

**IMPACT OF NEUROCOGNITION INTERVENTION
STRATEGIES ON THE DEVELOPMENT OF ENGLISH
LANGUAGE SKILLS IN UNDERGRADUATE
STUDENTS OF RURAL AREAS**

*Thesis submitted to Bharathidasan University, Tiruchirappalli
in partial fulfilment of the requirements
for the award of the Degree of*

**DOCTOR OF PHILOSOPHY
IN
EDUCATION**

by

C.HARIHARAN

Ph.D. Scholar (University Research Fellow)

(Ref.No: 16839/Ph.D.K5/ Education / Full Time / October 2017)

Under the guidance of

Dr. E. RAMGANESH

Professor



**DEPARTMENT OF EDUCATIONAL TECHNOLOGY
BHARATHIDASAN UNIVERSITY
TIRUCHIRAPPALLI – 620 023
TAMILNADU, INDIA**

JANUARY - 2022

C. HARIHARAN

URF- Ph.D. Scholar (Full Time)

Department of Educational Technology

Bharathidasan University

Tiruchirappalli – 620 023.

Tamil Nadu, India.

DECLARATION

I **HARIHARAN. C**, hereby declare that this research work titled ***“Impact of Neurocognition Intervention Strategies on the Development of English Language Skills in Undergraduate Students of Rural Areas”*** submitted to Bharathidasan University in fulfillment of the requirements for the award of the degree of **Doctor of Philosophy** is a record of original research work done by me, under the supervision and guidance of **Dr. E. Ramganes**, Professor, Department of Educational Technology, Bharathidasan University, Tiruchirappalli and that it has not previously formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or any other similar title of any University.

Place : Tiruchirappalli

Date :

Signature of the Candidate

Dr.E.RAMGANESH

M.Sc (Mat)., PGDCA. Ph.D., (Comp. Sc.), M.A (Psy)., M.A(Phil)., M.Ed., M.Phil.,
Ph.D(Edn.).

Professor,

Coordinator, UGC-SAP (DRS-II)

Dept. of Educational Technology &

Director, Institute for Entrepreneurship and Career Development & DDU
KAUSHAL Kendra

Bharathidasan University

Tiruchirappalli-620 023

Tamil Nadu, India.

CERTIFICATE

This is to certify that the research work titled “***Impact of Neurocognition Intervention Strategies on the Development of English Language Skills in Undergraduate Students of Rural Areas***” submitted to Bharathidasan University for the award of the degree of **Doctor of Philosophy** is a record of original research work done by **C. Hariharan**, in the Department of Educational Technology under my supervision and guidance and the dissertation has not previously formed the basis for the award of any Degree / Diploma / Associateship / Fellowship or any other similar title of any University.

Place : Tiruchirappalli

Date :

Signature of the Research Supervisor

ACKNOWLEDGEMENT

In this academic exploration of doctoral research I received help and support from many people. I wish to thank them.

I whole heartedly thank first and foremost, I glorify the **Almighty God** for the presence, blessings, grace, wisdom, knowledge and guidance throughout this research work successfully and my entire life.

I owe my deepest gratitude to my guide, mentor, academic parent **Dr. E. Ramganes**, Professor, Department of Educational Technology, Bharathidasan University, Tiruchirappalli, for his perpetual energy and enthusiasm in research which formed a constant source of encouragement to me in this work. Endowed with meticulous attitude, his research institution made him a constant source of ideas and passions in Education which exceptionally inspire and enrich my growth as a student and a researcher want to be. His originality has triggered and nourished my intellectual maturity which I will cherish for the years to come. Without his guidance and persistent help this thesis would not have been possible. I obligate my indebtedness to him for his precious guidance, informative discussions, valuable suggestions and instantaneous help during the entire course of this study.

I gratefully acknowledge the Doctoral Committee Member **Dr. S. Amutha**, Assistant Professor, Department of Educational Technology, Bharathidasan University, Tiruchirappalli, for her continuous motivation, guidance, sharing her valuable insights and support to make this work successful.

I express my gratefulness to the Doctoral Committee Member **Dr. A. Jahitha Begum**, Professor & Head, Department of Education, the Gandhigram Rural Institute (Deemed to be University), Gandhigram, for her inestimable suggestions that gave me a spirit of adventure in regard to research and scholarship.

I must mention my acknowledgement to **Bharathidasan University**, Tiruchirappalli, for the wonderful financial assistants with URF (University Research Fellowship) throughout the research and the authorities of the University for admitting me to carry out this research in the Department of Educational Technology by providing the fullest support to make my research peacefully.

I extend my gratitude and obligation to **Dr. I. Muthuchamy**, Professor and Head of the Department of Educational Technology, Bharathidasan University, for their generous help on the different phases of the research.

I convey my special acknowledgement to **Dr. K.T. Tamilmani**, Head, Department of English, Nehru Memorial College, Puthanampatti, for reviewing the tool construction of the thesis.

I express my sincere thank to **The Management, The Principal and The faculty members** of Imayam Arts and Science College, Kannanur, for granting permission to conduct the research experiment and their co-operation.

I place my gratitude to the **Undergraduate Students** who took part for this research in the Imayam Arts and Science College for their co-operation to conduct my experiment in a successful way.

I should thank all the fellow **Ph.D Research Scholars** of this department for their timely help during the research work and their fruitful discussion.

I am grateful to **The Staff Members** at the department of **IECD**, Bharathidasan University, Tiruchirappalli for the crucial part they played in the development of the research.

Finally I am indebted to **my parents, wife, son and parent in laws**. It would have been almost impossible to complete this study without their wholehearted support, cooperation and encouragement throughout the research.

Thank you all.

C.HARIHARAN

Document Information

Analyzed document	Hariharan thesis.doc (D113091284)
Submitted	9/21/2021 12:54:00 PM
Submitted by	Srinivasa ragavan S
Submitter email	bdulib@gmail.com
Similarity	1%
Analysis address	bdulib.bdu@analysis.arkund.com

Sources included in the report

W	URL: https://link.springer.com/article/10.1007/s11145-018-9874-1 Fetched: 9/21/2021 12:55:00 PM		2
W	URL: https://www.researchgate.net/publication/343825107_Neurocognition_in_Education_Linking_college_teachers'_awareness_in_Neurocognitive_strategies_to_their_teaching_can_it_be_done Fetched: 9/21/2021 12:55:00 PM		11
W	URL: https://www.frontiersin.org/articles/10.3389/fmicb.2020.01496/full Fetched: 9/21/2021 12:55:00 PM		2
W	URL: https://worldwidescience.org/topicpages/t/teaching%2Blistening%2Bcomprehension.html Fetched: 8/11/2021 7:27:25 AM		3
W	URL: https://www.eduhk.hk/apfslt/v17_issue2/tassanee/page2.htm Fetched: 9/21/2021 12:55:00 PM		5
W	URL: https://www.frontiersin.org/articles/671134 Fetched: 9/21/2021 12:55:00 PM		1
W	URL: https://www.science.gov/topicpages/l/listening+comprehension+skill.html Fetched: 10/18/2019 8:33:59 AM		1
W	URL: http://mjltm.org/article-1-65-en.pdf Fetched: 5/8/2021 9:34:50 PM		4
W	URL: https://www.science.gov/topicpages/e/effective+reading+comprehension.html Fetched: 12/29/2019 5:17:11 PM		2
W	URL: https://ejournal.ukm.my/3l/article/download/37304/10719 Fetched: 3/19/2021 3:57:36 PM		1

CONTENTS

Chapters	Titles	Page No.
I	Introduction and Conceptual frame work	1
II	Review of Related Literature and Studies	24
III	Neurocognition Intervention Strategies for Developing English Language Skills	56
IV	Design of the Research	90
V	Experimentation	120
VI	Data Analysis and Interpretation	153
VII	Summary of the Findings, Discussion, Implications, Recommendations and Conclusion	230
	References	
	Appendices	
	Publications	

CHAPTER I

INTRODUCTION AND CONCEPTUAL FRAMEWORK

S.No.	Titles	Page No.
1.1	Introduction	1
1.2	Historical Backdrop	2
1.3	Reading Skill	5
1.4	Writing Skill	7
1.5	Relationship of Reading and Writing Skills	8
1.6	Problems in Reading and Writing Skills	12
1.7	Reading and Writing Skills Developing Strategies	13
1.8	Rationale of the Study	18
1.9	Chapterization	21
1.10	Conclusion	23

CHAPTER- II

REVIEW OF RELATED LITERATURE AND STUDIES

S.No.	Titles	Page No.
2.1	Introduction	24
2.2	Sources of Literature Review	24
2.3	Review of related studies –Division for Study	25
2.4	Substantiation of Descriptive or Narrative Reviews	27
2.4.1	Reviews on Importance of English and Language Skills	27
2.4.2	Reviews on Rural Students' Difficulties in English Learning	28
2.4.3	Reviews on Relationship of Reading and Writing	32
2.4.4	Reviews on Cognitive Neuroscience in Education	34
2.4.5	Reviews on Neurocognition in Language Processes & Development	35
2.4.6	Reviews on Impact of Brain Active Techniques in Teaching & Learning	37
2.4.7	Reviews on Neurocognition Strategies on the Development of Language Skills	41
2.4.8	Reviews on PASS Cognitive Processes and Reading Writing Developing Strategies	47
2.5	Conclusion	55

CHAPTER- III

**NEUROCOGNITION INTERVENTION STRATEGIES FOR DEVELOPING ENGLISH
LANGUAGE SKILLS**

S.No.	Titles	Page No.
3.1	Introduction to Neurocognitive Learning	56
3.2	Processes of Neurocognition in Teaching and Learning	57
3.3	An outset of Neurocognition Intervention Strategies on the Development of English Language Skills	58
3.3.1	Neurocognition Intervention	60
3.3.2	Neurocognition Strategies	63
3.3.3	PASS Theory of Cognitive Processes	71
3.3.4	PASS Theory Based Cognitive Processes Supporting Strategies	74
3.4	Desk Review for Developing the DAELS	79
3.5	Diagnosing the Problematic English Language Skills of Rural Areas' Undergraduate Students	79
3.6	Administration of the Diagnostic Assessment	80
3.6.1	Deficit of Language Skills among Rural Undergraduate Students	81
3.7	A Panoramic View of Ramganesh -Hariharan's Model for English Language Skills through Neurocognition Intervention Strategies	82
3.8	Empirical Symbiotic Validation of the Neurocognition Intervention Strategies to Develop English Language Skills	86

CHAPTER IV
DESIGN OF THE RESEARCH

S.No.	Titles	Page No.
4.1	Introduction	90
4.2	Objectives of the Study	91
4.3	Hypotheses of the Study	92
4.4	Statement of the Problem	94
4.5	Components of the Experimental Method	98
4.5.1	Research Variables	98
4.5.2	Operational Definition of the Key Terms	99
4.6	Research Design	100
4.6.1	Appropriateness of Experimental Design	102
4.6.2	Sample for the Study	103
4.6.3	Construction and Validation of the Tools	104
4.6.3.1	Diagnostic Test	105
4.6.3.2	Designing and Development of Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-1, 2 & 3)	108
4.6.3.3.	Validation of the Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-1, 2 & 3)	111
4.6.3.4	Attitude Scale towards English Language Skills (ASTELS)	112
4.7	Experimentation in Phases	114
4.8	Duration of the Experimentation	116
4.9	Conduct of the Experimental Research	118
4.10	Conclusion	119

CHAPTER V
EXPERIMENTATION

S.No.	Titles	Page No.
5.1	Introduction	120
5.2	Validity of the Experimentation	121
	Pre-Test on the Entry Behavior of the Undergraduate Students in English	126
5.3	Language Skills.	
5.4	Experimentation with “Neurocognition Intervention Strategies”	127
5.5	Development of Model Lesson Plans	132
5.6	Conclusion	152

CHAPTER VI
DATA ANALYSIS AND INTERPRETATION

S.No.	Titles	Page No.
6.1	Introduction	153
6.2	Descriptive Analysis	154
6.3	Differential Analysis	173
6.4	Qualitative Analysis: Case Analysis	221
6.4.1	Selection of Cases	221
6.4.2.	Analysis of Case One	222
6.4.3.	Analysis of Case Two	224
6.5	SWOC Analysis	226
6.6	Conclusion	229

CHAPTER - VII
SUMMARY OF THE FINDINGS, DISCUSSION, IMPLICATIONS,
RECOMMENDATIONS AND CONCLUSION

S.No.	Titles	Page No.
7.1	Introduction	230
7.2	Summary of Findings Based on the Objectives	231
7.2.1	Findings of Quantitative Analysis	231
7.2.2	Findings of Qualitative Analysis	237
7.3	Discussion	238
7.4	Recommendations and Educational Implications of the Present Study	243
7.5	Recommendations for Policy Decisions	245
7.6	Suggestions for the Further Research	246
7.7	Conclusion	248

LIST OF TABLES

Table	Titles	Page No.
3.T.1	Components of English language skills and PASS theory based Cognitive processes Supporting Strategies	75
3.T.2	Selected Components of English language skillsfor DEALS	80
3.T.3	Selected topics for Competitive Exam based English language skillsfrom DEALS	82
3.F.4	Ramganesb - Hariharan's Model for English Language Skills through Neurocognition Intervention Strategies	84
4.T. 1	The Blue Print to CEBELSAS-1, 2 & 3	110
4.T. 2	Duration of the Experimentation	117
5.T.1	Showing the threats to Internal Validity and Control Measures Taken	122
5.T.2	Showing the threats to External Validity and Control Measures Taken	125
6.T.1	The rural undergraduate students' achievement in the diagnostic assessment in English language skills with reference to topics	155
6.T.2	Descriptive analysis of Control group and Experimental group scores on English language skills in the pre test, post test, delayed post test	157
6.T.3	Descriptive analysis of Control group and Experimental group scores on Dimensions wise English language skills in the pre test, post test, delayed post test	160
6.T.4	Mean and SD of the control and experimental group on English language skills performance with reference to reading and writing components	165
6.T.5	Mean and SD of the Control and Experimental groups on competitive exam based English language skills performance with reference to Questions	169
6.T.6	Comparison of mean scores of Control group and Experimental group in the pre – test in English language skills	173
6.T.7	Comparison of mean scores of Control group and Experimental group in the post test in English language skills	175
6.T.8	Comparison of mean scores of English language skills of Control group in the pre-test and the post-test.	176
6.T.9	Comparison of mean scores of English language skills of Experimental group in the pre-test and the post-test	179
6.T.10	Comparison of mean scores of Control group arts and science students in	181

	the pre test of English language skills	
6.T.11	Comparison of mean scores of Control group arts and science students in the post- test of English language skills	183
6.T.12	Comparison of mean scores of Experimental group Arts and Science students in the pre-test of English language skills	184
6.T.13	Comparison of mean scores of Experimental group Arts and Science students in the post-test of English language skills	186
6.T.14	Comparison of mean scores of Control and Experimental group arts students in the post-test of English language skills	188
6.T.15	Comparison of mean scores of Control and Experimental group Science students in the post-test of English language skills	190
6.T.16	Comparison of mean scores of control group first generation undergraduates and their counterparts students in the pre-test of English language skills	191
6.T.17	Comparison of mean scores of control group first generation undergraduate and their counterparts students in the post-test of English language skills	193
6.T.18	Comparison of mean scores of Experimental group first generation undergraduates and their counterparts students in the pre-test of English language skills	195
6.T.19	Comparison of mean scores of Experimental group first generation undergraduates and their counterparts students in the post-test of English language skills	197
6.T.20	Comparison of mean scores of Control and Experimental group first generation undergraduates students in the post-test of English language skills	198
6.T.21	Comparison of mean scores of Control and Experimental groups' counterparts of the first generation undergraduates in the post-test of English language skills	200
6.T.22	ANOVA for Comparison of mean scores in father's educational qualification with respect to English language skills of undergraduate students in the Control group in the post test	202
6.T.23	ANOVA for Comparison of mean scores in father's educational qualification with respect to English language skills of undergraduate students in the Experimental group in the post test	203
6.T.24	ANOVA for Comparison of mean scores in Mother's educational qualification with respect to English language skills of undergraduate students in the Control group in the post test	204

6.T.25	ANOVA for Comparison of mean scores in Mothers' educational qualification with respect to English language skills of undergraduate students in the Experimental group in the post test	205
6.T.26	Comparison of mean scores of control group students between the post-test and the delayed post test	206
6.T.27	Comparison of mean scores of Experimental group students between the post-test and the delayed post test	208
6.T. 28	Comparison of mean scores of control group and Experimental group in the delayed post test	210
6.T.29	Control group : Pre-test correlations between attitude towards English language skills and competitive exam based English language skills	212
6.T.30	Control group: Post-test correlations between attitude towards English language skills and competitive exam based English language skills	212
6.T.31	Experimental group: Pre-test correlations between attitude towards English language skills and competitive exam based English language skills	213
6.T.32	Experimental group: Post-test correlations between attitude towards English language skills and competitive exam based English language skills	214
6.T.33	Association between Neurocognition Intervention Strategies and the components of attitude of Experimental group in the pre-test	215
6.T.34	Association between Neurocognition Intervention Strategies and the components of attitude of Experimental group in the post-test	217
6.T.35	Regression Analysis for Experimental group in the post-test with different components of attitude towards English language skills	218
6.T.36	Achievement of Case one in CEBELSAS	222
6.T.37	Achievement of Case one in Components wise obtained scores	223
6.T.38	Achievement of Case Two in CEBELSAS	224
6.T.39	Achievement of Case one in Components wise obtained scores	225

LIST OF FIGURES

Figure	Titles	Page No.
2.F.1	Information Collected through Reviews	26
3.F.1	Three functional units and Associated Brain structures	72
3.F.2	Three Functional Units and Cognitive Processes	72
3.F.3	PASS theory based cognitive process	73
4.F.1	Research Design	101
4.F.2	Phases of the Experimental Research	119
6.F.1	Comparison of mean scores of Control group and Experimental group scores on English language skills in the pre test, the post test and the delayed post test	160
6.F.2	Descriptive analysis of Control group and Experimental group scores on Dimensions wise English language skills in the pre test, the post test, and the delayed post test	165
6.F.3	Comparison of Mean scores of the control and experimental group on English language skills performance with reference to reading and writing components	168
6.F.4	Difference among the means of pre-test, the post-test and the delayed post-test in the control group scores in the competitive exam based English language skills with reference to questions.	171
6.F.5A	Difference among the means of pre-test, the post-test and the delayed post-test in the Experimental group scores in the competitive exam based English language skills with referenceto questions	171
6.F.5B	Difference among the means of Control group and Experimental group scores in the post test of the competitive exam based English language skills with reference to questions	172
6.F.6	Comparison of mean scores of Control group and Experimental group in the pre – test in English language skills	174
6.F.7	Comparison of mean scores of Control group and Experimental group in the post test in English language skills	176
6.F.8	Control group undergraduate students' competitive exam based English language skills	178
6.F.9	Experimental group undergraduate students' competitive exam based English language skills	180
6.F.10	Comparison of mean scores of Control group arts and science students in the pre test of English language skills	182

6.F.11	Comparison of mean scores of Control group arts and science students in the post- test of English language skills	184
6.F.12	Comparison of mean scores of Experimental group Arts and Science students in the pre-test of English language skills	185
6.F.13	Comparison of mean scores of Experimental group Arts and Science students in the post-test of English language skills	187
6.F.14	Comparison of mean scores of Control and Experimental group arts students in the post-test of English language skills	189
6.F.15	Comparison of mean scores of Control and Experimental group Science students in the post-test of English language skills	191
6.F.16	Comparison of mean scores of control group first generation undergraduates and their counterparts students in the pre-test	192
6.F.17	Comparison of mean scores of control group first generation undergraduates and their counterparts students in the post-test	194
6.F.18	Comparison of mean scores of Experimental group first generation undergraduates and their counterparts students in the pre-test	196
6.F.19	Comparison of mean scores of Experimental group first generation undergraduates and their counterparts students in the post-test	198
6.F.20	Comparison of mean scores of Control and Experimental group first generation undergraduate students in the post-test	200
6.F.21	Comparison of mean scores of Control and Experimental groups' counterparts of the first generation undergraduate students in the post-test	202
6.F.22	Comparison of mean scores of control group students between the post-test and the delayed post test	208
6.F.23	Comparison of mean scores of Experimental group students between the post-test and the delayed post test	210
6.F. 24	Comparison of mean scores of control group and Experimental group in the delayed post test	211
6.F. 25	Components wise obtained scores: Case-1	223
6.F. 26	Components wise obtained scores: Case-2	225
6.F.27	Neurocognition Intervention Strategies for Language Learning- SWOC Analysis	228

CHAPTER – I

INTRODUCTION AND CONCEPTUAL FRAMEWORK

1.1 Introduction

Language is a valuable endowment of nature which has given essence to human beings. It makes one's life colourful and tasteful. Language connects human beings with each other and also connects with the existing world. According to Sapir (1949) language is purely human and non-instinctive method of communicating ideas, emotions and desires by means of a system of voluntarily produced symbols. "A language is a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements" says Chomsky (1957). It means each sentence has a structure. Human brain is competent enough to construct different sentences from out of the limited set of sounds or symbols belonging to a particular language. Human brain is so productive that, at any time a child can produce a sentence that has never been said or heard earlier. Wardaugh (1972) defined language as a system of arbitrary vocal symbols used for human communication. Robins (1985) believed that the supremacy of language is a symbol system based on pure or arbitrary conventions... infinitely extendable and modifiable according to the changing needs and conditions of the speakers. These definitions prominently point out that language is a system. Sounds join to form words according to a system. Words join to form sentences according to some system. It is in this sense that language is said to be a system of systems. It makes language a very complex phenomenon. Every human being has to master the conventions of the language, he or she learns before being able to successfully communicate with other members of the social group (Syal& Jindal, 2018).

Everything that distinguishes human beings from animals depends on language only. Today, language is a medium of literature, science and technology, computers and cultural exchanges among social groups; it is the most powerful, convenient and permanent means of communication in the world. By using language, a person can win the heart of others. With the same language, he/she can lose his/her dignity in the society. This

assumes a special significance for the language education in a multilingual country like India which has a repertoire of languages and language varieties. English plays a vital role in the recent context of globalization and liberalization in economy and technology around the world. People often talk about English as a global language or *lingua franca* (Abilasha&Ilankumaran, 2018; Him, 2018; Latha, 2018) and moreover it is vital instrument of communication in the world. So, the educational planners give importance for English which will ensure India in worldwide recognition (Mowla, et al. 2012).

A study carried out in the Indian context by Vijayalakshmi & Babu (2014) revealed that nobody had tried to change the literature based system of English. English was studied mainly for administration. Unfortunately, developments in science, technology, travel, trade, communications and entertainment, English got a new role as an international language. A lot of studies showed that (Chalasani, 2020; Uppe, Raghuram & Latha, 2019; Sharma, 2019; Mahapatra & Mishra, 2019; Him, 2018; John et al., 2017; Ahmed, 2015; Mishra, 2015; Gomathi, 2014) English language is necessary to learn all the four skills listening, speaking, reading and writing for communication. Thus, the present research has attempted to develop the English language skills among undergraduate students.

1.2. Historical Backdrop

WENR (Wold Education News + Reviews) Education in India (2018) reported that India is a rapidly changing country in high-quality education which is importance for our future prosperity. Our country has the largest youth population in the world such as 600 million young people under the age of 25 cited in (Trines, 2018). Utilising the available plentiful human resources in a fruitful way is the major challenge of the government. The 2011 Census reported that English is the first language or mother tongue for 2.5 lakh people, the second language for nearly 83 million people, and the third language for another 45.5 million people. Totally 135 million Indian people are speaking English. At present, English is a major communicative language in India and international levels. It is also a commonly used language in offices, business, industry, space travel, air traffic

control, transport, preparation of professionals like Doctors and Engineers and in academic research specifically in the fields of science and technology (Mathews, 2018; Anisaa & Hameed, 2016; Vijayalakshmi and Babu, 2014). Also it is an international language in the Constitution, the Supreme Court, the High Court, and official departments. Therefore, English is a link language in the world (Abilasha & Ilankumaran, 2018; Mowla et al., 2012; sharma, 2007). Present Indian Education system has increased the importance of English language in the entire field, for the reason that international universities often utilize English as the mutual way for learning and communication. All the prestigious schools, colleges and universities utilize English as their medium of instruction. Today, vocations in the field of science and technology, business and trade require a decent learning of English (Chalasani, 2020). For that reason employers need to see English as a key employability skill for job promotion and higher earnings (Uppe et al., 2019). British council report (2020) revealed that English language skills provide life-changing opportunities, and promote prosperity and security around the world to become ‘inextricably linked in academic circles along with the media through English language education. Emerging economies and developing countries like India recognize to produce large numbers of skilled graduates who can communicate in English. A focus on language skills is integrated in curriculum for English from primary education to higher education which makes jobs, economic opportunity and wealth creation.

English language plays a vital role in communication particularly multilingual countries like India. Every people should try hard to acquire good communication skills which are important for his/her career (Sharma, 2019; Gomathi, 2014). Abilasha & Ilankumaran (2018) revealed that one who is not having English knowledge will feel like handicapped and helpless in his / her day to day life. English communication skills in rural India need a lot of overhauling. Hossain, (2016) revealed that there is a difference in performance of English language among students in rural and urban areas with the contributing factors such as family factors, financial factor, logistic support, less qualified teachers, and adequate books. Sharma (2019) pointed out that to make our India glorious, it

is important to create well educated graduates in rural. English can play an important role in the development of rural areas. Learning and speaking of English language can create new jobs for graduate in rural areas and it helps them to contribute their part in the development of our country (Chakraborty & Bakshi, 2016; Clement & Murugavel, 2015). A sound knowledge in English for the graduate in rural areas is also a very important aspect for our country's development. English is teaching as a second language in India but there is a great difference between the urban and the rural students in adapting that language. The urban students are given a lot of methods to learn English with ample facilities and special training in college to improve their Listening, Speaking, Reading and Writing skills. At the same time, rural students have only limited exposure to learn English (Hossain, 2016). Similarly, Gomathi, (2014) acquainted that language learning is a skill that can be perfected only through constant practice and continuous exposure to the target language. Especially, there is a great difference between the urban and the rural students to acquire English. Most of the rural colleges provide the training purely theoretical and book based. Hence, English is taught only in the exam point of view (Gomathi, 2014). Therefore, even after twelve years of learning the English language is as a subject, the graduate students stumble or hesitate to communicate in English. And most of the general tests in administrative and the job-related exams conducted in India has English competitive exam. But the graduates have face difficulties in English competitive exam (Chalasani, 2020). Similarly, another one study Fareed et al., (2016) findings revealed that the major problems in writing. ESL undergraduate learners have insufficient linguistic proficiency (vocabulary, grammar, and syntax) writing anxiety, lack of ideas, reliance on L1 and weak structure organization. And also they provide some challenges which are influenced by different factors such as untrained teachers, ineffective teaching methods, lack of reading and writing practice, large classrooms, low motivation and lack of ideas. Uppe et al., (2019) revealed that the reading ability is necessary to access in printed resources and in internet then only they can receive employability in the modern world. Number of studies (Sharma, 2019; Rajan, 2019; Benet, 2018; Ponmozhi & Thenmozhi,

2017; Hossain, 2016; Mishra, 2015) exposed that rural students are poor in English learning; at the same time some studies (Jennifer & Ponniah, 2019; Sajid & Kassim, 2019; Liu, 2018; Arthi & Srinivasan, 2018) revealed that reading skills develop other language skills such as writing and speaking. Therefore, the researcher has attempted to develop the English language skills especially reading and writing skills among undergraduate students who are in rural areas.

1.3 Reading Skill

According to Burns and Griffin, (1998) “Reading is a complex developmental challenge that we know to be intertwined with many other developmental accomplishments: attention, memory, language, and motivation.” And also they revealed that reading is not only a cognitive psycholinguistic activity but also a social activity. Course (2017) reported that reading is a skill in which a reader works together with the text in order to reach understanding of the message relying on existing textual clues together with previous knowledge. In the act of reading, readers try to comprehend the message by bringing their experiences, emotions and background knowledge into reading context.

Sajid & Kassim (2019) pointed out that reading plays a vital role in learning and to improve the learners’ reading attitude. Aloud reading strategy could be helpful for learner to make them active. Many research studies show that reading is a skill that should be taught from the early stages (eg. Mancilla-Martinez et al., 2019; Nikolopoulou et al., 2019; Yaseen, 2019; Kikas et al., 2018; Teo et al., 2016) to higher education (e.g., Sajid & Kassim, 2019; Arthi & Srinivasan, 2018; Liu, 2018; Sapitri & Amin, 2018). Various studies revealed that reading is a suitable strategies to develop the second language skills such as fluency (Sadaffunisha and Vijayakumar, 2020; Kikas et al., 2018), phonological awareness (Tijms, Pavlidou & Hoette, 2020; Fracasso, Bangs & Binder, 2016), morphological awareness (Tijms et al., 2020; Ghasemi & Vaez-Dalili, 2019; Maria, 2019; Metsala et al., 2019; Fracasso et al., 2016), vocabulary (Maria, 2019; Liu, 2016), grammatical knowledge (Budak & Reeves, 2019; Sun, 2017), literary awareness (Sajid &

Kassim, 2019; Ceylan, 2016) and comprehension (Yaseen, 2019; Kikas et al., 2018). Some of the researchers (Tursunovna, 2019; Arthi & Srinivasan, 2018; Wijaya, et al., 2018; Carillo, 2017; Fareed et al., 2016) revealed that reading is a complex process and students usually have difficulties in constructing the meaning from the writing text.

Gowri & Ilankumaran (2018) pointed out that reading is a decoding process. Learners use strategies for developing the reading. Reading is a skill which uses knowledge to obtain ideas and information. It is a complex skill to relate a number of simultaneous operations. It is a unique importance in the life of a human being and plays a vital role in students' learning process (Ardiansyah & Ujihanti, 2018). Recent theoretical studies (Amin, 2019; Keezhatta & Omar, 2019; Arthi & Srinivasan, 2018; Johnson, 2018) have shown that reading is a very necessary skill for the students to develop their higher order thinking.

Akyol, Çakiroğlu, & GülKuruyer, (2014) in their study revealed how to acquire the effective reading skills through correct perception, sound recognition, word recognition, word discrimination, semantics, syntax, linguistic processes and comprehension. The effective usage of these skills in a reading supports the readers to understand the text. Yıldırım (2010) points out that the success of the reading process is determined through reading attitude, reading purpose, textual structure, prior knowledge about the text, vocabulary knowledge; comprehension is determined by the interaction of the reader with the text cited by Akyol et al., (2014). Bapitha & Gunasekaran (2019) point out that some of the factors are very important for developing the speed of the reading skill such as background knowledge, motivation, interest, organization of the texts and study skills.

Grabe (1991 cited in Rajab et al., 2017) stated that readers must believe fluency does not happen immediately. Fluency in reading is achieved by continuous effort and gradual development through different strategies. Good readers must have the ability to understand, evaluate and synthesize a text while reading other sources. Similarly, Sadaffunisha and Vijayakumar (2020) found that the repeated reading tasks and fostering

good reading habits enhanced the students reading fluency. Kim et al., (2017) pointed out that the supplemental reading program involved in instruction to support word-reading skills, fluency, vocabulary, comprehension, and peer talk to promote reading engagement and comprehension. Elhassan, Crewther & Bavin (2017) investigated that the contribution of phonological awareness of reading fluency and its sub-skills in reading. The result of the study revealed that phonological awareness influenced the reading fluency development. Several empirical studies found that undergraduate students who are studying English as a second language have difficulties in reading and its sub-skills such as vocabulary, grammatical knowledge and reading comprehension. So, the researcher has selected some of the specific reading skills to develop English language among the undergraduate students from rural areas.

