.25(b)	TV(n)	/Ti:vi/	/ti:wi:/	/ti:wi:/
Aud.29(c)	Freezer	fri: zə (r)	/pri:zar/	/pri:zar/

Table 5.31

5.4.2 Replacement of /ɜ : / with /ə /

The Table, given below, demonstrates the replacement of /ɜ : / with short vowel /ə /. It is explained in monosyllabic and disyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.42(a)	First	/fɜ : st/	/fə st/	/pə st/
Aud.42(b)	Reverse	/rɪ ' vɜ : s/	/rɪ ' v ə s/	/rɪ ' v ə s/

Table 5.32

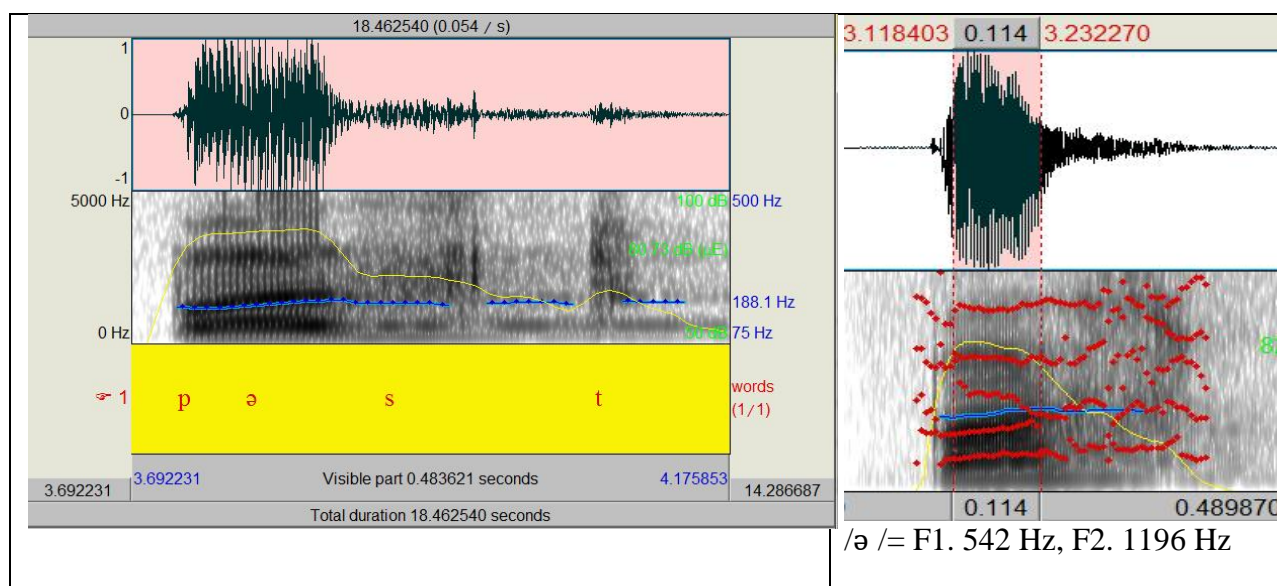


Fig.5.16

Here in Fig.5.16, the English long vowel /ɜ : / is replaced with the Pashto short vowel /ə / in the words like *reverse*, and *first*, because this vowel /ɜ : / is not there in Pashto Phonology so it is replaced by the Pashto vowel. The time duration of this vowel is 0.114 sec. the first formant is 542 Hz and the second formant is 1196 Hz giving the frequency of Pashto short vowel /ə /. Though, this change of vowel also does not change the syllable template. The replacement of the long English vowel /ɜ : / with the Pashto vowel /ə / is generated by SPYD according to

the Phonological system of Pashto. Whereas, showing the same syllable pattern, CVCC. The following shows statistic analysis replaced /ɜ : / with /ə /

Frequencies / ɜ : /	Total Numbers N	Mean	Standard Deviation
F1	24	538	33.8
F2	24	1110	31.1

Table 5.33

Analysis: the descriptive statistics of this table is illustrated for the English loan vowel /ɜ : /. Total 34 spectrograms were examined for this vowel, that gave the mean of F1, 538 Hz with (33.8) standard deviation and F2, 1110 Hz, with (31.1) standard deviation. The F1 and F2 frequencies of this vowel confirm that this is Pashto short vowel /ə /. This vowel is also replaced with the nearest Pashto vowel.

Key	Replaced /ɜ : / with /ə /	Didn't Replace /ɜ : /	Replaced /ɜ : / with /r/	Total
Frequency	96	0	96	192
Percentage	50	0	50	100

Table 5.34

Analysis: The statistic analysis of Table 5.34 reveals the occurrence of short vowel /ə / as well as consonant sound /r/ in the given frequencies. The frequencies of adapting /ɜ : / with /ə / are the same as the frequencies of adapting /ɜ : / with /r/. The English long vowel /ɜ : / is not found in Pashto phonology that's why it is consistently replaced.

As a result, from the study of the above Table 5.32, 33 and 34 we can generalize the following adaptation change.

Practice No (h) /ɜ : / —> /ə / sound,

5.5. Adaptation in English Diphthongs

It is the second category of sounds. In the collected data it is find out to determine that which diphthongs of English is changing with Pashto diphthongs or other sounds. The Pashto native speakers replace some English diphthongs with Pashto vowel sounds as there are many diphthongs that are not available in Pashto. Therefore, they are replaced with Pashto long vowels /e/ and /u:/ or short vowel /o/ which are demonstrated in the following tables in details.

5.5.1 Substitution of /ai/ with /ɪ/

Pashto speakers replace English /ai/ diphthong with Pashto /ɪ /vowel sound. There are some controversies but the majority is agreed with the above changes. The following table demonstrates the substitution of /ai/ diphthong with Pashto /ɪ / sound in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Uneducated speakers
Aud.12(a)	Pipe(n)	/paɪ p/	/pɪ p/	/pɪ p/
Aud.12(b)	Time(n)	/taɪm/	/tɪ m/	/tɪ m/
Aud.37(i)	China(n)	/tʃ aɪ nə /	/tʃ ɪ na/	/tʃ ɪ na/

Table 5.35

The diphthong /ai/ is replaced with the Pashto vowel /ɪ / in “*Pipe*”, “*time*” and “*china*”. The Praat software is used for this verification. The spectrogram analysis for the word “pipe” is presented below.

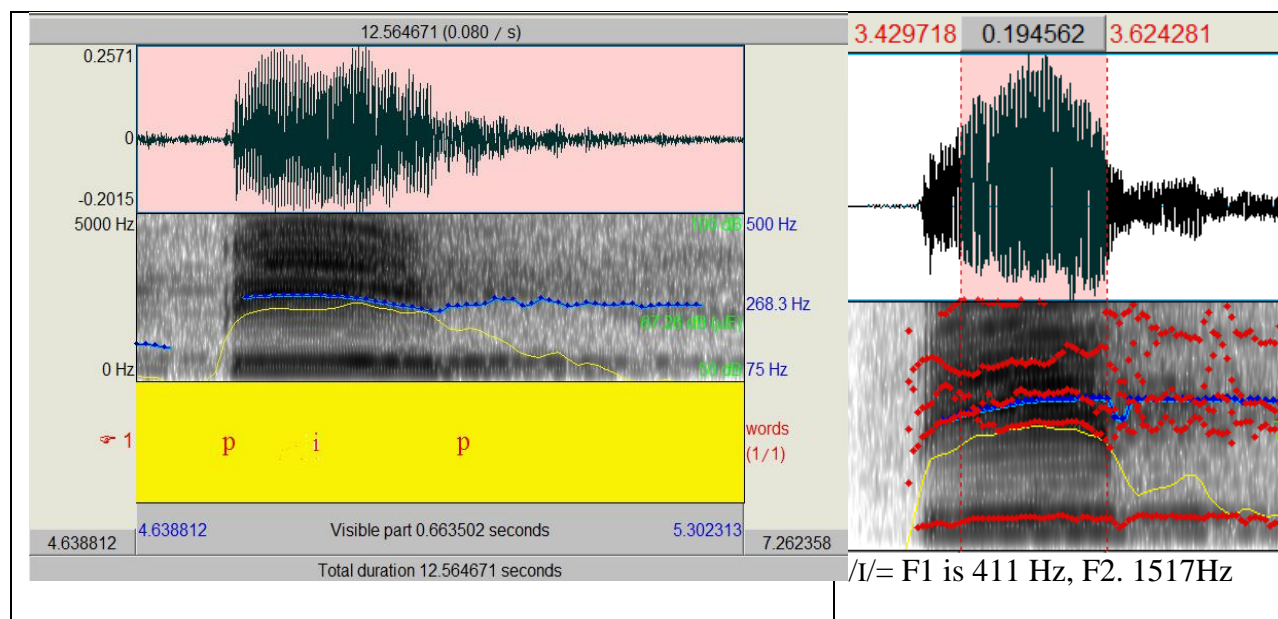


Fig.5.17

In this Fig.5.17 the spectrogram reveals that there is no glide in between both /p/ and /p/ sounds, thus, the existence of a diphthong is out of question. So we will bring out the F1 and F2 of this vowel to find it. The time taken by it is 0.194 sec; its F1 is 411 Hz which is low therefore the vowel is high and its F2 is 1517 Hz which is very high, hence making it the front vowel of Pashto. The pitch shown by the blue line that differs with vibration is going straight, which means there is no diphthong. The dark band, its frequencies and pitch line confirm that it is the Pashto short vowel /ɪ /, rather than the English diphthong /ai/. The syllable structure of the word “pipe” is CVC.

The following, Table 5.36, demonstrates the substitution of English /ai/ diphthong with Pashto /ɪ/ sound in *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.13(a)	Stabilizer(n)	/steibə laizə (r)/	/stiplizə r/	/stiplizə r/
Aud.13(b)	License(n)	/laisns/	/lisə ns/	/lisə ns/
Aud.24(C)	Driver(n)	/draivə (r)/	/də riwə r/	/də rewər/

Table 5.36

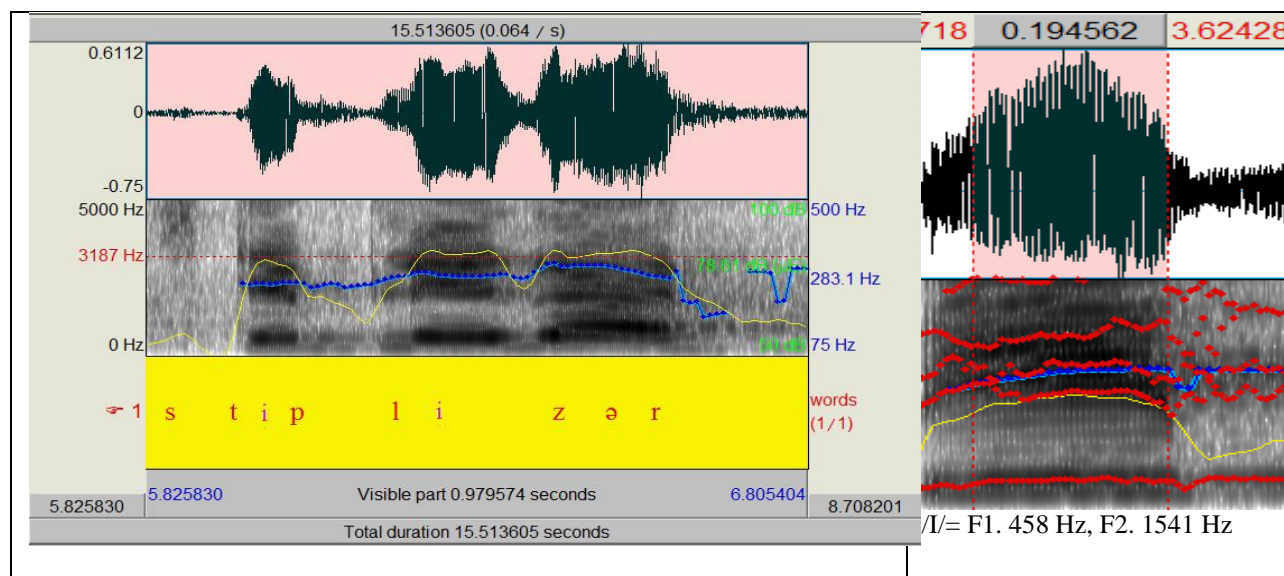


Fig.5.18

The spectrogram of Fig.5.18 for the word “Stabilizer” explains that, there is no slide of bands in between the /l/ and /z/ phoneme, and also between /t/ and /p/ sounds. The frequencies, revealed by the dark bands, for F1 is 458 Hz. it is also low therefore, vowel is high, and F2 is 1541 Hz this is high so it is the front vowel of Pashto /I/. Subsequently, here also we do not see the occurrence of any diphthong sound as, the pitch shown by the blue line is going in a straight line. The words mentioned in the above tables such as “pipe”, “time”, “stabilizer”, “license” and “driver” show that the speakers of Pashto Yusufzai dialect substitute English /ai/ diphthong with Pashto short vowel /i/.

Frequencies /ai/	Total Numbers N	Mean	Standard Deviation
F1	72	457	32.1
F2	72	1360	49.1

Table 5.37

Analysis: Table 5.37 demonstrate formant frequencies of the English diphthong / ai /. Total 72 spectrograms were examined for this diphthong, providing the mean of F1, 457 Hz with (32.1) standard deviation and F2, 1360 Hz, with (49.1) standard deviation. The F1 and F2 frequencies of this vowel shows that this is Pashto short vowel / I /. This vowel is also replaced with the nearest Pashto vowel.

Key	Replaced /ai/ with /i/	Didn't Replace /ai/	Replaced /ai/ with other	Total
Frequency	157	59	0	216
Percentage	72.6	27.3	0	100

Table 5.38

Analysis: In Table 5.38 it is apparent that the English diphthong /ai/ is replaced with Pashto short vowel /i/. The frequencies also show a great deal of variation 157 out of 216. Merely 59 out of 216 frequencies didn't replace /ai/ with /i/ or other. It means that the majority of speakers are not in favor to use the English diphthong /ai/ and happily replace it with Pashto short vowel /i/.

5.5.2. Substitution of English / iə / Diphthong with Pashto /e/ vowel

The native speakers of Pashto Yusufzai dialect also swap the diphthong /iə / with Pashto short vowel /e/. Since the existence of diphthong /iə /is not there in Pashto vowels, the speakers

use next close vowel to fill the gap. The following table expresses the substitution of /iə / diphthong with Pashto /e/ sound in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.14(a)	Gear(n)	/g iə (r)/	/ger/	/ger/

Table 5.39

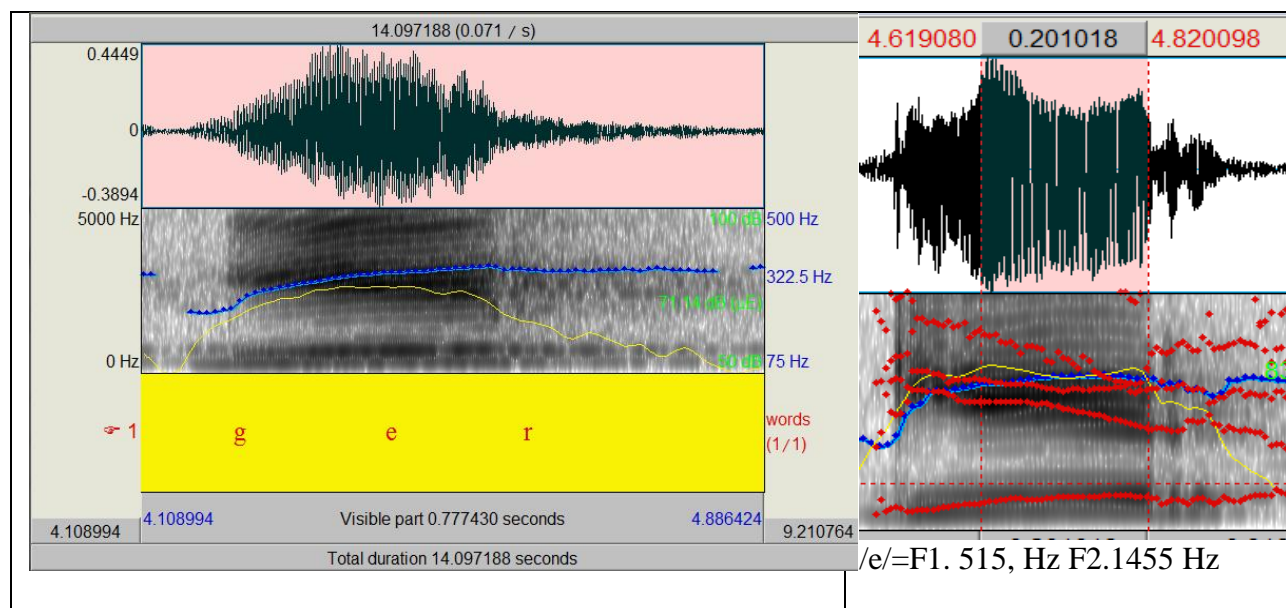


Fig.5.19

The spectrogram given above illustrates that there is no glide to prove that the diphthong /iə / occurred, between /g/ and /r/, so it is replaced with the Pashto short vowel /e/ in the word ‘gear’ by almost all the participants. The time taken is 0.201 sec, the F1 is 515 Hz which is not very low so it is the middle vowel and the F2 is 1455 Hz this is high hence the vowel is front vowel of Pashto /e/. The pitch shown by the blue line that differs with vibration does not drop anywhere. Though, this change in vowel also does not change the syllable structure for the word, Gear = CVC as it has the same structure. Table 5.40 demonstrates the substitution of English /iə / diphthong with Pashto /e/ sound in *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.14(b)	Engineer(n)	/endʒiniə (r)/	/endʒi ner/	/endʒi:ner/
Aud.7(b)	Steering(n)	/stɪ ə ri ŋ /	/steri ŋ /	/steraŋ /

Table 5.40

Words like “gear”, “engineer” and “steering” mentioned in the tables 39, and 40 shows that Pashto speakers replace English /iə / diphthong with Pashto /e/ vowel sound.