1.4 Writing Skill

According to Tulgar (2018) writing is a productive skill which can be described as the process of conveying information in the form of written symbols. Writing is a skill; it is combined with thinking, analysis, organization and production. It can be difficult as it entails the successful combination of linguistic and cognitive skills. Sermsook et al., (2017) stated that writing in English is perceived as the most difficult skill among the four skills of the language. Even a native speaker fails to write a well manner of writing (Kukurs, 2012) cited in (Sermsook et al., 2017).

According to Raimes (1983) writing is also known as a creative process because it is the process of reaching out for one's idea and discovering them. A well manner of writing always depend upon standard forms of grammar, choice of words with syntax, good mechanics of writing, organization of paragraph, and content cited in (Yusuf et al., 2019). The writer's purpose read to be clear, fluent and effective. Writing is an important skill among English language skills to be mastered in English to acquire writing competence (Al-Jarrah et al., 2019).

A number of recent research studies have been conducted on writing in the ESL/EFL context. The studies revealed that learners face various difficulties in writing English such as paragraphs (Al-Ghabra & Najim, 2019; Alharbi, 2019), essays (Ayana, 2020) research paper writing (Tuyena et al., 2019), and thesis or project (Jiang & Yan, 2020; Qasem & Zayid, 2019). They identified the types of errors made by ESL/EFL learners in their different writing, including Spelling (Farooq et al., 2020; Altamimi & Ab Rashid, 2019), vocabulary (Ahmed & Mani, 2020; Rungsinanont, 2020; Afzal, 2019), grammar (Ahmed & Mani, 2020; Farooq et al., 2020; Khalil, 2020), writing sentences (Agor, J. 2018; Rustipa, 2017; Sholeha et al., 2019) and categorize those errors, so they could be accurately corrected. Hussain (2019) revealed that the performance of language development in subject is to improve writing skills. A text of an effective ESL writer must be cohesive, logical, clearly structured, interesting and properly organized with a wide range of vocabulary and mastery of conventions in mechanics of writing skill (Al-Ghabra, & Najim, 2019). A lot of empirical studies (Al-Ghabra & Najim, 2019; Malik and Din, 2019; Saleh, 2019; Karakoç & Köse 2017) revealed that the sub-skills of writing such as vocabulary, grammatical knowledge and mechanics of writing in English helped the students writing skills. Thus, the researcher has selected some of the specific writing skills to develop English language among the undergraduate students who are from rural areas.

1.5 Relationship of Reading and Writing Skills

According to Carson & Leki (1993) reading is always the basis for writing. Hirvela (2004) pointed out that knowledge of writing informs the ability to read. These authors revealed that the interrelationship of reading and writing skills are supported one another. In 1980s some of the researchers defined reading is an interpretive act similar to writing (eg. Berthoff, 1982; Salvatori, 1983; Bartholomae & Petrosky, 1986; 1987; Horning, 1987) cited in (Carillo, 2017). These researchers, who wrote effectively about reading addressed these two (reading & writing) practices together. They described both as a forms of inquiry and ways of making meaning. Carson & Leki (1993) stated that reading and writing are equally essential processes of a literary event in which the most important product is not

the writing, but the meaning that has been created by the reader through writing from both comprehending and composing text. Hirvela (2004 cited in Choi et al., 2018), both reading and writing abilities build in rhetorical structure and linguistic characteristics with lexical and stylistic features of written discourse. The relationships of these two skills have shown consistent of correlation results. There is a huge portion of each skill that remains unexplained, especially second language (L2) writers' significant factors of proficiency (Pae, 2019). While reading, the reader acquires writing competency such as content, vocabulary, spelling and grammar for writing ability (Jennifer & Ponniah, 2019). Several number of recent studies have been conducted in the relationship between reading and writing in different perspectives (Jouhar & Rupley, 2020; Atayeva et al., 2019; Jennifer, & Ponniah, 2019; Ilahiyah et al., 2019; Pae, 2019; Schoonen, 2019; Jennifer & Ponniah, 2018; Schubert, Reilhac & McCloskey, 2018). The majority of the studies based on educational context concerned with the efficiency in reading and writing. The faithfulness of teaching is always involved to develop these two abilities.

A vast number of studies have shown that a teacher motivates the learners to actively participate to develop reading and writing skills in classroom context, because, these two skills increase the knowledge of the learner (eg. Ilahiyah et al., 2019; Schoonen, 2019; Choi, et al., 2018; Hidayanti & Gunawan, 2018; Tulgar, 2018; Xiao & Lynch, 2017; Varisoglu, 2016; Durukan, 2011). Shanahan and Lomax, (1988) framed theoretical relationship between writing to reading and the reading to writing model. Followed this study, recent work has been developed in extended way by Heeney (2015). He revealed that there are three hypothetical models of the reading and writing link such as 1) Reading-to-write, 2) Writing-to-read and 3) writing-to-learn. Berninger et al. (1994) pointed out a number of significant relationships between reading and writing drew a common cognitive system, for example motor system, orthographic, phonological and working memory systems as well as verbal intelligence. The result of the study revealed that reading and writing used in the common systems of the language skills. Noted on the previous study, Abbott et al. (2010) revealed that the reading and writing develops the two cohorts of the

students. This study is taken to develop the reading ability among the students. Yet, it also explains students' progress in writing ability. Similarly, Rastle (2019) argued that the nature of the reading system is a reflection of the writing system. He stated that a deep understanding of reading can be obtained through a deep understanding of written language. Atayeva et al., (2019) investigated how college students' reading skills affect the students' academic writing. The study revealed that reading and writing are the necessary skills of the students to obtain success academically.

Empirical research and numerous recent meta-analyses showed that the additional reading experiences influence writing quality and production. Jouhar & Rupley (2020) revealed that much of the known impact of systematic reading instruction (i.e., instruction of phonological awareness, phonics, and reading comprehension strategies) is based on writing performance. They conducted a systematic review including 13 experimental studies published in between 1970 and 2019. These studies have investigated purposely to find out the impact of reading on writing performance and writing on reading comprehension. The findings of the study suggest that reading increases the whole quality of descriptive and narrative writing and enhances the output, mechanics, spelling accuracy, content, grammatical accuracy, and text organization. However, the independent reading is failed to enhance vocabulary. Similarly, Graham et al. (2018) have investigated a reading-to-writing meta-analysis that incorporated 89 experimental studies to examine the effect of prepared reading instruction on writing performance. The study stated that systematic reading instruction improved writing performance on the measures of whole writing quality, writing output (number of words written), and spelling with an average weighted Cohen's *d* effect size of 0.63 (only twelve studies related), 0.37 (only five studies related) and 0.56 (only forty studies related) respectively. The result of the study recommended a medium effect of systematic reading instruction on the overall writing quality, spelling and a less effect on writing output for the students.

Reading and writing depend on similar in cognitive processes, so insights in one area can lead to insights in the other. Building this connection explicit will aid learners'

skill development, donate to their awareness about language, and improve their retrieval of text forms and meanings (The National Research Council and DBASSE, 2012). Another one recent study, Schoonen (2019) revealed that cognitive models of reading can be compared with similar models of writing. Reading has been studied in different disciplines together with education such as English (language), cognitive psychology, neurocognitive science and composition studies. Very few works on reading in these fields offer the writing center community a sense of the difficulties around reading (Carillo, 2017). Rastle (2019) points out that acquisition of reading skill is transmitted through writing information represented through an accumulation of instruction and text experience. Therefore, reading and writing relationship is very important to develop the language skills. So, in the present study, the researcher attempts to harmonize with the scholarly studies in a belief that the two skills are associated with brain functions and structures. The researcher provides some of the evidences from neuroimaging studies which support these theoretical assumptions. For instance, Pugh et al. (2001) found an overlap in the activation of specific brain regions during reading and writing. Longcamp et al., (2016) investigated that brain imaging contribute to acquire knowledge of both the brain's role in writing and the relationships between writing and reading. A neuroimaging study has been conducted by Richlan (2020). The findings of the study linked with orthography-dependent behavioral manifestations of developmental dyslexia and provided an insight into potential compensatory mechanisms that may support remediation across reading and writing systems. James and Engelhardt (2012) found that after handwriting experiences the brain activates neural networks and also it useful to develop reading. Cao & Perfetti (2016) have investigated cross-linguistic comparisons of the neural correlates of reading and writing in the left middle frontal gyrus (MFG), which is more involved in Chinese and English. The major finding revealed that writing regions are also activated in reading, and also reading-writing connection is modulated by the learning experience. However, Choi et al., (2018) reported that the exact nature and characteristics of reading-writing relationship should be developed through interventions. Hance the researcher intends to identify the relationship

of reading and writing's nature and characteristics from various studies mentioned above. It is concluded that the value of reading together with writing enhances the language skills.

1.6 Problems in Reading and Writing Skills

Recent research has begun to describe the heterogeneous reading and writing challenges faced by undergraduate students. Most of the recent research has focused on reading skill. It suggests that a large proportion of undergraduate students exhibit reading comprehension difficulties (Fogarty et al., 2020; Vaughn et al., 2019; Mukhlif & Amir, 2017; Ntereke & Ramoroka, 2017; Qrgez & Ab Rashid, 2017; Alghail and Mahfoodh, 2016). However, reading comprehension is a well-known difficulty for undergraduate students in word decoding and reading fluency (Bauer-Kealey & Mather, 2019). Most important reasons for these ongoing challenges with reading skills are related to the commonly observed vocabulary knowledge, content knowledge acquisition and content reading comprehension (Fogarty et al., 2020; Vaughn et al., 2019; Karakoç & Köse 2017). Another one study, Alghail & Mahfoodh (2016) found out that undergraduate students have difficulties in reading comprehension such as taking brief relevant notes, using own words in note taking, working out meaning of words, identifying supporting ideas, to get overall meaning by quick reading, to find out information through quick reading, understanding specialist vocabulary, understanding and organisation of a text, identifying the key ideas, and carefully reading to understand a text.

Alghail and Mahfoodh (2016) have investigated Malaysian university students to find out the most critical problems in reading such as paraphrasing, note-taking, supporting ideas and managing the time for the reading test. Samad, et al., (2017) conducted a study to find the difficulties of TOEFL students. The finding of the studies revealed that the main idea of the passage, recognizing the ideas, lack of vocabulary, ability to search the specific information, the tone, and the purpose or course have more difficulties. Another one study, Ntereke & Ramoroka (2017) investigated among first-year undergraduate students at University of Botswana. In this study, they found out that the students felt difficulties in to

recognizing the main ideas and details, reading techniques (skimming and scanning), strategies for independent critical and analytical reading, review strategies – that is, SQ3R system and ways of making notes – outline, summarising, mapping.

Tong & McBride (2016) revealed that the deficiencies of phonological awareness, morphological awareness, vocabulary knowledge, and syntactic awareness are associated with reading comprehension and writing composition skills' difficulties. Additionally, spelling, vocabulary knowledge, and discourse textual features (i.e., cohesion and text organization) influence reading comprehension skills (Abbott et al., 2010) cited in (Jouhar & Rupley, 2020).

Rozimela & Wahyuni (2019) have indicated that the college students have various writing problems in developing and organizing their ideas even though their texts contained the components of the generic structure. Also, they revealed that the students have complex grammatical problems. The result of the study has shown a gap between the students' perceived needs, their learning preferences, and their writing ability. Samad, Jannah & Fitriani (2017) revealed that the language learners could utilize any strategies to comprehend the texts. Reading strategies are very important; it is not only for the successful comprehension of the text but also to overcome any reading problems. Therefore, the present study addresses that there is a need for research in reading-writing, if the undergraduate students have difficulties in language skills and their sub-skills (reading and writing).

1.7 Reading and Writing Skills Developing Strategies

According to Block, (1986) reading strategies indicate how readers conceive a task, what textual cues they have to attend, how they make sense of what they read, and what they do when they do not understand cited in (Song, 1998). Graesser (2007) defined that the reading strategies in cognitive or behavioral action that is enacted under related conditions with the aim to develop a few characteristics of comprehension cited in (Koukourikou et al., 2018). Reading and writing are very important literacy skills which

have several aspects in common (Zaidi & Malik, 2018). Malik and Din (2019) revealed that cognitive aspects of both reading and writing skills require “planning and goals setting, asking question, making connection, tapping prior knowledge, constructing the gist, revisiting the meaning, monitoring, reflecting, relating and evaluating”. Amin (2019) pointed out that reading is very beneficial to help students and develop the structure of the text, to improve literacy performances and gain more insight to create their own text. Ilahiyah et al., (2019) stated that reading a variety of genres helps the students’ learning the text structures and transfer the language in their writing. Therefore, reading stimulates the learners’ prior knowledge and makes the learners to apply in their writing.

According to Tierney, et al., (1989) writing skill is a complex cognitive skill because it requires the learners to utilize proper intellectual skills, cognitive strategies, verbal information, language rules, and opposite motivation cited in (Yusuf et al., 2019). Abas & Abd Aziz (2017) pointed out writing strategy varies from writing process. Writing process is a personal activity commonly known as four major classifications: planning, drafting, revising and editing. Hence, effective readers deliberately implements conscious utilization in writing techniques to improve their writing.

Lot of studies with various groups of students in EFL (English as Foreign Language), ESL (English as Second Language) and L1 (First Language) revealed that there is a direct relation between reading and writing skills in developing strategies. Tong & McBride (2016), Varisoglu (2016), Xiao & Lynch (2017), Choi et al., (2018), Hidayanti & Gunawan (2018), Jennifer & Ponniah (2018), Mahadi et al., (2018), Wijaya, et al., (2018) Zaidi & Malik (2018), Atayeva et al., (2019), Pae (2019), Rahimi & Farjadnia (2019), Saleh (2019), Schoonen (2019), Jouhar & Rupley (2020) have conducted prominent studies in the last five years on this topic and reported similar findings that reading develops the writing skills. Most of the studies mentioned above is related with reading and writing through various teaching learning strategies. Hayes and Flower (1980) proposed that the cognitive model of writing which consists of three core processes such as planning, translating, and reviewing. The processes of translating and reviewing are

constrained by multiple low level and high level linguistic of cognitive skills (Berninger et al. 1991) cited by (Tong & McBride, 2016).

Lot of research has been suggested that to teach learners to engage in the processes used by learners improve their reading comprehension and writing composition. Teaching multiple strategies has been common in ELS / ELF in classroom instructions, such as constructivism, (Uopasai et al, 2018), reciprocal teaching (Kamdideh et al., 2019), cooperative strategic learning (Kamdideh et al., 2019; Yusuf et al., 2019; Hidayanti & Gunawan, 2018; Varisoglu, 2016; Durukan, 2011), implicit and explicit teaching strategies (eg. Williams, 2020; Liew, et al., 2018; Huang et al., 2017; Williams & Rebuschat, 2016), concept mapping (Ahmed, 2020; Aref & Mojavezi, 2019; Dehdari, 2019; Zarei & Feizollahi, 2018; Shakoori et al., 2017), Brainstorming (Abedianpour & Omidvari, 2018; Sari, 2018; Zarei & Feizollahi, 2018; Sharafi-Nejad et al., 2016) and metacognitive strategies (Cherrier et al., 2020; Al-Jarrah et al., 2019; Uopasai et al, 2018). Teaching a less number of strategies explicitly has proven to be the most effective thing to develop reading and writing.

The effectiveness of different language teaching and learning strategies has been demonstrated in several empirical studies. Oxford (1990) classified language learning strategies into two major categories: direct learning strategies and indirect learning strategies. Direct learning strategies consist of three aspects: memory strategies, cognitive strategies and compensation strategies. Indirect learning strategies include in three aspects: metacognitive strategies, affective strategies and social strategies cited in (Xiao & Lynch, 2017). Durukan, (2011) pointed to certain strategies as particularly powerful, including guessing meaning from context, monitoring & self-correcting, contextualization, cooperative reading, summarizing main ideas, and thinking about the types of questions to be answered. Gotseva (2017) examined through Ullman's DP model based second language acquisition by using explicit, implicit, triggering and cognitive association to improve the language skills such as listening, speaking, reading and writing. Other strategies have also been shown to be useful, such as Visual attention (Liao, Kruger, &

Doherty, 2020; Tine, 2014), decoding (Kendeou, Papadopoulos & Spanoudis, 2015), top down & bottom up perception (Mittal et al., 2020; Ganchev, 2020; Soomro, Khan & Younus, 2019; Suraprajit, 2019; Oliver & Young, 2016), rehearsal (Aref & Mojavezi, 2019; De Cates et al., 2017; Smalle et al., 2017), connecting logical sequence (Singh & Pauranik, 2017), Visualizing-Organizing (Liao et al., 2020; Tine, 2014; MohdYussof et al., 2012), retention (Aref & Mojavezi, 2019), interactive activity (Sadaffunisha and Vijayakumar, 2020), semantic representation (Akyol et al., 2014), feedback (Malik and Din 2019; Altalhab, 2018; Smalle et al., 2017; Singh & Pauranik, 2017), evaluation (Malik, and Din, 2019). The strategies deemed most effective.

Various findings have been shown that teaching and learning strategies lead to increasing English learning (e.g. Williams, 2020; Aref & Mojavezi, 2019; Al-Jarrah et al., 2019; Abedianpour & Omidvari, 2018), and it can enable the students to become more autonomous, and a lifelong learners. Alharbi (2019) stated that the lack of good strategies in teaching and learning among EFL/ESL students have been the causes of poor performance in English language skills. There are a number of strategies that have been propounded for effective teaching and learning of the language skills such as reading, writing skills which included the visual attention, collaborative, explicit and implicit teaching strategies, brainstorming, scaffolding, decoding, rehearsal, retention, feedback, evaluation etc.

Saleh (2019) examined that the social media application such as WhatsApp, Facebook, and Twitter which are used to achieve language skills particularly in developing motivational levels to enhance reading and writing skills of EFL learners. The result of the study revealed that the effective role of technology utilization is perceived positively by the students to develop reading and writing skills. These strategies develop their vocabulary, grammar, reading comprehension and writing to make language learning interesting and enjoyable. Based on Rinekso & Kurniawan (2020) indicated that the majority of the teachers agree that ICT tools such as (1) social media (Whatsapp group), (2) web-based online resources (YouTube), (3) presentation tools (PPT), (4) E-learning

(Google Classroom) can help the students to be more autonomous in language learning. A lot of recent studies (e.g. Rinekso & Kurniawan, 2020; Ahmed, 2019; Saleh, 2019; Zhou & Wei, 2018) revealed that the rapid technological changes in the 21st century (e.g., CALL, data-driven technology, online teaching and learning, blended learning approaches, and emerging technologies such as virtual and augmented reality, immersive classroom, and telepresence) are changing the landscape of second language teaching and learning. Therefore, the researcher takes cognizance of utilization and practices of ICT in classroom teaching learning process is essential for successful second language learning.

Language researchers have also begun to recognize the importance of the strategies to develop the reading and writing skills. Several empirical investigations have been conducted on strategies to develop the reading and writing skills and their relationships for successful and unsuccessful learning (Ahmed & Mani, 2020; Cherrier et al., 2020; Williams, 2020; Al-Jarrah et al., 2019; Kamdideh et al., 2019; Yusuf et al., 2019; Aref & Mojavezi, 2019; Dehdari, 2019; Abedianpour & Omidvari, 2018; Liew, et al., 2018; Sari 2018; Zarei & Feizollahi, 2018; Uopasai et al, 2018; Huang et al., 2017; Varisoglu, 2016; Shakoori et al., 2017; Sharafi-Nejad et al., 2016; Williams & Rebuschat, 2016).

Research on Neurocognitive learning strategy for developing language skills abounds in the past few years, some of the research studies' results manifested significant progress in the readers' comprehension ability and writing composition after PASS instructional strategies (Keat, Rajaratnam & Yuniardi, 2020; Naveenkumar, 2020; Chaudhury et al., 2019; Ortiz, 2019; Filickova et al., 2016; Kendeou et al., 2015). Especially, Chaudhury et al., (2019) showed that the significant improvement in the learners' reading and writing performance when implementing strategy. Some of the pioneers have applied neuroscience (Goswami, 2004, 2006, 2008; Hook & Martha, 2012; Anderson, Love & Tsai, 2014; Howard-Jones, 2014) and cognitive neuroscience (Geake & Cooper, 2003; Ansari, & Coch, 2006; Lisle, 2006; Anderson, 2009) in teaching and learning process. Anderson (2009) pointed out and recommended Neurocognitive theories for teaching and learning. For that reason the present study deals with cognitive functions

which are linked with the development of the brain and the central nervous system. The basic anatomy and function of the brain and the learning process are the two important aspects in Neurocognition. The researcher has attempted to develop the English language skills especially reading and writing skills through utilization of Neurocognition intervention strategies in classroom teaching and learning.

1.8 Rationale of the Study

Rastle (2019) revealed that reading is one of the very important in gathering and analyzing information while interact with the world. It offers to access knowledge, employment, social benefits, services, and agree to participate in democracy. Present era, most of the undergraduate students have reading and writing difficulties in English language (Saleh, 2019; Choi et al., 2018; Tulgar, 2018; Varisoglu, 2016). Numerous studies in the last five years revealed that rural students have poor language skills in English, who are studying English as a foreign language (EFL) or English as a second language (ESL) (eg. Rajan, 2019; Sharma, 2019; Ponmozhi & Thenmozhi, 2017; Anisaa and Hameed, 2016; Hossain, 2016; Gomathi, 2014). The difficulties of studying and understanding are primary problems of language skills, particularly reading and writing are the most important apprehensive skills (Atayeva et al., 2019; Schoonen, 2019; Xiao & Lynch, 2017).

Susanto et al., (2020) points out from his study that most of the undergraduate students have negative feelings regarding classroom instructions in their learning experience. The students varied in attitudes towards English language learning in usage and learning skills, which shows that methodology of teaching is not adequate to develop the English language skills. Some of the recent studies have confirmed that the students face difficulties in the basic level in English language learning as vocabulary (Ahmed & Mani 2020; Farooq et al., 2020; Rugsinanont, 2020; Saleh, 2019; Schoonen, 2019), grammatical skills (Saleh, 2019; Schoonen, 2019; Choi et al., 2018) reading comprehension (Ali & Razali, 2019; Saleh, 2019; Choi et al., 2018), writing mechanism

(Choi et al., 2018; Varisoglu, 2016). The students with learning disabilities in reading comprehension and written expression has the level ranges from 40 % to 70% in second language learning (Ilahiyah et al., 2019; Schoonen, 2019; Akbar et al., 2018; Krishnaveni, & Maheswari, 2018). These difficulties are naturally challenging to the classroom instruction, however intensive tutoring or small group reading and writing practice has been shown as effective to improve reading and writing skills (Atayeva et al., 2019; Jennifer, & Ponniah, 2019; Muflih, 2019; Saleh, 2019; Tursunovna, 2019; Hidayanti & Gunawan, 2018).

Over the past five years, a lot of the researchers examined the undergraduate students' English language skills to develop the general literacy (Jennifer, & Ponniah, 2019; Saleh, 2019; Choi et al., 2018; Mahadi et al., 2018) rather than focusing on learning to plan, revise, and recall in different genres such as narrative, expository and persuasive. Singh (2017) pointed out that importance is given to the learner's cognitive process development for self-monitoring progress and to foster the learner's ability for higher-order thinking skills through self monitoring strategies. Sripongwiwat et al., (2016) examined that the students' utilization of the neurocognitive learning theory is one of the best ways to enhance students' learning outcomes. The result of the study revealed that the Neurocognitive learning strategies develop the learners as creative thinkers.

In the last two decades a lot of Neurocognitive studies revealed the effects of cognitive functions such as working memory, attention and executive functions on learning outcomes (eg. Cherrier et al., 2020; Eloirdi, Ahami & Mammad, 2019; Tsuk et al., 2019; Fusar-Poli et al., 2018; Tervaniemi, Tao & Huotilainen, 2018; Berninger et al., 2017; Dunskey et al., 2017; Howard-Jones, 2014; Kuhl, 2011; Ansari, & Coch, 2006; Lisle, 2006; Goswami, 2008; 2006, 2004; Geake and Cooper, 2003). Particularly, the last five years numerous studies have examined in language learning (Kweldju, 2019; Ortiz, 2019; Faretta-Stutenberg & Morgan-Short, 2018; Gotseva, 2017). Especially some of the studies have been investigated in language skills such as reading and writing development

(Hashimoto et al., 2020; Richlan, 2020; Mountoufaris et al., 2018; Plis et al., 2018; Berninger et al., 2017; Cao & Perfetti, 2016; Longcamp et al., 2016).

Most of the studies (Hashimoto et al., 2020; Mountoufaris et al., 2018; Plis et al., 2018; Berninger et al., 2017; Cao & Perfetti, 2016; Longcamp et al., 2016) have revealed that the acquisition of reading skill transmit information through writing skill and measured the brains of individuals neural stimulation variation through various modern techniques (e.g. fMRI, MRI, EEG, etc.). It also combined the accumulation of instruction in the text experience. Numerous studies have investigated that the Neurocognition strategies are modifying the cognitive skills that enable the reading such as Word recognition (Mountoufaris et al., 2018; Sieh, 2016), visualization, (Schubert et al., 2018), auditory perception (Myers et al., 2020; Gokula et al., 2019; Yang & Li, 2019; Mueller et al., 2012), emotion regulation (Angelica & Katz, 2020; Järvenoja et al., 2020; Järvenoja et al., 2019; Martin, & Ochsner, 2016), visual attention (Liao et al., 2020; Javadipour et al., 2018; Tine, 2014), and Visual perception (Giaouri et al 2020; Alenizi et al., 2019; Fotidzis et al. 2018; Memiş & Sivri 2016) and bottom up or top down representations (Ganchev, 2020; Soomro, Khan, & Younus, 2019; Suraprajit, 2019; Oliver & Young, 2016), think aloud protocol (Abdel Latif, 2019; Aripin, & Rahmat, 2019; Wijaya, Suparno, & Supriyadi, 2019). They have increased cognitive functions through reading and writing. Some of the teaching and learning strategies had been developed with the neurocognitive functions increased reading and writing skills such as Planning, Attention, Simultaneous, and Successive Processing (PASS) (Chaudhury et al., 2019; Ortiz, 2019; Naglieri and Das, 1997).

A lot of neurocognitive studies examined that some of the interventions have developed cognitive skills through practice strengthening the synoptic connection in brain such as yoga (Jois et al., 2017; Vhavle et al., 2017; Lin et al., 2015), meditation (Mishra et al., 2020; Wongsothorn & Yordchim, 2020; Tarrasch et al., 2016), Aerobic exercise (Diamond & Ling, 2019; May et al., 2017; Choi et al., 2015; Lin et al., 2015; Tine, 2014) revealed that increases the students executive functions and language process. Foncubierta

et al. (2020), Nwokenna et al., (2019), Fotidzis et al. (2018), Fusar-Poli, et al. (2018), Tervaniemi et al. (2018), Janus et al. (2016), Li et al., (2016) empirical studies revealed that learning environment with music enhance the language skills among learners. A few studies have examined the neurocognitive bases of English language skills such as reading and writing. In this research, the researcher has taken these research gaps as a starting point for providing the Neurocognition intervention strategies for developing the English language skills with a perspective on neurocognitive evidence. Further the researcher has examined English language in various dimensions (e.g., vocabulary, grammar, reading comprehension and writing), to develop the English language skills proficiency. In the present scenario most of the rural Indian students have inability to acquire or to develop the reading and writing skills might affect capacity for learning which in turn will have an impact on the socioeconomic development of our country. Limited literature is available regarding the effect of the Neurocognition strategies to simulate English as a second language. So, the researcher has tried to develop the rural undergraduate students English language skills through Neurocognition intervention strategies.

This research is on “Impact of Neurocognition intervention strategies on the development of English language skills in undergraduate students from rural areas” is an attempt to fill the needs of the undergraduate students’ reading and writing skills development through Neurocognition intervention strategies in Tiruchirappalli district who are in rural areas.

1.9 Chapterization

The researcher has recorded this present study with seven chapters as follows:

Chapter One – Introduction and Conceptual Framework

The introductory chapter discussed English languages skills especially reading and writing, historical backdrop of the language, need of Neurocognition intervention strategies for language skills in English, and rationale of the study.

Chapter Two - Review of Related Literature

This chapter discusses about the review of related literature and researches carried out in this area. Researcher presents various aspects from the fields of neurocognition in teaching and learning, importance of English language skills, challenges in learning language skill, Strategies for English language teaching and learning, relationship between reading and writing skills, Neurocognition intervention strategies for language skills in English. It goes on with the explanations of different perspectives and recommendations on this pedagogy. The study's focus on Neurocognition intervention strategies for language skills in English class, the chapter concludes with research on the impact of Neurocognition intervention strategies for English class.

Chapter Three – Development of Neurocognition Intervention Strategies for Developing English Language Skills

The third chapter deals with the development of Neurocognition intervention strategies and the steps involved in the preparation of lesson scripts for classes.

Chapter Four - Research Design of the Study

It deals with the preplanned and well described research design of the study which involves objectives, hypothesis, the statement of the problem, experimental research, construction and validation of the research tools for the data collection.

Chapter Five – Experimentation

The fifth chapter deals the experimentation, the validity of the experimentation, the validation of pre test, post test-1 and delayed post test tools and also briefly discussed the data collection

Chapter Six – Data Analysis and Interpretation

The research work is fulfilled only when the data are collected promptly. This fifth chapter deals with the analyses and interpretations drawn from the data provided for

findings. This also deals with the method of computation of the data and find out the results.

Chapter Seven – Summary of the Major Findings and Conclusion

The final chapter of this study clearly gives the summary of the major findings based on the results arrived, recommendations and suggestions for the further research in this area with a fine conclusion of the study. Then References with APA (American Psychological Association) format provide extra details to refer the report. Annexure provides Diagnostic Assessment in English language skills (DAELS), Attitude Scale towards English Language Skills (ASTELS), Competitive Exam based English Language Skills Assessment Scale (CEBELSAS-1: Pre-Test, CEBELSAS-2: Post-Test, & CEBELSAS-3: Delayed Post-Test), and Publications.

1.10 Conclusion

The first chapter brings out the arguments for developing English language skills through Neurocognition intervention strategies. The historical backdrop of the research, need of Neurocognition intervention strategies for learning language skills in English and rationale of the study are presented for the better understanding.

CHAPTER- II

REVIEW OF RELATED LITERATURE AND STUDIES

2.1 Introduction

Review of related studies is the first task of a research to plan on a specific problem for investigation in any field of literature within a particular area of research. A researcher needs an adequate familiarity with previous research and theory available in the field of study and highlights what has been done already in the field and what is the current state of thinking on the topic. Creswell (1994) pointed out that review of related literature is a summary of research articles, book chapters, books and other documents of the past or present state of relevant information should be described on the topic of the research study.