The following shows statistic analysis of diphthong

Frequencies / iə /	Total Numbers N	Mean	Standard Deviation
F1	36	510	36.2
F2	36	1413	34.9

Table 5.41

Analysis: Table 5.37 shows the formant frequencies of the English diphthong / iə /. Total 36 spectrograms were examined for this diphthong, produced by SPYD, giving the mean of F1, 510 Hz with (36.2) standard deviation and F2, 1413 Hz, with (34.9) standard deviation. The F1 and F2 of this vowel shows that this is Pashto short vowel / e /. This vowel is also substituted with the nearest Pashto vowel.

Key	Replaced /iə / with /e/	Didn't Replace /iə /	Replaced /iə / with other	Total
Frequency	99	9	0	108
Percentage	91.6	8.3	0	100

Table 5.42

Analysis: According to this table, 92 percent of the respondents replaced /iə / with Pashto vowel /e/. Only 8 percent of the speakers gave the correct pronunciation. The difference is obvious that diphthong is not used by nearly all of them. So from the above tables 35, 36, 37, 38, 39, 40, 41 and 42 we can conclude the following two Practices.

Practice No. (I) /ai/—>/i/

Practice No. (J) /iə /—>/e/

5.5.3. Substitution of English /ei/ Diphthong with Pashto vowel /e/

The diphthong /ei/ does not exist in Pashto vowel system, that's why Pashto native speakers substitute English /ei/ diphthong with Pashto /e/ sound to utter the word. The following tables, Table 5.33 and Table 5.34 show the replacement of /ei/ diphthong with Pashto /e/ sound in monosyllabic, disyllabic and polysyllabic words.

Table 5.43 demonstrates the replacement of English /ei/ diphthong with Pashto /e/ sound in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.15(a)	Cake(n)	/keik/	/kek/	/kek/
Aud.15(b)	Plate(n)	/pleit/	/palet/	/palet/
Aud.15(c)	Gate(n)	/g eit/	/get/	/get/

Table 5.43

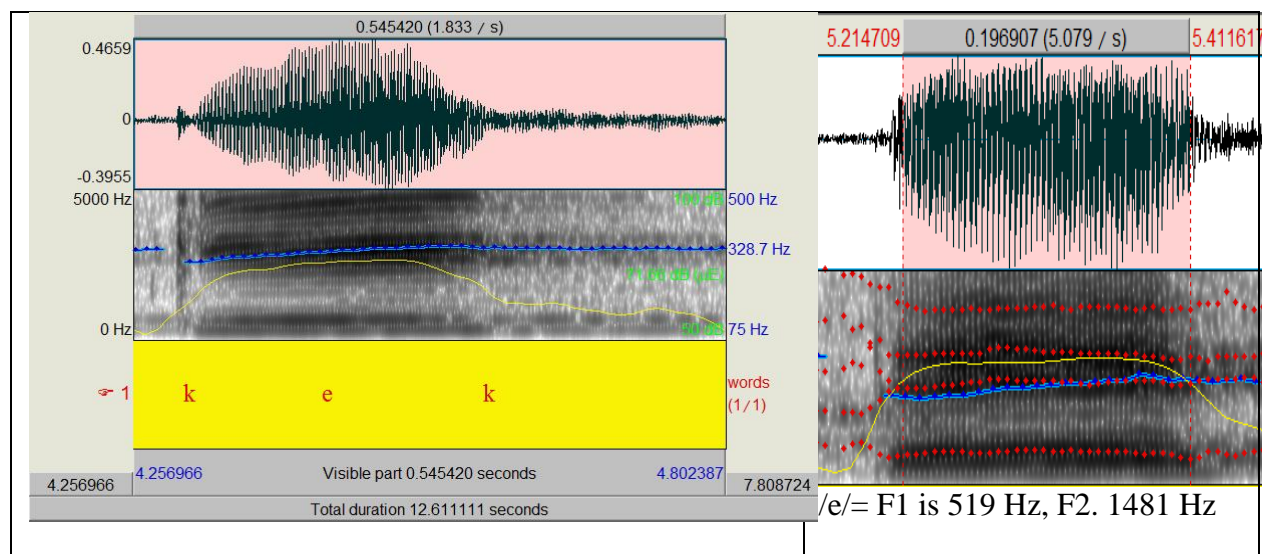


Fig.5.20

This spectrogram given in the Fig.5.20 shows the presence of the Pashto vowel /e/ instead of the English diphthong /ei/ between the phonemes /k/ and /k/ just like given before in the spectrogram of Fig.5.19. The F1 is 519 Hz and the F2 is 1481Hz indicating that it's the Pashto short vowel /e/. We can also observe that the pitch line is straight and showing no main curves. The tables given below demonstrate the substitution of English /ei/ diphthong with Pashto /e/ sound in *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.16(a)	Brief case(n)	/bri:fkeis/	/brɪ pkes/	/bə rɪ kes/
Aud.16(b)	Paper(n)	/peɪpə (r)/	/pɛpə r/	/pɛpə r/
Aud.19(a)	Radio	/reɪ dɪ ə ʊ /	/radi:aw/	/ri:do/,/redo/

Table 5.44

The above tables 43 and 44 explain that Pashto speakers of Yusufzai dialect replace English /ei/ diphthong with Pahto /e/ short vowel sound. The above mentioned words like “brief

case”, “paper”, “radio”, “cake”, “plate” and “gate” show the substitution of /ei/ diphthong with /e/ short vowel sound.

Frequencies / ei /	Total Numbers N	Mean	Standard Deviation
F1	72	510	31.5
F2	72	1417	37.5

Table 5.45

Analysis: this table shows the formant frequencies of the English diphthong / ei /. Total 72 spectrograms were studied for this diphthong, produced by SPYD, giving the mean of F1, 510 Hz with (31.5) standard deviation and F2, 1417 Hz, with (37.5) standard deviation. The F1 and F2 of this vowel shows that this is Pashto short vowel / e /. This vowel is also replaced with the Pashto nearest vowel.

Key	Replaced /ei/ with /e/	Didn't Replace /ei/	Replaced /ei/ with other	Total
Frequency	198	18	0	216
Percentage	91.6	8.3	0	100

Table 5.46

Analysis: Table 5.46 makes it clear that 92 % of the participants tend to use the short vowel /e/ to fill the gap of English diphthong /ei/. While only 8% of the participants didn't change it to any other sound.

So from the above tables 43, 44, 45 and 46 we can conclude the following Practices.

Practice No. (K) /ei/—>/e/

5.5.4. Replacement of /ə u / Diphthong with /o/

As discussed previously in vowels, the Pashto sound system does not have /u / sound and so this diphthong /ə u / which is not found, that's why they switch it with other near sound to fill the gap. Pashto native speakers substitute English /ə u / diphthong with Pashto /o/ sound. The following tables demonstrate the replacement of /ə u/ diphthong with Pashto /o/ sound.

Table 5.47 demonstrates the replacement of English /ə u / diphthong with Pashto /o/ sound in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.34(d)	Goal	g ə u l	/gol/	/gol/

Table 5.47

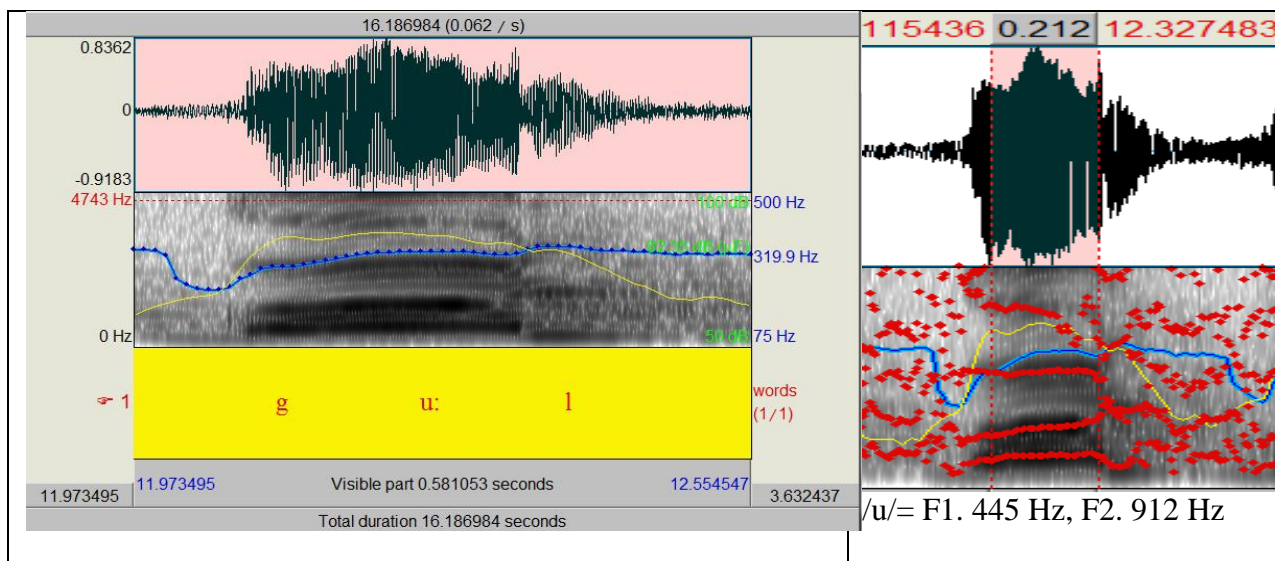


Fig.5.21

Fig.5.21 illustrates that the Pashto short vowel /o/ occurred between /g/ and /l/ in place of the diphthong /ə u/. There has to be a glide in case of diphthongs which is missing in this spectrogram. The pitch shown by the blue line that differs with vibration

is also in a straight line, between both consonants /g/ and /l/. The time duration for this vowel is 0.212 sec. The F1 is 445 Hz, which is low and its F2 is 912 Hz which is also very low and became back vowel, that's why making it mid- back rounded vowel /u/.

5.5.5. Replacement of /ə u / Diphthong with /o/

Table 5.48 demonstrates the replacement of English /ə u / diphthong with Pashto /o/ sound in *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.17(a)	Sofa(n)	/sə u fə /	/sopə /	/sopə /
Aud.17(b)	Easy load(n)	/i:zilə u d/	/izi:lod/	/izi:lod//inzi:lod/
Aud.17(c)	Loudspeaker	/lə u dspɪ:kə (r) / /	/lodspi:kə r/	/lodspi:kar/,/lospi:k/

Table 5.48

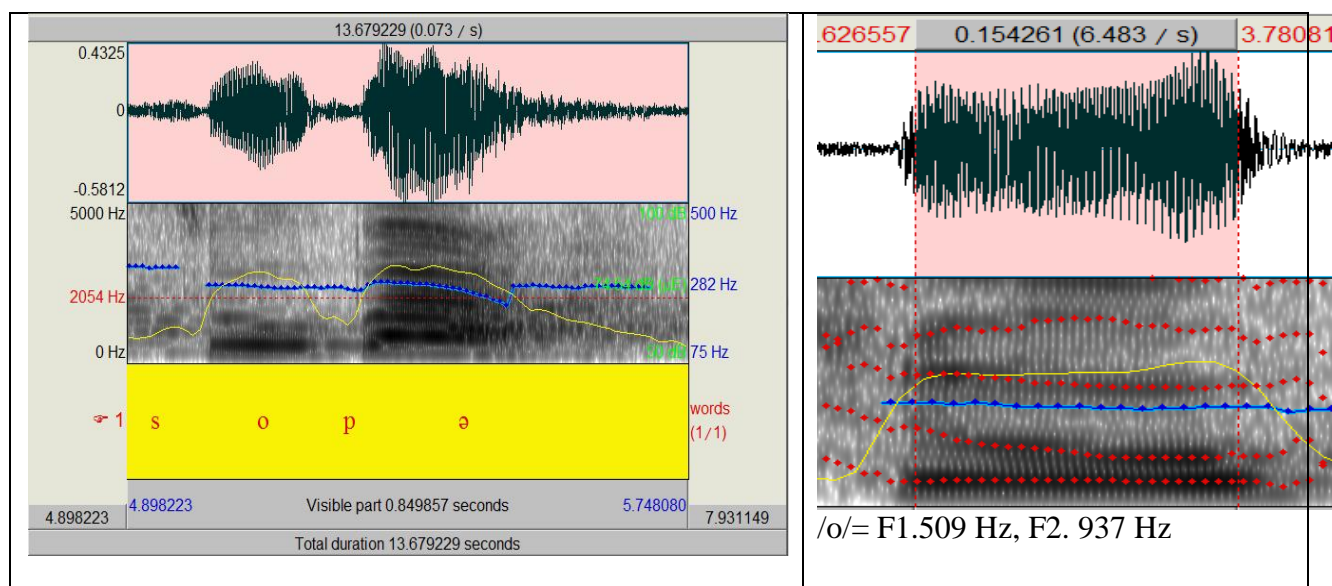


Fig.5.22

In Fig.5.22 the spectrogram for the word “Sofa” explains that, there is no glide in between the phonemes, /s/ and /p/. The pitch line shows no bend to prove diphthong. Hence, no existence of a diphthong is found. The time taken by this vowel is 0.154 sec. The F1 is 509 Hz and F2 is 937 Hz which very low so the vowel is back. The frequencies, revealed by the dark bands; and time period confirm that it is the Pashto mid-back, short vowel /o/.

The above English /əʊ/ diphthong is replaced with Pashto /o/ vowel sound by Pashto speakers. The diphthong was found only in *disyllabic* and *polysyllabic* words as there was no monosyllabic word in the collected data from the Pashto Yusufzai dialect speakers. So words like “sofa”, “easy load”, “loudspeaker”, “hotel”, “mobile” etc show that Pashto speakers of Yusufzai dialect substitute English /əʊ/ diphthong with Pashto /o/ short vowel sound. The following shows statistic analysis of diphthong /əʊ/ with /o/

Frequencies / əʊ /	Total Numbers N	Mean	Standard Deviation
F1	48	480	39.8
F2	48	938	50.4

Table 5.49

Analysis: Table 5.49 demonstrates the formant frequencies of the English diphthong /əʊ/. Total 38 spectrograms were examined for this diphthong, produced by SPYD, giving the mean of F1, 480 Hz with (39.8) standard deviation and F2, 838 Hz, with (50.4) standard deviation. The F1 and F2 of this vowel shows that this is Pashto long vowel /o/. This vowel is also substituted with the nearest Pashto vowel.

Key	Replaced <i>/ə ʊ / with /o/</i>	Didn't Replace <i>/ə ʊ /</i>	Replaced <i>/ə ʊ / with /u/</i>	Total
Frequency	138	0	6	144
Percentage	95.8	0	4.1	100

Table 5.50

Analysis: This table gives the frequencies of words pronounced by the respondents. The percentages of replacing English diphthong */ə ʊ /* with Pashto short vowel */o/* is 96%. Some of the respondents are replacing it with Pashto short vowel */u/*, while the occurrence of */o/* is more than */u/*. It is noticeable that none of the speakers used diphthong. Hence from the above tables we can conclude the following adaptation strategies.

Practice No. (L). /ə ʊ / → /o/

5.6 Adaptation in Trip thongs

In the collected data there are only two words, found in English loan words, which contain a trip thong sound. We see in the following Table 5.51 that the English */aiə /* trip thong was replaced with Pashto */e/* vowel sound, and */aʊ ə /* with */aw/* sounds by the Pashto speakers.