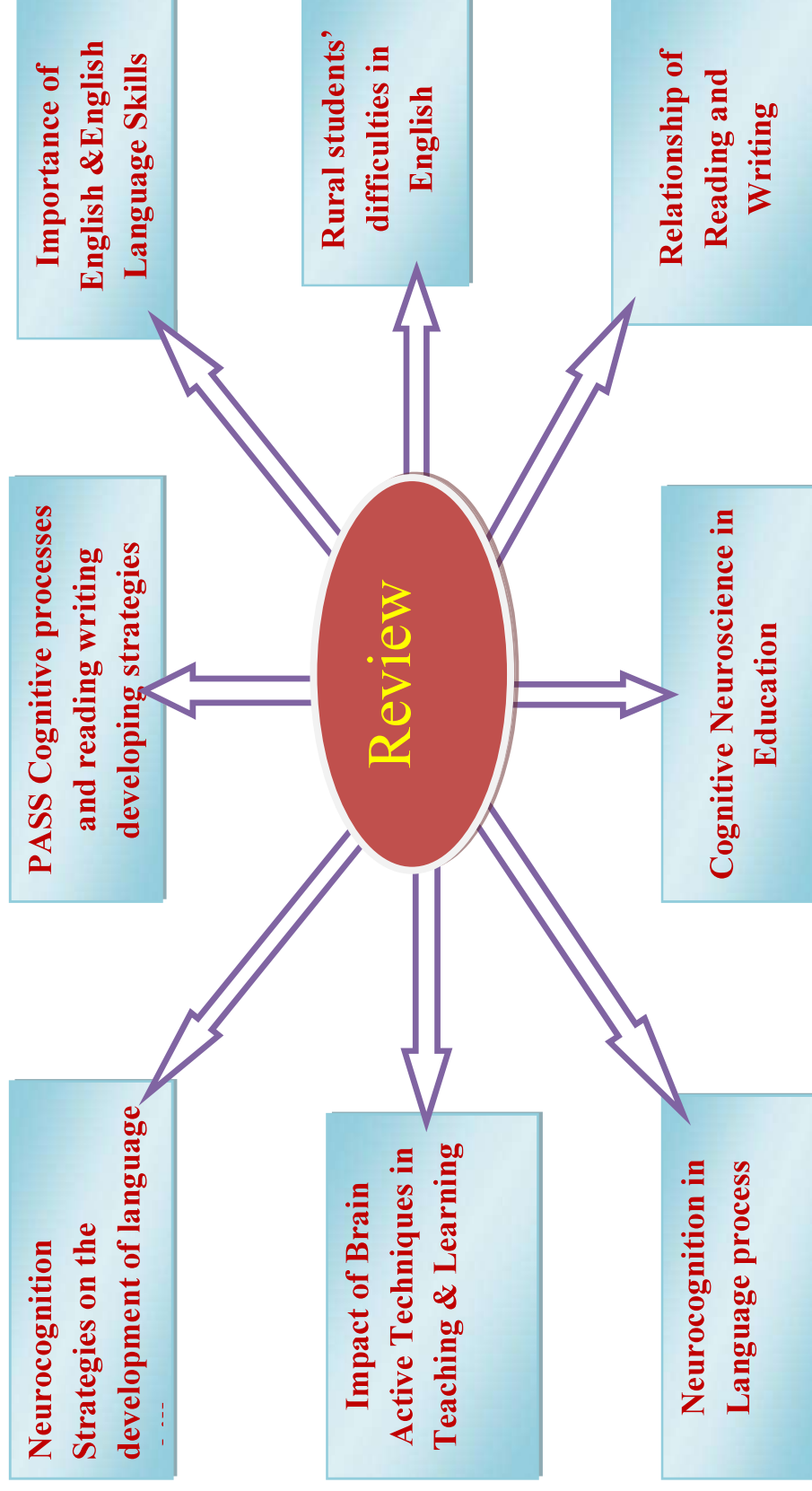
2.2 Sources of Literature Review

Number of works (Galvan, 2013; Persaul, 2010; Weidenborner & Caruso, 1997) showed that sources of literature review could be divided into majorly two categories such as primary and secondary sources. The researcher of the present study has referred and collected various resources like online journals (Science Direct, Web of Science, Jstor, Ebsco, and Scopus), peer reviewed articles, books, theses, reports, some government publications, conference papers, magazines and newspapers edited collections, literature reviews and methodological. And also the researcher has reviewed some of scholarly resources in Education Research Information Centre (ERIC) and Dissertations Abstracts international. Cooper (1985) pointed out that the collected relevant literature in the area of the study should be to acquire reviewed knowledge from the review to understand the variables of the study, to frame the objectives and hypotheses, to select the suitable methodology and analysis, to compare the findings of the present study with previous study and to find out the research gap of the study.

2.3 Review of Related Studies –Division for Study

According to Basavayya and Venkataiah (2016), review of related literature is the documentation of an extensive review of published and unpublished works from secondary sources of data in the area of explicit attention to a researcher. The researcher of the present research has closely considered the research studies and deliberations that have done on the theme of topic of the study and the research areas closely associated with the present study. The researcher has grouped the review of related literature widely under eight headings for the sake of coherence of the divisions might have examined two or more than two aspects from the same area but had been incorporated either for sake of clarity for the topic or to differentiate among them. In the present study the researcher started reviewing studies on importance of English language skills which is the primary focus of the study. The researcher also reviewed on difficulties of undergraduate students in English language learning. The researcher then examined the relationship of reading and writing. Taking acumen, studies that are pertinent to role of neurocognition in language process have been reviewed. The possibilities of Neurocognition intervention or the brain active techniques used in teaching and learning processes to develop English as foreign/second language learning were analysed. The researcher also reviewed Neurocognition strategies on the development of language skills. Finally, the researcher has taken up various studies related to PASS cognitive processes and reading and writing strategies. The figure 3.F.1 shows review of studies done in the titles relevant to the research.

Figure- 3.F.1 Information Collected through Reviews



2.4 Substantiation of Descriptive or Narrative Reviews

The researcher has examined the descriptive or narrative reviews above mentioned figure 3.F.1 has reviewed clock wise as following:

- Reviews on importance of English and language skills
- Reviews on rural students' difficulties in English learning
- Reviews on relationship of reading and writing
- Reviews on Cognitive Neuroscience in education
- Reviews on Neurocognition in language processes
- Reviews on impact of brain active techniques in teaching and learning
- Reviews on Neurocognition strategies on the development of language skills
- Reviews on PASS cognitive processes and reading writing developing strategies

This section is divided into eight sub-sections based on the relevance of this study mentioned above.

2.4.1 Reviews on Importance of English and Language Skills

Joseph (2019) gave the significance of English language in India. The entry of English language in India, the vast majority of recollections was pointed out in this study. The study carried over English education in India was also discussed. The author argued that fundamental ability of our students needs in the present worldwide setting to acquire significant job today. And also study by Latha (2018) reported that English is 'global language' and lingua franca of the modern era. Currently the language is most often taught as a second language around the world. English is used not only for communicating with the outside world, but also for inter-state and intrastate communication. It is used all over the world without any compulsion because of certain advantages.

Uppe et al., (2019) explored the importance of English in employability and necessity to develop language skills among Indians. They argued that English improves social life and provides better job opportunities for the individuals. Communication skills play a vital role to acquire a good job in the professional world. Melnichuk et al., (2017) revealed that undergraduate students were fully aware of utmost importance of English language for employment. The study identified the main social and psycholinguistic reasons determining to develop language skills in university settings. In this way, another recent study in Indian context of undergraduate programs in the state of Himachal Pradesh conducted by Sharma (2019) highlighted that undergraduate degrees such as BBA, B.Com, B.Sc., B.Tech and B.Pharm included a compulsory subject based on communication skills into their curriculum. Because of preparing young graduates to establish their future career in the global market, communication skills make them successful.

Khanum & Siddiqui, (2018) stated that students of rural areas are not aware of the importance of English. All students do not have equal opportunities to get good English education in institutions.

From the above studies made one to understand the significant of English language, the following reviews are set to explain the difficulties in English language teaching and learning.

2.4.2 Reviews on Rural Students' Difficulties in English Learning

In the context of India, challenges and difficulties of learning English are not only found at the level of primary, secondary, higher secondary education only, but also in college level. Particularly, a number of studies gave insight to the researcher about various challenges in English language learning among the rural students for example, Sharma, (2019) discussed the challenges of undergraduate students both rural and urban convent school passed out. From this study it is clear that the rural learners have problems such as fear to learn English, inferior to convey their feelings in English, medium of instruction, and lack of motivation.

And also the study stated that feeling of inferiority was stopped by conducting language learning activities. Thus present study gains the insight that rural undergraduate students have problems to learn English language and they can be overcome by a strategy.

Kumar (2017) dealt the difficulties of rural students in English language teaching and learning. From this study it is clear that rural students didn't have opportunities as urban students had (i.e.) language lab, audio visual aids and so on. Most of the rural students read English only for the sake of examination. And also most of the rural teachers focused to teach their student only on exam point of view. Commonly rural students consider English as a subject not as a language and they have little attitude towards learning the language. These are the major problems of them. As rural undergraduates are the target group, the researcher sets to ascertain attitude of them towards English language.

Ponmozhi & Thenmozhi (2017) focused on problems faced by the rural students in English learning. They discussed many challenges faced by the rural students in English language skills such as speaking, pronouncing, communicating and writing. The result of the study revealed that the difficulty of English learning is high among rural students. There exists significant difference between sub samples related to father's education, mother's education, parental occupation, and parental income. In addition, it was found that parental occupation, father's education and mother's education were positive predictors of rural students' difficulties in English learning and accounted for approximately 23 percentage difference in English learning difficulty of rural students. Hence, this study gave an insight to the researcher; the rural students have difficulties in English language skills especially writing.

A study carried out in the Bangladesh context by Hossain, (2016) focused on challenges of teaching English language in rural areas. This study found out the factors affecting student's performance in English language in rural areas such as geographical

location, resources, availability of technology and also the quality of teachers. And also the study revealed that rural students were inferior compared to urban students especially on international communication, academic advancement and employment prospects. So, it is a cue to the present researcher to develop the language skills for rural area students.

Jennifer & Ponniah (2019) discussed the language problems of regional medium instructed students. The students suffered highly in the lack of knowledge in vocabulary, and subject understanding in reading and writing activities. Thus the knowledge of the English vocabulary has become important and it has to be strengthened students writing skills in order to bring the development, the investigator focused to develop the vocabulary skill of the rural undergraduate students for the development on English language skills.

Ahmed & Mani (2020) investigated with language problems of the undergraduate students in a written composition test. Eighty engineering students were taken as a sample. They were instructed to write an essay 150 - 200 words on a given topic to complete the composition within an hour. The study rolled out various problems in writing such as, vocabulary, grammar, syntax, spellings, verb forms, and expressions in writing. From this study it is clear that undergraduate students were found to have difficulties in writing. Hence this study played a significant role in this study.

Farooq et al., (2020) focused on difficulties of writing in English faced by second language (L2) learners. A survey was conducted with 245 public sector college students who were studying English as compulsory subject. The findings showed that students faced various difficulties in writing English due to lack of vocabulary, spelling, and poor understanding of grammatical structure. The study gave an insight that female students faced more difficulties in English writing than male students. Hence this study added strength to the present study by stated the students' problems.

The investigator understood from the studies done by Ahmed & Mani (2020) and Farooq et al., (2020) that did undergraduate students have difficulties in grammar.

Rungsinanont (2020) discussed about the problems affecting the factors of reading ability in regard to English language journals. The finding of the study showed that reading ability in English journals affected students' anxiety and knowledge of vocabulary. The problems were encountered by students in reading English journals such as lazy to read; the feeling of difficulty in vocabulary; difficult to translate content; misunderstanding content; and uninterested in reading. Thus it is one of the vital difficulties for English language teachers to break down obstacles. Here the investigator attempts to utilize Neurocognition strategies to overcome difficulties of students if in case arise.

Similarly, Ali Alghail & Ali Mahfoodh (2016) examined the international graduate students' academic reading difficulties in Malaysian public university. It is understood that students faced academic reading difficulties in taking relevant notes, own words usage in note taking, identifying supporting ideas, working out meaning of difficult words, and time managing for completion of reading academic materials.

The investigator gains insights from the studies (Rungsinanont, 2020; Ali Alghail & Ali Mahfoodh, 2016) about undergraduate students having difficulties to understand while reading the observation has been taken into consideration by the researcher.

Sholeha et al., (2019) attempted to identify difficulties of linguistic aspects in writing paragraph experienced by undergraduate students. Twenty English language students were selected as a sample. The students were instructed to write a composition about their home town. The compositions were reviewed by instructors to identify the errors and mistakes made. The result of the study revealed that the students had various writing problems such as vocabulary; a cognitive problem was capitalization, sentence structure problem, grammatical

problem, and word order. From this study it is got that undergraduate students too had difficulties in English language while writing. The investigator gains insight from the study that the undergraduate students have difficulties in writing mechanism such as vocabulary; a cognitive problem was capitalization, sentence structure problem, grammatical problem, and word order. Hence the investigator has taken cognizance of writing mechanism for the development of writing skill.

The above studies made the researcher to understand the difficulties of English language skills such as vocabulary knowledge, grammar structure, reading comprehension and writing mechanism. The following reviews explain the relationship of reading and writing skills to develop the English language skills.

2.4.3 Reviews on Relationship of Reading and Writing

According to Koon, (2008) reading and writing are very important literacy skills which have many aspects in common and similar cognitive processing, “mutually reinforce each other and, therefore, promote learning when they are integrated in classroom activities” (Rahimi & Farjadnia, 2019). Both reading and writing draw upon same skills, knowledge and process in terms of being able to read a text and in terms of being able to write a text (Giesen, 2001). Comprehensible and meaningful input provided in reading materials influence the way meaningful output is created through writing process by retrieving information once processed (Krashen, 1984; Nation & Macalister, 2010). Research on teaching the two skills together indicates that “reading and writing instruction can be usefully combined” (Shanahan, 2006) and writing could be improved by extra readings (Koon, 2008) as there is interplay between the achievement levels of reading and writing skill (Stotsky, 1984). The above studies provide knowledge to the researcher that reading and writing skills are interrelated and develop the English language skills.

Jennifer & Ponniah (2019) investigated to improve the writing abilities of undergraduates through extensive reading. The acquisition of writing competency measures such as content, vocabulary, spelling and grammar are affected students' writing ability. Extensive reading enhances comprehension skills through various processes including connecting relevant ideas, analysing and reviewing the content which can improve reading skills. This reading confidence extended to writing situations as cognitive flexibility of the students. The finding of the study indicated that extensive reading practice enhance the writing skills of the students. The investigator understood from the study, reading improves writing sub-skills. These studies revealed reading and writing are partially the same cognitive processes. Therefore the investigator has given concentration in developing reading and writing skills for the development of English language skills.

Choi et al., (2018) discussed about the relationship between reading and writing abilities of Korean EFL learners in relation to their English proficiency by considering both form and content of their writings, measured by Toulmin model, and language proficiency measured by vocabulary knowledge. From this study it is clear that vocabulary knowledge significant direct effect on reading comprehension abilities and showed significant indirect effects on writing performance. Hence the researcher gained insights from study that vocabulary knowledge influences the reading and writing performance.

Schoonen (2019) examined the relationship between reading and writing. The author pointed out that both reading and writing used partially the same cognitive ability with models of writing. This study clearly revealed that sub-skills of reading and writing viz., metacognitive knowledge, vocabulary knowledge, grammar knowledge, word recognition, orthographic knowledge, sentence construction, lexical retrieval, sentence verification were related in the development of EFL learners' language skills. The findings of the study indicated that declarative linguistic knowledge was a more important source for the common

variance between reading and writing. The present study considered from the study about influence of vocabulary and grammar to develop reading and writings among students.

2.4.4 Reviews on Cognitive Neuroscience in Education

Neurocognition is a broad area of the present study, there is a plenty of relevant literature in the field of the study. The investigator reviewed the related studies with special reference to language process development through teaching and learning.

Neurocognition is an interdisciplinary subject to combine such as neuroscience, neuropsychology and cognitive neuroscience (Anderson, 1996). According to Dolors (2007), Neurocognitive functions are cognitive functions closely linked to the function of particular areas, neural pathways, or cortical networks in the brain substrate layers of neurological matrix at the cellular molecular level. How these areas relate to perception of the concepts, memories embed, association and recall to improve the learning or behavioral change.

A lot of researches enumerated great hopes in education in which results from the neuroscience laboratory positively transformed the classroom activities. In fact, a number of articles have been reviewed and discussed on cognitive neuroscience that might be relevant to education (Geake and Cooper, 2003; Goswami, 2004, 2006, 2008; Howard-Jones, 2014, 2016; Arsalidou & Pascual-Leone, 2016; Sasikumar et al., 2016; Sripongwiwat et al., 2016; Ramganes and Hariharan, 2020). The investigator gained knowledge from the studies about utilization of neurocognitive concepts in teaching and learning.

Anderson (2009) explored the Neurocognitive learning theory with constructivist perspectives, and emphasized the neuroscientific theory. The study also recommended curriculum design, improving inquiry practices and enhancing scientific thinking.

2.4.5 Reviews on Neurocognition in Language Processes & Development

Number of studies (e.g. Faretta-Stutenberg & Morgan-Short, 2018; Cao Perfetti, 2016; Johnson 2016; Kemmerer, 2015; Strijkers & Costa, 2012; Brown & Hagoort, 1999) examined that learning a foreign or second language, increasing the size of the brain's language centers and the hippocampus. These studies also revealed that the area of the brain is responsible for forming, storing, and retrieving memories. New language learning also increased the density of grey matter and improves blood flow to the brain. Carreiras et al., (2012) explored the Broca's area and its language processes. The study stated that it's vital focal point for language processing. The study revealed that the area for syntax, and by product working memory. The stimulation of Broca's area reduced the grammatical relative to ungrammatical word pairs. The interaction between grammaticality and stimulation was specific to Broca's area, which involves in language processing. The present study gained insights from these studies about the brain structure and functions to develop the language processes.

Ardila (2011) emphasized that language has mentioned two different language processing systems: lexical/semantic and grammatical. These two language processing systems were supported by various brain structures such as temporal and frontal lobe. These two brain areas based in different learning processes. And also this study stated that two memory processes got (declarative and procedural) to involve in language development. The present study gained insights from the study about language development in brain structure and functions while learning processes.

Faretta-Stutenberg & Morgan-Short (2018) examined that the second language development based on Neurocognition through context of behavioral learning and proficiency in language. This study stated that the combination of students' cognitive assessments of declarative, procedural, and working memory abilities. This study indicated that cognitive

abilities changed the individual difference on the basis of behavioral and neural functions in the structures of brain through language processing. The present study gained insights from the study on executive functions of the brain that made individual differences while learning second language.

Kweldju (2019) discussed an elaborative educational neuroscience for second language classrooms. The study gave latest findings from neuroscience research, and proposed principles of second language classroom. The principles were developed on the basis of declarative memory, and universal grammar to develop the language processes. The present study gained insights from the study about principles of second language learning on the basis of neuroscience.

Johnson, (2016) investigated as groundbreaking work especially act of reading processes. The study stated that the visual data taken into the eyes and then move to the thalamus and the cortex. The cortex is the part of the brain responsible for higher level thinking and memory. While the act of reading information flows from the cortex to the thalamus, the higher and the lower structures of the brain modified during the act of visual information processing in reading. The researcher got an ideal about visual information developing the reading processes more effective.

Cao & Perfetti (2016) examined a comparative study on human brain areas in language process. The study pointed out that the neural correlation of reading involvement in English and mother tongue (Chinese) in the left middle frontal gyrus (MFG). The study revealed that there was a lack of consensus on the interpretation of the language difference because the brain region was found more involvement in English writing. The study stated that reading depends on the connection of visual input with language areas. The finding revealed that reading-writing were co-activation in language process. The writing brain regions were also

activated through reading, and this reading-writing connection was changed by the learning experience. This gave clear picture of the Neurocognitive development in reading and writing processes in brain areas. The present study gained insights from the study about second language (English) making changes in brain structure.

These reviews threw light on the neurocognition in language processes and development of the brain structures. The following reviews explain the brain active techniques used in teaching and learning processes to develop the English language skills.

2.4.6 Reviews on Impact of Brain Active Techniques in Teaching & Learning

May et al., (2017) experimented aerobic exercise training that were set to provide physical health benefits to individuals and improved cardiovascular performance. From this study it is learnt that aerobic exercises improve self-confidence, mood and self-image, relieve stress tension and premenstrual tension, increased energy, increased alertness and increased ability to cope with stress. The study provided valuable suggestions for designing high intensity interval training (HIIT) based interventions aimed to improve cognitive functioning in mathematics and reading. Hence, the present study gained insights that aerobic exercise has been considered as one of the Neurocognition interventions.

Lin et al., (2015) compared the benefits of aerobic exercise and yoga to improve cognitive impairments. The sample consisted of 140 female patients; only 124 received the intervention for twelve weeks of yoga or aerobic exercise compared with a waitlist group. The major aim of the study was to improve cognitive functions such as memory and attention. They utilized psychotic measurements for find out the hippocampal volume from 124 women patients. From this study it is learnt that aerobic exercise and yoga groups indicated significant improvements in working memory and attention. The present study gained insights from the

study that aerobic exercise and yoga improve cognitive functions such as working memory and attention of the students. Hence the investigator attempted to improve the brains' cognitive functions such as memory and attention by practicing aerobic exercise and yoga as Neurocognitive intervention.

Vhavle et al., (2017) explored the impact of yoga intervention on learning, cognitive abilities, behavior and health in school students. 768 high schools in Karnataka with around 7601 students were assessed on improvement in learning ability (listening, reading & writing), cognition abilities, behavior and health following 2 months of yoga intervention. Physical education teachers were trained to teach yoga intervention over 2 months to the students. Evaluation was done by class teachers who were not involved in the yoga intervention. The result of the study indicated that highly effective gains in the training of the students were significant improvement in health, learning ability (listening, reading & writing), cognitive ability, behavior, and positive emotions and decrease in negative emotions. The present study is also set to develop learning abilities of the students by means of Neurocognitive intervention.

Similarly Jois et al., (2017) investigated the effectiveness of superbrain yoga practice used to improve on short term memory and selective attention of students. Experimental design was used in the study. The sample consisted of 91 students from a residential school in mysore. The short term memory was evaluated through the Knox cube test and attention was assessed through digit cancellation test. The improvement was measured before and after the yoga practice and tested through pre and post test scores were recorded. The results of the study indicated that effectiveness of yoga practice improve the short term memory and attention of the students. Hence the study gain insight to the researcher practice of yoga is essential for developing memory and attention of the students. Therefore, the investigator

attempted to develop the brains' cognitive functions such as memory and attention by practicing yoga as one of the Neurocognition interventions.

Tarrasch et al., (2016) portrayed the effects of a mindfulness-used as stress reduction intervention to enhance attention, reading, and psychological well-being among students with dyslexia or attention deficits. The study revealed that regular practice of meditation decreased the rate of committing errors, improved sustained attention and improved reading skill. This study paves the way to understand the necessity of meditation practice to improve attention. Hence, the present study gained insights from the study that meditation has been considered as one of the Neurocognition interventions.

Klichowski& Patrício (2017) highlighted human brain like ICT tools and it made the students to learn eagerly. Jensen (2008) stated in this study, outdoor learning was perceived as a brain-friendly learning environment. The outdoors stimulation gave effective forms of learning through multisensory activity. From this study it is learnt that ICT tools gave same effect of outdoor effect on stimulating attention, improving cognitive processes and encouraging learning. This study contributed to conceptualize the pro and cons of the ICT integration in teaching and learning. Further, these studies made the investigator how ICT could be integrated in second language teaching and learning processes more effective.

A lot of researchers revealed that the methods of English language teaching were changed due to the utilization of ICT. The use of ICT helped to learn the language skills. Some of the researchers highlighted that instruction through ICT was found to be more effective to develop English language skills such as vocabulary (Pham & Nguyen, 2018), grammar (Erkulova, et al. 2020, Olentsova, 2019), reading (Gubbels et al., 2020; Maduabuchi & Emechebe, 2016) and writing (Boudjadar, 2015). The present study gained insights from these studies that ICT stimulates students' attention, improves cognitive processes and eager

to learn the English language skills. Hence the investigator attempted to use the ICT tool in classroom teaching learning as one of the Neurocognition interventions.

Erkulova et al., (2020) adopted mobile phone as a ICT tool to teach grammar to the students in the classroom. From this study it is clear that mobile phone utilization is necessary for language learning. In the study, mobile phone assisted language learning was worked as one of the ICT tools in classroom learning to develop grammar competences. Thus present study took cognizance of the mobile phone as one of the ICT tools utilized for classroom activities.

Justina (2016) examined the reading and writing skills to develop through social media such as WhatsApp, Facebook, Instagram, Twitter and YouTube were used to develop the learners their reading and writing skills. The study revealed the utilization of social media among the undergraduate students to develop the reading and writing skills without anxiety. Thus present study took cognizance of the social media app to create group and share the assignment and learning material to the students.

Saleh (2019) investigated the educational role of WhatsApp as one of the mobile-assisted language learning applications to develop reading and writing skills. 20 Yemeni EFL learners joined a WhatsApp English-medium chat group. The students chatted, shared news articles in English and commented on two months. The result of the study indicated that WhatsApp was a very effective application to develop the undergraduate students' reading and writing skills. And also it helped to develop vocabulary, grammar, reading comprehension and writing skills of them. Consequently, the study recommended EFL teachers to use WhatsApp as an educational tool and to motivate their students to create and join WhatsApp groups for natural interactions to active participate in English language development. The present study gained insights from the study that WhatsApp as ICT tool improve the English language skills.

Hence the investigator attempted to create a WhatsApp group and share the learning material to stimulate the students' interest and active participation.

2.4.7 Reviews on Neurocognition Strategies on the Development of Language Skills

Sensory input means touch, movement, or other sensations involving difficulty in organizing and sequencing tasks related to physical movement; which limits the ability to distinguish among visual, movement, auditory, tactile, and other sensory input described by Wild and Steeley (2018). Sensory approaches were valuable in language learning, because relationships between sound and symbol, or word recognition, and the use of tactile methods were more effective in classroom environment. The study done by Korkmaz & Karatepe (2018) investigated multisensory learning techniques for students to obtain a reciprocal relationship between sensory input and thinking, to interact with the material more intensely, and to retain what they have learned for longer periods of time. The study revealed that students overcome their difficulties through hands-on, visual, auditory, and olfactory stimuli by sensory input.

Indeed, these studies provided impetus for the investigator to develop a sensory input strategy to improve the English language skills of the students. Hence the researcher has adopted sensory input learning practice for developing English language skills among students.

Muflih (2019) experimented visual organization strategy on the development of reading and writing skills of disabilities students. The participants were 87 teachers as a sample in this study. The results of the study indicated that visual organizations in class room improved reading and writing skills among students with learning difficulties. Thus the

present study took cognizance of the visual organization strategy as a way to provide effectiveness on the development of English language skills.

A close relation between visual perception and language development had been indicated by various studies in different perspectives especially in reading (e.g. Memiş & Sivri 2016; Alenizi, 2019; Cui et al., 2019; Giaouri et al., 2020). Memiş & Sivri (2016) the study revealed that psychological processes play a vital role in reading process including visual perception, audio perception, memory, attention, and language skills. The study indicated that visual perception increased reading speed and reading comprehension but decreased the error reading. Durka (2008) stated that reading process provides visual perception skills which is appropriate for his age to differentiate written letters, words, and punctuation marks. Therefore, failures of visual perception directly affect students' reading and writing skills. Also, Memiş and Harmankaya (2012) stated that students have higher level visual perception; they made lowest error and got highest writing scores. It revealed that students who made most writing errors; they have poor visual perception. Visual perception strategy was provided to students to develop their reading and writing skills.

Alenizi (2019) examined the effectiveness of multisensory strategy to develop the visual perception of primary school students with learning disabilities. The quasi-experimental method was adopted in this study. The sample consisted of 60 students who were divided into two groups. The experimental group consisted of 30 students who have been taught with the strategy of multi – sensory training program, and the control group of 30 students was exposed to the regular reading comprehension instructions. The participants were provided equal interval of time duration for the instruction for both groups. Pre and post test were examined in terms of the students' visual perception to evaluate the teaching's effectiveness. The findings of the study indicated that there was a variation in visual perception of the learners

with learning disabilities in different teaching strategy, and the differences were in favor of multi - sensory strategy. The present study gained insights from the study that quasi experimental design could be used.

Giaouri et al (2020) examined the role of the cognitive parameters of visual perception, assessed by the Developmental Test of Visual Perception-2nd Ed. on the reading ability of students with learning disabilities. The results showed that visual perception was a predictive factor for reading performance. In this way, the present study was set to improve the reading skills of the students through visual perception strategy considered as one of the Neurocognition strategies for enhancing reading and writing skills.

Myers et al., (2020) investigated sensorimotor integration to enhance auditory perception. This study stated that how sensorimotor integration affects the accuracy of auditory perception. Active sounds are always a consequence of the participant's actions. By contrast, "passive sounds" are presented to direct consequence of their actions. It is understood that processing of active vs. passive sounds by encompassing students generates sounds about their perceptions. Similarly, Yang & Li (2019) examined the relationship between auditory perception and L2 vocabulary learning. The study pointed out that the ventral stream and the dorsal stream played more dominant role in auditory word learning in second language. Mueller et al., (2012) explored auditory perception strategy for the development of language learning. The study provided synchronistic impact of auditory perceptual abilities through online language learning. From these studies researcher gained knowledge of auditory processing ability to develop English language skills. Therefore, auditory perception strategy has been used as one of the Neurocognition strategies on the development of English language skills in the present research.

Implicit learning is postulated to be effortless, unconscious, similarity-based, and carried out in procedural memory. Implicit learning is defined as learning without intention or as acquiring complex information without awareness of what has been learned (Mackintosh, 1998; Reber, 1992) cited in (Danner, Hagemann & Funke, 2017). Explicit learning is defined as knowledge that a learner is consciously aware of, that can be called up on demand and articulated in a verbal statement (Dörnyei, 2009; Anderson, 2005) cited in (Silva & Roehr-Brackin, 2016). Hashemi & Daneshfar (2018) conducted a study about teaching strategies on grammar, which was more rewarding for college students on the matter of teaching methods such as implicit and explicit instruction of collocational expressions in ESL contexts to develop reading and writing skills. The present study included implicit and explicit learning as one of the Neurocognition strategies in the orientation.

Recently, Guci & Drajati (2019) were also involved in a similar study about implicit teaching strategies on grammar in foreign language education that has been maintained by most theories as one thing playing a significant role in facilitating the process of learning to read, write, speak, and understand a foreign language. The results of the study revealed the students' attitude was maintained through implicit teaching strategies in grammar instruction, regarding to the natural acquisition of language skills.

Farahani et al., (2019) explored the comparative effect of explicit vs implicit reading comprehension skills on translation quality of undergraduate students in Iran. The quasi-experimental design was adopted in the study. The research was a comparative group design research. It compared explicit vs implicit reading comprehension methods with different treatments. The findings of the study indicated that implicit strategy had a positive and direct relationship between reading comprehension and translation. Hence the present study gains insight from this study to develop English language skills using implicit strategy.

Nabizadeh, Taghinezhad & Azizi (2016) examined the effects of implicit instruction and explicit instruction on L2 grammar learning. Forty students selected as a sample in the study. The two intact classes were assigned to comparison focus on implicit group and explicit group. The target structures were enhanced visually with the technique of bolding. Pretest and posttest were conducted to compare the two groups' performances before and after the instruction. The results of the study indicated that the explicit group had better performance in L2 grammar learning compared than the participants in the implicit group on the posttest. The present study gained insight from this study about quasi experimental design finding the impact of the intervention strategy in the classroom teaching.

Martin & Ochsner (2016) described that emotion regulation had a critical life skill that facilitated learning and improved educational outcomes. The study stated that emotion regulation abilities were associated with recruitment of prefrontal brain regions involved in executive functions and cognitive control that mature late in development. The study also indicated that positive emotions such as feedback, prize or rewards facilitate better learning, utilizing positive emotions in classroom which maintained the emotional regulation in good condition to enhance learning and successful student outcomes. Thus, the investigator took cognizance emotional regulation as the part of the present research.

Angelica & Katz (2020) examined the emotion regulation to shape the relationship between teachers' satisfaction or frustration and the adoption of motivating styles. This study revealed that emotion regulation was a factor to motivate teachers' teaching styles.

Järvenoja et al., (2019) explored the emotion regulation in the challenging situation of collaborative learning. The sample consisted of 62 higher education students, who collaborated in groups during a six-week mathematics course. The data consisted of eighty seven hours of video-recorded learning sessions. The analytical part revealed the emotion

regulation strategies were used in collaborative learning. The finding of the study indicated the evidence about collaborative groups' emotion regulation, and revealed the group-level emotion could be regulated through provision of different type of activities. The results also showed four types of strategies were utilized for emotion regulation. The study indicated that collaborative learning enhanced the positive emotion and regulated the students' emotion. Hence the researcher has used emotion regulation strategy in the language teaching and considered as one of the Neurocognition strategies for developing English language skills.

Wilson et al., (2015) explored that ventral frontal neural system, which played an important role in language function in humans. This neural system involves sequence processing. Carota & Sirigu (2008) examined that sequential structure was necessary for planning contiguous discourse segments and syntactic patterns in language. This study also stated that sequential information was a crucial cognitive component in language, which showed sequential patterns in morphology and syntax. Bornkessel-Schlesewsky & Schlewsky (2012) explored language comprehension involved in the processing of sequentially ordered input. Hoen et al., (2006) investigated the cerebral basis of sentence comprehension and sequence processing. This study stated that language comprehension related on two memory systems, the declarative (ventral) and procedural (dorsal) (Ullman, 2001, 2004). Sentence comprehension was treated by the procedural memory system. The procedural memory system was implicated in the acquisition of new and usage of well trained motor skills. This system was important for learning in the context of real-time sequences, whether the sequences were serial, abstract, sensori-motor or cognitive.

The investigator gained knowledge from the studies done by Wilson et al., (2015); Carota & Sirigu (2008); Bornkessel-Schlesewsky & Schlewsky (2012); Hoen et al., (2006); that sequential information is essential for language comprehension. Hence the researcher has

used sequential information frequently in the language teaching as one of the Neurocognition strategies for developing English language skills.

Kim et al., (2012) examined brain mechanisms engaged in association formation through neuroelectric evidence and suggested that different memory processes underlie item encoding and cognitive association formation. A recent study by Wright (2020) explored three multimodal association areas in primary sensory areas. The study revealed the general principle to be learned that the primary sensory areas of associative functions become more general. There are

1. Limbic association area
2. Posterior association area
3. Anterior association area

These three areas are very important in memory, planning, and higher-order concept formation.

The present study gained insights from these studies (Wright, 2020; Kim et al., 2012) that cognitive association is very important for improve memory, attention, planning, and higher-order concept formation. Hence the researcher has used cognitive association strategy frequently in the language teaching as one of the Neurocognition strategies for improving English language skills.

2.4.8 Reviews on PASS Cognitive Processes and Reading Writing Developing Strategies

A study was conducted by Ortiz (2019) on neuropsychological background based on PASS cognitive processes. The PASS cognitive processes in Neurocognitive model of intelligence was used, which main targets were modification of the cognitive skills through reading. The study provided substantial evidence regarding the effectiveness of cognitive

modifications on learners' reading and writing development. And also some other studies (Keat et al., 2020; Naveenkumar, 2020; Chaudhury et al., 2019; Filickova et al., 2016; Kendeou et al., 2015; Rosário et al., 2015; Keat & Ismail, 2011) followed to investigate in the same ways in various point of view in PASS cognitive processes. Besides all these studies, there were still other studies conducted to examine the influence of PASS learning strategies on the development of reading and writing skills in the field of language teaching. The present study gained insights from these studies that PASS cognitive processes could improve the students' reading and writing.

Ali & Razali, (2019) described that reading was a challenging process as it required the involvement of various types of reading strategies, which included cognitive reading strategies (e.g., planning and goal setting, tapping prior knowledge, asking questions and making predictions, constructing gist, monitoring, revising meaning, reflecting and relating, and revising meaning), constructivism reading strategies (eg. Interactive, reflective, enquiring based learning, co-operative and collaborative learning), metacognitive reading strategies (e.g., problem solving reading strategy, global reading strategy, support reading strategy) and reciprocal reading strategies (predicting, summarizing, question generating and clarifying) which were used to think aloud protocol as a major method to assist the reading text. MohdYussof et al., (2012) gave suggestions to improve the reading skills through graphic strategy and several cognitive strategies (story structure, questioning, synthesizing, visualizing and inferencing) were used on narrative texts, through constructivism principle. These studies provided insight to the present study to adopt appropriate strategies to develop the cognitive processes and develop the reading skill.

A previous study Olson & Land (2007) examined a guided practice in a mixture of strategies viz., planning and goal setting, tapping prior knowledge, asking questions and

making predictions, constructing the gist, monitoring, revising meaning; reconstructing the draft, reflecting and relating, and evaluating to help the students read and write about challenging texts; and involving students as partners in a community of learners. The application of those strategies in reading and writing provided positive outcome on the development of English language learning. The present study gained insights from the studies that cognitive strategies could improve the students' reading and writing skills.

Soomro et al., (2019) explored EFL undergraduate students' reading performance through top-down, bottom-up utilized to reduce their reading anxiety. The study revealed that bottom-up had a significant negative impact on the reading performance and top-down reading anxiety had an insignificant negative impact on the reading performance of the students. Ganchev (2020) examined the top down and bottom up strategies were used to develop the academic writing among the chinese graduates. There are few empirical studies revealed that bottom up and top down strategies improved English language skills (Coll et al., 2020; Suraprajit, 2019; Yang, Tsai & Hikaru, 2019; Moradi Motlagh, & Taghi Farvardin, 2017; Oliver & Young, 2016). Indeed, these studies provided impetus for the researcher to have cognitive processes as instrumentals to improve the English language skills.

Slavin (1980) stated that cooperative learning is an instructional strategy basis for the human nature of cooperation. The students work in small groups and are given rewards and recognition based on their groups' performance. Umar et al., (2020) explored the technique of cooperative integrated reading composition strategy that increased reading comprehension by it was done with fun or the topic was appropriate with the students' interest. Varisoglu (2016) investigated the influence of cooperative integrated reading composition strategy on reading aloud, comprehension, writing, and academic achievement. The findings of the study indicated that this strategy developed the students' academic achievement in reading aloud, reading

comprehension and writing. Hence, this study insight to the researcher cooperative learning improves the students' cognitive processes and develops the English language skills.

Yusuf et al., (2019) examined the effects of using cooperative learning strategies to improve writing skills among second language learners. The quasi-experimental research design was employed and the data were analysed through descriptive and inferential statistics. The learners' writing was scored on the 5 writing components such as vocabulary, organization, accuracy of grammar and mechanics. The results indicated that the learner had increased in their writing skills mean scores from the pre-test to the post test. The findings revealed the positive effects on cooperative learning in improving the writing skill of the students. The present study gained insight from the study that cooperative learning strategy could improve the student's cognitive processes while learning language.

Kim (2017) described interactive activities and identified a conceptual model that empirically tested in the relations of individual and social variables on the development of reading-writing connection. And also a few empirical studies examined to reveal the influence of interactive activity strategies on the development of reading and writing skills (Llorente et al., 2016; Nugraheni & Priyana, 2017; Suarmi & Fatimah, 2019).

Rahimi & Farjadnia (2019) investigated the effect of interactive read-aloud on English as a foreign language learners' development of writing skill. 46 students were selected and sampled as the experimental (n=23) and control (n=23) groups. Reading was taught to the experimental group using interactive read-aloud technique while the control group received conventional silent reading instruction. The result of the study indicated that significant difference between the experimental and control groups' writing ability. The study revealed that interactive read-aloud technique improved the students writing skills. The present study gained insight from the study that interactive strategy could improve the student's cognitive processes while learning language.

Virdaus, (2019) defined that brainstorming is a strategy to stimulate the brain into thinking about issues in a new way. It encourages students express their thoughts or ideas quickly and spontaneously. The major aim is to collect as many ideas as possible in a short time. So that the larger number of ideas can be generated, the more chance can be produced for effective solution. Although, there is a number of research evidence proved that utilizing the brainstorming strategy in classroom teaching could be improved writing skills (Abedianpour & Omidvari, 2018; Sari & Fitrawati, 2018; Zarei & Feizollahi, 2018; Tuyet, 2017; Sharafi-Nejad et al., 2016; Virdyna, 2016).

Abedianpour & Omidvari (2018) investigated the impact of brainstorming strategy, as a pre-writing strategy, on advanced EFL students' writing ability. Moreover, the study sought to investigate the attitudes of the participants in terms of the efficacy of brainstorming for developing writing performance. 60 students were as a sample and divided into two groups. The results of the study indicated that brainstorming strategy made significant progress in writing. The present study gained insight from the study that brainstorming strategy could improve the student's cognitive processes while learning language.

Zarei & Feizollahi (2018) argued that a writer can encourage the reader in favor of his desired intention. The study revealed the effect of concept mapping and brainstorming on the lexical and grammatical accuracy in writing. 90 students were selected through cluster sampling based on convenience. The students were divided into 3 equal groups to experience different treatments in a 15-session semester. First group was instructed through concept mapping, second group through brainstorming, and the third group through conventional instruction. The finding of the study indicated that the concept mapping group obtained the highest mean scores in grammatical accuracy and writing anxiety followed by the brainstorming group. The present study gained insight from the study that concept mapping

and brainstorming strategies could improve the student's cognitive processes while learning language.

Dehdari (2019) examined the comparative effect of concept mapping and marginal glossing on EFL students' reading comprehension and vocabulary retention. 110 students were selected as a sample to participate in a mock IELTS General Module test and were randomly divided into two experimental groups. The result of the study indicated that concept mapping groups mean scores greater than marginal glossing in reading comprehension and vocabulary retention.

According to Novak & Gowin (1984) concept mapping is intended to link concepts to meanings for creating propositions cited in (Zarei, & Feizollahi (2018). Trang (2017) identified and mentioned a lot of definitions about concept mapping as a chronological order. Finally, the author defined as concept mapping is considered as tool of representing knowledge of a particular subject matter. The concept mapping is referred as graphical tool that help learners to organize and represent knowledge that is composed of concepts and the relationships among them. The study investigated students' attitudes towards the implementation of concept mapping in reading skills. The result of the study revealed the positive attitudes of the students towards the utilization of concept mapping in reading skills. The students enjoyed reading through concept mapping and perceived utilizing concept mapping as beneficial in reading. A lot of recent research studies have revealed that *concept mapping* is one of the most important strategies which can enhance students' reading comprehension (Andoko et al., 2020; Defri, & Syafei, 2020; Dehdari, 2019; Davaribina & Asl, 2017) and writing (Ahmed, 2020; Marashi & Kangani, 2018; Rahman & Ambreen, 2018; Zarei & Feizollahi, 2018; Shakoori et al., 2017; Shakoori, 2016). The investigator gained

knowledge from the studies that concept mapping strategy could improve the student's cognitive processes while practicing language learning.

According to Oster (2001) think aloud protocol is the verbalization of thinking during problem solving, reading, or other cognitive tasks. Otherwise, think aloud protocol provides scaffolding for learners as they engage in higher order thinking. It offers access to decision making and reasoning process underlying cognition (Talapngoen and Deerajviset, 2017). The study Aripin & Rahmat (2019) examined the metacognitive strategies namely planning, monitoring and evaluating utilized to improve think aloud protocol on writing process. Davidson & Berninger (2016) employed think aloud utilized as an idea generating tool to develop the writing. The finding revealed that think aloud help learners planning and organize their thinking process in writing essay. Being able to apply a think aloud strategic learning repertoire has been proven repeatedly to be positively associated with learners' language learning development (Abdel Latif, 2019; Aripin, & Rahmat, 2019; Rogiers et al., 2019; Wijaya, Suparno, & Supriyadi, 2019). The present study gained insights from the studies that cognitive strategies could improve the students' language skills.

Writing is a complicated cognitive process which involves a number of activities such as brainstorming, outlining, planning, organizing, drafting, and revising. Writing have received a particular attention, as teacher to understand the cognitive processes underlying the compositions of learners (Flower & Hayes, 1981) cited in Shakoori et al., (2017).

From the review of the collected research studies, it was found that some researchers also used different types of cognitive strategies on the development of language skills using the decoding (Papadopoulos & Spanoudis, 2015; Plourde et al., 2018), repetition (Altalhab, 2018; De Cates et al., 2017; Singh & Pauranik, 2017; Smalle et al., 2017 Chen, 2016; Shi et al., 2016; Varisoglu, 2016; Hoen et al., 2006), retrieval (Moreira et al., 2019; Chai et al.,

2016), Monitoring & Self-Correcting (Choi et al., 2018; Durukan, 2011; Aripin & Rahmat 2019), visual attention (Liao, Kruger, & Doherty, 2020; Muflih, 2019; Fotidzis et al. 2018; Tine, 2014; MohdYussof et al., 2012) semantic representation (Akyol et al., 2014), feedback (Malik and Din 2019; Altalhab, 2018; Smalle et al., 2017; Shakoori et al., 2017; Singh & Pauranik, 2017; Aripin & Rahmat 2019) and Evaluation (Ganchev, 2020; Malik and Din, 2019; Rahimi & Farjadnia 2019; Varisoglu, 2016; Olson & Land 2007) have increased the writing skills through reading. Akyol et al., (2014) revealed that provided reading environment, working with different texts and textual structures, making predictions and inferences, setting goals and utilising strategies are all considered to develop reading comprehension skills and overcoming writing difficulties. The present study gained insights from these studies that cognitive strategies could improve the students' reading and writing skills.

Sadafunisha and Vijayakumar, (2020) explored the efficacy of three approaches viz bottom-up, top down and integrative approaches utilized to enhance reading skill. A mixed method was used to test the efficacy of the three reading approaches. 60 students consisted as a sample and divided into three groups. The result revealed that the integrative approach was more effective than the other two approaches to develop the reading skill. The researcher gained knowledge from the study that bottom-up, top down and integrative approaches could improve the student's cognitive processes while reading.

Kalia (2017) pointed out that the Indian students have difficulties in learning English and must provide necessary new teaching approaches for them. And also the study revealed that teacher should adopt eclectic and pragmatic approach because no single approach was useful in all situations. Therefore, the researcher has created a model various teaching-learning strategies utilized to develop the English language skills.

As far as the insight gained from the review of related literature were concerned, there was a research gap that none of the studies attempted to develop Neurocognition interventions to improve the English language skills of rural undergraduate students. To fulfill this research gap, the researcher attempted to find out the **“Impact of Neurocognition Intervention Strategies on the development of English Language Skills in Undergraduate Students of rural Areas”**.

2.5 Conclusion

Neurocognition intervention strategies are successful in developing reading and writing skills, and improving the brain power especially memory, attention and cognitive processes. The researcher makes its attempt to have the venture of developing English language skills among rural students

CHAPTER- III

NEUROCOGNITION INTERVENTION STRATEGIES FOR DEVELOPING ENGLISH LANGUAGE SKILLS

3.1 Introduction to Neurocognitive Learning

This chapter provides a broad overview of the many strands that together contribute to develop English language skills through Neurocognition intervention strategies. A lot of neuroscientists proved that a brain's executive functions essential for learning and also educationists accept this truth. Anderson (2009) has proposed the Neurocognitive learning theory with the help of neurophysiology, cognitive science and learning theory. These three components provide equally reinforcing explanations of learners' learning. Therefore, researchers could understand and predict to develop learners' learning. There are three procedures covering the neurocognition based learning. Firstly, perceptions of sensory input from learners' five senses formed by their prior experiences, and modified in relation to prior stored information in their long term memory. The affective states influence how the incoming sensory data are perceived and integrated with prior knowledge, thus the working memory takes responsibility in doing these processes. Secondly, the brain processes multiple information inputs almost at the same time. Thirdly, decision making and response patterns are weighted by emotion, and finally the appropriate response is selected and actualized by motor pathways. Some of the researchers had done experimental research in teaching and learning. For example, Sripongwiwat et al., (2016) promoted their learners' affective states in order to keep their continual attention; focusing on the appropriate connection between prior knowledge and new knowledge; promote executive function, especially working memory, for shaping and reworking in relation to their prior stored information; and use multi-sensory media or hands-on experience as much as possible (Sripongwiwat et al., 2016).

Neurocognitive learning theory is more effective and meaningful at all level of learners because neurocognition is higher order learning and the ability is related to brain functions. Neurocognitive learning helps identify the components of cognitive process in the brain areas related to the language development. It has been explained briefly, in this chapter, some of the Neurocognition intervention viz., aerobic exercise, yoga, meditation, music and ICT which help to understand meaningful practice improve brain power. Based on Neurocognitive theories, the researcher has identified different components of Neurocognition strategies such as sensory input, visual perception, auditory perception, explicit & implicit, emotion regulation, information sequencing and cognitive association, which have helped in the development of Neurocognitive learning for the undergraduate students who are from rural areas. These strategies have been adopted in various studies for developing the English language skills, at present; the researcher has concentrated only on English language skills especially reading and writing.

3.2 Processes of Neurocognition in Teaching and Learning

The following are the processes of Neurocognition in teaching and learning (Anderson, 2009).

- Neuroscience studies have helped the teachers to understand the human brain plays a crucial role in our cognitive processes
- Neurocognition provides a theoretical basis for understanding how teaching influence students' learning
- Students cognitive change is made by teachers and these cognitive processes inform through Neurocognition strategies for understanding, for example, how a teacher's actions influence a student's learning

3.3 An outset of Neurocognition Intervention Strategies on the Development of English Language Skills

One of the important challenges in our modern India regarding English language learning, some of the factors play a vital role to affect the rural learners to learn English such as, economically backwardness, uneducated families, and hesitation to learn English language. Moreover, these factors are main reasons for rural undergraduate learners' obstacle to develop their English language skills. Unfortunately, some of the study revealed that rural learners are not skilled in learning English language skills and utilization of the recent learning strategies. A recent study done by Susanto et al., (2020) pointed out difficulty of English language learning among undergraduate learners in four skills, those are Listening, Speaking, Reading and Writing especially language competencies. Some of the recent studies revealed that how students' attitude towards English language skills especially reading (eg. Fogarty et al., 2020; Vaughn et al., 2019; Bauer-Kealey & Mather, 2019) writing (eg. Ismail, Hussin & Darus, 2012 cited in Mahadi et al., 2018) were affected. The study carried out by Ntereke & Ramoroka (2017) revealed that recognising main ideas, reading techniques (skimming and scanning), critical and analytical reading, note making, summarising, mapping concept were the difficulties in reading skills among university learners. Spencer & Wagner (2017) investigated reading comprehension and oral language skills of second-language learners who had been identified as having specific reading comprehension deficits. The meta-analysis revealed that most of the second language learners had lower mean scores on measures of vocabulary knowledge, comprehension, semantic knowledge, and syntax compared to typical readers.

Alghail & Mahfoodh (2016) explained that undergraduate learners had difficulties in notes making, using own words in note making, identifying supporting ideas, to get overall

meaning , quickly find the information, to understand the specialist vocabulary, organising a text, to identify the key ideas and understanding a text. The learners need to perceive the writing tasks positively in order to acquire the language skills effectively. When the learners perceive the text positively, then they will be a lower level of apprehension towards the writing tasks and increase their readiness to write. The lack of vocabulary also contributes to the difficulty of writing for a second language learner (Mahadi et al, 2018). Similarly, Afrin (2016) stated writing problems of non-English major undergraduate students in Bangladesh. The results of the study revealed that lack of vocabulary, misusing tense, utilization of the subject verb agreement in statements and punctuation had problems in writing.

Several neuroscience studies (Li et al., 2019; Perkins & Jiang, 2019; Romeo et al. 2018; Cao, 2016; Johnson, 2016; Barquero et al. 2014; Gabrieli et al. 2010) detailed the neural network involved in reading. The act of reading is efficient operation widespread in brain regions that are enlisted not only to support the perceptual processing of printed stimuli but also it provides bridges that connect visually recognized letters, sentences etc. with other components of the linguistic system. Johnson (2016) pointed out that higher structures of the brain involved in critical thinking and the lower structures of the brain influence the processing of visual information during reading.

A lot of empirical studies (Adams et al., 2019; Kerry et al., 2019; Sharoh et al., 2019) investigated that reading was involved to increase the neuron in the brain. Carson & Birkett (2017) pointed out that the similarities of reading involved in writing. Both similarities and differences in the neural circuits for reading across writing systems had been described very clearly. Longcamp et al (2016) described very elaborately neural anatomy involvement of handwriting and relationship of reading with writing skills among adults without learning disability.

Sripongwiwat et al., (2016) pointed out that current education system required a high degree of flexibility and adaptability in personal, social, technological and economical challenges. The challenges of the 21st century were complex environmental, social and economic forces, requiring learners to be adaptable, innovative, and creative, with the motivation, confidence and skills to use critical and creative thinking decisively. Especially, educators require a new teaching model for this new era. It is in the line of thinking the researcher has attempted to review various Neurocognitive, language teaching and learning studies and find out gaps within the literature, as well as common themes that emerged. Additionally, different perspectives on implementation of Neurocognition intervention strategies in teaching of English language skills especially reading and writing are analyzed by the present investigation.

3.3.1 Neurocognition Intervention

In the modern era, lot of the brain based teaching and learning studies revealed that physical activities (Zvonarev et al., 2020), aerobic exercise (Diamond & Ling, 2019; May et al., 2017; Lin et al., 2015; Choi et al., 2015), yoga (Lin et al., 2015;), meditation (Mishra et al., 2020; Hafenbrack & Vohs, 2018;), and music (Nwefuru, 2019; Fusar-Poli et al., 2018; Fotidzis et al., 2018; Ettlinger et al., 2011) improved the executive functions of the brain. The relationship between physical exercises and cognition has been a prominent scientific research interest among scholars. However, cognitive functions were assessed through different type of modern technologies (eg. EEG, PET, MRI, fMRI,) which type of physical activities was more effective to improve the cognitive function in the brain.

Physical exercise also increases blood flow and connectivity in the hippocampus, a key region for memory formation and consolidation. And also, exercise improves a range of white and grey matter regions, in the size of the hippocampus that are related to improved spatial

memory in the hippocampus, which contributes to the effects on cognitive functions (Zvonarev et al., 2020). There is a number of empirical evidence about beneficial effects of aerobic exercise on selective aspects of brain function (Diamond & Ling, 2019; Tsuk et al., 2019; May et al., 2017; Choi et al., 2015; Lin et al., 2015; Pontifex et al., 2013). Similarly, numerous studies suggested that physical activity aided cognitive functioning (e.g., De Wit et al., 2018; Bernstein & McNally, 2017; Choi et al., 2015; Lin et al., 2015). In adults, regular exercise improved the efficiency of those frontal, posterior, and temporal networks important for language learning (Britt et al., 2018; De Wit et al., 2018;) including the fronto-parietal networks that help guide our attention (Pontifex et al., 2013). Tsuk et al., (2019) noted that aerobic exercise stimulus improved the selective attention, and executive functions. May et al., (2017) pointed out that acute exercises were the beneficial effect on cognitive performance among young adults. Especially, aerobic exercise gave rise benefits for executive function in cognitive processes for goal-directed cognition. These processes are importance for inhibitory control, planning, set shifting, and working memory. Tine, M. (2014) examined that aerobic exercise increase executive function in the brain and also it supported to increase the reading comprehension.

Numerous studies (Eg. Mishra et al., 2020; Gilbert, 2019; Jois et al., 2017; Vhavle et al., 2017) suggested that yoga and meditation had been shown to be beneficial aids for students to develop the cognitive functions such as attention, emotion regulation, cognitive association, and other executive functions improvement among learners.

The researcher reviewed empirical evidences on the effects of learning with music on Neurocognitive development among students in formal and informal settings, and also in music interventions. Number of empirical studies revealed that the roles of music played a vital in promoting learning both in schools and colleges. Hyde et al. (2009) found that music

intervention activated neurons and developed the neuronal structures of cortex, amygdala, hippocampus, and hypothalamus and improved plasticity and neurogenesis among students while learning with music (Nwokenna et al., 2019). Li, Chung & Hsiao (2016) pointed out that both music and English reading involved a left-to-right reading direction in right visual field or left visual field. The finding of the study suggested that music with reading on visual spans in language learning improved the cognitive processes in the brain. Recently, Fotidzis et al., (2018) conducted a study; the result of the study supported the existence of Neurocognitive resources for linguistic and musical rhythm processing important for the use of rhythm-based activities for reading interventions. Nwokenna et al., (2019) investigated music intervention for perceived stress reduction among English education students. The music intervention brought about a positive reduction in perceived stress of the recipients compared to participants in a control group. Thus, music intervention is helpful the students toward overcoming stress.

ICT tools not only enrich teaching and learning activities and also the quality of education. ICT creates a bridge between students' needs and expectations (Klichowski & Patrício, 2017). Ahmed (2019) and Justina (2016) urged the system to enlarge alternative teaching and learning strategies that can facilitate the rural background learners' work on their reading and writing skills in English. In the modern era, social media such as Whats App, YouTube, Facebook, Instagram, and Twitter are used as ICT tools to help the learners develop their learning skills and these are utilized further motivate learners to improve their reading and writing skills. Klichowski & Patrício (2017) point out that ICT tools change the way of thinking or change in a sense the human brain. Hadar et al., (2015) pointed out that cognitive changes and brain activity changes were associated with smartphone usage. A study by Gustafson et al., (2015) showed that using ICT tools had a positive influence on the

improvement of cognitive skills such as memory and attention in older adults. In this way, the researcher has tried to provide brain active techniques viz., aerobic exercise, yoga, meditation, music and ICT as Neurocognition intervention to improve the students' brain to improve their reading and writing skills in English.

3.3.2 Neurocognition Strategies

In the present study the researcher has selected seven strategies based on the literature survey and concept of neurocognition such as sensory input, visual perception, auditory perception, explicit & implicit, emotion regulation, information sequencing and cognitive association.

1) Sensory Input

According to Goswami (2015) learning depends on neural networks distributed across multiple brain regions. The brain is plasticity. The basis of cognition is indeed in sensory-motor learning. Perceptions of sensory input from five senses are formed by prior experiences and modified in relation to prior stored information in long term memory; the brain processes multiple information inputs almost at the same time (Anderson, 2009). The neural activity of primary and secondary sensory areas is evoked by the presentation of a stimulus to a given sensory organ (Borghesani & Piazza, 2017). Each sensory system has its own association areas on the cerebral cortex. The sensory systems (vision, hearing, somatic sensation etc.) each have their own primary area on the cortex, which gets the most direct connections from its sense. Each primary sensory area sends information to its own cortical association areas, which are next to their primary areas.

Neurological processing has led to the generally accepted idea that the brain has evolved to learn optimally through multi-sensory input (Berninger et al., 2017). Reading and

writing are a visual and mental phenomenon. In other words, the reading process is both a sensory process that depends on certain visual skills, such as the identification of symbols, and a perceptual process that involves the interpretation of what is sensed. Information is presented through technology that the students interact with it using more than one of their senses, most commonly through a combination of auditory and visual channels. Using ICT to deliver learning input allows a student-centered environment and can be adapted to many different learning strategies. Use of technology in language learning is very common, and it can be combined with sensory learning for an optimized learning experience (Tervaniemi et al., 2018; Ettlinger et al., 2011).

In order to balance all processes, teachers need to utilize reading techniques such as background knowledge, reading for matching, reading for sequencing, predicting content from the title, guessing the meaning of unknown words from context, using textual aids to anticipate information, skimming to get the gist, scanning for specific information, silent reading, aloud reading and collaborative reading. Likewise, in teaching English language skills, teachers should integrate teaching of reading and writing skills into their lesson after providing oral input through scaffolding activities with a variety of sensory input.

2) Visual Perception

According to McCandliss et al., (2003) visual recognition is a level of visual processing that extracts invariant information about the shape of visual words to perceive the structure of the object. During the act of reading, visual perception is important for many functions. Visual perception is the ability to interpret and understand the information is taken by the eyes and move to the thalamus. All three cuing systems are used to make sense of this data before it moves to the cortex. The cortex is the part of the brain responsible for higher level thinking and memory. However, during the act of reading information does not flow just one way from the page to the thalamus and up to the cortex (Johnson, 2016). The readers require the differentiation and recognition of visual stimuli from written words and access their grammatical features and meaning, despite large differences in their size, position, CASE, or font cited in (Ostrolenk et al., 2017). Readers also require a visual analysis of a uniquely ordered array of letters such as a familiar word and retrieval of the word representation from memory (Bellocchi et al., 2017; Giaouri et al., 2020). The **occipital lobe** is associated with **processing visual information**. This means that the adult reader comes to visually recognize “whole words” automatically which speeds the rate of reading to better suit our rate of thinking. The visual system also “chunks” larger words for easy processing (eg. La-bo-ra-to-ry, Dis-a-bi-li-ty). This involves in the occipital area of the brain and the visual cortex in recognizing the word and activating visual “images” that support word meaning. The left occipitotemporal lobe is responsible for the rapid extraction of this abstract orthographic representation of ordered strings of letters, this area is activated preferentially while writing relative to other perceptually similar control stimuli (McCandliss et al., 2003). This activation is thought to be invariant for spatial location, with comparable activation patterns being observed for words presented in the left or right visual field (Cohen et al., 2002,

2000) cited in (Ostrolenk et al., 2017). Visual perception is a dynamic process that identifies, organizes, interprets, and understands what is seen. It integrates sensory and motor information generated by the brain and body to derive meaning from it and direct movement (Johnson, 2016).

3) Auditory Perception

Auditory perception is the ability to receive, interpret information, and identify the meaning of sound that reached the ears through audible. The sound enters the auditory pathway as information to the auditory cortex in the temporal lobes to process it; the connections will work faster and more efficiently, to improve auditory perception. The auditory information is manipulated and sent to the rest of the brain to allow interacting. The neural connections can be strengthened by replaying mentally a word, phrase or piece of information; using one's mental tape recorder, hearing the piece of information again frequently training these skills. Auditory perception will become stronger the brain structures in the auditory cortex in the temporal lobes. This means that when ears send information to the brain and the brain processes it, the connections will work faster and more efficiently, improving overall our auditory perception (Gokula et al., 2019).

4) Explicit and Implicit

Language is dependent on two different systems of the brain. Humans possess various storage systems known as explicit (declarative) and implicit (procedural) memory. Explicit memory is a subcategory of long-term memory and used for learning facts and events. The hippocampus and the temporal-parietal cortex are considered important structures in subserving explicit learning and representation of knowledge (Cohen et al., 1985; Eichenbaum, 1999) cited in (Yang & Li, 2012). This type of memory is happened while conscious retrieval

of information. It is mainly related to the hippocampal region of the brain. In addition, significant that one's performance has been watched and evaluated by others are shown to disrupt a formerly well learned action sequence. Consequently, explicit cognitive strategies essential to kick-start adaptation, they actually interfere with retention and implementation of well learned actions. Brown (2007) point out that explicit learning is conscious awareness and intention. It involves directing student attention toward a specific learning objective in a highly structured environment. Topics are taught in a logical order directed by the teacher through demonstration, explanation and practice. The main purposes of this learning are to introduce a new topic or skill, to provide guided instruction and to give students specific instruction through modeling.