5.6.1. The Replacement */aɪ ə /* Trip thong with */e/*

The following table demonstrates the replacement of English */aɪ ə /* trip thong with Pashto */e/* vowel sound in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.18(a)	Tyre(n)	<i>/taɪ ə (r)/</i>	<i>/ter/</i>	<i>/ter/</i>

Table 5.51

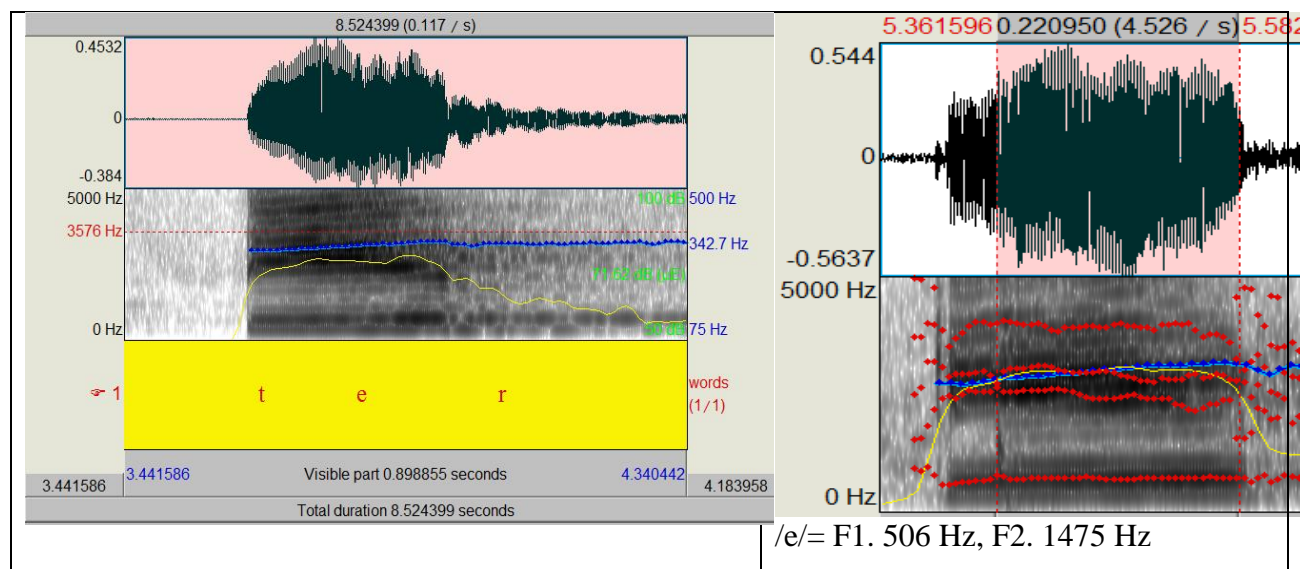


Fig.5.23

The Spectrogram in Fig.5.23 confirms that the Pashto short vowel /e/ is present between /t/ and /r/ instead of the English trip thong /aɪ ə/. There has to be a glide in case of trip thongs also which is not there in this figure. Thus, we have no trip thong in loan words as well as in Pashto. Time noted is 0.220 sec. The F1 of this vowel is 506 Hz neither high nor low making it middle vowel and the F2 is 1475 Hz which is very high that's why it is front vowel as well. To conclude it becomes Pashto middle, front, short vowel /e/.

5.6.2. /aʊ ə / Trip thong with /aw/

The following table gives us an idea about the replacement of /aʊ ə / trip thong with Pashto diphthong /aw/ (discussed in chapter 2). As we do not have any trip thong in Pashto sound system the presence of /aʊ ə / is out of question. So, the following table shows the replacement of /aʊ ə / trip thong with Pashto diphthong /aw/ in *disyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.37(b)	Tower ¹	taʊ ə (r)	/ta:wr/	/ta:wr/

Table 5.52

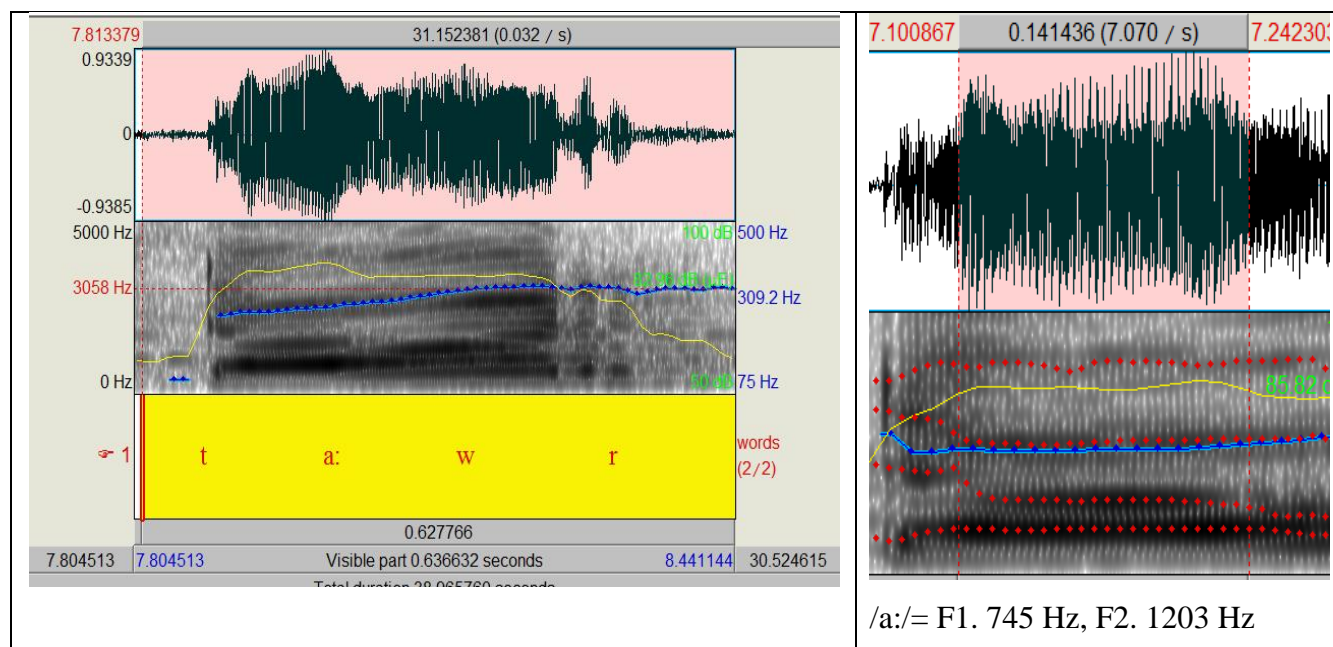


Fig.5.24

The Spectrogram in Fig.5.24 reveals that the Pashto diphthong /aw/ is present between /t/ and /r/ rather than the English trip thong /aʊ ə /. There is also a glide between /t/ and /r/ in this spectrogram but it is a Pashto diphthong /aw/. The formants taken for the initial vowel is 745 Hz for F1 and 1203 Hz for F2. The frequencies also show some variations in the dark bands but they only specify two phonemes. As a result, there is no formation of trip thong in loan words.

It is generally recognized that the Southern British English comprises eleven monophthong vowels (Deterding, 2006). The Average, Formant frequencies of 11 monophthong vowels as produced by three L1 speakers, is given below.

British Vowels	i:	ɪ	e	æ	ʌ	a:	ɒ	ɔ:	ʊ	u:	ɜ:
F1/Hz	296	396	532	667	661	680	643	480	395	386	519
F2/Hz	2241	1839	1656	1565	1296	1193	1019	857	1408	1587	1408

Table 5.53,

(Deterding,2006:391-409)

The Average Formant frequencies of eight vowels of Pashto obtained from the data.

Vowels	i:	ɪ	e	ə	a	a:	o	u
F1	371	451	512	537	718	753	484	442
F2	1613	1547	1418	1112	1251	1207	934	913

Table 5.54

On the basis of the overall average of F1 and F2 a formant chart showing the frequency of the first formant (F1) on the vertical axis designed against the second formant (F2) on the horizontal axis for eight Pashto vowels is developed below:

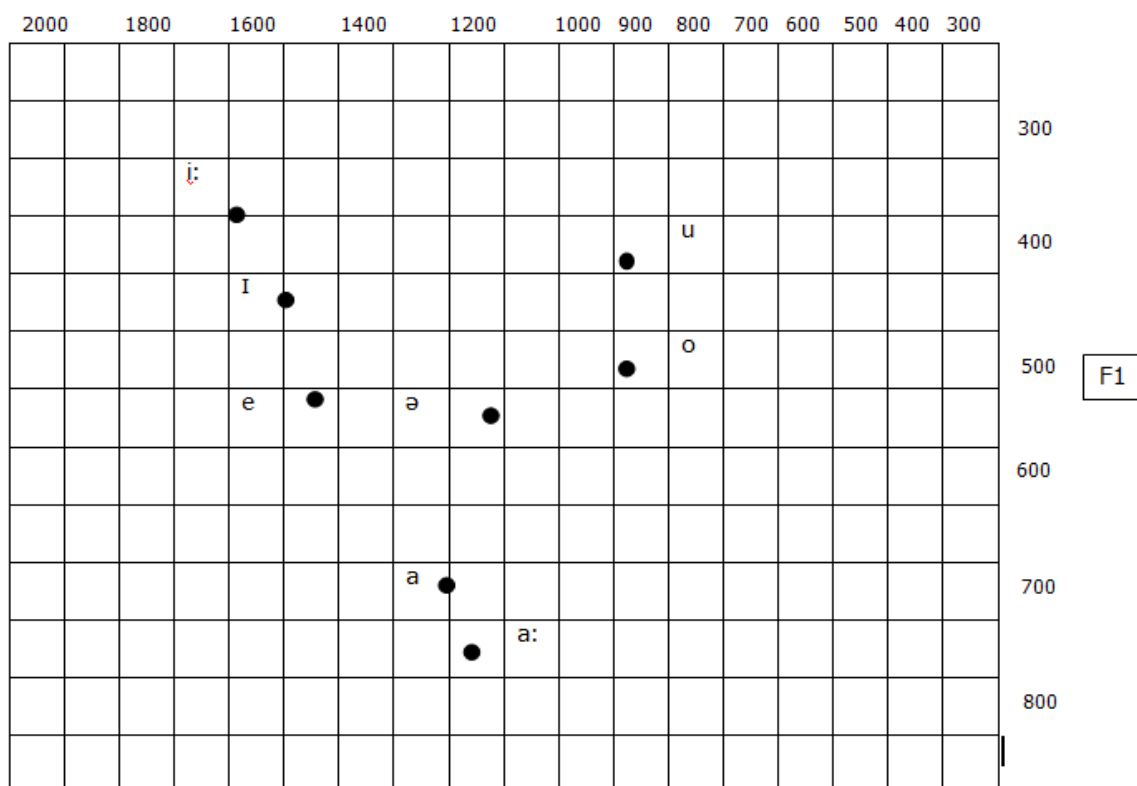


Fig.5.25

This frequency chart makes the foundation for developing the quadrilateral of Pashto vowels which is given below:

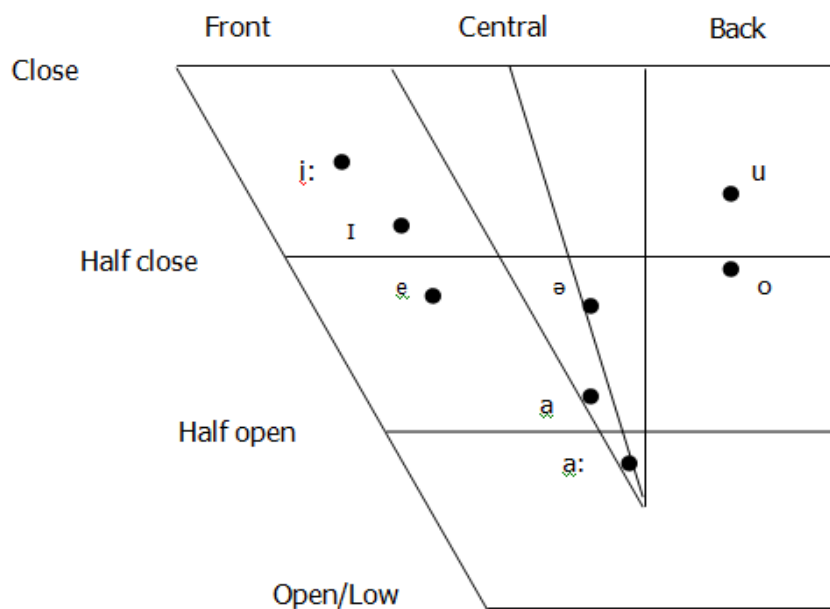


Fig.5.26

The oral vowels of Pashto in the light of the quadrilateral given above are described as:

/i:/	Front	Close	Spread	Long
/ɪ/	Front	Close	Spread	Short
/e/	Front	Half-Close	Spread	Short
/æ/	Front	Half-Open	Spread	Long
/ə/	Central	Half-Open	Neutral	Short
/ɑ:/	Central	Open	Neutral	Long
/o/	Back	Half-close	Rounded	Long
/u/	Back	Close	Rounded	Long

The values are taken for the sake of a graphic comparison of vowels in English loanwords spoken by Pashto speakers. The white bar is for Southern British vowels and black bar demonstrates the F1 and F2 in loanwords, using the frequency scale given on vertical line, with lower part indicating F1 and the upper part F2.

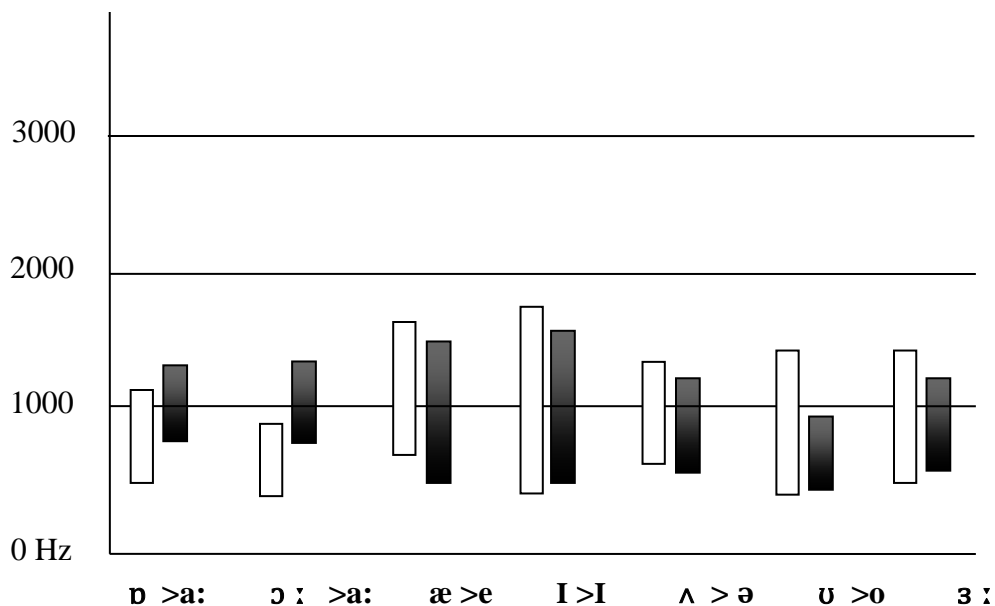


Fig.5.28

This graph shows that there is a visible difference in F1 and F2 of Southern British English vowels (SBE) and loanwords. The vowel /ɒ/ in loanwords has a big difference of F1 and F2 than its counterpart in SBE. The long vowel /ɔ :/ also exhibits a huge difference of F1 and F2 as it is higher than its counterpart in SBE. The vowel /æ/ indicates that F1 is a bit high and F2 is also high in SBE in contrast with its counterpart in loanwords. The F1 of /ɪ/ is a bit high and F2 is very low in loanwords. The same trend is found in relation to /ʊ/ and /ɜ :/. The comparison of /ʌ/ shows visible difference of F1 and F2 in loanwords. This comparison on bars shows that the level of difference between these two is very big in F1 and also in F2.

All this specifies that the vowels pronounced by Pashto speakers in loanwords are wholly different as none of the vowels shares the same F1 or F2 with their counterparts in SBE. This difference of F1 and F2 is noteworthy because F1 determines the height of tongue body and F2 the part of the tongue that plays a part in articulation. This comparative

demonstration shows that the vowels in loanwords spoken by Pashto speakers are different from the English vowels.

From the above discussion it can be said that the speakers of Pashto Yusufzai dialect replace the vowels in loanwords with Pashto vowels which are also nearly the same or close to some extent with vowels of English. Precisely, it was found the same in the spectrogram analysis of vowels. Therefore, generalization can be made as the vowels in loanwords are substituted with Pashto vowels by the speakers, though, this substitution does not change the syllable structure of loanwords.

5.7. Adaptation in Consonants

The Pashto consonant system comprises retroflex sounds, which is not found in any other language belonging to its family. All of Its consonants are formed with pulmonic forceful airstream. In Pashto there are certain sounds that are absent. When Pashto speakers borrow words from other languages, they replace those sounds with their alternate Pashto sounds. There are many examples of borrowing from foreign languages, like the /q/, phoneme “in the Holy Qur’an” from Arabic is replaced with /k/ phoneme, /h/ sound with /a/ and /ʔa/ with /a/ sound etc. The phoneme /f/, originated from Arabic as well as English, is also substituted in to /p/. Here the discussion is about English loanwords adapted by Pashto speakers, of Yusufzai dialect, transformation of phonemes and articulation of English sounds. Those words are discussed below in detail.