Implicit memory, on the other hand, involves the incidental and unconscious retrieval of information and is indexed by "indirect" measures such as repetition priming or skill acquisition. Explicit and implicit memory systems map onto similar neural correlates as declarative and procedural memory systems (Dew & Cabeza, 2011; Voss & Paller, 2008) cited in (Sawi & Rueckl, 2019). Implicit learning is without conscious attention or awareness (Brown, 2007). Implicit teaching involves teaching a certain topic in a suggestive or implied manner; the objective is not plainly expressed. Its purposes are to introduce new concepts in a learner-centered manner, to give learners instruction with a variety of examples and to allow the learners to create their own schemas for understanding rules instead of memorizing specific rules.

Explicit and implicit learning happen together and the learners can apply the explicit knowledge of the rules to new structures. The learner may employ both systems by using explicit learning for initial registration of form-meaning associations while using implicit learning for information integration, thus maximally benefitting from both types of learning.

However, recent studies (Sawi & Rueckl, 2019; Yang & Li, 2012) support the view that both explicit and implicit learning contribute to change the human behavior.

5) Emotion Regulation

Emotion regulation abilities are associated with recruitment of a set of prefrontal brain regions involved in cognitive control and executive functioning that mature late in development (Martin & Ochsner, 2016). Emotion regulation is a type of emotion-cognition interaction where cognitive control systems are believed to aid in dampening or enhancing negative and positive emotions. Because, the brain regions associated with cognitive control structures – such as prefrontal cortex, the amygdala and ventral striatum. These brain regions are contributing toward increased difficulty with emotion regulation (Gabard-Durnam et al., 2014; Silvers et al., 2015) cited in (Martin & Ochsner, 2016). Martin& Ochsner (2016) have discussed the regulation of both negative and positive emotions and the potential applications in education.

Järvenoja et al., (2019) point out that emotion regulation means students purposefully aim to influence emotions with their experience and express. Emotion regulation also includes the capacity to understand others' emotions and to modify emotional experiences when participating in social interaction in a group context (Järvenoja, Volet, and Järvelä 2013; Whitebread and Basilio 2012) cited in (Järvenoja et al., 2019). Similarly, previous study, Martin & Ochsner, (2016) revealed that the presence of a caregiver can have a buffering effect, reducing emotion and stress responses to negative stimuli. Also, in the reward domain, the presence of a caregiver during a risky decision task decreased risky choices and increased activation in control regions ventral striatum and amygdala activation in adolescents (Telzer et al., 2015) cited in (Martin & Ochsner, 2016) . Emotion regulation in a collaborative learning situation is composed as an active strategy to form the perceptions and interpretations of each

other's emotional reactions through observation (Järvenoja et al., 2019). Emotional interpretations are also part of the appraisals the group members make of a variety of challenging situations. Emotion regulation is activated in relation to these situations and appraisals in order to shape the learning process. Group-level emotion regulation takes place if this regulation involves multiple individual perspectives in the fine-tuning of emotional conditions. Some researchers have extended the group level emotion regulation among the students through collaborative learning (Järvenoja et al., 2020 & 2019) and cooperative learning (Marashi & Khatami, 2017; Kamdideh et al., 2019).

6) Information Sequencing

Language can be processed as sequences of phonemes, syllables, words and sentences, or tonal sequences as sequences of actions. Sequential encoding is necessary for stimuli presented in the temporal domain. Information sequence processing perspective on left inferior frontal Gyrus (LIFG) function is whether the LIFG (BA 47/45/44) as part of the perisylvian network is involved in processing recently learned or acquired sequences, independent of the kind of elements the sequences are built (Bornkessel-Schlesewsky & Schlewsky, 2012; Uddén, 2012; Carota & Sirigu, 2008). (Bornkessel-Schlesewsky & Schlewsky, 2012; Uddén, 2012) have elaborated on the functional neuroimaging evidence in favor the sequence processing perspective on LIFG through the activations words or lexical items to produce full sentences.

Straková (2013) pointed out that the visual and auditory inputs from the speaker are related to sequences level of processing. It provides relation among word level or sublexical level, as well as integration of gesture. Written and spoken language has a common knowledge structure, as well as phonology, syntax and semantics in the form of sequences with adjacent and non-adjacent dependencies. Syntactic structure can be seen as sequences of words. The

rule system consists of a formal grammar that generates a set of rule following, patterned or grammatical sequences. Subjects are informed, after acquisition, that the sequences were generated according to complex rules and asked to classify novel items as grammatical or not.

7) Cognitive Association

The cognitive association is included in parts of the cerebral cortex that receive inputs from multiple areas; association areas integrate incoming sensory information, and also form connections between sensory and motor areas. Because they are involved in organizing information that comes from various other areas of the brain, association areas are often linked to complex functions.

The limbic association areas: located just beneath the cerebrum on both sides of the thalamus, is not only responsible for our emotional lives but also many higher mental functions, such as learning and formation of memories.

The posterior association areas: located at the junction of temporal, occipital, and parietal lobes. The temporal lobe is associated with the retention of short- and long-term memories. It processes sensory input, including auditory information, language comprehension, and naming. The occipital lobe is the visual-processing center of the brain and the parietal lobe is associated with sensory skills. These areas are important in perception and language comprehension.

The anterior association areas: located in the prefrontal cortex (PFC). It links information from other association areas. It is involved in the top-down processing of sensory and motor information in memory formation, planning, execution, higher-order information processing, and suppression of unwanted behaviors. Interestingly, several studies have also

shown the significance of the PFC in the regulation of endurance exercises, as evidenced by increased brain activity of this area with functional imaging (Wright, 2020).

3.3.3 PASS Theory of Cognitive Processes

According to Luria (1973) research on the brain lesions divided as three functional units. There are the information processing, cognitive processing and neuropsychological functioning. These processes refer to the mental activities of attention (I-unit), simultaneous and successive processing (II- unit), and planning (III- unit) cognitive processes that called as PASS theory. The P stands for planning process allows for the completion of goals through the development of strategies. It is associated with Luria (1974) third brain functional unit located in the frontal lobe. The students' mental process enables to select strategies and make decisions to solve problems (eg. to identify the vocabulary or error in statement). The A stands for attention and refers to Luria's first unit. It located in the reticular activating system. It has a dual relationship with the cortex because it influences both the tone of the cortex, and its regulation. Otero, Gonzales, & Naglieri (2013) defined attention as a cognitive process associated with the ability to concentrate on a specific stimulus. The first S in PASS is for successive processing; this process is in the posterior region of the neo cortex, including the occipital, temporal, and parietal lobes (Luria, 1974). This cognitive ability is associated with the organization of stimuli in information sequence or sequential order. The last S in PASS is for simultaneous processing; this process allows for the grouping of information that has interrelated elements in common. Simultaneous second functional unit located in the occipital, temporal and parietal lobes (Ortiz, 2019). The following figures 3.F.1 show Luria's the three functional units of PASS and associated brain structures.

Figure- 3.F.1 Three Functional Units and Associated Brain Structures

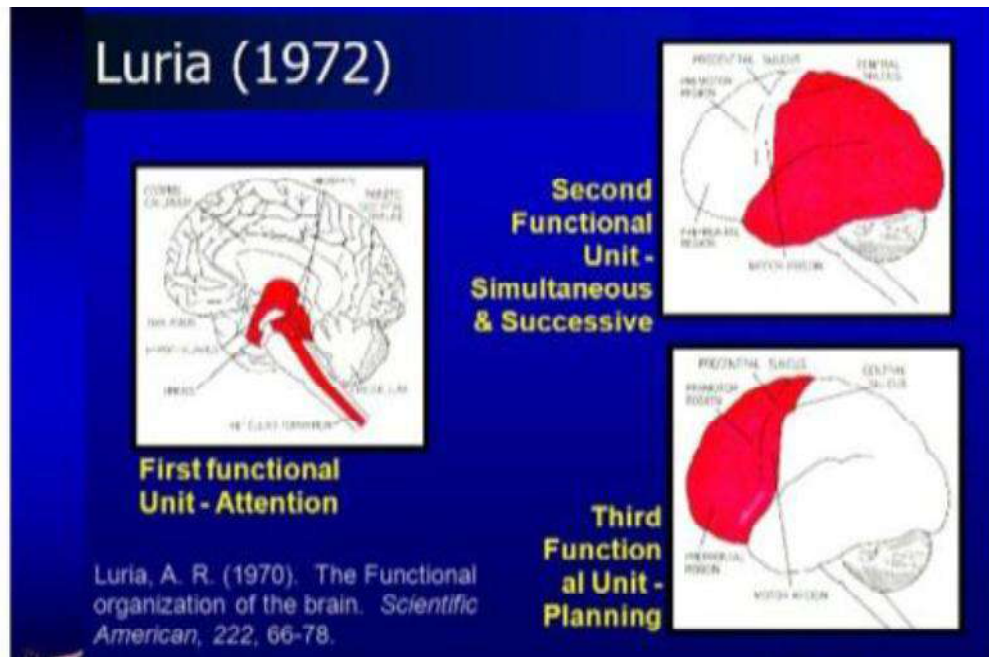
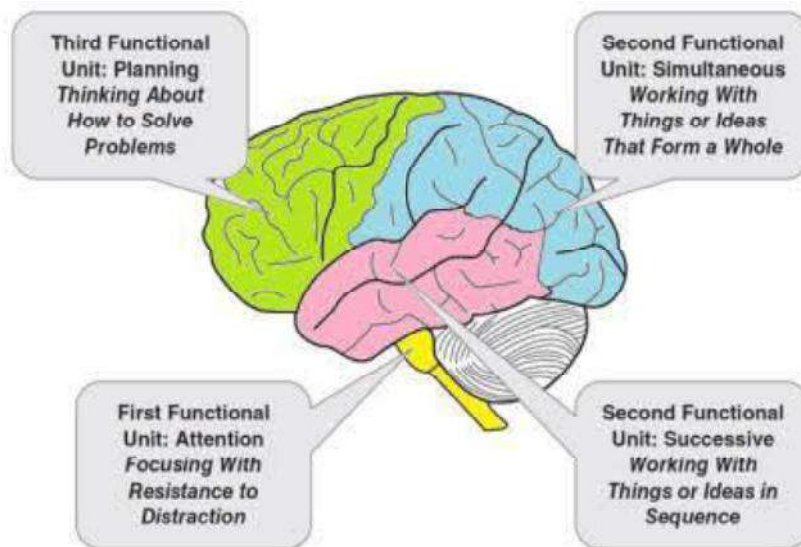


Figure-3.F.2. Three Functional Units and Cognitive Processes



Based on the PASS theory of Neurocognitive processes, an instructional design was developed by the investigator to make teaching learning effective.

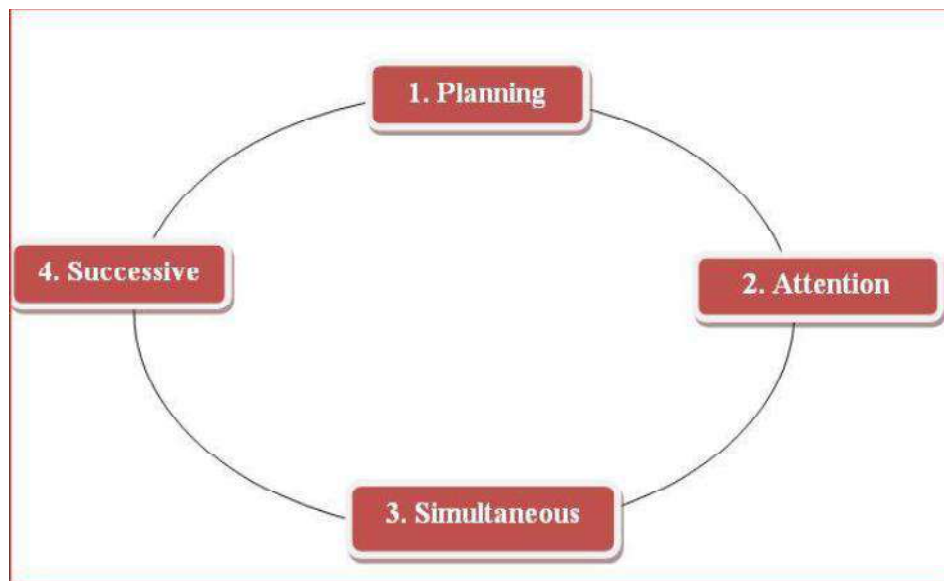


Figure 3.F.3 PASS Theory Based Cognitive Process

Thought can influence language, and language can influence thought, but rather than being part of a single automated cognitive system, each evolves as a separate, modular, biologically prepared component of the mind. The PASS (Planning, Attention, Simultaneous, and Successive) theory of cognitive processes (Naglieri & Das, 1997) is based largely on the neuropsychological work of Luria. The maintenance of attention, the processing and storing of information, and the management and direction of mental activity comprise the activities of the operational units that work together to produce cognitive functioning (Das et al., 1994) cited in (Naglieri & Das, 2005). The PASS theory proposes that cognition is organized in four processes and that these processes are functions of four areas of the brain. The first process is Planning, which involves executive functions responsible for controlling, organizing, and monitoring behavior. For example, shifting attention during reading to different parts of the text and selectively allocating resources and effort to different information involve this kind of processing. The second process is Attention, which ensures sufficient arousal levels and focus on specific stimuli. For example, performance in selective attention and reading comprehension tasks is likely to be related when there is a need to inhibit stimuli that are not

the primary focus of attention (e.g., when a word or a sentence is degraded or masked by no targets in the surround). The other two processes, Simultaneous and Successive processing, enable encoding, transformation, and retention of information. Simultaneous processing is relevant when the task or behavior requires integration into whole units of information, or a “gestalt.” For example, recognition of whole words by sight involves this kind of processing, as does comprehension of the meaning of an entire sentence in a paragraph. Successive processing is relevant when the task or behavior requires organization of individual units in a serial order. For example, word decoding / sentence or word sequencing and spelling involve this kind of processing. Here, the researcher has provided some important components for increasing the cognitive processes and developing the English language skills through teaching and learning strategies.

3.3.4 PASS Theory based Cognitive Processes Supporting Strategies

Traditional language teaching methods have been criticized on the bases of environment that they hardly represent a variety of structure. Alternatively, cognitive processes are involved in variety of teaching methods with supporting learning activities. Cognitive processes supporting teaching and learning strategies help a teacher to understand the learning process. So, the researcher has tried to utilize blend of cognitive processes developing teaching learning strategies, to meet out the individual difference of students in skills, and interests to learn their needs. Moreover, to teach and develop the English language skills effectively is important for undergraduate students. Therefore, the researcher needs to use a wide range of instructional strategies to promote high levels of knowledge in English language skills. The following components of cognitive processes supporting strategies used to develop the English language skills especially reading and writing skills. These have been taken from various review of related studies and incorporated in the model development for the present study.

Table 3.T.1: Components of English Language Skills and PASS Theory Based Cognitive Processes Supporting Strategies

S.No.	Components of English language skills and cognitive process supporting strategies	Authors
Vocabulary		
1	Visual attention- refers to a set of cognitive operations that mediate the selection of relevant and the filtering out of irrelevant information from cluttered visual scenes.	Liao et al., (2020); Javadipour et al., (2018); Tine, (2014)
2.	Guessing Meaning from Context- This strategy is a key vocabulary learning skill for dealing with low-frequency vocabulary, particularly in reading authentic texts. The background knowledge about the topic and the culture greatly aid inferencing and retention by providing a framework (“schema”) for incorporating the new word with information already known, but even without such a background learners can become skilled in guessing.	Durukan, (2011); Olson & Land (2007);
3	Interactive activity- learners try to learn through their participation in the attainment of knowledge by gathering information and processing it by solving problems or individual learning in favor of getting their involved and engaged with the lessons or material.	Sadaffunisha and Vijayakumar, (2020)
4	Monitoring & Self-Correcting- Learned competence acts as a monitor which involves paying close attention.	Choi et al., (2018); Durukan, (2011); Aripin & Rahmat (2019)
5	Rehearsal- is a repeated practice of information to learn specific information to be learned, such as a list, often students will attempt to memorize the information by repeating it over and over.	Aref & Mojavezi, (2019); De Cates et al., (2017); Smalle et al., (2017)
6	Evaluation- The teacher wants to check retention of their students. This can be done such as activities: Choosing the correct word, Gap-filling, Sentence completion, Matching, Write suitable substituted word, Providing example sentences, Creating a scenario to feature the new word, giving meaning for idioms and phrases.	Malik, and Din, (2019); Aripin & Rahmat (2019); Varisoglu, B. (2016)

Grammar		
7	Memories the Roles- teacher motivate the learners only cram the subject/grammatical rules by rote.	Chen, Z. (2016); Pawlak (2019)
8	Repetition- Imitating or reciting grammar smartly including overt practice and silent rehearsal	Altalhab, (2018); Singh & Pauranik, (2017); De Cates et al., (2017); Chen, (2016); Shi et al., (2016); Varisoglu, (2016); Hoen et al., (2006)
9	Retrieval- means to bring information to mind enhances and boosts learning. Deliberately recalling information forces to pull their knowledge “out” and examine what they know.	Lin, S. F. (2018); Arifin, (2017);
10	Making Connection- Encourage students to make connections to their own lives and other texts that they have read. Weave this into your discussion or questioning after reading in order to link comprehension with real-world concepts your students can relate to.	Chen, Z. (2016); Keezhatta, & Omar (2019)
11	Scaffolding & Decoding- scaffolding means the teacher guides their students as they read their way through a text. Decoding means the ability to apply knowledge of written words. And to Understand the relationships to recognize familiar words quickly and to figure out words the students haven't seen before.	Brevik, (2019); Plourde et al., (2018)
12	Thinking Aloud- Reasoning about or reflecting on grammar	Chen, Z. (2016); Malik and Din (2019); Aripin & Rahmat (2019)
13	Self Monitoring - Inferring and analyzing grammar rules from a text	Aripin & Rahmat (2019)
14	Rewriting- To write again, especially improved form; after revise.	Rahimi & Farjadnia (2019); Akyol et al., (2014)
15	Feedback: 1. Recasts- It is when the teacher partly or completely reformulates the student’s incorrect utterance without repeating the error. 2. Prompts- It is when a teacher provides the student with hints in order for the student to produce the correct output. 3. Elicitations- It is when a teacher provides the students with information in order for the student to produce the correct output. 4. Repetition- It is when a teacher repeats the	Malik and Din (2019); Altalhab, (2018); Smalle et al., (2017); Shakoori et al., (2017); Singh & Pauranik, (2017); Aripin & Rahmat (2019)

	students' L2 output. 5. Explicit correction- It is when a teacher explicitly tells the student his/her output is incorrect and after provides the student with the correct output. 6. Providing metalinguistic clues- It is when a teacher provides helps the student produce correct output by hinting on the metalinguistic rules. 7. No response- It is when the teacher hears the students' incorrect output, but decides not to respond to it for various didactic and/or pedagogical reasons. 8. Clarification request- It is when the teacher either asks the student to repeat what s/he has said or the teacher indicates the output is unintelligible, in order for the student to adjust his/her output.	
16	Self-evaluation - appraising one's performance in relation to one's own standards.	Rahimi & Farjadnia (2019); Chen, Z. (2016)
Reading Comprehension		
17	Decoding- reading is a decoding process by which students comprehend a written message through others' ideas, thoughts, or feelings. It means the ability to apply knowledge of written words. And to Understand the relationships to recognize familiar words quickly and to figure out words the students haven't seen before.	Kendeou, Papadopoulos & Spanoudis, (2015); Plourde et al., (2018)
18	Bottom up perception- the student understood as the process of recognizing the printed text as letter and word (the bottom) and constructs meaning from as phrases and clauses (the top) found within, and then processes the text in a linear fashion. The reader seems to play a relatively passive role because the basis of bottom – up processing is the linguistic knowledge of the reader.	Sadafunisha and Vijayakumar, (2020); Soomro et al., (2019) Suraprajit, (2019)
19	Organizing logical sequence- Sequencing is an important strategy which helps reader not only to understand the text better but also to realize that meaning in logical order. The ability to search and discover this order can be practiced best in story-based activities where the content always follows certain order.	Singh & Pauranik (2017); Shakoori et al., (2017)
20	Construct the sentence- construct sentence that emphasize the students meaning and make their interest in writing.	Farahani et al., (2019)
21	Concept mapping- to identify the major ideas or concepts presented in a selection of text as the students read.	Ahmed, 2020; Aref & Mojavezi, 2019; Dehdari, 2019; Shakoori et al., 2017
22	Interactive activity- learners try to learn through their participation in the attainment of knowledge by gathering	Sadafunisha and Vijayakumar, (2020); Rahimi

	information and processing it by solving problems or individual learning in favor of getting their involved and engaged with the lessons or material.	& Farjadnia (2019); Kim (2017)
23	Cooperative learning- working with peers to complete a task, pool information, solve a problem, get feedback; cooperating, working with classmates, coaching each other. Each student is given a different strategy that they are responsible for leading/answering during the discussion time which follows the reading of the text. These roles are summarising, question generating, clarifying, and predicting.	Umar Al Faruq et al., (2020); Kamdideh et al., 2019; Yusuf et al., 2019; Hidayanti & Gunawan (2018); Varisoglu (2016); Durukan, (2011)
Graphical Representation		
24	Visualizing-Organizing - Constructing a mental image or graphic organizer for the purpose of extracting and constructing meaning from the graph, chart table etc.	Liao et al., (2020); Muflih, (2019); Tine, (2014); MohdYussof et al., (2012)
25	Brainstorming- is a large or small group activity that encourages students to focus on a topic and contribute to the free flow of ideas.	Abedianpour & Omidvari, (2018); Sari (2018); Zarei & Feizollahi (2018); Sharafi-Nejad et al., (2016)
26	Top down Perception- The student is involved to read or try to understand the graph, chart, table etc. and build the meaning. That means the student moves from the top, the higher level of mental stages to down the point. It emphasizes the reconstruction of meaning rather than the decoding of form, the interaction between the student and the text rather than the graphic forms of the printed pages. A whole meaning occurs in reading and combine the printed page with the reader's background knowledge and experiences.	Ganchev, (2020); Sadaffunisha and Vijayakumar, (2020); Suraprajit, (2019)
27	Semantic Representation- is a strategy which helps learners to understand the concepts through graphical representation and its relations between individual parts of the concept.	Akyol et al., (2014)
28	Evaluation- it is conducted after reading or writing. This involves encouraging the students to form opinions, make judgments, and develop ideas from reading or writing. Teachers can create evaluative questions that will lead the student to make generalizations about and critically evaluate a text.	Ganchev, (2020); Malik, and Din, (2019); Rahimi & Farjadnia (2019); Varisoglu, B. (2016); Olson & Land (2007)

All the listed components of cognitive processes supporting English language skills such as reading and writing skills and its teaching strategies were incorporated in the process of cognitive (PASS) to develop English language skills integrating Neurocognition strategies

and Neurocognition interventions to enhance the language skills in English among undergraduate students from rural areas.

3.4 Desk Review for Developing the DAELS

The competitive examination questions were analysed for a desk review to develop the diagnostic assessment in English language skill (DAELS). The desk review helped the researcher to identify the key factors of competitive exam based English language skills to be focused on competitive examiners. It also helped to develop the conceptualization of language skills in English for the study. Syntheses of gathered information have produced into a form of reading and writing's sub-skills identification for enhancing the English language skills. Advice of the experts in English language teachers and competitive examination trainers have been required for gaining a thorough understanding of the requirement examinations' language skills while preparing into a successful examinations. Based on the consolidated data, a diagnostic assessment has been validated to find out the gaps between the competitive examinations based English language skills and the current status among the rural undergraduate students' English language skills.

3.5 Diagnosing the Problematic English Language Skills of Rural Areas' Undergraduate Students

The researcher administered a diagnostic assessment in English language skills (DAELS) among undergraduate students from rural areas in Bharathidasan University affiliated colleges located in Tiruchirappalli district only to find out the problems in English language skills. The description and validation of the diagnostic test is presented below elaborately. The major aim of the present study is to develop the English language skills through an appropriate teaching strategy with the help of oriented model is developed. Therefore, the researcher has reviewed a lot of empirical researches for collecting to develop the suitable components of competitive exam in English language skills so that those

components of competitive exam could be taken cognizance for their development of English language skills especially competitive examination questions based.

Table- 3.T.2

Selected Components of English Language Skills for DAELS

Competitive Exam Based English Language Skills			
Vocabulary	Grammar	Reading	Writing
Synonyms, Antonyms, Substituted words, Idioms and phrasal verbs	Articles, Preposition, Tense, Subject verb agreement (concord), Spot the error, Sentence pattern, question tag, and Kinds of sentence (voices, direct & indirect speech, simple, compound and complex sentences)	Reading comprehension, Graphical representation and Jumbled words	Graphical representation, Dialogue, Notes making, Summarizing and Letter writing

3.6 Administration of the Diagnostic Assessment

The diagnostic assessment was administered to identify the problems encountered by students in English language skills. It is set to help the researcher to find out the strengths and weaknesses of the undergraduate students from rural areas for the researcher can develop strategies to address the development of language skills for the undergraduate students. The researcher selected 721 students from rural areas at random in Bharathidasan University affiliated colleges in Tiruchirappalli district. The diagnostic test consists of items in Reading and writing skills. These two skills are divided to test the sub skills of language skills such as vocabulary, grammar, graphical representation and reading comprehension passage with comprehension questions testing from understanding contextual clues. The reading skill of students has been tested through multiple choice questions and the writing skills through open ended questions with 50 marks each. They are scored holistically.

These two types of questions were widely used in various competitive examinations especially for job recruitments (UPSC, RRB, SSC, TNPSC, etc.,) in India. The researcher has incorporated the syllabus for competitive examination based on the findings of the diagnostic study and the desk review. It depends on various areas in English language skills such as vocabulary, grammar, reading comprehension and graphical representation. So, the researcher has concentrated on finding out the students' weaknesses in competitive examination skills in English for he can help the learners to understand the grey areas.

3.6.1 Deficit of Language Skills among Rural Undergraduate Students

The diagnosing assessment is composed of two divisions as Reading and Writing skills. Each of the two skills have different type of questions from the four areas viz., vocabulary, Grammar, Reading comprehension and Graphical Representation based on the difficulties experienced in English language skills by learners to read and write.

A diagnostic assessment to find out the problems in English language skills was conducted in the selected areas mentioned in table 3.T.2. The contexts in this regard were taken from various competitive examinations question papers so that it would be meaningful to diagnose their vocabulary, grammar, reading comprehension and graphical representation in which they are required to concentrate on developing English language skills. The researcher has found out that the rural undergraduate students did not have sound knowledge in English (topics) usage in competitive examination competence such as substituted words, Idioms and phrasal verbs, subject verb agreement (concord), spot the error, kinds of sentence (voices, direct & indirect speech, simple, compound and complex sentences), reading comprehension, jumbled words, and graphical representation (description of table, chart, graph).

Table - 3.T.3

Selected Topics for Competitive Exam Based English language skills from DAELS

Competitive Exam Based English Language Skills			
Vocabulary	Grammar	Reading Comprehension	Graphical Representation
Substituted words, Idioms and phrasal verbs.	Subject verb agreement (concord), Spot the error, and Kinds of sentence (voices, direct & indirect speech, simple, compound and complex sentences)	Comprehension passages (paragraphs and essays), and Jumbled words	Description of table, chart, Graph etc.,

This enables the researcher to spot out the processing area of the undergraduate students from rural areas. It is in this context, by adopting the concept of Neurocognition intervention strategies through brain active techniques along with the ICT, a model was developed to improve the Competitive Exam based English language skills of undergraduate students from rural areas. The panoramic view of Neurocognition intervention strategies model design is presented below.

3.7 A Panoramic View of Ramganesh -Hariharan's Model for English Language Skills through Neurocognition Intervention Strategies

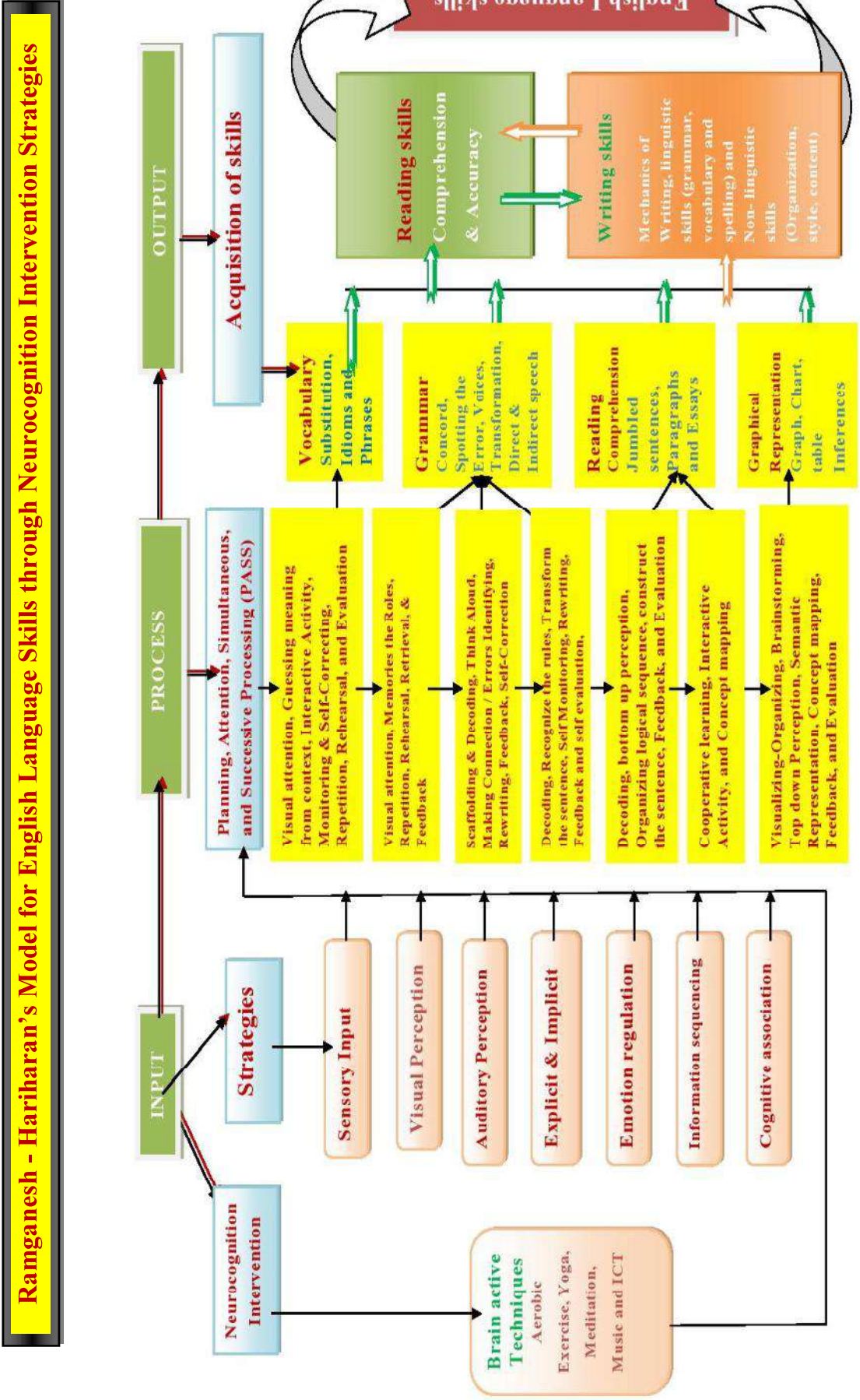
A model was developed by the researcher and the research supervisor based on literature and studies reviewed that had positive research outcomes of cognitive neuroscience in language processes. The following model is called as “Ramganesh - Hariharan's Model for English Language Skills through Neurocognition Intervention Strategies”

The model of Neurocognition intervention strategies was developed after going through the various strategies and components of English language skills suggested in

different studies for the development of reading and writing. The researcher identified and organized the Neurocognition strategies and interventions that have contributed positively to the teaching-learning process for the development of the reading and writing performance of rural undergraduate students.

The objective of developing the Neurocognition intervention strategies model was to improve the reading and writing performance in English of undergraduate students from rural areas. The identified English language skills components and Neurocognition intervention strategies were schematically represented in the Input-Process-Output design of figure 3.F.3 as follows:

Figure 3.F.4. Ramganes - Hariharan’s Model for English Language Skills through Neurocognition Intervention Strategies



Appropriateness of Neurocognition intervention strategies were utilised as a supplementing device in the teaching learning process for the strategic orientation. There were abundant of research studies substantiated for Neurocognition intervention strategies such as aerobic exercise (May et al., 2017; Lin et al., 2015; Tine, 2014), yoga (Jois et al., 2017; Vhavle et al., 2017), medication (Wongsothorn and Yordchim, 2020), music (Eccles et al., 2020; Foncubierto et al., 2020; Nwokenna et al., 2019; Fotidzis et al., 2018; Li, Chung, & Hsiao, 2016) were used as a supplementing device to improve cognitive processes and develop the English language skills. It was also emphasised that integrating technology and neurocognition strategies in teaching learning process improved the reading and writing performance of the students (e.g. Erkulova et al., 2020; Gubbels et al., 2020; Maduabuchi & Emechebe, 2016; Mishra, B. 2015).

According to Stager (2010) Neurocognitive-based teaching model was to create a productive context for learning, including preparing multisensory material, scaffolding, consulting, giving time, collaboration, and doing ahead with the coming needs of student cited by Sripongwiwat et al., (2016). In this way, the researchers have created multisensory model through Neurocognition-based teaching learning strategies such as sensory input, visual perception, auditory perception, emotion regulation, information sequencing, and cognitive association utilized to enhance cognitive processes and develop the English language skills of students also ICT was integrated with it wherever necessary.

After identified the Neurocognition intervention and strategies, it was organized to meet the demands to develop the English language skills of undergraduate students. Based on the opinion of the experts in the field and the empirical evidences, a Neurocognition intervention strategies model was developed by the researcher. It is believed that the

components of English language skills can be oriented through this model to enhance the reading and writing performance of undergraduate students who are in rural areas.

3.8 Empirical Symbiotic Validation of the Neurocognition Intervention Strategies to develop English Language Skills Model

The Neurocognition intervention strategies model focuses on developing reading and writing performance of rural undergraduate students through providing orientation in the four components of competitive exam based English language skills, namely vocabulary, grammar, reading comprehension and graphical representation. These four components are very important for competitive examination in their future. Hence, the researcher has chosen reading and writing skills in English. Some of the research studies reported that undergraduate students have difficulties in vocabulary (Al-Momani, 2020; Ahmed & Mani, 2020; Afzal, 2019; Akbar et al., 2018; Al-Nouh & Abdul-Kareem, 2017), grammar (Ahmed & Mani, 2020; Farooq et al., 2020; Khalil, 2020; Akbar et al., 2018; Alhaysony & Alhaisoni, 2017), reading comprehension (Fogarty et al., 2020; Vaughn et al., 2019; Mukhlif & Amir, 2017; Ntereke & Ramoroka, 2017; Qrquez, & Ab Rashid, 2017; Alghail and Mahfoodh, 2016) and graphical representation (Ramganesha & Hariharan, 2021; Pirnay-Dummer & Ifenthaler, 2011; DelMas et al., 2005). It was evident from the research studies in the field of English language skills that undergraduate students need to be provided intensive training in developing the competitive exam skills in English in order to minimize their reading and writing difficulties and to improve their English language skills.

The close relationship between reading and writing skills have been generally accepted through numerous research attempts and also the importance of reading in enhancing writing ability has been largely acknowledged (e.g. Ilahiyah et al., 2019; Schoonen, 2019; Choi, et al.,

2018; Hidayanti, & Gunawan, 2018; Tulgar, 2018; Xiao, & Lynch, 2017; Varisoglu, 2016). Reading grants chances for readers to learn several mechanisms of language such as vocabulary, grammar, sentence construction and punctuation as well as how to write paragraphs and essays (texts) (Rajab et al., 2017). According to Hirvela (2004), both reading and writing skills give common constructs including linguistic characteristics and rhetorical structure as well as lexical and stylistic features of written discourse. Although similarities of reading and writing are common in cognitively complex skills, there are also remarkable differences (Schoonen, 2019; Berninger et al. 1994). To specify, reading tends to require automaticity of sub-processes, whereas writing needs deliberate awareness of the writer. Actually, past research commonly accept the complex relationship exists between two elements of reading and writing skills, and also the exact nature is clear explained (Shanahan and Lomax, 1988; Carson & Leki 1993; Berninger et al. 1994; Hirvela, 2004; Heeney 2015; Pae, 2019).

Number of empirical studies revealed that utilization of information and communication technology (ICT) in classroom teaching provides a positive influence on the improvement of cognitive skills such as memory and attention among students (Jalal & Mahmood, 2019; Geraldo et al., 2018; Klichowski & Patrício 2017). Recently a lot of studies have enabled ICT as intervention program in classroom teaching to develop the students' language skills such as vocabulary (Bilová, 2018), grammar (Erkulova et al., 2020; Olentsova, 2019), reading (Gubbels et al., 2020; Saleh 2019; Maduabuchi & Emechebe, 2016) and writing (Saleh 2019; Boudjadar, 2015). Bilová (2018) noticed that ICT based collaborative language learning has improved positive effects on vocabulary learning among the undergraduate students. Olentsova (2019) pointed out that information technology creates

interest to learn grammar material in distance learning and improves the efficiency of grammar knowledge. Ahmed (2019) and Saleh (2019) examined the pedagogical role of WhatsApp as one of mobile-assisted language learning applications to develop reading and writing skills.

Kendeou, Papadopoulos & Spanoudis, (2015) point out that PASS theory has shaped our understanding about the cognitive processes that are involved in reading development. Usually, the components of PASS theory have been explicitly linked to reading fluency, as well as visual or orthographic processing and reading comprehension. In this way, learners obtain new vocabulary knowledge, grammatical knowledge and syntax of a sentence from different meaning.

Numerous studies attempted to explain the Neurocognition strategies such as sensory input (Borghesani & Piazza, 2017; Anderson, 2009), visual perception (Giaouri et al., 2021; Bellocchi et al., 2017), auditory perception (eg. Myers et al., 2020; Gokula et al., 2019; Yang & Li, 2019; Mueller et al., 2012), emotion regulation (eg. Boggio et al., 2019; Martin, & Ochsner, 2016), implicit and explicit (eg. Erçetin, & Alptekin, 2013; Morgan-Short, et al., 2012; Conway & Pisoni, 2008), information sequencing (Bornkessel-Schlesewsky & Schlewsky, 2012; Uddén, 2012; Carota & Sirigu, 2008), and cognitive association (eg. Wright, 2020; Radel et al., 2017; Kim et al., 2012) that increased synaptic changes in brain while reading.

Hence, it was evident from these research studies that instruction in sensory input, visual perception, auditory perception, explicit and implicit, emotional regulation, information sequencing and cognitive association enhanced the cognitive processes and the processes developed the language skills especially reading and writing skills of students. This is how the Neurocognition Interventionstrategy model was validated symbiotically.

The chapter presented an overview of components and its subcomponents that led up to the development of Neurocognition intervention strategies based instructional model for the development of English language skills among undergraduate students. Neurocognition intervention strategies focus primarily on brain based activities viz., aerobic exercise, yoga, meditation, music with ICT, and also using teaching learning strategies for developing the brain functions with Neurocognition strategies such as sensory input, visual perception, auditory perception, explicit and implicit, emotional regulation, information sequence, and cognitive association to increase the cognitive processes related to English language skills. The incorporation of the intervention strategies provides students confidence with meaningful learning in a motivated environment, in a naturalistic way to reduce the fear of the English language learning and unconscious picking of language skills that can be used for developing the competitive exam task.

CHAPTER IV

DESIGN OF THE RESEARCH

4.1 Introduction

A research design is conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis (Kothari, 2008). It is a plan or proposal to conduct research, which involves the intersection of philosophy, strategies of inquiry and specific methods (Creswell, 2009). Thus, it is a plan that guides the decision as to, when and how often to collect data, what data to gather and how to analyze the data. Mixed methods research is a flexible approach where the research design is determined by what we want to find out rather than by any predetermined epistemological position. In mixed methods research, qualitative or quantitative components can predominate or both can have equal status (Mujis, 2004). Conducting mixed methods research involves collecting, analyzing, and interpreting quantitative and qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon. Thus, the design of the study provides an understanding of how the research is conducted and organized in order to obtain information that can be helpful for developing the different research components. The way in which research is conducted may be conceived of in terms of research strategy employed and so the research instruments utilized in the pursuit of a goal, the research objectives, the quest for the solution of a problem and the research question. The purpose of this chapter is to:

- Spell out the objectives to be achieved.
- Formulate the hypotheses to be tested and Research questions to be addressed.
- Expound the research strategy, including the research methodologies adopted.
- Introduce the research instruments that are developed and utilized in the pursuit of the objectives.

4.2 Objectives of the Study

Although many researchers investigated the influence of individual factors on English as a second language performance, no prior research has attempted to explore how the Neurocognition intervention strategies variables influence English language skills performance as a whole because of the ambiguity of the constructs and complexity of the relationships. For this reason, this study contributed valuable information, including the understanding of how English language skills development is influenced by Neurocognition intervention strategies on vocabulary, grammar, reading comprehension and writing skills.

The aim of the present study is to find out what extend the Neurocognition intervention strategies could develop the English language skills of undergraduate students from rural areas. The objectives were framed by the researcher based on the aim of the present study. Objectives indicate the central thrust of the present study taken by the researcher. To facilitate the aim of the present study, the following objectives were accomplished.

1. To diagnose the difficulties of the rural undergraduate students in their English language skills.
2. To develop Neurocognition intervention strategies to overcome the difficulties of rural undergraduate students in their English language skills.
3. To assess the impact of the Neurocognition intervention strategies on the language skills in English among rural undergraduate students.
4. To ascertain the level of attitude of rural undergraduate students towards English language skills before and after the intervention.
5. To evolve recommendations for policy decisions on the findings of the study.

4.3 Hypotheses of the Study

As objectives should be coupled with the Hypothesis of the study (Farrugia, 2010), hypotheses are framed in relation to the objectives of the present study. In this way, the following Hypotheses were formulated:

1. Control group and Experimental group do not differ significantly in the English language skills in the pre test.
2. Control group and Experimental group do not differ significantly in the English language skills in the post test.
3. Control group students do not differ significantly between the pre test and the post test in the English language skills.
4. Experimental group students do not differ significantly between the pre test and the post test in the English language skills.
5. The undergraduate students of Arts and Science in the control group do not differ significantly in the English language skills in the pre-test.
6. The undergraduate students of Arts and Science in the control group do not differ significantly in the English language skills in the post-test.
7. The undergraduate students of Arts and Science in the experimental group do not differ significantly in the English language skills in the pre-test.
8. The undergraduate students Arts and science in the experimental group do not differ significantly in the English language skills in the post-test.
9. The undergraduate students of Arts in the control group and experimental group do not differ significantly in the English language skills in the post-test.
10. The undergraduate students of Science in the control group and experimental group do not differ significantly in the English language skills in the post-test.
11. First generation undergraduate students and their counterparts in the Control group students do not differ significantly in their English language skills in the pre-test.

12. First generation undergraduate students and their counterparts in the Control group students do not differ significantly in their English language skills in the post-test.
13. First generation undergraduate students and their counterparts in the Experimental group students do not differ significantly in their English language skills in the pre-test.
14. First generation undergraduate students and their counterparts in the Experimental group students do not differ significantly in their English language skills in the post-test.
15. First generation undergraduate students in the control group and Experimental group do not differ significantly in their English language skills in the post-test.
16. The counterparts of the first generation undergraduate students in the control group and Experimental group do not differ significantly in their English language skills in the post-test.
17. Father's Educational qualification does not have significantly influence in the English language skills of undergraduate students in the control group in the post test.
18. Father's Educational qualification does not have significantly influence in the English language skills of undergraduate students in the Experimental group in the post test.
19. Mother's Educational qualification does not have significantly influence in the English language skills of undergraduate students in the control group in the post- test.
20. Mother's Educational qualification does not have significantly influence in the English language skills of undergraduate students in the Experimental group in the post test.
21. Students of control group do not differ significantly between the post test and delayed post test in the English language skills.
22. Students of Experimental group do not differ significantly between the post test and delayed post test in the English language skills.
23. Students of control group and Experimental group do not differ significantly in their English language skills in the delayed post test.
24. Attitude of control group students towards English language skills is related to their performance in reading and writing skills in the pre-test.

25. Attitude of control group students towards English language skills is related to their performance in reading and writing skills in the post-test.
26. Attitude of Experimental group students towards English language skills is related to their performance in reading and writing skills in the pre-test.
27. Attitude of Experimental group students towards English language skills is related to their performance in reading and writing skills in the post-test.
28. Neurocognition intervention strategies are significantly associated with the components of attitude of Experimental group in the pre-test.
29. Neurocognition intervention strategies are significantly associated with the components of attitude of Experimental group in the post-test.
30. Neurocognition intervention strategies significantly estimate the extent of the components of attitude of Experimental group in the post-test.

4.4 Statement of the Problem

English is an integral part of the education system in India because it is one of the two official languages of the country (National Council of Educational Research and Training, 2011). The Annual State of Education Report (ASER) 2018 survey has showed proportion that most of the 14- to 19 year-old students in rural areas can read only Class 2-level textbooks. The report has stated that about 25 per cent of those surveyed could not read basic texts in their own language, and more than half struggled with division cited in (Rao, 2018). According to a recent UNESCO report, India has the highest number of illiterate adults which is a matter of serious concern. It is the major problem associated with the economic growth and it will affect our country's development.

In a recent study Petrus & Shah (2020) has noted that learning English as a L2 (second language) for rural students is challenging, especially related to reading skills. This challenge causes anxiety among rural L2 students reading English related materials, which indirectly affects their language skills. Another one study has been conducted recently in Indian context,

Shenoy, Wagner & Rao (2020) indicated that the low-cost institutions students struggled in all reading measures; students from middle cost institutions had an average scores on reading measures; and high-cost institutions students had above average scores on all measures of reading. And also the study revealed that most of the low cost institutions are located in rural areas.

Writing is another one challenging and difficult task because it involves both language knowledge and content knowledge (Bialystok, 1978; Nunan 1989; Makalela, 2004) cited in (Raoofti, Miri, Gharibi & Malaki, 2017). Shadik et al., (2018) have indicated that rural students are anxious in writing, and face difficulty to organize their thoughts, presenting their ideas clearly, and they don't have confidence in their writing. Fareed et al., (2016) highlighted that the similar major problems in undergraduate students' writing are insufficient linguistic proficiency (grammar, syntax and vocabulary), lack of ideas, writing anxiety, reliance on L1 (first language) and weak structure organization. And also they point out these challenges are influenced by various factors such as untrained teachers, lack of motivation, large classrooms, ineffective teaching methods and examination system, lack of reading and writing practice and lack of ideas.

Raoofti et al., (2017) noted that since students have written in a language other than their first language (L1), their writing have many difficulties associated with coherence, cohesion, grammar and word choice. Additionally, lack of exposure to L1 writing experiences poses difficulties for the learners in their L2 (second language) writing activities. According to Sholeha, Ghazali & Mahbub (2019) a lot of studies have conducted that factors such as content, linguistic (grammar, vocabulary, spelling) and non-linguistic features (organization, style, content) have less proficient in students and they were tried to become more proficient in writing through various approaches. According to Nunan (1989) writing is an extremely difficult cognitive activity which requires the learners to control over various factors cited in

(Fareed et al., 2016). These factors differ from academic background and personal interest of the learner's linguistic, psychology and cognitive phenomena.

The National Research Council and DBASSE (2012) reported that the adults with low literacy have less participation in the labor force and lower earnings when they do have jobs, for example. They are unable to understand and use healthy information. Just over one third of all undergraduate students in India, approximately eight million a year, attend rural colleges. Enrollments at two-year, rural colleges have risen in the last decade; yet, increased enrollments have not translated into more graduates. The report shows that just over 50% of rural students receive a degree or associates degree within 6 years, while nearly 10% rural students drop out from colleges. A lot of remediation studies indicate undergraduate student's unable to read and understand the English language to suffer from poor quality writing performances may be associated with writing apprehension (Ahmed & Mani, 2020; Farooq et al., 2020; Alharbi, 2019; Shadik et al., 2018; Fareed et al., 2016). The main purpose of this study was to investigate the effectiveness of the reading skills to improve the writing skills of the rural students at the undergraduate level. According to Harmer (2001) both reading and writing are meaning making process in which reading acts as receptive skill and writing act as productive skill. Kalia, (2017) pointed out in his study some of the obstacles in Indian classroom such as a big number of students, rural background, lack of motivation and confidence, illiteracy, inability to read and write. And also the author revealed that the needs to reform teaching methodology in literature and to adopt appropriate teaching strategies are also taken up to face the global demands.

The researcher has selected undergraduate students from rural areas who are studying English as a second language (ESL) at Imayam Arts and Science College, Kannanur in Tiruchirappalli district. They are considered as the group of students who have difficulties in English language skills (reading and writing skills). In the case of second language (L2) learning in the rural context, undergraduates students face difficulties in their writing tasks due

to the problems faced in grammatical accuracy, learning styles as well as a lack of vocabulary knowledge (Ahmed & Mani, 2020; Rungsinanont, 2020; Afzal, 2019; Sholeha et al., 2019). Alharbi, (2019) focused majorly on assessing three essential aspects of writing: mechanics, grammar, and lexical. In these three aspects most of the EFL undergraduate students have difficulties in writing mechanics, five items (punctuation, capitalization, spelling, singular, and plural), two grammar items (i.e., sentence structure and subject-verb agreement), and four lexical items (i.e., nouns, pronouns, articles, and prepositions) were included. Although the English Language subject is taught as one of the main subjects in the Indian college curriculum, the communication proficiency level has been criticised, particularly for failing to meet the workforce needs. The reason for this weakness is the use of teaching methods in reading as a quick realization without paying attention with previous students' experience and relying on them in providing and building new experiences.

In spite of the rapidly increasing body of research addressing different aspects of L2 reading and writing skills, little research has focused on L2 reading and writing strategies. Furthermore, Neurocognition intervention strategies are need of the hour teaching techniques that can be used to facilitate meaningful learning in the construction of a new learning experience. It has been designed based on neuroeducation, facilitating it and increasing its speed. Learners are also able to maintain learning for a longer period. Many studies have revealed that Neurocognition strategies conquer the success in developing the second language (eg. Ortiz, 2019; Bauer-Kealey & Mather, 2019; Mukhlif, & Amir, 2017). Hence, the present study made an attempt to explore Neurocognition intervention strategies for developing English language skills among rural undergraduate students. Furthermore, the Neurocognitive strategy is used along with technologies by Ortiz, (2019). This study provides an insight to the researcher to integrate information communicative technology (ICT) with Neurocognition intervention strategies. Moreover, English language skills especially reading skills are involved in ICT utilizations. The ICT can facilitate learner's multi-sensory experience in their

concept mapping. It is in this line of thinking the present study aims to find out the effectiveness of an innovative strategy known as Neurocognition intervention strategies to develop the English language skills at undergraduate level. In that way the research problem has been selected and stated as, **“Impact of Neurocognition Intervention Strategies on the development of English Language Skills in Undergraduate Students of rural Areas”**.

4.5. Components of the Experimental Method

4.5.1 Research Variables

Variables are attributed to the entities with which the researcher is able to observe, control and manipulate them for achieving the objectives of the research problems. The present investigation is an attempt to find the impact of Neurocognition intervention strategies on the development of English language skills in undergraduate students of rural areas. The variables involved are:

Independent Variable or Experimental Variable:

In the present study, the design and implementation of 33 hours of teaching that was modeled and delivered based on the Neurocognition intervention strategies with brain active techniques and ICT as an enabler. Hence the brain active techniques and ICT enabled Neurocognition intervention strategies is the independent variable.

Dependent Variable or Outcome Variable

The development of students’ English language skills which is intended to be measured through accomplishment of the given tasks on the administration of the competitive exam based English language skills assessment scale(CEBELSAS-1, CEBELSAS-2 and CEBELSAS-3).

Intervening Variables

The following variable is identified as intervening variable.

- Attitude towards English language skills

4.5.2 Operational Definition of the Key Terms

The operational definition describes how the variables have been operated in the present study in a measurable term by the researcher. The following are the operational definition for the present study.

Impact

It refers to the immediate positive change of effect or influence of teaching performance through Neurocognition intervention strategies on the integrated developments of the rural undergraduate students in their learning.

Neurocognition Intervention Strategies

Dolors (2007) defined neurocognition is cognitive functions closely linked to the function of particular areas, neural pathways or relating to cognitive functions associated with particular areas of the brain. The structure and function of the brain relates to perception defragmentation of concepts, memory embed, association and recall both in the thought process and behavior.

Neurocognition intervention strategies refer to the intervention model developed by the investigator using brain active techniques viz., Aerobic Exercise, Yoga, Meditation, Music and ICT that improve cognitive functions among undergraduate students. Instructional strategies viz., sensory input, visual perception, auditory perception, explicit and implicit, emotion regulation, information sequential, and cognitive association, which develop PASS theory

based cognitive processes that facilitate one's own learning and achievement in English language skills among the students.

English Language Skills

English language skills are the total score obtained by the participant in the competitive exam based English language skills assessment scale(CEBELSAS-1, CEBELSAS-2 and CEBELSAS-3) that test their vocabulary (knowledge), grammar (application), reading comprehension (understanding) and writing (analyze) in English. These four components are majorly included in two dimensions such as Reading skill and writing skill.

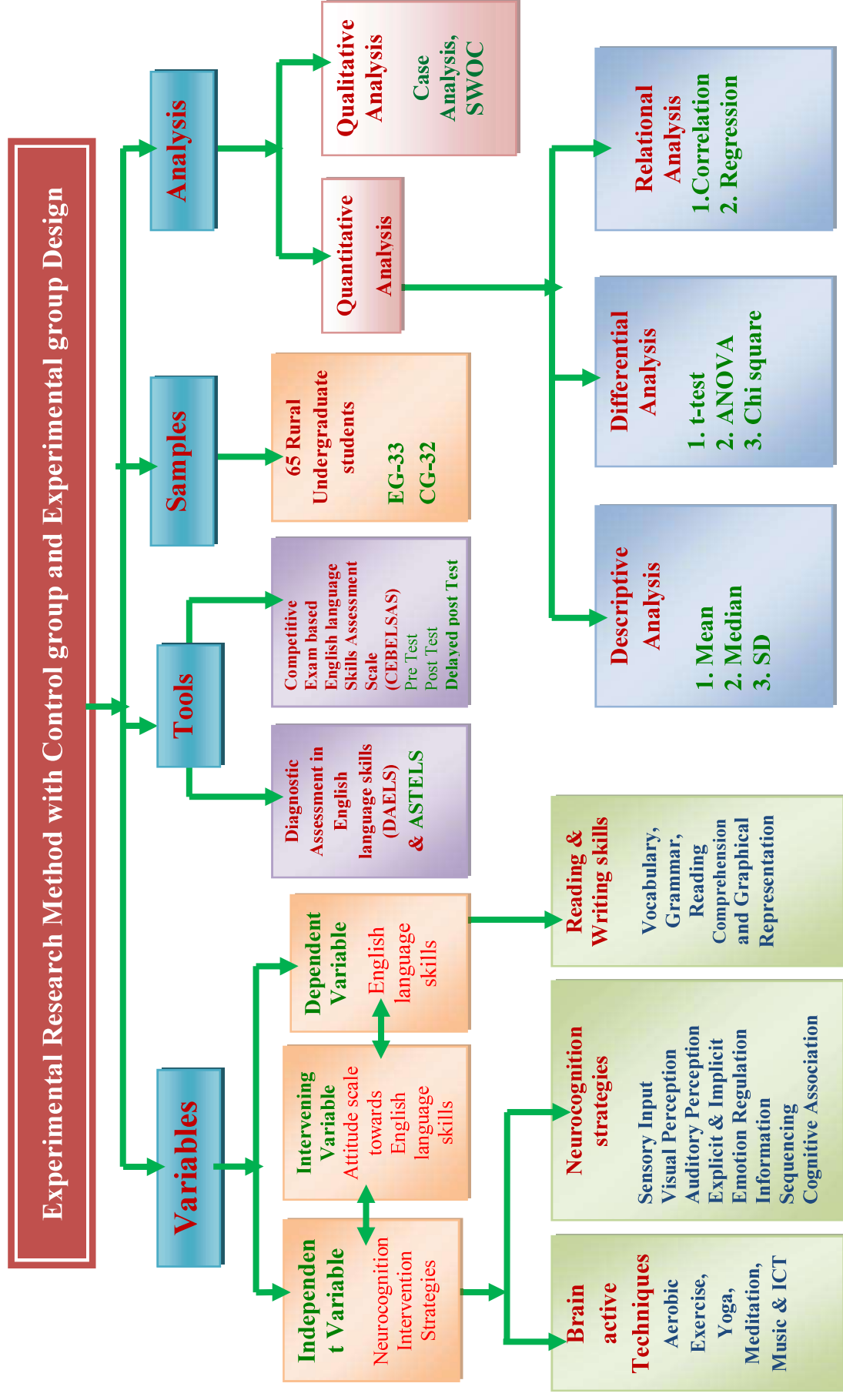
Undergraduate Students of Rural Areas

The undergraduate students from rural areas who are studying final year in Imayam arts and science college, Kannanur.

4.6 Research Design

The research design is the conceptual structure of the research procedure. It provides planning on selection of subjects, data gathering devices and data analysis techniques in relation to objectives of research (Kothari, 2008). It also refers to the overall strategy that a researcher chooses to integrate the different components of the study in a coherent and logical way, thereby, ensuring he/ she will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data. It helps the researcher to find solution to the identified problem logically and critically. In the present study the experimental method was adopted, to study the impact of Neurocognition intervention strategies on the development of English language skills in undergraduate students of rural areas. The research design of the present study is given below:

Figure 4.F.1. RESEARCH DESIGN



4.6.1 Appropriateness of Experimental Design

According to Creswell (2012), experimental researches are taken to study the effect of the outcome of an idea, practices and procedure. Here in this study also the ideology of Neurocognition intervention strategies were taken to study its impact in teaching English language skills for which experimental research is an appropriate design. The Experimental method is one of the best methods for determining the cause and effect relationship of a variable or dependent variables. It also allows for precise control of variables. It provides a systematic and logical way for answering the research questions. Also this method provides a high degree of control over extraneous variables and the manipulation of variables. It reduces bias and increases reliability. The important fact for the adaptation of the experimental design is that it helps to test hypotheses of casual relationship between variables and permits drawing inferences about causality.

The Experimental research facilitates the researcher to go beyond description, prediction and identification of relationship to partial determination of what causes among them. The researcher has used stratified randomly techniques to select the undergraduate students from Arts and Science College located in rural area. Chances of other intervening elements to develop their English language skills were minimized as it was mentioned in the chapter V – “Experimentation” under the heading ‘Validity of the Experimentation’. The researcher ascertained the absence of the other intervening variables that contributed to the development of English language skills. In that way, experimental research was found to be effective to undertake for this study by which the effect of the cause could be measured.

All the students selected for the present study were studying in undergraduate. So, an experimental research was developed. It was understood that control group and experimental group had been selected in same college, because both groups might be handled by the researcher and taught different methods and strategies. Based on the above advantages of experimental research, the researcher adopted an experimental research method with the control group design using pre-test and post-test in the present investigation. Because, the study is predominantly to determine the impact of Neurocognition intervention strategies on the development of English language skills in undergraduate students of rural areas, the noticeable increase of English language skills of the treatment group can be determined by comparing it with the other parallel group taught by existing method. Hence the researcher felt that the experimental group design could promote the sensitivity of the experimental inputs (Ramganes, 2003).

4.6.2 Sample for the Study

The present investigation was carried out in Imayam Arts and Science College, Kannanur, in Tiruchirappalli District, Tamil Nadu. The final year students from various departments in that college were selected as sample. The college was selected for the experiment using stratified random sampling technique because it is a basic sampling technique where a group of subjects for a study is selected from a larger population (Valerie and John, 1997). Moreover the study is focused to determine the impact of Neurocognition Intervention strategies.

The researcher selected 148 undergraduate students from rural areas. Of them, 80 students were selected, based on their performance in the pre test. The researcher selected the

students those who scored the average marks in the pre test and rejected the lowest and highest 25% scored students. Then the selected students were arranged in descending order and divided into two groups. From that, the researcher selected the first one for control group, and the next for experimental group. The control group consisted of odd numbers of the students' serial number, which was exposed to traditional (lecture) method of teaching. It consisted of 40 undergraduate students from various departments. In the same way, the experimental group consisted of even number of the students' serial number. The experimental group was given treatment through Neurocognition intervention strategies. It also consisted of 40 undergraduate students. Finally, the researcher selected 32 students for the control group and 33 for the Experimental group as sample. It was because totally 65 students only, attended the classes regularly.

4.6.3 Construction and Validation of the Tools

In the present study, the following tools were used.

1. Diagnostic Assessment in English Language Skills (DAELS)
2. Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-1: Pre-test)
3. Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-2: Post-test)
4. Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-3: Delayed post - test)
5. Attitude Scale towards English Language Skills (ASTELS)

4.6.3.1. Diagnostic Test

The **Diagnostic Assessment in English Language Skills (DAELS)** was developed by the researcher to analyse the difficult areas of the undergraduate students' competitive exam based English language skills such as vocabulary, grammar, reading comprehension, graphical representation and writing skills which are considered to be the important components of competitive exam in English. This DAELS was constructed based on the previous competitive exam question papers (eg. UPSC, SSC, RRB, Bank Exam, TNPSC). And also it was constructed on the basis of related review studies supporting the language skills in English. A recent study, Al-Momani (2020) reported that undergraduate students not have sufficient vocabulary knowledge. A study carried out in Kuwait context by Al-Nouh & Abdul-Kareem (2017) revealed that college students did not have sufficient vocabulary and grammar knowledge. Similarly, recent studies Farooq et al., (2020) pointed out that undergraduate students were insufficient knowledge in vocabulary and grammar skills. Fareed et al., (2016) pointed out that ESL learners had problems in tenses, articles, prepositions and subject-verb agreement. Alghail and Mahfoodh (2016) investigated EFL students of Malaysian university. They revealed that note making was one of the most critical problems of reading skill. Pirnay-Dummer & Ifenthaler (2011) examined graphical representation with reading practice develop writing skills. Farooq et al., (2020) and Sholeha et al., (2019) revealed that undergraduate students were weak in writing skills. However, this study could do the prime duty of the teachers to develop the English language skills of the undergraduate students from rural areas for enriching their competitive exam based English language skills. Hence the researcher diagnosed the difficult areas in competitive exam based English language skills through the questionnaire 'DAELS'.