5.7.1. Substitutions of /f/ with /p/

Uneducated speakers of Pashto Yusufzai dialect cannot articulate the labiodentals /f/ sound. They replace the English unvoiced labiodentals fricative /f/ sound with Pashto unvoiced bilabial plosive /p/ sound. As discussed before it a foreign phoneme and difficult to pronounce

by the Pashto uneducated people. Though, the educated speakers somehow pronounce this /f/ sound due to modern needs and awareness of technology. The following table demonstrates the replacement of English unvoiced labiodentals fricative /f/ sound with Pashto unvoiced bilabial plosive /p/ sound in monosyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.10(b)	Fashion(n)	/fæʃ n/	/fej ə n/	/peʃ ə n/
Aud.23(a)	Film(n)	/film/	/fi lə m/	/pi lə m/
Aud.36(c)	Fine	/faɪ n/	/faɪ n/	/paɪ n/

Table 5.55

The table given below illustrates the replacement of English unvoiced labiodentals fricative /f/ sound with Pashto unvoiced bilabial plosive /p/ sound in *disyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.23(b)	FM(n)	/efem/	/efem/	/epem/
Aud.23(c)	FATA(n)	/fə tə /	/fə tə /	/pə tə /
Aud.17(a)	Sofa(n)	/sə ʊ fə /	/sopə /	/sopə /

Table 5.56

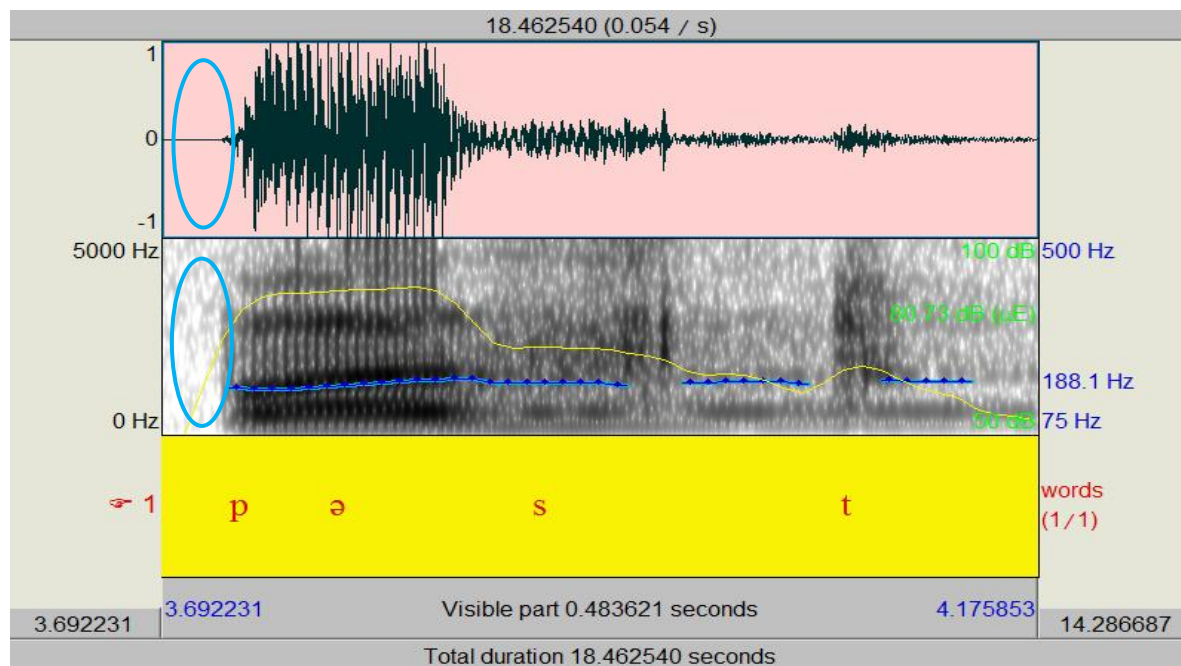


Fig.5.29

The spectrogram of the /p/ aspiration is quite flat like other stop bursts. The starting formants peaks may be of back cavity. The frequency of this is more intense than the /f/ because /f/ has very weak waveform compared to the level of /p/ spectrum.

The words mentioned in the above tables, like “fashion”, “film”, “Fine”, “sofa”, “factory”, “traffic” etc show that the uneducated speakers of Yusufzai dialect replace English unvoiced labiodentals fricative /f/ sound with Pashto unvoiced bilabial plosive /p/ sound, and the educated speakers pronounce this /f/ sound in many words. So, from the above given examples we can generalize the following Practices.

Practice No. (m) /f/→/p/

5.7.2. Replacement of /v/ with /w/

There is no voiced bilabial fricative /v/ consonant sound in Pashto. The Pashto speakers replace voiced bilabial fricative /v/ consonant sound with Pashto bilabial semi vowel /w/ sound. The

following table demonstrates the substitution of English voiced bilabial fricative /v/ consonant sound with the Pashto bilabial semi vowel /w/ sound in *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.24(b)	Survey(n&v)	/s3:vei/ /sə vei/	/sə rwej/	/sə rway/
Aud.25(a)	Dvd	di: vi: ' di	/di: wi: ' di/	/di: wi: ' di/
Aud.25(b)	TV(n)	/Ti:vi/	/ti:wi:/	/ti:wi:/

Table 5.57

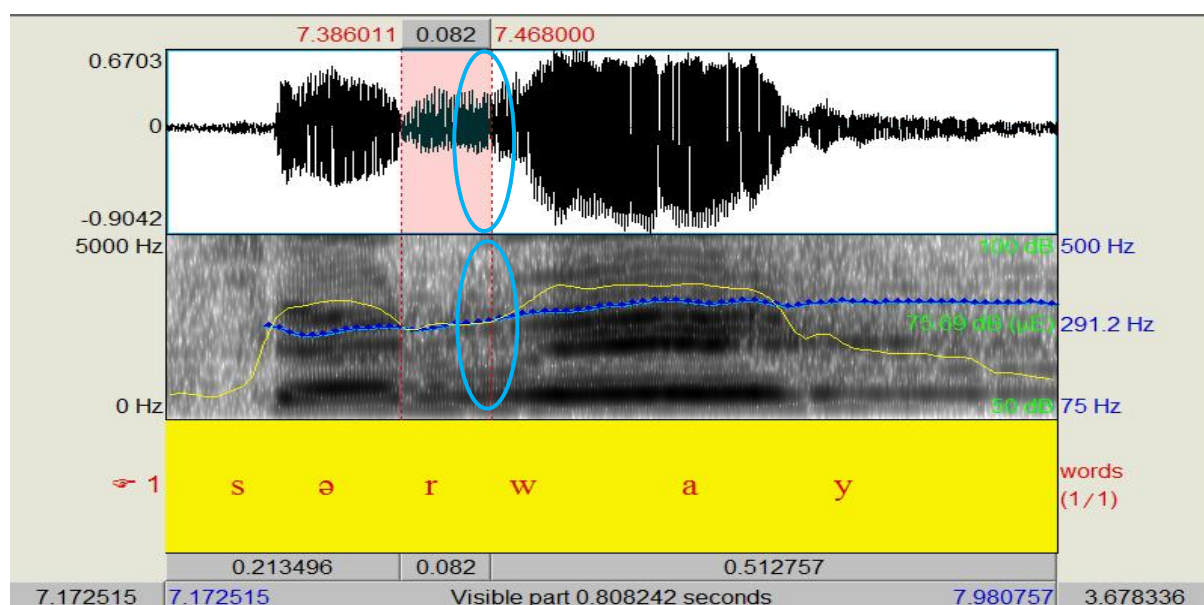


Fig.5.30

It is clear from the spectrogram of Fig.5.30 that the phoneme in between /r/ and /a/ is not fricative; it is the /w/ glide, because F1 and F2 are lowered. While, the /v/, spectrum has stronger source components, and higher frequencies. The decline of the frequency of /w/, low

pitch and intensity is also there. F1 and F2 are as much lowered as they should be as in case of /w/, which shows the pronunciation of lip rounding.

The above replacement of the English voiced bilabial fricative /v/ consonant sound with Pashto bilabial semi vowel /w/ sound was not found in monosyllabic words that are borrowed. The examples are “survey” “TV” “DVD” and others like “university”, “driver”, “volleyball”, etc which show that Pashto speakers of Yusufzai dialect replace English voiced bilabial fricative /v/ consonant sound with Pashto bilabial semi vowel /w/ sound. So from the above table we can generalize the following Practices.

Practice No. (n) /v/ → /w/

5.7.3. Replacement of /θ/ with /t̪/

Pashto speakers of Yusufzai dialect do not articulate English /θ/ sound. They replace English unvoiced dental fricative /θ/ consonant sound with Pashto unvoiced dental plosive /t̪/ consonant sound. The following table demonstrates the substitution of English unvoiced dental fricative /θ/ consonant sound with Pashto unvoiced dental plosive /t̪/ consonant sound in *disyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.26(a)	Thunder(n)	/θΛndə(r)/	/t̪əndə r/	/t̪əndə r/
Aud.26(b)	Bathroom(n)	/ba:θrum/	/ba:t̪rum/	/ba:t̪rum/
Aud.27(a)	Thresher(n)	/θref ə(r)/	/t̪əref ə r/	/t̪əref ə l/

Table 5.58

The above replacement of English unvoiced dental fricative /θ/ consonant sound with Pashto unvoiced dental plosive /t̪/ consonant sound was not found in monosyllabic words in the

collected English loanword from the Pashto speakers. The SPYD found it very hard to pronounce English consonant /θ/.

From the above table we can generalize the following Practices.

Practice No. (o) /θ/→/t/

5.7.4. Replacement of /ð/ with /d/

Pashto speakers of Yusufzai dialect cannot articulate English /ð/ sound. They replace English voiced dental fricative / ð / consonant sound with Pashto voiced dental plosive /d/ consonant sound. The following table demonstrates the substitution of English voiced dental fricative /ð/ consonant sound with Pashto voiced dental plosive /d/ consonant sound in *disyllabic* and *polysyllabic* words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.9(c)	Motherboard	/mΛ ðə bɔ :d/	/mə <u>də</u> rbod/	/ma <u>d</u> arbod/
Aud.27(c)	Leather(n)	/leðə (r)/	/le <u>d</u> ə r/	/le <u>d</u> ar/

Table 5.59

The above replacement of English voiced dental fricative /ð/ consonant sound with Pashto voiced dental plosive /d/ consonant sound was not found in monosyllabic words in the collected English loanword from the Pashto speakers. The replacement was only possible in *disyllabic* and *polysyllabic* words in the collected data and the examples such as “motherboard” and “leather” has shown in the above table. So from the above table we can generalize the following Practices.

Practice No. (p) /ð/→/d/

5.7.5. Articulation of /t/ and /d/

Pashto speakers apply different method for verbalization of sounds; they will employ their own way of pronouncing it, even if they borrow it from other sources. The following table illustrates the use of alveolar stop /t/ instead of unvoiced retroflexed stop /t/ in monosyllabic, disyllabic and polysyllabic words

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.5(a)	Tax(n)	/tæks/	/teks/	/teks/
Aud.13(a)	Stabilizer(n)	/steibə laizə (r) /	/steplezə r/	/steplezə r/
Aud.35(b)	Table	teɪ bl	/tebə l/	/tebə l/

Table 5.60

The Table 5.60, given above, contains the words recorded, and interviewed from the informants shows that the unvoiced retroflexed stop /t/ sound is not formed by curling the tongue backward, though it was found that this is alveolar stop /t/ as the native speakers notified that their tongue was not curled back and the tip of their tongue touched the alveolar region. The table, given below, gives an idea about the use of alveolar stop /d/ in place of voiced retroflexed stop /d/ in disyllabic and polysyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.10(c)	Bundle(n)	/bʌ ndl/	/bandə l/	/bandal/
Aud.11(c)	Double bed	/dʌ blbed/	/də bə lbed/	/dabalbed/
Aud.29(b)	Doctor	dɒ ktə (r)	/da:ktə r/	/da:ktə r/

Table 5.61

It is described in many studies that retroflexed stops for both unvoiced /t/ and voiced /d/, the stops are made by curling the tongue backward. However it was discovered, in the interview, that these were the alveolar stops /t/ and /d/ as all of the Pashto speakers, both educated and uneducated, informed that their tongue tip contacted the alveolar region and it was not rounded backward by any means.

5.7.6. Unpredictable Pronunciation of /r/ Consonant

Pashto uneducated native speakers of Yusufzai dialect are irregular in the pronunciation of /r/ consonant sound when it comes in the cluster of consonants in the onset of the syllable. Sometimes they omit /r/ consonant sound from the cluster of consonant. On other occasions, they insert /ə / sound in the cluster of consonants. In some other cases they will replace /r/ with /l/. They also produce the cluster of consonant, in onset and coda, as they are pronounced by English native speakers. The following tables show the irregular pronunciation of /r/ consonant sound when it comes in the cluster of consonants.

Table 5.62 demonstrates the omission of /r/ consonant sound when it comes in the cluster of consonants in onset position of the syllable.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.28(a)	Screw range	/skru:reindʒ/	/sku:rentʃ /	/sku:rentʃ /
Aud.6(b)	Tractor(n)	/træktə (r)/	/tektə r/	/tektar/
Aud.36(d)	Program	/prə ʊ ɡ ræm/	/pə rogra:m/	/pə rogra:m/
Aud.27(a)	Thresher(n)	/θref ə (r)/	/tref ə r/	/tref ə l/

Table 5.62

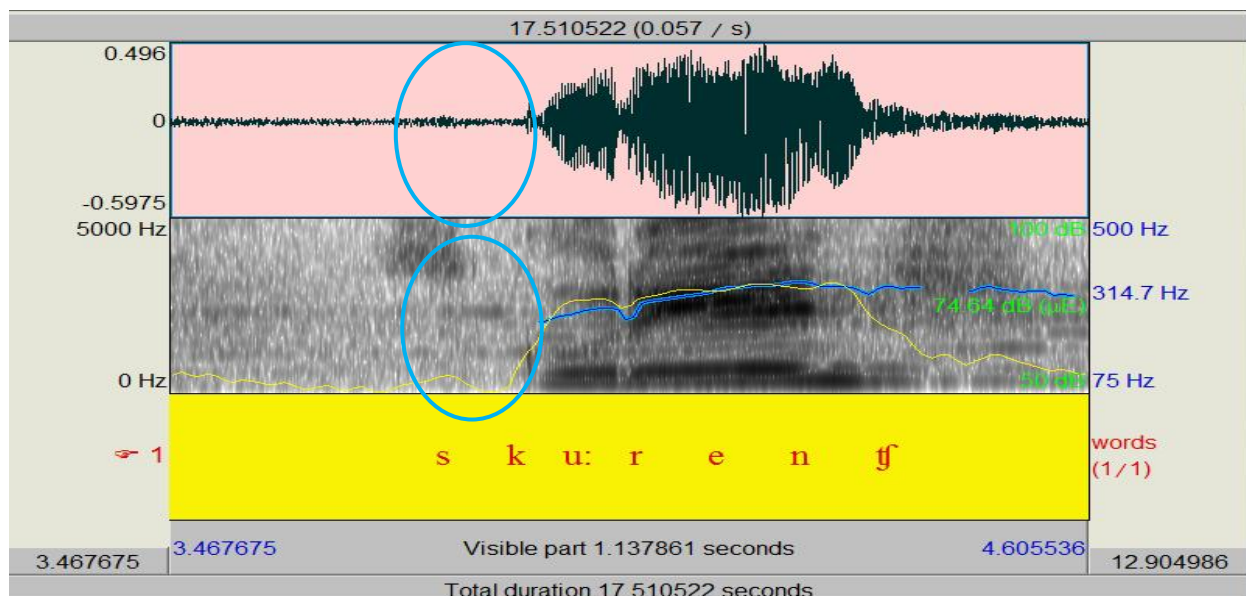


Fig.5.31

The spectrogram of Fig.5.31 exposes the deletion of /r/ between /k/ and /u:/ in the first syllable of the word “Screw range”, as there is nothing to indicate the presence of /r/. There is neither dark band, nor any frequency available for an alveolar tap /r/, as given in the second syllable “range”. Interestingly, the sound /dʒ/ is also replaced with /tʃ/ sound.

As discussed before the following table indicates the addition of /ə / vowel sound in the cluster of consonants in the first syllables of the words. Table 5.63; demonstrate the insertion of /ə / vowel sound in the cluster of consonants in the onset of the syllable, and /r/ consonant sound is a part of that cluster of consonants.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Uneducated speakers
Aud.36(d)	Program	/prə ʊ g ræm/	/pə rogra:m/	/pə rogra:m/
Aud.24(C)	Driver(n)	/draivə (r)/	/də rewə r/	/də rewar/
Aud.27(c)	Drama(n)	/dra:mə /	/dra:mə /,	/də ra:mə /

Table 5.63

The following table explains the list of words like “brash”, “professor”, “cricket” etc in which we neither have the omitting of /r/ consonant sound nor the insertion of /ə / vowel sound in the clusters of consonants. In the following words /r/, consonant sound is found in the cluster of consonant in the onset and coda position of the syllable of the words, like ‘Program’, ‘Driver’ and ‘Drama’. Table 5.64 Presence of /r/ consonant in the cluster of consonants, in the onset and coda of the syllable

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.28(b)	Brash(n)	/bræʃ /	/braʃ /	/braʃ /
Aud.28(c)	Professor(n)	/prə fesə (r)/	/propesə r/	/propesar/
Aud.7(c)	Cricket(n)	/kri ki t/	/kri kə t/	/kri:kə t/
Aud.31(b)	Master	mɑ : stə (r)	mɑ : stə r	/mɑ : stə r

Table 5.64

5.7.7. The Replacement /p/ as an Alternative of /B/

The speakers occasionally pronounce the phoneme /p/ instead of /b/ in loanwords, while doing so, sometimes; they also replace /w/ sound into /B/ sound in the word “wicket”. Some uneducated speakers will pronounce it like /be’kə t/. The exchange of /B/ with /p/ occurred in monosyllabic words are given in the following table.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.10(a)	Bulb(n)	/bʌ lb/	/bə lə p/	/balə p/
Aud.42(c)	Tube	/tju: b/	/tu: p/	/tu: p/

Table 5.65

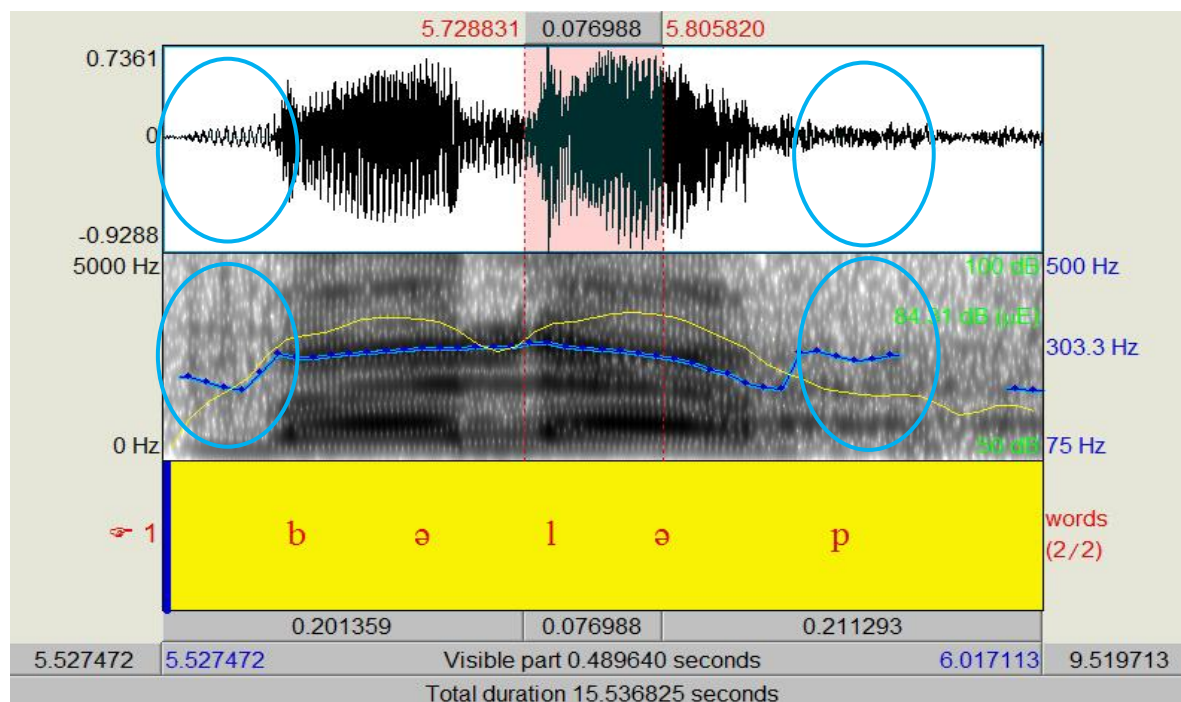


Fig.5.32

The formant transitions of the vowels are very similar to /b/ in the spectrum of ‘bulb’ because they have the same place of articulation. In the spectrogram bulb we can see a closure before the starting of a /b/ sound and then the release we can see a big difference between the frequencies of /b/ and /p/ as it is given in the last so it is confirmed from their frequencies that the last sound is changed into /p/ voiceless stop.

5.7.8. The Insertion of /n/

This addition of nasal /n/, in loanwords, mostly occurs in the speech of the illiterate people. They will unconsciously add it in the monosyllabic word to make it disyllabic or they will trade it with other sounds like /m/ and /l/. The examples are given in the following table. Table 5.66; illustrate the placing of /n/ nasal sound in monosyllabic and disyllabic words.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.2(b)	Copy(n)	/kɒ pɪ /	/ka:pɪ /	/ka:npɪ /
Aud.32(c)	Computer	əm'pjʊ:tə(r)	/kə m pu: tə r/	/kə n pu: tə r/
Aud.40(c)	Calculator	'kælkjuleɪ tə (r)	/kalkuletə r/	/ka:nkuletə r/
Aud.17(b)	Easy load	/i:zɪlə ʊ d/	/izi:lod/	//inzi:lod/

Table 5.66

5.7.9. The Deletion of Phonemes for Convenience in Loanwords

Table 5.67 exhibit the elimination of some sounds from the words that are borrowed from other languages. It was found in the recorded data that the subject removed the /f/ sound from “Briefcase”, /r/ sound from the first syllable of “Screw range” and the whole two syllables /ɪ n' ten/ from the middle of “superintendent”. The Pashto speakers do this to achieve the fluency and expediency in the articulation of loanwords, as the Pashto linguistic system does not allow more than three syllables in a word.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.16(a)	Brief case(n)	/bri:fkeɪs/	/brɪ :kes/	/bə rɪ kes/
Aud.28(a)	Screw range(n)	/skru:reɪndʒ/	/sku:rentʃ /	/sku:rentʃ /
Aud.36(a)	Superintendent	su: pə rɪ n' tend ə nt	/su:pə rdə nt/	/su:pə rdə nt/

Table 5.67

5.7.10. The Absence of /m/ Nasal in the Onset.

Table 5.68: also reveals the deletion of /m/ nasal consonant sound in the onset position of some loanwords by unqualified speakers. As it noticeable in the table, given below, that the uneducated speakers practice this phenomenon more than the educated speakers of Pashto Yusufzai dialect. They will simply cut it as in the word “company” or trade with other nasal /n/ sound in “computer”.

S.No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.40(a)	Company	' kλ mpə ni	/kəpni:/	/kəpni/
Aud.32(c)	Computer	əm'pju:tə(r)	/kə m pu: tə r/	/kə n pu: tə r/

Table 5.68

5.8. The Syllable

Syllable shows different performance in a speech form and its pronunciation occurs in opening, ending or center of word. In syllabification the position of some syllable in word is very important, as changing the position of some syllable may also change its pronunciation. Usually, nucleus is the core of a syllable, consists of vowel or diphthong. It is known in syllable by using the order of fragments. The fragments in a syllable are explained as consonant (C) and vowel (V). It will look like (CVC) however both the C's in the given pattern may consist of several numbers of consonant before and after the nucleus in syllable. After studying the syllables of Pashto in chapter 2, a table of Pashto syllable structure was prepared for the better understanding of English loanwords and its syllable structure. The following table will explain this in more detail.

The Syllable structure for Pashto words

S. No	Pashto words	Syllable Structure	Gloss for Pashto words
1.	ə	V	He
2.	au	VV	Yes
3.	am	VC	Mango
4.	Sa:	CV	Breath
5.	gə z	CVC	Meter
6.	xra	CCV	Donkeys
7.	mə rg	CVCC	Death
8.	mast	CVCC	Excited
9.	Spen	CCVC	White
10.	xpə l	CCVC	Personal
11.	zmə kə	CCVCV	Earth
12.	xwla	CCCV	Mouth
13.	xwjen	CCVCV	Slippery

Table 5.69

In this, above given, table some Pashto words with its apparent syllable structure is demonstrated. This explains that Pashto accepts three consonant clusters in the onset and mainly two in the coda, with some restrictions. The phoneme /ə / (He) can exist without any consonant in onset or coda position. In rhyme constituent, the nucleus is mandatory and the coda is optional and can have zero consonant or maximum two consonants. The sounds must agree in the cluster consonant onset, or a fricative should follow the stop. While in the coda cluster the final consonant must be stop or retroflex. So we can conclude the following two principles.

Principle 1: Onset (CC) = grouping of stop and fricative or affricate.

Principle 2: Coda (CC) = final consonant must be stop or retroflex.

5.9. Gemination

A short vowel generally takes a consonant after it and just in case if there is another short vowel following that consonant, then the consonant becomes onset and coda of both vowels crop up gemination. In practice of gemination ‘a single, non-geminate, consonant experience lengthening or doubling to become a geminate consonant. (Carr 2008).

Gemination, in Pashto, arises when a consonant comes in the middle of two short vowels, like in the word “arə ” when this ‘r’ appear in the middle of ‘a’ and ‘ə ’ it geminates itself to be the coda of the first and onset of the second syllable. Thus, a geminate is a doubling of a, consonant, sound.

There are several, disyllabic words, in Pashto, where the consonant in coda of the first becomes the onset of the second syllable because of gemination. Such as /ʒ ə bə / tongue, /addə / bus stops and /balunə / balls etc.

5.10. Syllable Structure of English Loanwords

Every language has a specific syllable structure, that is, each language displays an arrangement of the syllable structures through which syllables are framed. Just like Pashto, English syllable structure allows quite complex syllable patterns as in “screen” (CCCVC) and in “belt” (CVCC), such complex consonant clusters are allowed both at onset and coda position. In contrast there are many other languages which do not have such complex structures in onset and coda clusters including Iranian and Turkish as their syllable typology does not permit.

Despite the fact that, Pashto permits such multipart syllable structure, the residents Malakand, reform some of the complex structures, of the source language, to accept it. This

subsection is to examine how consonant clusters of English are treated by Pashto speakers. One might be expecting that either clusters are disconnected or one of the consonant is removed to restructure the complex onset into a simple one if it does not conform and as well as a complex coda into a simple one for convenience in speaking. A list of fifty loanwords was arranged from the recorded data, showing the syllable structures of English and also the templates used by SPYD. It is divided into two tables, Table 5.70 which show the identical syllable template used by SPYD, and Table 5.71 demonstrates the words restructured by SPYD.

5.11. Matching Syllables of English Loanwords.

The noteworthy aspect of the data is that almost all the members used the same syllable structures while speaking the English loanwords. In articulation of the loanwords, there are various monosyllabic, disyllabic and polysyllabic words that do not experience any sort of change in syllabification. When there is no violation of the two principles given for the formation of onset and coda then, their English syllable patterns are maintained by the SPYD in the loanwords. Nonetheless, as projected, vowel change occurs. These words are given below in the Table 5.58. The syllable structures of these words are precisely identical with each other in loanwords and as spoken by SPYD.

5.12. Syllable Structure for English Loanwords (identical)

S. No	Loanwords	Syllable Structure	Template used by Pashto speakers
1.	on	VC	VC
2.	Key	CV	CV
3.	Rod	CVC	CVC
4.	Catch	CVC	CVC

5.	Radio	CV.CV	CV.CV
6.	Program	CCV.CCVC	CCV.CCVC
7.	Truck	CCVC	CCVC
8.	Six	CVCC	CVCC
9.	Tax	CVCC	CVCC
10.	Whats-app	CVCC.VC	CVCC.VC
11.	DVD	CV.CV.CV	CV.CV.CV
12.	Budget	CV.CVC	CV.CVC
13.	FM	VC.VC	VC.VC
14.	Engine	VC.CVC	VC.CVC
15.	Easy load	VCV.CVC	VCV.CVC
16.	Engineer	VC.CV.CV(C)	VC.CV.CVC
17.	Factory	CVC.CCV	CVC.CCV
18.	Traffic	CCV.CVC	CCV.CVC
19.	Cricket	CCV.CVC	CCV.CVC
20.	Professor	CCV.CV.CVC	CCV.CV.CVC
21.	Bumper	CVC.CV(C)	CVC.CVC
22.	Football	CVC.CVC	CVC.CVC
23.	Volleyball	CV.CV.CVC	CV.CV.CVC
24.	Motherboard	CV.CVC.CVC	CV.CVC.CVC
25.	Loudspeaker(n)	CVC.CCV.CV(C)	CVC.CCV.CVC

Table 5.70

5.13. Syllable Structure for English Loanwords (splitting the clusters)

S. No	Loanwords	Syllable Structure	Template used by Pashto speakers
1.	Bulb	CVCC	CV.CVC
2.	Cycle	CV.CC	CV.CVC
3.	Glass	CCVC	CV.CVC
4.	Bundle	CVCCC	CVC.CVC
5.	Pencil	CVC.CVC	CVC.CVC
6.	Cigarette	CVCV.CVC	CVC.CVC
7.	Plate	CCVC	CV.CVC
8.	Radio(n)	CV.CVC	CV.CV.VC
9.	Company	CVC.CV.CV	CVC.CV
10.	Camera	CV.CVC.V	CVC.CV
11.	Computer	CVC.CCV.CVC	CVC.CV.CVC
12.	Thermos	CV.CVC	CVC.CVC
13.	briefcase	CCVC.CVC	CCV.CVC
14.	Plot	CCVC	CVCVC
15.	Tractor	CCVC.CVC	CVC.CVC
16.	Cable	CVCC	CV.CVC
17.	License	CVCCC	CV.CVC
18.	America	V.CVC.V.CV	VC.CV.CV
19.	Ambulance	VC.CCV.CVC(C)C	VC.CV.CVCC

20.	Stabilizer	CCV.CV.CV.CV(C)	CCV.CCV.CVC
21.	Laboratory	CV.CVC.V.C(V)CV	CV.CVC.CV
22.	Fashion	CVCC	CV.CVC
23.	Accelerator	VC.CV.CV.CV.CVC	VC.CV.CVC
24.	Superintendent	CV.C(V)CVC.CVC.CVCC	CVCVC.CVCC
25.	Calculator	CVC.CCV.CV.VCV(C)	CVC.CV.CV.CVC

Table 5.71

As discussed before the coda clusters found in Pashto are /ks/, in ‘tax’, /st/, in first, /rk/, in park /nd/ as in ‘bundle’ and /nt/ Superintendent

The striking feature of clusters in /nd/ and /nt/ is that both of the consonants in the clusters have the same places of articulation. For example, /n/, and /t/ or /n/, and /d/ are alveolar, which obviously shows that the consonant clusters found in Pashto are subject to two conditions, that is. Only two can join together to make coda cluster, and secondly the last consonants should be stop or retroflex. Therefore, clusters in loanwords that execute the above restriction are not restructured by the SPYD which, remains the same and not restructured in case of syllable structures as given in Table 5.70. On the other hand, the syllable structures are restructured (in Table 5.71) in case, as the consonants in the clusters engage any other combination and not following the second principle for coda cluster formation.

5.14. Onset Clusters

Pashto allows complex CC onsets such as /sk/, /sp/, /st/, as well as /ts/, /ps/, /zm/. Due to restrictions, the only possible way for making cc onset is that one consonant in the cluster has to be the combination of stop and fricative or affricate. Some of the CCC onsets in Pashto may consist of affricate, initial nasal or labialization /ndr/, /xwl/, /w/ /xwj//ndg/.

Usually, the onset clusters in loanwords are restructured by SPYD using two methods. Mostly, the restructuring is done through epenthesis, i.e. by inserting /ə / sound and constructing another syllable. As there is the violation of the first principle acknowledged “Principle 1: Onset (CC) = grouping of stop and fricative or affricate.” Barely, the clusters are structured by removing the second consonant in it forming a single consonant onset. For example

Plate(n) /pleit/	CCVC	CV.CVC /palet/
Glass /gla:s/	CCVC	CV.CVC /gi:la:s/

Table 5.72

5.15. Coda Clusters

The formation of coda clusters in English loanwords is different. In some cases, the clusters remains the same whereas in others split by SPYD. Because the requirement for the formation of coda cluster was not fulfilled, as explained in the second principle derived from the study “Principle 2: Coda (CC) = final consonant must be stop or retroflex.”

For example

Cable /keɪ bl/	CVCC	CV.CVC /kebə l/
Bulb(n) /bʌ lb/	CVCC	CV.CVC /bə lə p/

Table 5.73

In the above given Table 5.71 the restructured syllable templates are specified, which are also presented below as 5.11(a) can be depicted in the theoretical framework of Auto-segmental Phonology. Goldsmith (1990), who is the originator of auto-segmental phonology believes that it is an immediate descendent of the theory of generative phonology, which was exhibited in "the sound pattern of English" (SPE) by Chomsky and Halle (1968). The theory of Auto-segmental phonology is that phonological depictions consist of various independent, parallel tiers. In this

way, it gives legitimate methods for depicting these autonomous levels/tiers and demonstrating how they make bond with each other. At first, this model was utilized to depict tone merely yet later it was reached out to portray other phenomena even infixational morphology also. Subsequently, applying the system of Auto-segmental Phonology the reconstructed syllable pattern for some of the words which are restructured is depicted below.