The tool was developed by the researchers. The researchers got idea of the questions from various previous question papers of competitive examinations such as UPSC, SSC, RRB, Bank exams, TNPSC. There were two main phases such as content validity and Item analysis has conducted during the tool development of DAELS in 2020. The participants were to respond by multiple choice questions, fill in the blanks and open end questions. It conducted as a paper pencil test among the undergraduate students who are in rural areas. During the development of the DAELS, the researchers found that a diagnostic language test would benefit more than other test because its results could be used for competitive exam purposes only.

The researcher could not find any appropriate questionnaire for measuring the competitive exam based English language skills; therefore, it was advised by Doctoral committee to develop a questionnaire to elicit students' responses related to the research study. Hence, the researcher developed the questionnaire and it was validated by the experts in the field of competitive examination, English and education. According to Alderson (2005) a diagnostic test to be effective, it should emphasise the identification of learners' weakness (Urmston et al., 2013). Based on a wide range of literature review and experts' opinions, rephrasing and rewording were carried out. The tool was set to have four dimensions such as vocabulary, grammar, reading, and writing skills. Each dimensions had different topics.

Vocabulary: The vocabulary task includes different type of multiple choice questions. There are four types of vocabulary items: synonyms, antonyms, substituted words, Idioms and phrasal verbs. Students are required to answer the multiple choice information transfer items after reading the questions based to select the suitable answers on non specialist academic topics.

Grammar: The grammar task includes different components of grammars such as articles, preposition, tense, subject verb agreement (concord), identify the error, sentence pattern, question tag, and sentence types. There are three types of questions framed as multiple choice questions, namely spot the error, and fill in the blanks with suitable answers. Students are required to read the questions and respond to the questions.

Reading: The reading task includes one or two time silent reading based on general topics. There are three types of reading task items: multiple-choice, jumbled statements, and short-answer questions. The students are required to answer short-answer questions, multiple choice, and information transfer items after reading.

Writing: The writing task includes different type of writing such as graphical representation, dialogue, notes taking, summarizing and letter writing. There are three types of writing task items: fill in the blanks, short-answer and paragraph writing. The writing task is scored by two trained raters based on an analytic scoring guide with the three categories of coherence and style, content, and form.

The researcher did not limit the number of questions in the area of English language skills pointed out above. The tool was developed with 100 Marks. Each item in the tool was subjected to the experts' opinion. However, the reliability of the tool was calculated by Spilt-half Method. The reliability coefficient of the tool 0.734 revealed that tool was found reliable. The tool DAELS is enclosed in Appendices for further reference.

4.6.3.2 Designing and Development of Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-1, 2 & 3)

The competitive exam based English language skills assessment scale was developed by the researcher with concrete theoretical foundation and literature reviews. Thus, conceptual validation of the CEBELSAS-1, 2, & 3 were done through previous question papers and past researches. It was created as a procedure for providing valid and reliable observations of the appropriateness of undergraduate students' competitive exam skills to test setting. Research focused on the assessment of reading and writing skills have attempted to specify particular context, in which competitive exam skills can be found and measured to focus the appropriateness, however allows examination of behaviour within a context. There are different type of methods are used to measure the competitive exam skills in English including objective type questions, short answers, match the following, fill-in-the-blanks, descriptive writing etc. The researcher used the multiple choice questions, spot the error, and fill in the blanks with suitable answers for measure the reading skills and short answer for measure the writing skills. (Urmston, et al., 2013) point out that language is for expression of ideas so various type of questions suit for measure the competitive exam skills. The researcher has already discussed earlier topic 4.6.4.1 diagnosing test and in the third chapter table 3.T.3 shows difficulties of the competitive exam based English language skills of undergraduate students. The researcher has taken only the difficulties topics which had found from the diagnosing assessment that topics only selected to develop in the competitive exam based English language skills assessment scale (CEBELSAS-1, 2 & 3). The final draft of the competitive exam based English language skills assessment scale (CEBELSAS-1, 2 & 3) consists of 50 multiple choice questions for reading skills and 30 short answer questions for

writing skills tasks. The subjects have to record the responses in the space given below each statements or questions. The tools CEBELSAS-1, 2 & 3 are enclosed in appendices for further reference.

Preparation of the Blue Print

According to Bloom's Taxonomy the Knowledge and Understanding are the lower levels in the pyramid. The second stage is the Application and skill. These are where the researcher found the point to be analysed. Because of the undergraduate students are able to interpret the answers successfully.

A blue print is a three dimensional document capable of representing a complete functional picture bringing out all significant details of a test. The researcher constructed the blue print in order to bring together all the details pertaining to content, type of questions and form of questions. The blue print of (CEBELSAS-1, 2 & 3) is given in the table 4.T. 1

Table 4.T. 1 The Blue Print to CEBELSAS-1, 2 & 3

Components of CEBELSAS	Objective	Knowledge			Comprehension			Application			Analysing			Total Marks	
		MC	FB	SA	MC	FB	SA	MC	FB	SA	MC	FB	SA	Topic s	Component s
Vocabulary	Substituted words	10 (1) = 10												10	25
	Idioms and phrasal verbs	10 (1) = 10								5 (1) = 5				15	
Grammar	Subject verb agreement													10	25
	Spot the Error				10 (1) = 10									10	
	Kinds of sentences									5 (1) = 5				5	
Reading Comprehension	Comprehension passage				5 (1) = 5								5 (2) =10	15	25
	Jumbled words												5 (2) =10	10	
Graphical Representation	Tables				5 (1) = 5									5	25
	Bar chart												5 (2) =10	10	
	Pie chart												5 (2) =10	10	
Total marks		20			20			20			40			100	100
MC= Multiple Choice, FB= Fill in the blanks, SA= Short Answer															

4.6.3.3. Validation of the Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-1, 2 & 3)

Validity, Reliability and Generalisability are three major concerns of quantitative research that are associated with the quality of measurement done in a study. Validity is a multidimensional construct, and the three types of validity such as content validity, criterion validity and construct validity are not mutually exclusive. Hence it is important to demonstrate all the three in a study (Muji, 2004). The researcher took desk review of previous question papers of UPSC, SSC, RRB, Bank exams, and TNPSC for competitive exam language skills in English were identified. A wide range of competitive exam situations exist within skill based test setting which was identified, analysed and evaluated by the experts in the panel. The experts belong to the field of English language teaching, Education, and competitive exam trainers. They reviewed the questions and gave some suggestions and modifications for frame the tools (CEBELSAS-1, 2 & 3). Thus, the content validity was established on the expert panel's advice on the adequacy and appropriateness of competitive skills tested in the Competitive exam based English language skills Assessment Scale. The first step in validating is conceptual validation. The Competitive exam based English language skills Assessment Scale was examined for clarity, and lack of bias. These were also validated by the experts for clearly worded. The congruence between the construct that is the competitive exam skills and the task given to measure was evaluated by the experts. Thus conceptual validation was also established.

They also amended that CEBELSAS-1, 2 & 3 measures both the reading skills and writing skills and are parallel in nature. In the second step operationalisation validation was

done. To assess this type of validity, one can produce several methods or tests, indicate similar measures of the same or a similar construct, elicit different responses to the same stimulus set or inter- correlate the items on the test to provide an internal consistency measure (Rubin, 1975). Since operationalisation is concerned with the best method of measuring the construct. The study adopted two methods for operationalised validation through parallel forms of questions in the CEBELSAS-1, 2 & 3.

Another major concern in experimentation and instrumentation is the establishment of reliability. Reliability of a tool refers to the dependability or consistency of the measure provided by it. In the present investigation, the split-half method of reliability was established for the three tools (CEBELSAS-1, 2 & 3). The cron bach alpha are (0.767), (0.844), (0.784) respectively. Pearson 'r' values were also calculated and analysed. These tools are attached in the appendices for further clarifications.

4.6.3.4 Attitude Scale towards English Language Skills (ASTELS)

The scale '**Attitude Scale towards English Language Skills (ASTELS)**' was prepared after conceptualizing different components of Students Attitude by number of review by the researcher. The questionnaire was divided into two parts. The first part has open form or unrestricted type of questions. It contains questions regarding personal information such as name, gender, age, discipline, medium of instruction at primary, secondary and higher secondary levels, first graduate, and parental education. The second part, English Language skills learning strategies utilization in Attitude scale towards English language skills (ASTELS) contains 65 statements to ascertain the students' attitude in learning English language skills in their learning attitude, vocabulary, grammar, reading comprehension,

graphical representation and writing skills. A five point likert type scale ranging from 1 for strongly disagree, 2 for disagree, 3 for Neutral, 4 for Agree and 5 for strongly agree was used for each attitudinal item in the questionnaire which were positively worded. Since, the intention of the researcher aimed to know if the sample was developed attitude towards English language skills. The scale constituted of 65 items. There are five items in the tool which represent 'attitude of English learning'; eight items represent 'vocabulary learning' of the students; eight items indicate their 'grammar learning'; nineteen items for 'reading comprehension'; six items ascertaining the 'graphical representation' aspects and nineteen items represent 'writing' strategies utilized to develop English language skills.

ASTELS was administered twice before and after the intervention. Detailed instructions were given in the scale to help the respondents. The researcher ensured that all the statements were answered by the respondents, to avoid missing data. ASTELS was structured with simple and clear language. After the survey experimentation was done.

Construct Validity

The tool Attitude scale towards English language skills (ASTELS) was administered for 258 undergraduate students in Bharathidasan University affiliated colleges, Tiruchirappalli. After a gap of 25 days, the tool was administered once again to the same students. The test retest method of reliability was adopted and the correlation coefficient for the entire scale was found to be 0.761. A correlation between the scores obtained by these respondents at both these instances was recorded and presented below:

1. Learning attitude: 0.742
2. Vocabulary: 0.736
3. Grammar: 0.723
4. Reading comprehension: 0.753
5. Graphical Representation: 0.781
6. Writing skills: 0.747

4.7 Experimentation in Phases

The researcher has obtained permission from the management of Imayam group of institutions, to conduct an experimental study in Imayam arts and science college, Kannanur. Before starting the experimentation, the researcher conducted 148 students were administered a pre-test on Competitive exam based English language skills assessment scale (CEBELSAS-1: Pre-Test). Then the researcher selected 80 students from them who got average score in the pre-test. After, the students were divided into two groups as control group with 40 students and experimental group with 40 students. The treatment was focused on giving training in all different components of English language skills, which in turn enhances the competitive exam based language skills in English. The students in the experimental group were given instruction through the Neurocognition intervention strategies model based on **Ramganesh - Hariharan's Model for English Language Skills through Neurocognition Intervention Strategies** supplemented with ICT tool and the control group students were taught through traditional teaching method.

The researcher provided the instruction for both the groups in order to avoid the experimenter's effect on the dependent variable. The researcher taught both the groups separately for the period of 21 days. During the instruction, the researcher ensured that the selected classroom for teaching the students was free from other distractions.

Experimentation organized by the present study in different phases is given below:

Phase I:

- Identifying the difficulties of English language skills through diagnostic assessment and understand the suitability of Neurocognition intervention strategies to overcome the skills.

Phase II:

- The results of the diagnostic assessment were used to prepare the instructional objectives and develop a model based on Neurocognition intervention strategies to develop the undergraduate students' language skills in English.

Phase III:

- To develop the instructional materials for teaching components of competitive exam based English language skills (Vocabulary, Grammar, Reading Comprehension, and Graphical Representation) based on brain active techniques with ICT enabled Neurocognition strategies.

Phase IV:

- Conducting the pre-test among the 148 students to select 80 students and divided as control group and the experimental group in English language skills to assess the entry behavior of them.
- Administering attitude scale towards English language skills (ASTELS-1) both Control Group and Experimental Group

Phase V:

- The class start with brain active techniques (Warming up exercises) then teaching was done by the researcher guided by the developed model. The experimental group was used initially to deliver the content; assignments were given individually and collaboratively. The teacher created interaction with the students and then they were divided into small groups, they were expected to

produce short written texts on the class. In end of the class, the researcher sent assignments through WhatsApp to them, it was completed through Google form; it was discussed next day in the class to exchange ideas.

- Control group students were taught by traditional method.

Phase VI:

- Administering the post-test for all the Students of Experimental Group and Control Group in competitive based English language skills were used for assessment of the subjects or the exit level behavior at the end of the Neurocognition intervention strategies based instructional approach.
- Administering Attitude scale towards English language skills to both Control Group and Experimental Group

Phase VII:

- Administering the delayed post-test as for retention test all the Students of Experimental Group and Control Group in English language skills to assess their consistency in competitive exam based English language skills after a period of fifteen days.

4.8. Duration of the Experimentation

The students of experimental group were taught the components of English language skills (Vocabulary, Grammar, Reading Comprehension, and Graphical Representation) through ICT enabled Neurocognition intervention strategies which were detailed in the chapter V under the heading “Experimentation”. The experimentation was conducted with the students for 21 days per a day one and half hour including 15minute per a day warming up exercise. The schedule for the conduct of the experiment is tabulated below.

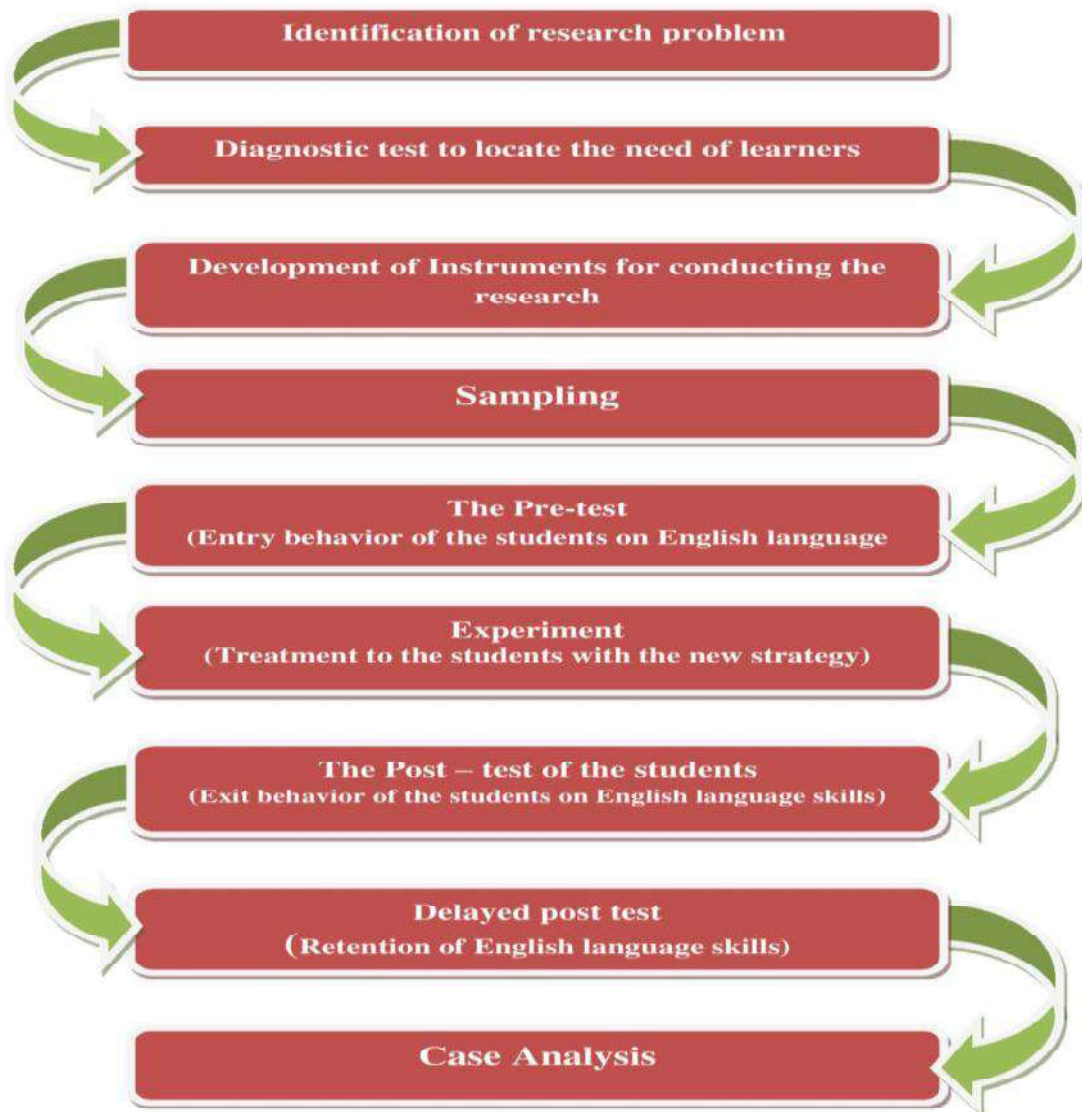
Table 4.T.2**Duration of the Experimentation**

Language skills	Activities	Experimentation Components of English language skills	Duration
Vocabulary	Visual attention, Guessing meaning from context, Interactive Activity, Monitoring & Self-Correcting, Repetition, Rehearsal, feedback, Connecting logical sequence & Evaluation	Substituted words	2 days
		Idioms	2 days
		phrasal verbs	2 days
Grammar	Visual attention, Memories the Roles, Repetition, Rehearsal, Scaffolding & Decoding, Think Aloud, Errors Identifying, Rewriting, Feedback, Self-Correction	Subject verb agreement (concord)	2 days
		Spot the error	2days
	Visual attention, Memories the Roles, Repetition, Rehearsal, decoding, Recognize the rules, Transform the sentence, Self Monitoring, Rewriting, Feedback and self evaluation	Kinds of sentence (voices, direct & indirect speech, simple, compound and complex sentences)	3 days
Reading comprehension	Decoding, bottom up perception, Organizing logical sequence, construct the sentence, Peer Assessment	Jumbled words	2 days
	Cooperative Reading, Interactive Activity, Perceive Whole & Part, Peer Assessment	Reading comprehension passages (Paragraphs and Essays)	2 days
Graphical representation	Visualizing-Organizing, Brainstorming, Top down Perception, Semantic Representation, Concept mapping, Feedback, and Evaluation	Description of table, chart, Graph etc.,	4 days

4.9 Conduct of the Experimental Research

The conduct of experiment with the prior permission from the principal of the college for twenty three days with a prepared lesson plan for each day was sequentially planned and also sample collections. The classes were regularly organized without any gap to control the intervening variables that affect the sensitivity of the input. The classes were conducted for experimental group in the morning 10.00 a.m to 11.30 a.m, the experiment time of one and half hour per day was maintained every day. Another one classes were conducted for control group the afternoon 2.00 p.m to 3.00 p.m, the experiment time of an hour per day was maintained every day. Students were well informed ahead to make regular attendance. Maximum care was taken by the investigator to minimize the threats of internal validity and external validity in order to maintain the validity of the experimentation which is explained in the next chapter V under the title ‘Validity of the Experimentation’. However the following figure 4.F.2 explains the overall idea of the phases of the experimental research process of the present study.

Figure 4.F.2 Phases of the Experimental Research



4.10 Conclusion

In this chapter, the researcher explained the design of the present study. Formulation of the objectives and hypothesis of the study, statement of the problem, the procedure of the development and validation of the pre test, post test-1, delayed post test and attitude towards English language skills tools used in the study. And also the chapter provided a detailed report on process of sample selection and the phases of Experimentation were presented understandably. The details of the experimentation conduct in the study are explained in the next chapter.

CHAPTER V

EXPERIMENTATION

5.1 Introduction

Experimentation is one of the scientific research methods. It is unique and involves the conscious manipulation of certain aspects of a real system and the observation of the effects of that manipulation. It is oriented to the future in the sense that the experimenter is seeking to evaluate something new. It is a process of contribution to the already acquired fund of knowledge. An experimental design is a blueprint to architect the research. It provides the experimenter an opportunity for the comparisons required by the hypotheses of the experiment and enables experimenter to make meaningful interpretation of the result of the study with the help of statistical analysis of the data. Thus, the experimenter operates under the basic assumption that the research situation wishes to evaluate and does not now exist.

The major purpose of experimentation is to derive verified functional relationships among phenomena under controlled conditions, to identify conditions underlying the occurrence of a given phenomenon. From an experimentation point of view, it is a matter of varying the independent variable in order to study the effect of such variation on the dependent variable. Experimentation facilitates to increase the condition under which it is observed precise results.

Several authors produced different explanations about the experimentation and also researchers exist in the field of research. According to Best and Kahn (2008) experimental research is the description and analysis of what will be or what will occur, under carefully controlled condition”.

Experimental research is used to determine and evaluate the adequacy and effectiveness of the educational and instructional objectives through the measurement of their outcomes. After evaluating the efficacy of objectives, the suggestions are made for the formulation, execution and modification of educational programmes and classroom practices. The classroom teacher uses experimentation to evaluate the effectiveness of certain learning experiences, planned and organized, to achieve some desired objectives. Impact of teaching methods and innovations in the evaluation techniques is also ascertained through experimental research. With this background, this chapter throws light on the conduct of the experimentation, validity of experimentation, pre-assessment on the entry behavior and post assessment on the exit behavior of the students in English language skills, and Neurocognition intervention strategies model lesson plans.

5.2 Validity of the Experimentation

To make a significant contribution to the development of knowledge, an experiment must be valid. Factors that have the potential to influence the findings are called threats to validity. A good experimental research remains in the careful control of extraneous variables that may possibly affect the outcome the study. Campell and Stanely (1963) suggested two type of experimental validity. They are internal validity and external validity. A lot of research works (Ramganes, 2003; Amutha, 2010; Johnson, 2012; Vency, 2016; Paulraj, J. Milton, 2017) followed the threats to experimental validity and gained insights for the minimization of threats to the validity of the experimentation. Maximum efforts were taken in the present research to minimize the experimental threats.

Threats to Internal Experimental Validity

An experiment has internal validity to the extent that the factors that have been manipulated (independent variables) actually have a genuine effect on the observed

consequences (dependent variables) in the experimental setting (Best and Kahn, 2008). Internal validity relates to the degree to which causal inferences can be drawn from the covariation among variables (Agostino, 2005). It is the degree to which an experiment is designed so that a causal relationship between the independent and dependent variable is demonstrated without interference by extraneous variables (Beins, Bernard & Carthy, 2012). The study determines a causal relationship among the variables. Therefore, the researcher planned to control the influence of other variables in order to be confident when making conclusions about the relationship between the variables. Following are lists of threats to internal validity in experimental research and the measures taken to minimize the threats are pointed out here.

Table 5.T.1 Showing the Threats to Internal Validity and Control Measures Taken

Type of Threats to Internal Validity	Description of Threat	Control Measures Taken to Minimize the Impact
History	Unanticipated events affect the dependent variable and this may occur while the experiment is in progress. Occasionally, one or more unanticipated and unplanned events which can affect the responses of the subjects may occur during the course of study.	During the experiment unexpected events did not occur. Because, preplanning the experimentation was discussed with research experts and their expertise was carried out in the experimentation with the cooperation of the faculty members and the principal of the college where the experiment was conducted.
Maturation	Students change (biological or psychological) within the time of the study may impact the results. Students may become bored, tired, and hungry during the time of the study.	The researcher minimized this threat by conducting the experiment only for 21 days which has the less possibility to intervene the result of this study. Sharma (2001) suggested that the conduct of experiment for 21 days will be become as habit.

Regression	Participants are selected on the basis of high / extreme scores for the experiment. Naturally, their scores, over time, regress toward the mean.	The pre-test scores display that cases were selected average level of scores. The researcher would randomly assign his sample of average score obtained in pretest and equally divided them from their scores to experimental and control groups. Because both groups expected to improve equally.
Selection	Selection bias is represented by nonequivalence of experimental and control groups and its most effective deterrent is the random assignment of subjects to treatments.	The researcher selected 148 undergraduate students who are in rural areas. Of them, 80 students were selected, based on their performance in pre test which is a common one. For that, those students who have secured average score in pre-test were alone selected. Based on the pre- test scores, the students were arranged in descending order and divided as two groups. From that, the researcher selected the first one for control group, and the next for experimental group.
Experimental Mortality	Participants drop out during an experiment due to many possible reasons. The loss of participants may impact the study if the withdrawal rate is higher. For example, a larger number of participants may drop out of a group due to illness, less motivated participants drop out of themselves from the experiment.	Each groups consisted of 40 undergraduate students from various departments. 32 students were selected for the control group and 33 students were selected for the Experimental group was taken into consideration as they were only regularly attending the classes.

Testing	The process of pretesting at the beginning of an experiment can produce a change in subjects. Pretesting may produce a practice effect making subjects more proficient in subsequent test performance. Testing presents a threat to internal validity that is common to pretest- posttest experiments.	The pre-test and post - test administered had different items for testing with similar skills and objectives were tested.
Instrumentation	Changes in testing instrumentation during a study may affect what is being measured and how it is measured. Similarly human observations or perceptions of the of the observers may change over time, rather than the actual performance of the test subjects	Attitude scale towards English language skills (ASTELS) was prepared by the researcher that was not changed and strictly followed to measure what the researcher intended to measure. The tool was tested using the same instrument before and after treatment. In this way 'Instrument Threat' was minimized to the extent possible.

Threats to External Experimental Validity

External validity is concerned with the generalisability of the experimental findings, that is, to what subject populations, settings, time, treatment variations, and measurement variables can the results of the experiment be generalized. It also refers the difficulties in generalizing the findings of experimental research, interaction effect of selection biases and experimental treatment. This refers to the effect of some selection factors of intact group interacting with the experimental treatment that may not be the case if the group had been randomly formed. The controlling measures adopted by the researcher in the experimental design to minimize the threats to external validity are explained as follows:

Table 5.T.2 Showing the Threats to External Validity and Control Measures Taken

Type of Threats to External Validity	Description of threat	Control Measures Taken to minimize the impact
Interaction Effects of Testing	The use of a pretest at the beginning of the study may make the participants more sensitive to aware of concealed purpose of the treatment and that may influence to change.	The participants were informed by the researcher “this is just to teach you English language skills and this data will not be considered for your progress or any other academic purpose”. So they were made at ease to just learn competitive skills in English. By making the students comfortable and kept well informed early, this threat was minimized.
Interaction of setting and treatment	Artificially, there are some threats that affect the interaction between the setting and treatment which makes the researcher find difficult in generalising the findings.	The study was conducted in a private college and both the experiment was conducted in normal classroom settings.
Multiple treatment interference	When the same subject receives two or more treatments, there may be a carryover effect between treatments such that the results could not be generalized to single treatment.	The researcher gave only one treatment (English language skills) to each group throughout the study. Hence this type of threat was eliminated.
Interaction of history and treatment	The experiment results are time bound so the researcher cannot generalise to the results to past or future situations.	The researcher conducted a delayed post - test and the study discussed current situation.

Researcher made efforts to ensure that the threats were controlled as best as possible. The most common methods to achieve internal and external validity are randomization and the use of appropriate research designs and statistical analyses which were mainly cognized by the researcher in this experimentation to make it valid.

5.3 Pre-test on the Entry Behavior of the Undergraduate Students in English Language Skills.

The Pre-test was conducted by the researcher to understand the entry behavior of the students on English language skills with a tool “Competitive exam based English language Skills Assessment Scale (CEBELSAS-1)” which is mentioned in the chapter IV under the heading “Construction and validation of the research instrument”. This test mainly assessed the competitive skills in English of the students on using vocabulary- substituted words, idioms and phrasal verbs; Grammar- subject verb agreement, subject verb agreement (concord), spot the error, and kinds of sentence (voices, direct & indirect speech, simple, compound and complex sentences); Reading - reading comprehension, jumbled words; Graphical representation- description of table, chart, graph etc., by which their competitive skills in English become easy. Though this test was on reading and writing skills, the mode of conducting the assessment was done paper and pencil test. All the 148 students were individually assessed by the researcher. This assessment indicated the quality of the competitive exam based English language skills assessment scale made in the present study. From the assessment it was found that the overall percentage of the competitive exam based English language skills of the student was 32%. Of them, 80 students were selected, based on their performance in pre test which is a common one. For that, those students who have secured average score in pre-test were alone selected. Based on the pre- test scores, the students were arranged in descending order and divided into two groups. From that, the researcher selected the first one for control group, and the next for experimental group. This pre assessment revealed the undergraduate students’ English language skills level and the areas in which students needed to concentrate for developing their competitive exam skills in

English. Based on the pre-assessment on the entry behavior of the undergraduate students in English language skills, the experimentation was conducted using the new strategy. The pre-test tool is attached in the appendices at the end of the research report.

5.4 Experimentation with “Neurocognition Intervention Strategies”

The experimentation was conducted with the rural undergraduate students at Imayam Arts and Science College in Kannanur. The researcher taught to the undergraduate students based on the important components of competitive exam skills in English for improving their English language skills, following the lesson plan prepared already. The lesson plan prepared was required to modify at the time of teaching to face the practicability of the class. However, the researcher was careful to integrate the brain active techniques and Neurocognition strategies as Neurocognition intervention strategies in teaching to develop the English language skills among the undergraduate students.

A Brief Description on the Utilization of ‘Neurocognition Intervention Strategies’

PASS cognitive processes have supported the teaching and learning and help teachers to understand the learning process. So, the researcher has tried to utilize the mixed level of cognitive processes developing teaching learning strategies, because the students have different potentialities, skills, and interests to learn their needs. Moreover, to teach and develop the English language skills effectively is important for undergraduate students. For example the researcher used Neurocognition intervention strategies viz., sensory input, visual perception, auditory perception, explicit and implicit, emotional regulation, information sequencing, cognitive association and brain active techniques (meditation with music) in classroom teaching to develop students cognitive processes on the topic “Idioms” (see the sample lesson plan-1).

The first sample lesson was started with brain active techniques; the researcher motivated the students to do meditation with music more than 15 minutes and then made the students to do attend the class actively. After the researcher initiated a casual discussion to bring the mind of the students to show a picture through ICT tool and asked a question relevant of the picture. Students were allowed to search the meaning of the picture through utilizing mobile phone dictionary or Google search with help of internet. After few minutes later the researcher asked to the students what the picture indicating? The students answered that this picture indicated the parts of speech especially idioms. This strategy is called as **sensory input** in Neurocognition strategies. After finding the meaning of the picture, the researcher showed two pictures and asked them to combine the two pictures to make a new one sentence. The first picture was cup of tea and the second picture portrayed the meaning of teaching. The students saw the pictures and combined the meaning of the pictures to bring new one sentence (eg. Teaching English is my cup of tea). This strategy is called as **visual perception** in Neurocognition strategies. Then, the researcher framed some model sentences from the idiom. Students listened eagerly and took notes. After that researcher explained some other examples of idioms with meaning and gave orally. The students tried to guess the meaning of the idioms in the given contexts. This strategy is called as **auditory perception** in Neurocognition strategies.