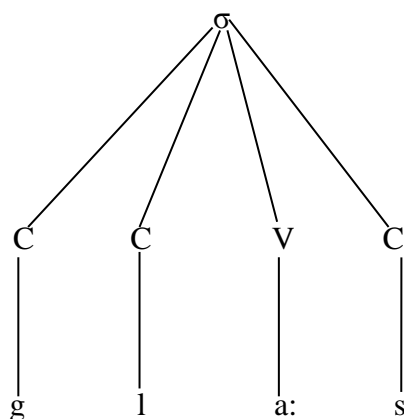
There are four stages of demonstration; they are syllable tier, tonal tier, skeletal tier and segmental tier. The syllable tier illustrates the English and the restructured syllabification, the tonal tier shows if any extra phonemes added in the syllable. The skeletal tier point out the English and restructured template while the segmental tier put on display the sections including the addition done for the purpose of restructuring. The dotted lines reveal the new relations that arise as an outcome of reformation.

5.16. Demonstration of English Monosyllable Word “Glass”

Syllable Tier

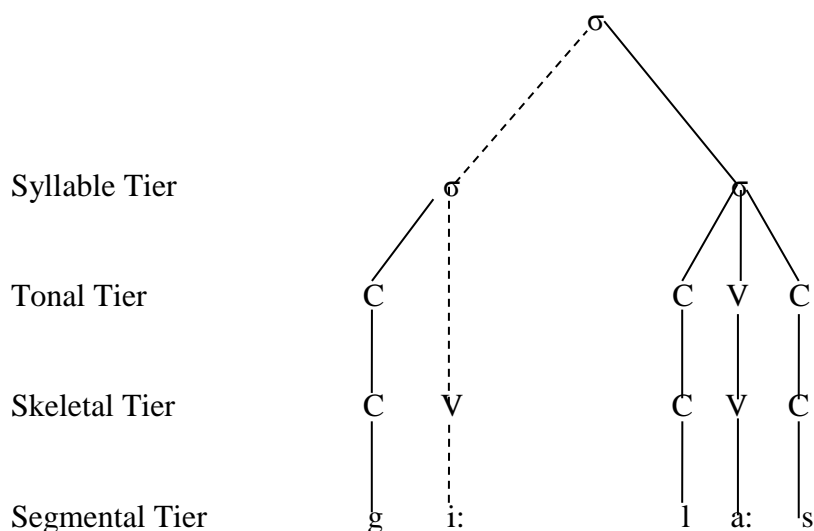
Skeletal Tier

Segmental Tier



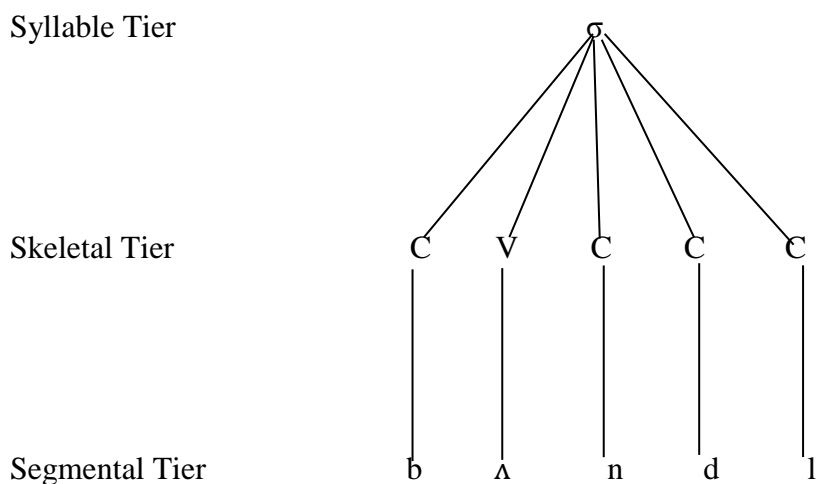
Here in the above given depiction 5.16 the structure of an English word “Glass” is presented, which is having no extra tier, Tonal Tier, because it is monosyllabic word. And so there is no need of dotted line as well.

5.16.1. Demonstration of Restructured Word “Glass”



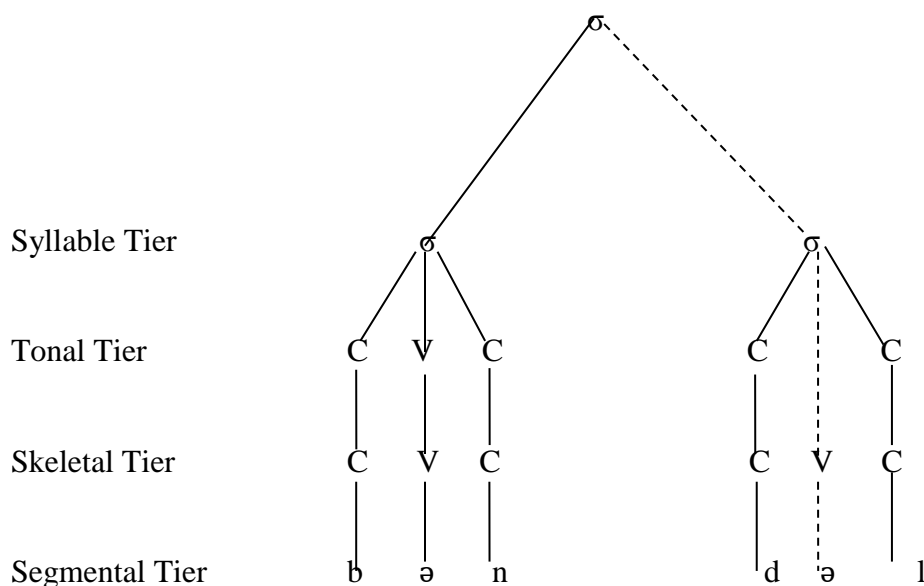
The depiction in 5.15.1, illustrates that the mono syllabic loanword “glass” is restructured since it is changed into a disyllabic word because of the formation of the extra onset cluster. For making the extra syllable, the first consonant in the onset is alienated, represented by the tonal tier, from the rest of the segments and /i:/ is added directly after it to complete the syllable.

5.17 Presentation of English Monosyllabic Word “Bundle”



In this depiction no 5.17 the presentation of monosyllabic English word “Bundle” is specified, having only one Tonal Tier, as it has only one syllable.

5.17.1 Presentation of Restructured Word “Bundle”



This representation demonstrates that the monosyllabic word ‘bundle’ which includes three consonant clusters at coda position. It is converted into disyllabic word due to the coda cluster ‘ndl’. The de clustering is done by separating the consonants ‘ndl’ and inserting /ə / between /dl/ to fulfill the requirement of Pashto syllable structure. This also creates an extra syllable resulting from restructuring.

Primarily a list of loanwords taken from Pashto dictionaries was analyzed for phonological changes, and their British transcriptions were taken from Oxford dictionary. Personal observations, a list of loanwords, un-structured interviews and smart phone were the tools used for data collection. The data were analyzed and annotated using Praat software. Then it was divided in the following four categories for better comprehension.

- Adaptation in the vowel sounds of the English loanwords in the Pashto.
- Adaptation in the diphthong sounds of the English loanwords in the Pashto.
- Adaptation in the trip thong sounds of the English loanwords in the Pashto.
- Adaptation in the consonant sounds of the English loanwords in the Pashto.

After analyzing the data through spectrograms the following results were obtained.

- The Native Pashto speakers of Yusufzai dialect replace English front high vowel /ɪ /, and back high vowel /ʊ :/ with Pashto low central, long vowel /a:/.
- The SPYD replace the vowel /æ/ with Pashto mid front, short vowel /e/.
- The SPYD reinstate English mid-high front (nearer central) /ɪ / short vowel sound with Pashto middle high central, short vowel /ə /.
- The speakers swap English central short vowel /ʌ / with Pashto mid-high central, short vowel /ə /.
- They insert Pashto mid-high central vowel /ə / in the consonant clusters of some words when the consonant clusters do not fulfill the desired requirements.
- They substitute English high back rounded short vowel /ʊ / with mid back rounded vowel /o/ of Pashto.
- They exchange the central long English vowel /ɜ:/ with Pashto mid-high central, short vowel /ə /.
- They substitute English diphthongs /ai/, with high front, short vowel /i/, and /ei/ and /iə / with Pashto mid front, short vowel /e/.
- They trade English /ə ʊ / diphthong with mid back rounded vowel /o/ and mid-high back rounded vowel /u/ of Pashto.
- They replace of English /aɪ ə / trip thong with Pashto mid front, long vowel /e/.
- The trip thong /aʊ ə / is traded with /aw/ Pashto diphthong.
- They substitute English unvoiced, labiodentals, fricative /f/ consonant sound with Pashto unvoiced, and bilabial plosive /p/ consonant.

- They switch English, voiced, labiodentals, and fricative /v/ consonant sound with Pashto bilabial semi vowel /w/ sound.
- They reinstate English unvoiced dental fricative /θ/ consonant sound with Pashto unvoiced dental plosive /t/ consonant sound.
- They substitute English voiced dental fricative /ð/ consonant sound with Pashto voiced dental plosive /d/ consonant sound.
- The consonants /t/ and /d/ are found the alveolar stops and not the retroflexed stops.
- The SPYD use voiced bilabial /b/ consonant sound instead of unvoiced and bilabial plosive /p/ in some words.
- The SPYD insert nasal /n/ consonant sound in some loanwords.
- The absence of nasal /m/ consonant in the onset of some words.

It was determined after study that a large number of words have been borrowed in the field of technology, auto-mobile and machines, electronics, sports, occupation, domestic life, and ethnicity. Apart from them, in the collected data, there was also determined, a great deal of borrowed words in the field of defense, hardware, foods, and certain words have come with the mobile invention. A high frequency of loanwords was found in the field of domestic life.

5.18. Conclusion

It is a common experience in Pashto to adapt English loanwords. We likewise observed that the phenomenon of borrowing take place in all languages coming about either filling the semantic gap or allowing some cultural influence from the target language. Pashto is also influenced by this. Nonetheless, the loanwords in Pashto are acquired to fill the gap that exists because of the modern advancement and technologies around the globe. About, all advance words in Pashto originate from English as Pashto is not a modern dialect. As mentioned before,

Pashto is utilized basically for oral correspondence and not generally utilized for written correspondence. To conclude, Pashto does not have a rich vocabulary for technological words and in this manner generously acknowledges English loanwords keeping in mind the end goal to bridge the space. The representation of restructured syllables, in the theoretical framework of Auto-segmental Phonology of Goldsmith (1990), also prove that the words are re structured from monosyllabic to disyllabic words and from disyllabic to monosyllabic words.

Chapter Six

Conclusion

6.1. Introduction

This chapter concludes the study. The findings of the study and the significance of the study is discussed in this chapter. It also recommends future researches that can be conducted.

The first objective of this study was to find out whether Pashto phonology affects the phonological adaptation of English loanwords when they become a part of Pashto language or not. The result shows that yes, there is a strong influence of the Pashto phonology on English loanwords when they become a part of Pashto language. The second objective was to identify the patterns of syllabification in Pashto designed for a framework to study the syllable construction of English loanwords. The last objective was the depiction of the structure of English loanwords used by SPYD from the perspective of their structural properties.

The vowels pronounced by Pashto speakers in loanwords are wholly different as none of the vowels shares the same F1 or F2 with their counterparts in Southern British English.

The Native Pashto speakers of Yusufzai dialect replace English front high vowel /ɪ /, and back high vowel /ʊ :/ with Pashto low central, long vowel /a:/

The SPYD replace English mid-high front, short vowel /ɪ /, central short vowel /ʌ / and central long English vowel /ɜ:/ with Pashto middle high central, short vowel /ə /. The vowels in loanwords are replaced with Pashto vowels by SPYD, though; this replacement does not bring any change to syllable patterns.

The articulation of vowels and diphthongs in loanwords showed that they face great difficulty in pronouncing these English sounds.

The articulation of /θ/ and /ð/ consonants phonemes, are different from the Standard English. The SPYD find it hard to pronounce these English dental fricatives. Hence, they are produced as “Dental Plosives” as an alternative for “Dental Fricatives”.

The manner of articulation for English fricative /f/ and /v/ was found totally different as the majority of speakers frequently replace it with bilabial /p/ and /w/. They substitute English unvoiced, labiodentals, fricative /f/ consonant sound with Pashto unvoiced, and bilabial plosive /p/ consonant, and labiodentals, fricative /v/ consonant sound with Pashto bilabial semi vowel /w/ sound.

The study of the collected data showed that they also have serious issues in the pronunciation of /æ/, /ʊ/, /ai/, /ei/, /iə/, /əʊ/, /aɪ ə/ and /aʊ ə/ sounds.

The English loanwords with the same syllable template as found in Pashto retain their syllable structure. The syllabification patterns in English loanwords are restructured, in accordance with Pashto phonology, if the syllable templates in loanwords are not in conformity with Pashto syllable templates.

To get the syllable structure, the possible Pashto syllable structures were studied and acknowledged and the Pashto speakers’ spontaneous knowledge. It was identified that the possible syllable structure in Pashto is (C)(C)(C)V(C)(C). Therefore, onset and coda are optional in syllabification. The familiar structures found in monosyllabic words are CV, VC, CCV and CVC. In disyllabic words the patterns CV.CVC, CVC.CV or CVC.CVC are normally used. While, polysyllabic words usually consist of three syllables, on the other hand, adding some morphemes can increase the number of syllables to four. The most noticeable feature of Pashto syllables is that it allows three consonants onset clusters, but, permit just two consonants in coda clusters. In which the final consonant must be stop or retroflex only. So, Pashto tolerates the

occurrence of the syllable templates like CCVC, CCCVC or CCCVCC in Pashto, with restrictions for consonants to occur at certain position.

The aim of this study was to analyze the syllable structure of loan words of English. Hence, it was discovered that there are numerous loanwords that do not transform their structure in terms of syllabification. For example, the words like *rod*, *plot* and *Budget* with particular syllable patterns like CVC, CCVC and CV.CVC were found unchanged. This happened because of their structural conformity with the Pashto syllables for monosyllabic and disyllabic words. But, on the other hand, several English loan words were restructured when they do not conform to Pashto syllabification.

Therefore, it can be generalized that the English loanwords with the same syllable template as found in Pashto retain their syllable structure.

Generally, for the phenomenon of cluster formation in Pashto, two Principles were determined.

- Principle 1: Onset (CC) = grouping of stop and fricative or affricate.
- Principle 2: Coda (CC) = final consonant must be stop or retroflex.

In the onsets, the sounds must agree in the cluster consonant, or a fricative should follow the stop, whereas, in the coda cluster the final consonant must be stop or retroflex. Ignoring these principles give ways to restructure the syllables of English loan words.

The restructured syllables are given below.

Plate(n)	/pleit/	CCVC	CV.CVC	/palet/
Glass	/gla:s/	CCVC	CV.CVC	/gi:la:s/
Cable	/ker bl/	CVCC	CV.CVC	/kebə l/
Bulb(n)	/bʌ lb/	CVCC	CV.CVC	/bə lə p/

Table 6.1

These generalizations were portrayed in the framework of Auto-segmental phonology.

Thus, the outcomes of the current investigation strengthen the already existing theory, which states that loan words are restructured according to the phonology of the recipient language.

6.2. Significance of the Study

The researcher has attempted to find out that whether the borrowed words retain its pronunciation in the donor language or not. This study let us know that the speakers of the Pashto Yusufzai dialect generally replace English vowels with Pashto vowels. However, some English vowels that do not exist in Pashto phonology are replaced by the nearest vowel of Pashto. Moreover, it also reveals that the restructuring of English loanwords, in terms of phonemic and syllabification level is, done by the speakers.

This work can assist in making language translator apps for Google, Siri, and other smart phone devices etc, and better understanding of Pashto accent and grammar.

In addition, this study provides linguistic explanations of the practice the English loan words experience while absorbing in Pashto language. It might enhance the tendency why most languages borrow words from English language. It is expected that this work will place linguistic studies in Pashto to the front position. *'The phonological adaptation of English loanwords in Pashto'* can lay down foundation for further research in Pashto, in broad-spectrum. This study will inspire advance work on Pashto and will introduce lesser known language to the word linguistic community. It is planned to extend this study to investigate other social and psychological reasons of adaptation of English loanwords.

6.3. Conclusion

Pashto language has borrowed words from English language in every field of life. After analyzing the data it was found out that the collected data was concerned with the field of technology, transportation and auto-mobile, sports, with the field of domestic life, culture and society, electronics, occupation, defense and hardware etc.

In terms of location, this research was limited to a village, Wartair Malakand of KP, Pakistan. In terms of population this research was limited to twelve speakers of the Yusufzai dialect of Pashto. Borrowing is an extra linguistic feature of a language. There are certain possibilities for investigation that what would be the influences of other linguistic features upon the borrowing words. In other linguistic features mean syntactic feature, semantic feature, phonetic feature morphological feature and orthographic feature.

References:

- Anna B. David, (2014). Descriptive grammar of Pashto and its dialects (Mouton-Casl Grammar).
- Baart; Joan, L. G. & Baart E. L. (2011). Bibliography of languages of Northern Pakistan. Quaid-i-Azam University, Islamabad.
- Baker Kirk and Brew Chris, (2008). Statistical identification of English loanwords in Korean using automatically generated training data. In proceedings of the sixth international conference on Language Resources and Evaluation. (LREC). Marrakech, Morocco.
- Baumgardner, J. (October 1992). The English language in Pakistan. Lahore. (Society of Pakistan English language teachers) Annual Newsletter, 2(4).
- Broselow, E., Chen, S-I. & Wang, C. (1998). The Emergence of the Unmarked in second language phonology, studies in Second Language Acquisition.
- Chang, C.B (2003) "High-Interest Loans": The Phonology of English loanword adaptation in Burmese.
- Davis, Stuart & Mee-Hui Cho. 2006. Phonetics versus phonology: English word final /s/ in Korean loanword phonology. *Lingua* 116. 1008–1023.
- D. Deterding (1997). "The formants of monophthong vowels in standard southern British English pronunciation." *Journal of the International Phonetic Association*, 27, 47-55.
- D. Deterding (2006). "The North Wind versus a Wolf: short texts for the description and measurement of English pronunciation" *Journal of the International Phonetic Association*, 36(2), 187-196.
- Donegan, P., and Stampe, D. (2004). Rhythm and the synthetic drift of Munda. *The yearbook of South Asian Languages and Linguistics*.

- El-Khalil, Mohammad. (1983). Linguistic analysis of the English loanwords in journalistic Jordanian Arabic as read by an educated native speaker of Arabic. Unpublished Master of TEFL Thesis, Yarmouk University Irbid.
- Fenk-Oczlon, G., and Fenk, A. (2005). Cross-linguistic correlations between size of syllables, number of cases, and adposition order. *Sprache and Naturlichkeit: Gedenkband fur Willi Mayerthaler*.
- Frechtling, J., Sharp, L., & Westat, I. (1997). User-friendly handbook for mixed method evaluations, directorate for education and human resources, division of research, evaluation and communication, National Science Foundation (NSF).
- Galal, Mohamed (2004). An OT approach to loanword adaptation in Cairene Arabic. University of Kansas. Linguistics Graduate Student Association. Kansas Working Papers in Linguistics, Vol 27.
- Habib, Abdul (1967). The two thousand years old language of Afghanistan or the mother of Dari Language (An Analysis of the Baghlan Inscription) . Historical society of Afghanistan. p. 6.
- Hock, 1986; *Principals of Historical Linguistics*, Berlin: Mouton de Gruyter.
- Hock & Joseph. 2009. *Language history, language change, and language relationship: An introduction to historical and comparative linguistics*. Walter de Gruyter.
- Hockett, C. F. (1985). Distinguished lecture: F. *American Anthropologist*, 2, 263-281
- Holms, Janet. *An introduction to sociolinguistics*, Second edition. 2006. Longman. USA.
- Hudson. R. A. (1989). *Socio-linguistics*. Reprinted 1981-1982, twice 1983-1985-1986-1987, Cambridge University Press.
- Ijaz, M. (2009). Phonemic inventory of Pashto. P.85-86. Lahore: University of NUST.

- Islam, Riaz (2011). The morphology of loanwords in Urdu: The Persian, Arabic and English Strands. Un Published Doctoral Dissertation. Newcastle University.
- Kachru B.B. 1982; 'Models for Non-Native Englishes' in B.B. Kachru (ed). The Other Tongue. English across cultures (1st ed). University of Illinois press.
- Katamba, F. (1994). English words. Roulledge: London.
- Kenstowicz, M., and Suchato, A. (2006). Issues in loanword adaptation: A case study from Thai. *Lingua*. Vol 116: 921—949.
- Khan, A.Q. & Bukhari, N. (2011). Phonological adaptation of English loanwords in Pahari. University of Azad Jammu and Kashmir.
- Khan, M. K. (2012). Pashto phonology: The relationship between Syllable structure and word order. University of Azad Jammu and Kashmir, Muzaffarabad.
- Ladefoged, Peter. (2006). A course in phonetics (5th ed.). Fort Worth, TX: Harcourt College Publishers.
- Major, R. C. (2001). Foreign accent: The ontogeny and phylogeny of second language phonology. Mahwah, NJ: Lawrence Erlbaum Associates.
- McCarthy, John J. and Alan Prince. 1995. Faithfulness and reduplicative identity. Beckman et al. (1995), pp. 249-384.
- Mckeever, J.(Spring2011). Pashto informational Report. Mbridge University Press.
- McManus, H. E. (2008). Loanword Adaptation: A study of Some Australian Aboriginal Languages. Unpublished BLS thesis, Unisversity of Sydney.
- Michael M. T. Henderson spring (1998). The phonology of Pashto, sample phonology 1 Term Paper.

- Mwita, Leonard Chacha. (2009). "The adaptation of Swahili Loanwords from Arabic: aconstraint-based analysis" *Journal of Pan African Studies* p46.
- Odlin, T. (1989). *Language transfer: Cross-linguistics influence in language learning*. Cambridge: Cambridge University Press.
- Paul M. Lewis, ed. (2009). "Pashto, Northern". SIL International. Dallas, Texas: *Ethnologue: Languages of the World*, Sixteenth edition. Retrieved 2010-09-18.
- Penzl, Herbert. 1955. *A grammar of Pashto*. Washington, DC: American Council of Learned Societies.
- Peperkamp, S. & E. Dupoux. 2003. Reinterpreting loanword adaptations: the role of perception. *Proceedings of the 15th International Congress of Phonetic Sciences*, 367-370. Barcelona, Causal Productions.
- Rahman, G. Khan, A.Q. & Bukhari, N. H. (2012). *English problematic consonants for Pashto Speakers*. University of Azad Jammu and Kashmir.
- Robert J. Baumgardner, (2008). *Teaching World Englishes, The handbook of world Englishes*.
- San Duanmu (2013), To appear in *The Handbook of Chinese Linguistics*, First Edition, ed. C.-T. James Huang, Y.-H. Audrey Li, and Andrew Simpson, 422-442. New Jersey: John Wiley & Sons.
- Shinohara, S. (2000). Default Accentuation and Foot Structure in Japanese: Evidence from Japanese adaptations of French words, *Journal of East Asian Linguistics* vol 9,1, 55-96.
- Silverman, Daniel. 1992. Multiple scansion in loanword phonology: Evidence from Cantonese. *Phonology* 9. 289–328.
- Tanushree Sarkar (2012). *A loanword adaptation in bangla: an optimality – theoretic account*, The English and Foreign Languages University Hyderabad, India.

- Tegey, Habibullah; Robson, Barbara (1996). A reference grammar of Pashto. Washington: Center for Applied Linguistics. p. 178.
- Tegey, H. (1996). A reference grammar of Pashto: Pashto and the pashtuns. Department of education. Washington, DC.
- Tokizaki, H., and Kuwana, Y. (2012). 'Limited consonant clusters in OV languages' To be published in `Consonant Clusters and Structural Complexity. Ed. by Philip Hoole, Lasse Bombien, Marianne Pouplier, Christine Mooshammer, Barbara Kuhnert. Berlin: Mouton de Gruyter.
- Van Coetsem, F. (1988). Loan phonology and the two transfer types in language contact. Dordrecht, Holland: Foris Publications.
- Wilton, R. D. (2003). Poverty and mental health: A qualitative study of residential care facility tenants. *Community Mental Health Journal*, 39, 139–156.

APPENDICES:

Appendix: A

List of loanwords in Pashto for recording

S. No	Loan words	English transcription	Pashto transcription	
			Educated speakers	Un educated speakers
Aud.1(a)	Block(n)	/blɒ k/	/bla:k/	/bla:k/
Aud.1(b)	Rod(n)	/rɒ d/	/ra:d/	/ra:d/
Aud.1(c)	Plot(n)	/plɒ t/	/pla:t/	/pə la:t/
Aud.2(a)	Socket(n)	/sɒ kit/	/sa:kə t/	/sa:kə t/
Aud.2(b)	Copy(n)	/kɒ pɪ /	/ka:pɪ /	/ka:npɪ /
Aud.2(c)	Laboratory(n)	/lə bɒ rtri:/	/leba:tri:/	/leba:tri:/
Aud.3(a)	Call(n&v)	/Kɔ :L/	/ka:l/	/ka:l/
Aud.3(b)	Ball(n)	/bɔ :l/	/ba:l/	/ba:l/
Aud.3(c)	Record(n&v)	/rekɔ :d/ /rɪ kɔ :d/	/reka:d/	/ri:ka:d/
Aud.4(a)	Football(n)	/futbɔ :l/	/putba:l/	/putba:l/
Aud.4(b)	Volleyball(n)	/vɒ lɪ bɔ :l/	/wa:lɪ ba:l/	/wa:lɪ ba:l/
Aud.5(a)	Tax(n)	/tæks/	/teks/	/teks/
Aud.5(b)	Bat(n)	/bæt/	/bet/	/bat/
Aud.5(c)	Catch(n)	/kætʃ /	/ketʃ /	/ketʃ /
Aud.6(a)	Traffic(n)	/træfɪ k/	/trepɪ k/	/trepek/
Aud.6(b)	Tractor(n)	/træktə (r)/	/tektə r/	/tektar/
Aud.6(c)	Factory(n)	/fæktɪ /	/pakɪ /	/pektri:/
Aud.7(a)	Engine(n)	/endʒɪ n/	/ɪ ndʒɪ n/	/endʒə n/
Aud.7(b)	Steering(n)	/stɪ ə rɪ ŋ/	/sterɪ ŋ/	/sterə ŋ/
Aud.7(c)	Cricket(n)	/krɪ kɪ t/	/krɪ kə t/	/ki:rkə t/
Aud.8(a)	Clutch(n)	/klʌ tʃ /	/klə tʃ /	/klə tʃ /
Aud.8(b)	Truck(n)	/trʌ k/	/trə k/	/trə k/
Aud.8(c)	plug(n)	/plʌ g /	/plə g/	/plə g/
Aud.9(a)	Budget(n)	/bʌ dʒɪ t/	/bə dʒə t/	/bə dʒə t/
Aud.9(b)	Bumper(n)	/bʌ mpə (r)/	/bə mpə r/	/bampə r/
Aud.9(c)	Motherboard	/mʌ ðə bɔ :d/	/mə ðə rbod/	/madə rbod/
Aud.10(a)	Bulb(n)	/bʌ lb/	/bə lə p/	/bə lə p/
Aud.10(b)	Fashion(n)	/fæʃ n/	/feʃ ə n/	/peʃ ə n/
Aud.10(c)	Bundle(n)	/bʌ ndl/	/bə ndə l/	/bə ndal/
Aud.11(a)	Election(n)	/ɪ lekʃ n/	/ɪ lekʃ ə n/	/ɪ lekʃ ə n/
Aud.11(b)	Cycle(n)	/sʌ ɪ kl/	/sekə l/	/saykə l/
Aud.11(c)	Double bed(n)	/dʌ blbed/	/də bə lbed/	/dabalbed/
Aud.12(a)	Pipe(n)	/paɪ p/	/pip/	/pip/
Aud.12(b)	Time(n)	/taɪm/	/tim/	/tim/
Aud.13(a)	Stabilizer(n)	/steibə laizə (r)/	/stiplizə r/	/stiplizə r/
Aud.13(b)	License(n)	/laɪns/	/lisə ns/	/lisə ns/
Aud.13(c)	Eye	/aɪ /	/æ/	/æ/
Aud.14(a)	Gear(n)	/gɪ ə (r)/	/ger/	/ger/
Aud.14(b)	Engineer(n)	/endʒɪniə (r)/	/endʒɪ ner/	/endʒɪ:ner/

Aud.15(a)	Cake(n)	/keik/	/kek/	/kek/
Aud.15(b)	Plate(n)	/pleit/	/palet/	/palet/
Aud.15(c)	Gate(n)	/g eit/	/get/	/get/
Aud.16(a)	Brief case(n)	/bri:fkeis/	/bri:kes/	/bə rikes/
Aud.16(b)	Paper(n)	/peipə (r)/	/pəpə r/	/pəpə r/
Aud.17(a)	Sofa(n)	/sə ʊ fə /	/sopə /	/sopə /
Aud.17(b)	Easy load(n)	/i:zilə ʊ d/	/izi:lod/	//inzi:lod/
Aud.17(c)	Loudspeaker	/lə ʊ dspɪ:kə (r)/	/lodspi:kə r/	/lodspi:kar/lospi:kar/
Aud.18(a)	Tyre(n)	/taɪ ə (r)/	/ter/	/ter/
Aud.19(a)	Radio	/reɪ dɪ ə ʊ /	/radi:aw/	/ri:do/,/redo/
Aud.19(b)	Nose	/nə ʊ z/	/noz/	/noz/
Aud.20(a)	Toilet	/tɔɪ .lə t/	/telə t/	/telə t/
Aud.20(a)	Noise	/nɔɪ z/	/nəɪ z/	/nəɪ z/
Aud.21(a)	Poor	/pʊ ə (ɹ)/	/poə r/	/poə r/
Aud.22(a)	Hair	/heɪ ə /	/heə r/	/heə r/
Aud.23(a)	Film(n)	/film/	/filə m/	/pilə m/
Aud.23(b)	FM(n)	/efem/	/efem/	/epem/
Aud.23(c)	FATA(n)	/fə tə /	/fə tə /	/pə tə /
Aud.24(b)	Survey(n&v)	/sɜ : vei/ /sə vei/	/sə rweɪ /	/sə rway/
Aud.24(C)	Driver(n)	/draɪvə (r)/	/də riwə r/	/də riwar/
Aud.25(a)	Dvd	/di: vi: ' di/	/di: wi: di/	/di: wi: di/
Aud.25(b)	TV(n)	/Ti:vi/	/ti:wi:/	/ti:wi:/
Aud.26(a)	Thunder(n)	/θʌ ndə (r)/	/tə ndə r/	/tə ndə r/
Aud.26(b)	Bathroom(n)	/ba:θrum/	/ba:trum/	/ba:trum/
Aud.27(a)	Thresher(n)	/θref ə (r)/	/tref ə r/	/tref ə l/
Aud.27(b)	Drama(n)	/dra:mə /	/dra:mə /,	/də ra:mə /
Aud.27(c)	Leather(n)	/leðə (r)/	/ledə r/	/ledar/
Aud.28(a)	Screw range	/skru:reɪndʒ/	/sku:rentʃ /	/sku:rentʃ /
Aud.28(b)	Brash(n)	/bræʃ /	/braʃ /	/braʃ /
Aud.28(c)	Professor(n)	/prə fesə (r)/	/propesə r/	/propesar/
Aud.29(a)	Pressurecoker	/preʃ ə (r) kʊ kə (r)/	/Ku:kə r/	/Ku:kə r/
Aud.29(b)	Doctor	/dɒ ktə (r)/	/da:ktə r/	/da:ktə r/
Aud.29(c)	Freezer	/fri: zə (r)/	/pri:zar/	/pri:zar/
Aud.29(d)	Facebook	/feɪ sbʊ k/	/pesbɒk/	/pesbɒk/
Aud.30(b)	Bogus	/bə ʊ g ə s/	/bukə s/	/bukə s/
Aud.30(c)	Ambulance	/æmbjə lə ns/	/ɪ mbulans/	/ɪ mbulans/
Aud.31(a)	Whats-app	/wɒ ts æp/	/wə tsə p/	/wə tsə p/
Aud.31(b)	Master	/mɑ : stə (r)/	/mɑ : stə r	/mɑ : stə r
Aud.31(c)	Six	/sɪ ks/	/seks/	/seks/
Aud.32(a)	Pen	/Pen/	/pen/	/pen/
Aud.32(b)	Pencil	/Pensl/	/pensə l/	/pensə l/
Aud.32(c)	Computer	/kə m' pjʊ: tə (r)/	/kə m pu: tə r/	/kə n pu: tə r/
Aud.33(a)	CD-ROM	/si: di: ' rɒ m/	/si: di: ' ra:m/	/si: di: ' ra:m/
Aud.33(c)	Window	/wɪ ndə ʊ /	/wɪ ndo/	/wɪ ndo/
Aud.34(b)	Game	/g eɪ m/	/gem/	/gem/
Aud.34(c)	Gate	/g eɪ t/	/get/	/get/
Aud.34(d)	Goal	/g ə ʊ l/	/gu:l/	/gu:l/
Aud.35(a)	Cigarette	/sɪ g ə ' ret/	/si:grə t/	/si:grə t/
Aud.35(b)	Table	/teɪ bl/	/tebə l/	/tebə l/

Aud.35(c)	Thermos	/θɜ : mə s/	/ t̩ ɹ ma : s/	/ t̩ ɹ ma : s /
Aud.36(a)	Superintendent	/su: pə ri n' tendə nt	/su:pə rdə nt/	/su:pə rdə nt/
Aud.36(b)	Five	/faɪ v/	/pa:jo/	/pa:jo/
Aud.36(c)	Fine	/faɪ n/	/faɪ n/	/paɪ n/
Aud.36(d)	Program	/prə ū g ræm/	/pə rogra:m/	/pə rogra:m/
Aud.36(e)	Party	/pɑ : ti/	/pa:ti /	/pa:ti /
Aud.37(a)	Mobile	/mə ū bai /l	/mobaɪ l/	/mobil/
Aud.37(b)	Tower	/taʊ ə (r)/	/ta:wer/	/ta:wer/
Aud.37(c)	Biscuit	/bi ski t/	/bi skə t/	/bi skə t/
Aud.37(d)	Belt	/Belt/	/belt/	/belt/
Aud.37(e)	Bomb	/bɒ m/	/bə m/	/bə m/
Aud.37(g)	Dollar	/dɒ lə (r)/	/da:ler/	/da:ler/
Aud.37(h)	America	/ə ' mer-ə -kə /	/a:mri :ka:/	/a:mri :ka:/
Aud.37(i)	China	/tʃ ai nə /	/tʃ ina/	/tʃ ina/
Aud.37(j)	London	/lə ndə n/	/lə ndə n/	/lə ndə n/
Aud.37(k)	Cable	/keɪ bl/	/kebə l/	/kebə l/
Aud.37(l)	Bottle	/bɒ tl/	/botə l/	/botə l/
Aud.38(a)	Rubber	/rʌ bə (r)/	/ra:ber/	/ra:ber/
Aud.38(a)	Plastic	/plæsti k/	/pə la:sti k/	/pə la:sti k/
Aud.38(a)	Team	/ti: m/	/ti:m/	/ti:m/
Aud.39(a)	Cross	/krɒ s/	/kra:s/	/kra:s/
Aud.39(a)	Basket	/bɑ : ski t/	/baskɪ t/	/baskɪ t/
Aud.39(a)	Horn	/hɔ : n/	/a:rə n/	/a:rə n/
Aud.40(a)	Company	/kʌ mpə ni/	/kɑpni:/	/kɑpni:/
Aud.40(b)	Camera	/kæmə rə /	/kəmra:/	/kəmra:/
Aud.40(c)	Calculator	/kælkjuleɪ tə (r)/	/kalkuletə r/	/kalkuletə r/
Aud.41(a)	motor	/mə ū tə /	/motə r/	/motə r/
Aud.41(b)	Hook	/hu k/	/hok/	/hok/
Aud.41(c)	Book	/bu k/	/bok/	/bok/
Aud.42(a)	First	/fɜ : st/	/fə st/	/fə st/
Aud.42(b)	Reverse	/ri ' vɜ : s/	/ri v ə s/	/ri v ə s/
Aud.42(c)	Tube	/tju: b/	/tju: b/	/tu: p/
Aud.43(a)	On	/ɒ n/	/a:n/	/ə n/
Aud.43(b)	key	/ki:/	/ki:/	/ki:/
Aud.43(c)	Glass	/glɑ:s/	/gi:la:s/	/gi:la:s/
Aud.44(b)	Accelerator	/ə k' selə rei tə (r)/	//ik selə tə r/	//ik selə tə r/

Appendix: B**Syllable Structures for English Loanwords (identical)**

S. No	Loanwords	Syllable Structure	Template used by Pashto speakers
26.	On	VC	VC
27.	Key	CV	CV
28.	Rod	CVC	CVC
29.	Catch	CVC	CVC
30.	Radio	CV.CV	CV.CV
31.	Plot	CCVC	CCVC
32.	Truck	CCVC	CCVC
33.	Six	CVCC	CVCC
34.	Tax	CVCC	CVCC
35.	Whats-app	CVCC.VC	CVCC.VC
36.	DVD	CV.CV.CV	CV.CV.CV
37.	Budget	CV.CVC	CV.CVC
38.	FM	VC.VC	VC.VC
39.	Engine	VC.CVC	VC.CVC
40.	Easy load	VCV.CVC	VCV.CVC
41.	Engineer	VC.CV.CV(C)	VC.CV.CVC
42.	Factory	CVC.CCV	CVC.CCV
43.	Traffic	CCV.CVC	CCV.CVC
44.	Cricket	CCV.CVC	CCV.CVC
45.	Professor	CCV.CV.CVC	CCV.CV.CVC
46.	Bumper	CVC.CV(C)	CVC.CVC
47.	Football	CVC.CVC	CVC.CVC
48.	Volleyball	CV.CV.CVC	CV.CV.CVC
49.	Motherboard	CV.CVC.CVC	CV.CVC.CVC
50.	Loudspeaker(n)	CVC.CCV.CV(C)	CVC.CCV.CVC

Appendix: C**Syllable Structures for English Loanwords (splitting the clusters)**

S. No	Loanwords	Syllable Structure	Template used by Pashto speakers
26.	Bulb	CVCC	CV.CVC
27.	Cycle	CV.CC	CV.CVC
28.	Glass	CCVC	CV.CVC
29.	Bundle	CVCCC	CVC.CVC
30.	Pencil	CVC.CVC	CVC.CVC
31.	Cigarette	CVCV.CVC	CVC.CVC
32.	Plate	CCVC	CV.CVC
33.	Radio(n)	CV.CVC	CV.CV.VC
34.	Company	CVC.CV.CV	CVC.CV
35.	Camera	CV.CVC.V	CVC.CV
36.	Computer	CVC.CCV.CVC	CVC.CV.CVC
37.	Thermos	CV.CVC	CVC.CVC
38.	Briefcase	CCVC.CVC	CCV.CVC
39.	Program	CCV.CCVC	CVCV.CCVC
40.	Tractor	CCVC.CVC	CVC.CVC
41.	Cable	CVCC	CV.CVC
42.	License	CVCCC	CV.CVCC
43.	America	V.CVC.V.CV	VC.CV.CV
44.	Ambulance	VC.CCV.CVC(C)C	VC.CV.CVCC
45.	Stabilizer	CCV.CV.CV.CV(C)	CCV.CCV.CVC
46.	Laboratory	CV.CVC.V.C(V)CV	CV.CVC.CV
47.	Fashion	CVCC	CV.CVC
48.	Accelerator	VC.CV.CV.CV.CVC	VC.CV.CVC
49.	Superintendent	CV.C(V)CVC.CVC.CVCC	CVCVC.CVCC
50.	Calculator	CVC.CCV.CV.VCV(C)	CVC.CV.CV.CVC

Appendix: D; Formant Frequencies of Loanword Vowels

F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
ɒ	ɒ	æ	æ	ʌ	ʌ	ʊ	ʊ	ɔː	ɔː	aɪ	aɪ
735	1203	531,	1462,	573,	1051,	467,	878,	738	1241	398,	1391,
726	1179	524,	1506,	609,	1070,	516,	868,	742	1193	441,	1403,
786	1183	518,	1403,	549,	1118,	429,	989,	758	1208	422,	1380,
744	1221	487,	1380,	521,	1111,	431,	908,	803	1216	468,	1427,
789	1096	527,	1391,	605,	1104,	481,	906,	728	1192	457,	1342,
738	1241	516,	1427,	548,	1113,	474,	954,	788	1210	416,	1342,
742	1193	489,	1442,	577,	1073,	433,	976,	767	1224	456,	1351,
758	1208	499,	1442,	550,	1127,	509,	986,	697	1206	429,	1304,
802	1216	495,	1451,	572,	1091,	520,	1016	728	1179	447,	1267,
728	1197	517,	1404,	545,	1122,	502,	953,	785	1183	471,	1411,
788	1210	510,	1367,	544,	1099,	522,	956,	697	1221	466,	1309,
767	1224	496,	1481,	568,	1090,	515,	942,	756	1199	498,	1417,
697	1200	458,	1411,	572,	1131,	454,	877,	711	1241	452,	1401,
728	1179	502,	1409,	545,	1122,	476,	885,	837	1193	451,	1342,
785	1183	551,	1417,	544,	1139,	506,	981,	759	1208	493,	1402,
697	1221	439,	1401,	568,	1088,	489,	967,	690	1216	478,	1359,
756	1098	508,	1422,	607,	1128,	475,	947,	752	1197	466,	1382,
709	1241	636,	1402,	573,	1182,	508,	963,	737	1210	438,	1346,
837	1193	428,	1399,	509,	1018,	467,	979,	779	1224	481,	1314,
759	1208	601,	1382,	497,	1134,	486,	878,	735	1260	452,	1279,
699	1216	492,	1406,	602,	1085,	562,	933,	726	1179	485,	1315,
752	1197	525,	1374,	580,	1102,	419,	1001	786	1183	496,	1425,
737	1210	516,	1379,	502,	1082,	423,	889,	744	1221	436,	1381,
779	1224	536,	1415,	552,	1133,	466,	878,	789	1188	450,	1313,
735	1200	510,	1425,	514,	1124,	553,	933,	738	1241	482,	1300,
726	1179	482,	1504,	511,	1134,	429,	915,	742	1293	538,	1427,
786	1183	538,	1479,	498,	1120,	434,	910,	758	1308	416,	1344,
744	1221	486,	1381,	507,	1094,	467,	793,	805	1216	418,	1462,
789	1199	518,	1393,	516,	1081,	474,	986,	748	1194	390,	1325,
738	1241	501,	1390,	489,	1120,	463,	1062	778	1210	419,	1387,
742	1193	489,	1427,	498,	1156,	539,	986,	767	1277	449,	1401,
758	1208	549,	1374,	496,	1139,	550,	898,	687	1207	468,	1308,
803	1216	489,	1412,	517,	1204,	522,	1012	738	1179	471,	1356,

728	1192	500,	1385,	519,	1127,	542,	970,	785	1183	491,	1318,
788	1210	551,	1413,	496,	1093,	561,	895,	697	1221	513,	1429,
767	1224	539,	1387,	538,	1098,	533,	932,	756	1199	477,	1300
697	1206	541,	1407,	501,	1124,	437,	977,	701	1241	398,	1391,
728	1179	524,	1388,	551,	1105,	453,	948,	837	1193	468,	1427,
785	1183	528,	1356,	469,	1130,	505,	889,	759	1208	457,	1342,
697	1221	488,	1418,	508,	1085,	489,	913,	699	1216	416,	1342,
756	1199	527,	1429,	536,	1181,	415,	891,	752	1197	456,	1351,
711	1241	516,	1426,	588,	1010,	520,	979,	837	1210	429,	1304,
837	1193	486,	1346,	601,	1056,	469,	858,	789	1224	447,	1267,
759	1208	494,	1393,	522,	1168,	486,	943,	735	1203	471,	1411,
690	1216	495,	1428,	535,	1074,	563,	898,	726	1179	466,	1309,
752	1197	517,	1420,	546,	1132,	459,	878,	786	1183	498,	1417,
737	1210	512,	1500,	536,	1033,	423,	989,	744	1221	452,	1401,
779	1224	498,	1456,	515,	1098,	456,	938,	789	1096	451,	1342,
735	1260	514,	1483,	492,	1064,	533,	1027	738	1241	493,	1402,
726	1179	482,	1417,	538,	1084,	429,	958,	742	1193	478,	1359,
786	1183	538,	1486,	486,	1130,	463,	991,	758	1208	466,	1382,
744	1221	486,	1405,	518,	1084,	473,	869,	802	1216	438,	1346,
789	1188	518,	1351,	521,	1181,	461,	1021	728	1197	481,	1314,
738	1241	502,	1451,	489,	1113,	421,	1031	788	1210	452,	1279,
742	1293	489,	1419,	549,	1156,	510,	856,	767	1224	485,	1315,
758	1308	549,	1417,	488,	1161,	530,	942,	697	1200	496,	1425,
805	1216	489,	1404,	501,	1074,	511,	890,	728	1179	436,	1381,
748	1194	503,	1382,	551,	1127,	473,	885,	785	1183	450,	1313,
778	1210	535,	1396,	539,	1201,	537,	912,	697	1221	482,	1300,
767	1277	517,	1502,	541,	1084,	439,	950,	756	1098	538,	1427,
687	1207	478,	1409,	524,	1079,	436,	887,	709	1241	416,	1344,
738	1179	501,	1388,	528,	1120,	477,	868,	837	1193	418,	1462,
785	1183	551,	1390,	608,	1088,	472,	939,	759	1208	390,	1325,
697	1221	469,	1417,	527,	1181,	432,	948,	699	1216	419,	1387,
756	1199	518,	1452,	566,	1123,	509,	916,	752	1197	449,	1401,
701	1241	513,	1445,	486,	1155,	530,	957,	737	1210	468,	1308,
837	1193	428,	1455,	544,	1109,	522,	936,	779	1224	471,	1356,
759	1208	604,	1424,	495,	1064,	497,	976,	735	1200	491,	1318,
699	1216	493,	1377,	577,	1127,	481,	1003	726	1179	513,	1429,
752	1197	525,	1491,	571,	1191,	433,	813,	786	1183	477,	1300,
837	1210	516,	1421	546,	1150,	511,	886,	744	1221	441,	1403,
789	1224	602	1432	564	1080	516	940	789	1199	422,	1380,

Appendix: E; Formant Frequencies of Loanword Vowels

F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
I	I	ɜː	ɜː	iə	iə	ei	ei	əʊ	əʊ
441,	1403,	573,	1104,	499,	1442,	489,	1474,	434,	967,
422,	1380,	489,	1113,	488,	1506,	499,	1379,	456,	947,
398,	1391,	549,	1073,	531,	1403,	495,	1415,	501,	963,
468,	1427,	521,	1127,	524,	1380,	517,	1425,	479,	979,
457,	1342,	487,	1091,	518,	1391,	510,	1504,	435,	933,
416,	1342,	548,	1122,	527,	1427,	496,	1479,	501,	889,
456,	1351,	577,	1099,	516,	1442,	458,	1381,	469,	878,
429,	1304,	550,	1090,	489,	,1451	502,	1393,	476,	933,
447,	1267,	572,	1131,	495,	,1404	551,	1490,	563,	915,
471,	1411,	545,	1122,	517,	,1367	439,	1427,	439,	910,
466,	1309,	544,	1139,	510,	,1481	508,	1374,	433,	793,
498,	1417,	568,	1088,	496,	,1411	536,	1412,	467,	986,
452,	1401,	572,	1128,	458,	,1409	428,	1385,	516,	986,
451,	1342,	545,	1182,	501,	,1417	600,	1413,	429,	898,
493,	1402,	544,	1018,	551,	,1401	492,	1387,	431,	932,
478,	1359,	568,	1134,	439,	,1422	525,	1407,	481,	977,
466,	1382,	507,	1085,	508,	,1402	516,	1388,	474,	948,
438,	1346,	573,	1102,	636,	,1399	536,	1356,	433,	889,
481,	1314,	509,	1082,	468,	,1382	510,	1418,	509,	913,
452,	1279,	497,	1133,	601,	,1406	482,	1429,	520,	891,
485,	1315,	462,	1124,	492,	,1374	538,	1426,	502,	979,
496,	1425,	580,	1134,	525,	,1379	486,	1346,	515,	858,
436,	1381,	502,	1120,	516,	,1415	518,	1393,	454,	943,
450,	1313,	552	1094	536,	,1425	501,	1428,	476,	898,
482,	1300,			511,	,1504	489,	1420,	506,	878,
538,	1427,			482,	,1479	549,	1400,	489,	989,
416,	1344,			538,	,1381	489,	1456,	475,	938,
418,	1462,			486,	,1393	500,	1483,	508,	1027
390,	1325,			518,	,1390	531,	1417,	467,	,958,
419,	1387,			501,	,1427	524,	1486,	486,	991,
449,	1401,			489,	,1374	518,	1405,	562,	869,
				549,	,1412	487,	1351,	419,	1021
				488,	,1385	527,	1451,	423,	,856,
				502,	,1413	516,	1419,	466,	1031
				478,	,1387	551,	1417,	553,	,942,
				481	,1407	539,	1404,	429,	890,
						541,	1382,	434,	912,
						524,	1396,	467,	950,
						528,	1502,	474,	887,
						488,	1409,	463,	1018
						527,	1388,	522,	,948,

468,	1308,					516,	1390,	542,	916,
471,	1356,					486,	1417,	561,	957,
491,	1318,					494,	1452,	533,	936,
513,	1429,					495,	1445,	437,	976,
477	1300					517,	1455,	453,	1003
						512,	1424,	505,	,986,
						498,	1377,	489	940
						514,	1491,		
						482,	1421,		
						538,	1432,		
						486,	1462,		
						518,	1506,		
						502,	1403,		
						489,	1380,		
						549,	1391,		
						489,	1427,		
						503,	1442,		
						535,	1442,		
						517,	1351,		
						478,	1404,		
						501,	1367,		
						551,	1381,		
						469,	1411,		
						518,	1409,		
						513,	1417,		
						428,	1401,		
						584,	1422,		
						493,	1402,		
						525,	1399,		
						516,	1382,		
						602	1406		