After that the teacher distributed worksheets of idioms with meaning to them. The students read the idioms to understand the meaning and memorize the unfamiliar words. The researcher showed some videos of idioms with meaning to the students and motivated to write down the idioms and their meanings. And also teacher motivated the students to recall the idioms. This strategy is called as **explicit** in Neurocognition strategies. The researcher asked

the students to underline the familiar idioms in the distributed papers. Students were advised to create a sentence for the familiar idioms. Students follow the instruction to write sentences for familiar idioms. This strategy is called as **implicit** in Neurocognition strategies. Then the researcher made groups among the students work together to complete a given task. The students were advised to share their unknown idioms from the given worksheet among the group and find meaning for the unknown words and frame sentences for the idioms. Finally, they discussed their sentences among the peer group. This strategy is called as **emotional regulation** in Neurocognition strategies.

In Neurocognition strategies, Information Sequencing is one of the important strategies which helps learners not only to understand the text better but also to realize the meaning of the words from every-day life how we use this in certain order. The ability to search and discover this order can be practiced best in sentence framing activities where the content always follows certain order. This can be done through picture sequencing or word/ sentence/ paragraph sequencing. Besides the reading comprehension, it is useful to teach students that even daily actions happen in a sequenced way and through pictures or sentences ask them to put them in order. For example, the researcher could give sentences: *After finished the supper, I go to bed. I do my homework after return the school. I go to college by bus. I wake up. I take bath.....* Learners will organize those actions in the order as they happen during the day. At this level, it is possible to start with simple activities as discovering the order of sentence. E.g. over / spilt milk / don't cry (There's no reason to complain about something that can't be fixed). The students are supposed to notice how the sentence is sequenced and the sequencing can be developed through syntax/grammar-based activities. Students recall the idioms to arrange sequence the given idioms and make to rewrite the sentences (Eg. Don't cry over spilt milk).

In classroom teaching, the researcher guides the students to make connections which might be personally relevant for them, e.g. based on their experience or prior knowledge, or it might be an original solution to a problem. It can be trained through simple activities such as build words chains: after completed the reading the students are asked to write words and add the first word they associated with the previous knowledge of the word meaning. Also, the researcher motivates the learners to collect a set of words from the topic and connect them (e.g. college, professor, sports, tiger, etc.), or to contrasting words (e.g. like/hate, more/less, fast/slow, etc.) and creating association: the researcher gives a task to read a sentence, the students are first asked to repeat a sentence and then to create a new sentence by leaving out a word or phrase, or by replacing another one word in the sentence to make new meaningful sentence (eg. My grandfather **passed away** last year). Then students repeated the sentence two or three times, then follow the researcher instruction to make the sentence to utilize suitable idiom to produce same meaning (eg. My grandfather **kicked the bucket** last year). This strategy is called as **cognitive association** in Neurocognition strategies. This strategy helps students in being flexible and inventive way. It is a very important strategy to be trained for cognitive association functions. This strategy helps to stimulate the learner's neural cognitive functions through connecting the words and creating associations with words or sentences.

The PASS theory proposes that cognition is organized in four processes and that these processes are functions of four areas of the brain. The first process is **planning**, which involves executive functions responsible for controlling, organizing, and monitoring behavior. For example, the researcher used these cognitive processes through utilizing sensory, visual and auditory strategies in teaching the lesson idioms (see sample lesson plan -1). The second process is **attention**, which ensures sufficient arousal levels and focus on specific stimuli. For

example, performance in selective attention and teaching tasks is likely to be related when there is a need to inhibit stimuli that are not the primary focus of attention (e.g., when an idiom or a sentence with idioms is explained detail by the teacher). In this lesson plan, the researcher used explicit strategy for develop the cognitive process of attention.

The other two processes, Simultaneous and Successive processing, enable encoding, transformation, and retention of information. Simultaneous processing is relevant when the task (encode familiar words) then share to the peer group to get as whole units of information, or a “gestalt.” For example, recognition of whole idioms by sight involves this kind of processing, as does comprehension of the meaning of an entire sentences in given work sheet. The researcher used implicit and emotion regulation strategies for developing cognitive process of simultaneous.

Successive processing is relevant when the task or behavior requires organization of individual units in a serial order. For example, sentence decoding and word arrangement or replace a word to create new sentence involve this kind of processing. The researcher used information sequencing and cognitive association strategies for developing cognitive process of successive. Here, the researcher has provided some important components for develop the English language skills through teaching and learning strategies.

The researcher in between the teaching used Neurocognition intervention strategies to develop the English language skills systematically. The researcher, while teaching impressed the students by ‘positive affirmation’ technique using words like ‘well’, ‘good’, ‘excellent’, ‘super’ etc. The researcher used the ‘reframing technique’ when they have negative attitude towards English language skills and they felt difficult to learn English. The class was interesting to the students and easy for the researcher to handle the students. In this context a

lesson plan models are provided here to understand the integration of new intervention strategies in teaching English language skills.

5.5 Development of Model Lesson Plans

Based on the analysis and design phases, the researcher developed Neurocognition intervention strategies to develop the English language skills of undergraduate students from rural areas. The objectives of Neurocognition intervention strategies and sample lesson plans were evolved and discussed in detail in this phase.

Objectives of the Lesson Plan

The rural undergraduate students were expected to achieve the following objectives at the end of the strategic intervention of English language skills. The objective statements were framed on focusing the development of vocabulary, grammar, reading comprehension and graphical representation performance in English of undergraduate students who are in rural areas. There are the major objectives of the lesson plans:

The students will be able to

- i. To acquire knowledge about vocabulary skill in substituted words, idioms and phrasal verbs.
- ii. To develop the grammatical skill in concord, spotting the error, voices, transformation, direct & indirect speech to apply in sentences
- iii. To understand and analyse the comprehension passage by applying Neurocognition strategies
- iv. To understand and analyse the graphical representation of the graph, table, chart etc. through answer the questions.

Sample Lesson Plan-1 (Vocabulary)

Sample lesson plan with the integration of the new teaching strategy

Lesson Plan based on Neurocognition Intervention Strategies	
Students :	Rural Undergraduate students
Subject :	English
Topic :	Idioms
Unit :	Vocabulary
Duration :	90 Minutes
General Objectives:	1. To activate the students' brain through Neurocognition intervention. 2. To increase the interest of students to develop the English vocabulary. 3. To make students understand the different meanings in vocabulary. 4. To develop the linguistic ability among students and use in their own expression. 5. To enable students develop the learners' proficiency in English language skills.
Specific Objectives	1. To provide instruction through Neurocognition strategies. 2. To provide the knowledge and understanding of the various aspects of idioms. 3. To help the students understand the idiomatic expressions and their meanings. 4. To use idioms that the students have learned to do gap filling exercise. 5. To enable students write sentences with idioms. 6. To enable students use the idioms in speaking and writing.
Assumptions	
Teaching Aids	Power Point, Videos, Worksheets, Black Board, Mobile and Google form (worksheet).

Stapes	Teacher's Activities & strategies	Students Activities
Warm up	Meditation music is played 15 minutes and makes the students to do meditation for boost their brain power. (Brain active techniques)	The students follow the teacher instruction to do meditation.
Planning	Strategy- Sensory Input Teacher will initiate a casual talk to bring the mind of the students into the classroom and show a picture to ask a question. Did you see in the picture in internet?  Could you give any special meaning for this picture? Teacher will explain which phrase is having special meaning that is called as Idioms. Today topic is Idioms. Strategy- Visual Perception Teacher will show a picture and asks questions about the picture.	Students may respond and see the picture with meaning in Mobile phone (internet) Students may respond to make a sentence.

	What do you see in the image? Could you tell about the picture in different meaning? Teacher will show another one picture to combine the pictures to make a sentence.	Students may not be able to guess the correct meaning of the words, so in order to save time, teacher explained the meaning through direct translation can be replaced. Students try to guess the meaning of the pictures and interact freely with the teachers (cognitive association)
--	--	--

	What do you see in the picture? Could you connect these two pictures to produce a sentence? Eg. Teaching English is my cup of tea. What is the meaning of cup of tea in the sentence? Eg. To like something, favorite	Students may not be able to connect the meaning of the pictures; teacher will give a suitable sentence for the pictures.
	Strategy- Auditory perception Teacher will tell some model sentence to use cup of tea Eg. : I like Elayaraja's music much more my cup of tea than other music. I enjoy riding bike; it is my cup of tea. Non vegetarian is not my cup of tea, but my husband likes to eat it. That dress is really not my cup of tea. I decided not to go to the restaurant with them, because eating spicy food isn't my cup of tea. Teacher asks the students to use the idiom to create a sentence from their favorite. After a few seconds, teacher asks them to tell one by one.	Students will listen eagerly the examples. Students will deliver their sentences one by one. Other students will listen and take notes.
Attention	Teacher will explain some idioms with meaning (Explicit) Eg. on cloud nine - extremely happy The eleventh hour - just before the last minutes. Need no introduction - well known Saw eye to eye - agreed	Students will listen the teacher attentively.

	null and void - invalid Teacher will give examples related to each word and gets students to guess the meaning of the words in contexts. Eg. Hari was on cloud nine in the moment he met his friends. Hari was extremely happy in the moment he met his friends. Murugan submitted his assignment the eleventh hour Murugan submitted his assignment just before the last minutes. Teacher will show a video to listen, read, and write the idioms one by one Teacher will distribute worksheets (important idioms with meaning) to memories. Teacher will motivate the students to read the idioms with meaning one by one	Students will watch the videos and write down the idioms Students will read the idioms to understand the meaning and memorize the unfamiliar words. Peer assisted reading (Auditory perception)
Simultaneous	Strategy- Implicit Teacher will motivate the students to underline the familiar idioms in distributed papers and asks them to try to make sentence for them. Strategy- Emotion Regulation Teacher will encourage the students to form a peer group among	Students will write sentences for familiar idioms. The students are encouraged with team members to explain the familiar idioms

	themselves and share the known idioms to others with meaning.	thoroughly to each other.
Successive	Strategy- Information Sequences Teacher will provide some sentences disorderly and asked to rearrange the idioms to write the sentences. Eg. over / spilt milk / don't cry (There's no reason to complain about something that can't be fixed) all your eggs/ don't put / in one basket (one should not concentrate all efforts and resources in one area)	Students will recall the sentences to arrange sequence the given idioms and make to rewrite the sentences. Eg. Don't cry over spilt milk Don't put all your eggs in one basket
	Strategy- Cognitive Association Teacher will ask the students to repeat a sentence and then to create a new sentence by leaving out a word or phrase, or by replacing another one word in the sentence to make new meaningful sentence. Eg. I have decided to donate my organs when I kick the bucket. My father passed last year.	The students repeat a sentence two or three times, then follow the teacher instruction to make new meaningful sentence. Eg. Velan would like to donate his organs when he kicks the bucket. My father kicked the bucket last year.
Assignment	Homework Teacher sends email or whatsapp to the students a set of idioms on Google form (worksheet), match the meaning.	

Sample Lesson Plan-2 (Grammar)

Sample lesson plan with the integration of the new teaching strategy

Lesson Plan based on Neurocognition Intervention Strategies	
Students :	Rural Undergraduate students
Subject :	English
Topic :	Active and Passive Voice
Unit :	Grammar
Duration :	90 Minutes
General Objectives:	1. To activate the students' brain through Neurocognition intervention. 2. To increase the interest of students to develop the English grammar. 3. To make students understand the different types of voices such as active and passive voice. 4. To develop the linguistic ability among students and use in their own expression. 5. To enable students develop the learners' proficiency in English language skills.
Specific Objectives	1. To provide instruction through Neurocognition strategies. 2. To provide the knowledge and understanding of the various aspects of voices. 3. To help the students understand the voice expressions and their meanings. 4. To make the students use the suitable voice to do gap filling exercise. 5. To enable students write sentences both active and passive voices. 6. To enable students use the voices in speaking and writing.
Assumptions	
Teaching Aids	Power Point, Videos, Worksheets, Chart, Black Board, Mobile and Google form (worksheet).

	Ravana was killed by Rama. What type of statement is this? Yes dear students, we are going to see the topic is active and passive voice. Strategy- auditory perception Teacher will explain the meaning of the voice to the students. Today topic is Active and Passive voice.	Students will listen eagerly.
Attention	Strategy- Sensory Input Teacher explains the rules of the Grammar Active and passive voice  What subject does The focus is on the action. Active : Ram killed Ravan Passive : Ravan was killed by Ram. Strategy- Explicit Teacher will distribute the rules of the grammar work sheet to memories. Teacher will clarify the students doubt Teacher will ask the students to change the active voice statements to passive voice statements.	Students will note down. Students will read the rules of the voices and memorize the rules and also they ask some doubts to the teacher. Students will do changes in the sentences one form to another one form. Students will assess their mistake and correct

	Teacher will explain sentences and write some statements on the black board.	themselves.
Simultaneous	Strategy- Implicit Teacher will show in either Active or Passive Voice. From the four options select the one which best expresses the same sentence in the opposite voice than mentioned in the question. Eg. Who stole your bike? a) Your bike was stolen by him? b) By whom was your bike stolen? c) Your bike was stolen by whom? d) By whom your bike stolen? Strategy- Auditory Perception Teacher will encourage the students to write active sentences from given clue words. Eg. eat, give, teach, write Teacher discusses about the given words and frame model sentences. Eg. Raja eats an apple. (AV) An apple is eaten by Raja. (PV) Malliga gives a pen. (AV) A pen is given by Malliga (PV) Strategy- Emotion Regulation Teacher will encourage the students to form a peer group among themselves.	Student monitors his/her own reading and synthesis of logical grammatical components of language and write down on their note. While the teacher asks, the student may respond. Eg. (b) By whom was your bike stolen? Students will follow the auditory information to make new sentences. Eg. I eat a Mango. The students are comfortable with auditory input and profit from lectures. To organize information as whole. The students correct their mistake has been made in their sentences. Each student will participate to share their familiar statements in the active voice to passive voice and write down their statements within a peer group.

Successive	Strategy- Information Sequences Teacher will present a set of sentences on a PPT format for students and explain how these sentences changes AV to PV and then asks them to repeat the sentences in the same order and explain it. Teacher will provide some A.V sentences and asked them to change P.V sentences. Eg. A novel was written by him. (change into Active voice)	Students will recall the rules changes in the sentences AV to PV and then change the sentences AV to PV. Eg. He wrote a novel.
	Strategy- Cognitive Association Teacher rehearsal the topic and gives repetition to emphasize important information to the students then distribute a worksheet. Teacher will ask the students to create a new sentence by leaving out a word (verb) or phrase, or by replacing another one word in the sentence to make new meaningful sentence. Eg. The bananas were eaten by the monkeys. (change into AV) The coach trained the team. (change into PV) Mani give a pen (change into tense & Voice)	The students repeat a sentence two or three times, then follow the teacher instruction to make new meaningful sentence. And the students read the worksheet and write down the examples in the worksheet. Eg. The monkeys ate the bananas. The team was trained by coach. A pen is given by Mani (present) A pen was given by Mani (past) A pen has been given by Mani (present perfect)
Assignment	Homework Teacher sends email or whatsapp to the students a set of substitution of words on Google form (worksheet), match the meaning.	

Sample Lesson Plan-3 (Reading Comprehension)

Sample lesson plan with the integration of the new teaching strategy

Lesson Plan based on Neurocognition Intervention Strategies	
Students :	Rural Undergraduate students
Subject :	English
Topic :	Comprehension passage
Unit :	Reading Comprehension
Duration :	90 Minutes
General Objectives:	1. To activate the students' brain through Neurocognition intervention. 2. To increase the interest of students to develop the reading skills. 3. To make students understand the content. 4. To develop the linguistic ability among students and use in their own expression. 5. To enable students develop the learners' proficiency in English language skills.
Specific Objectives	1. To provide instruction through Neurocognition strategies. 2. To provide the knowledge and understanding of the various aspects of content. 3. To help the students understand the unfamiliar vocabularies and their meanings. 4. To make the students read for specific information as well as for general meaning. 5. To engage the students in collaborative and cooperative reading, collect information as well as presenting them. 6. To enable students to answer the content based questions in writing.
Assumptions	
Teaching Aids	Power Point, Videos, Worksheets, Chart, Black Board, Mobile and Google form (worksheet).

Stapes	Teacher's Activities & strategies	Students Activities
Warm up	Warm up meditation music will be played a few seconds and makes the students to do meditation and yoga to grab their attention. (Brain active techniques)	The students will follow the teacher instruction to do meditation and yoga.
Planning	Strategy- Visual Perception Teacher will initiate a casual talk to bring the mind of the students into the classroom and show a picture to ask a question. Who is he? 	Students may respond. Eg. Vivekananda

	Strategy- Auditory Perception Teacher encouraging them and will inform, today, our topic is Swami Vivekananda. Teacher will ask some other questions. Eg. What do you know about swami Vivekananda? Strategy – explicit Teachers will tell their students’ processor of classroom activity especially reading, take the notes, practice, and application.	Students may respond. . Students will listen the rules eagerly.
Attention	Strategy- Sensory Input Teacher will distribute the worksheet of reading comprehension and ask them to read silently the page then underline the unfamiliar words, after that refer the underlined word’s meanings through mobile dictionary. Strategy –Explicit Teacher will encourage the students to identify the main idea and summarizing requires that students determine what is important and then put it in their own words.	Students will read silently and write the unfamiliar words on their note. And also refer the meaning for the underlined words. Identifying the main idea and summarizing requires that students determine what is important and then put it in their own words.
Simultaneous	Strategy- Emotion Regulation Teacher will encourage the students to form a peer group among themselves. Strategy- Implicit The students will be asked to tell the topic in their own words without forces them to analyze the content to determine what is important.	Each student will participate to share their unfamiliar words meaning to other in the peer group. Students tell one by one among the peer group.

Successive	Strategy- Information Sequences Teacher will ask the students different types of questions require that they will find the answers in different ways. Eg. What was Vishwanatha Datta's profession? Give the opposite of the word "Occident" from the second passage of the speech Strategy- Cognitive Association Teacher rehearses the topic and gives repetition to emphasize important information to the students then distribute a worksheet. Teacher will ask the students to answer the questions. Eg. Who spoke at the World's Parliament of Religion? In the phrase: "all lead to Thee", to whom does the word 'Thee' refer?	Students will recall the content and answer for the questions Eg. Attorney "Orient" is the opposite of Occident
Assignment	Homework Teacher sends email or whatsapp to the students a set of substitution of words on Google form (worksheet), match the meaning.	The students reread the topic and then try to answer the questions in own words. Eg. Swami Vivekananda spoke at the conference It refers to God.

Sample Lesson Plan-4 (Graphical Representation)

Sample lesson plan with the integration of the new teaching strategy

Lesson Plan based on Neurocognition Intervention Strategies	
Students :	Rural Undergraduate students
Subject :	English
Topic :	Table description (Rajadhani Express Timetable)
Unit :	Graphical Representation
Duration :	90 Minutes
General Objectives:	1. To activate the students' brain through Neurocognition intervention. 2. To increase the interest of students to develop the reading skills. 3. To make students understand the content. 4. To develop the linguistic ability among students and use in their own expression. 5. To enable students develop the learners' proficiency in English language skills.
Specific Objectives	1. To provide instruction through Neurocognition strategies. 2. To provide the knowledge and understanding of the various aspects of content. 3. To help the students understand the unfamiliar vocabularies and their meanings. 4. To make the students read for specific information as well as for general meaning. 5. To engage the students with cooperative reading, collect information as well as presenting them. 6. To enable the students to answer the content based questions in writing.
Assumptions	
Teaching Aids	Power Point, Videos, Worksheets, Chart, Black Board, Mobile and Google form (worksheet).

Stapes	Teacher's Activities & strategies	Students Activities
Warm up	Warm up meditation music will be played a few seconds and makes the students to do meditation and yoga to grab their attention. (Brain active techniques)	The students will follow the teacher instruction to do meditation and yoga.
Planning	Strategy- Visual Perception Teacher will initiate a casual talk to bring the mind of the students into the classroom and show a picture to ask a question. What city do you understand from this picture?  Strategy- Auditory Perception Teacher encouraging them and will inform, today, our topic is Related to Delhi. Teacher will ask some other questions. Eg. Did you go to Delhi by train? Which train is best for travel Chennai to Delhi?	Students may respond. Eg. Delhi Students may respond. No Students may not be able to say the correct train, so in order to save time, teacher will tell the train name.

Attention	Strategy – Explicit Teachers will tell their students’ processor of classroom activity <table><tr><th colspan="4">A nice choice from Chennai to the National capital</th></tr><tr><th colspan="4">RAJADHANI EXPRESS TIMETABLE</th></tr><tr><th colspan="4">Shortest Route between Chennai and Hazrat Nizamuddin 8 Halts & 324 intermediate stations in between</th></tr><tr><th>Station Name</th><th>Departs</th><th>Day</th><th>Speed</th></tr><tr><td>Chennai Central</td><td>06.05</td><td>1</td><td>75</td></tr><tr><td>Vijayawada</td><td>11.55</td><td>1</td><td>76</td></tr><tr><td>Warangal</td><td>14.40</td><td>1</td><td>77</td></tr><tr><td>Balharshah</td><td>18.00</td><td>1</td><td>78</td></tr><tr><td>Nagpur</td><td>20.45</td><td>1</td><td>74</td></tr><tr><td>Bhopal</td><td>02.10</td><td>2</td><td>89</td></tr><tr><td>Jhansi</td><td>05.31</td><td>2</td><td>99</td></tr><tr><td>Gwalior</td><td>06.32</td><td>2</td><td>85</td></tr><tr><td>Agra Cantt</td><td>07.57</td><td>2</td><td>76</td></tr><tr><td>Hazrat Nizamudin</td><td>10.25</td><td>2</td><td>-</td></tr></table> especially Graphical Representation (picture, table, chart, Graph etc.), take the notes, practice, and application. Strategy- Sensory Input Teacher will show a table (Rajadhani Express Timetable) and ask them to read silently and take notes what they understand from the table.	A nice choice from Chennai to the National capital				RAJADHANI EXPRESS TIMETABLE				Shortest Route between Chennai and Hazrat Nizamuddin 8 Halts & 324 intermediate stations in between				Station Name	Departs	Day	Speed	Chennai Central	06.05	1	75	Vijayawada	11.55	1	76	Warangal	14.40	1	77	Balharshah	18.00	1	78	Nagpur	20.45	1	74	Bhopal	02.10	2	89	Jhansi	05.31	2	99	Gwalior	06.32	2	85	Agra Cantt	07.57	2	76	Hazrat Nizamudin	10.25	2	-	Students will listen the rules eagerly. Students will read silently and note down (the main ideas) what they understood.
A nice choice from Chennai to the National capital																																																										
RAJADHANI EXPRESS TIMETABLE																																																										
Shortest Route between Chennai and Hazrat Nizamuddin 8 Halts & 324 intermediate stations in between																																																										
Station Name	Departs	Day	Speed																																																							
Chennai Central	06.05	1	75																																																							
Vijayawada	11.55	1	76																																																							
Warangal	14.40	1	77																																																							
Balharshah	18.00	1	78																																																							
Nagpur	20.45	1	74																																																							
Bhopal	02.10	2	89																																																							
Jhansi	05.31	2	99																																																							
Gwalior	06.32	2	85																																																							
Agra Cantt	07.57	2	76																																																							
Hazrat Nizamudin	10.25	2	-																																																							
Simultaneous	Strategy –Explicit Teacher will encourage the students to reread and summaries the identified the main ideas what is important and then put it in their own words.	The students reread the picture (Table) and summaries the identified the main ideas what is important and then put it in their own words.																																																								

	Strategy- Emotion Regulation Teacher will encourage the students to form a peer group among themselves. Strategy- Implicit The students will be asked to modify the summary in their own words without forces them to analyze the content to determine what is important.	Each student will participate to share their summarized points among the peer group and add some new points get from others.
Successive	Strategy- Information Sequences Teacher will ask the students different types of questions require that they will find the answers in different ways. Eg. How many stations are there in between Chennai Central and Hazrat Nizamudin ? Where does the train reach around 8.45 PM? Strategy- Cognitive Association Teacher rehearsal the topic and gives repetition to emphasize important information to the students then distribute a worksheet. Teacher will ask the students to answer the questions. Eg. Why do people prefer the Rajadhani express to travel from Chennai to Delhi? Where does the train run at its maximum speed?	Students will recall the content and answer for the questions Eg. Eight Nagpur The students reread the topic and then try to answer the questions in own words. Eg. Because, it is the shortest route from Chennai to New Delhi. The train runs at its maximum speed between Bhopal to Jhansi.
Assignment	Homework Teacher sends email or whatsapp to the students a set of substitution of words on Google form (worksheet), match the meaning.	

5.6 Conclusion

In this chapter, the researcher explained the controlling measures adopted by the experimenter to minimize the threats to the experimental design such as threats to internal and external validity. Therefore modus operandi followed for this study was elaborated in the present chapter. The collected data were analyzed in the next chapter.

.CHAPTER VI

DATA ANALYSIS AND INTERPRETATION

6.1 Introduction

The purpose of the present study is to find out the impact of Neurocognition intervention strategies on the development of English language skills among undergraduate students from rural areas. This chapter deals with the analysis and interpretation of data. Data Analysis and interpretation are the two major steps in the process of research. For a good research study a systematic organization, classification and tabulation of data are essential. The data gathered through the administration of tools need to be systematically organized and analyzed in order to determine the inherent meaning. Avdhesh (2014) pointed out data analysis means to study the tabulated material in order to determine inherent facts or meanings. It involves breaking down existing complex factors into simpler parts and putting those parts together (in new arrangements) for the purpose of interpretation.

Data can be defined as scores describing the variables that are under study or observed. There are two types of analysis. In the first type that is Quantitative analysis involves quantification of data into numbers and qualitative data is used to express the data into words. The quantitative data can be analysed using descriptive and inferential statistics.

6.2 Descriptive Analysis

According to Gay and Airasan, (2000) descriptive statistics describe and summarize the properties of the mass of data collected from the target group. It helps the researcher to explore the obtained data. They are useful if the investigator wants to make general observations of the collected data (Coakes, 2005). Descriptive analysis is the transformation of raw data into a form that makes easy for understanding, interpreting, rearranging, ordering, and manipulating the data to generate descriptive information. Also, descriptive statistics describes quantitative features of a collection of information. The main aim of the descriptive statistics is to summarize a sample. Descriptive statistics is important to present the raw data in a visualized way.

Descriptive statistical methods like frequency, percentage, means, and standard deviations were followed for analyzing the data using SPSS. In the present study, the researcher used as the 33rd percentile was regarded as the cut-off point between ‘low’ and ‘average’ levels of English language skills. The 67th percentile was considered the cut-off between ‘average’ and ‘high’ levels. Therefore, a mean of 2.13 (upon 5) or below was considered a ‘low’ level of English language skills; a mean ranging between 2.14 and 3.73 was regarded as ‘average’; and finally, a mean of 3.74 or higher was reported as a ‘high’ level of English language skills (Nowrouzi et al., 2015).

Table 6.T.1 The rural undergraduate students' achievement in the diagnostic assessment in English language skills with reference to topics

S.No	Topics	Mean	SD	Level *
1	Synonyms	3.42	0.66	Average
2	Substituted Words	1.80	0.88	Low
3	Idioms & Phrasal verbs	1.83	0.89	Low
4	Antonyms	3.41	0.62	Average
5	Concord	2.08	0.58	Low
6	Spot the Error	1.67	1.04	Low
7	Sentence Pattern	3.93	0.86	High
8	Question Tag	3.82	0.71	High
9	Articles	4.25	0.89	High
10	Kinds of Sentences	1.71	0.87	Low
11	Preposition	3.93	0.67	High
12	Tense	4.01	0.98	High
13	Reading comprehension	2.10	0.82	Low
14	Graphical Understanding	2.45	0.94	Average
15	Jumbled words	1.79	0.95	Low
16	Graphical Representation	1.78	0.96	Low
17	Dialogue	3.42	0.66	Average
18	Note making	3.77	0.60	Average
19	Summary	3.44	0.64	Average
20	Letter Writing	3.99	0.77	High
Total		2.93	0.80	Average

*Means values ≤ 2.13 (low level), 2.14 - 3.73 (Average level); and ≥ 3.74 (high level) of English language skills.

The diagnosis assessment in English language skills was administered with 721 undergraduate students from rural areas to ascertain their difficulty in competitive exam based English language skills. From the table 6.T.1 indicates that the undergraduate students from rural areas have difficulties in English language skills such as Substituted Words, Idioms and Phrasal verbs, Concord, Spot the error, Kinds of sentences, Reading comprehension, Graphical representation, and Jumbled words. By this way, the researcher has found out the areas of difficulties of the undergraduate students in English language skills.

After that the researcher has framed questionnaires based on the difficult topics. It is named as the competitive exam based English language skills (CEBELS-1, 2 and 3). It has two dimensions viz., reading skill and writing skill. These two dimensions also have some sub skills as vocabulary, grammar, reading comprehension and graphical representation. In these sub-skills included all the above mentioned difficult topics. These were analyzed for both Control and Experimental groups of the undergraduate students.

In the present investigation the scores secured by the 32 undergraduate students of the Control group and the 33 undergraduate students of the Experimental group were tabulated.

Table: 6.T.2 Descriptive analysis of Control group and Experimental group scores on English language skills in pre test, post test, delayed post test

Groups	Number	Tests	Mean	Median	SD	Kurtosis	Skewness
Control Group	32	Pre Test	32.59	32	4.32	-1.413	0.051
		Post Test	66.59	65	11.41	-0.609	0.426
		Delayed Post Test	60.18	59.50	8.20	-0.935	-0.041
Experimental Group	33	Pre Test	32.69	32	4.34	-1.360	-0.003
		Post Test	80.84	82	7.47	0.105	0.066
		Delayed Post Test	80.87	81	7.75	-0.139	0.599

Table 6.T.2 indicates that, the mean scores of the Control group obtained with the highest for post test (M=66.59) and it is followed by delayed post - test (M=60.18). It revealed that there is a greater increase in the mean from the pre- test (M = 32.59) to the post- test (M = 66.59). And also there is a gradual decrease in the mean (M = 60.18) in the delayed post –test. The median for the pretest, the post - test and the delayed post - test are (32.00), (65.00) and (59.50) respectively. It is also noted that there is slight difference in the values of standard deviation among the pre-test, the post test and the delayed post-test are (4.32), (11.41) and (8.20) respectively. The deviations are more in pre - test compared to the post – test and the delayed post test. It indicates that the scores of the pre-test are around the mean and there is a higher deviation in Control group. Hence the distribution of post test scores in Control group has recorded a deviation in the low and high scores of the

undergraduate students. The kurtosis value of the pre-test (-1.413), the post test (-0.609) and the delayed post-test (-0.935) is less than three. This indicates that these tests of the Control group are platy kurtic. Similarly, The skewness value of the Control group the pre-test (0.051) and the post test (0.426) are greater than zero, the distribution is right skewed: which means most of the distribution of the scores are existing below the mean and only the exception performance are existing above the mean. But, the skewness value of Control group in the delayed post test (-0.041) is less than zero, the distribution is left skewed: Which directs few students are to be improved upon their English language skills.

It can be seen from the above table 6.T.2, the mean scores of the Experimental group obtained with the highest for the post test (M=82.00) and it is followed by the delayed post - test (M=81.00). It revealed that there is a greater increase in the means from the pre- test (M = 32.00) to the post- test (M = 82.00) and the delayed post test (M= 81.00). The median for the pretest, the post - test and the delayed post - test are (32), (82) and (81) respectively. It is also noted that there is slight difference in the values of standard deviation between the pre-test, the post test and the delayed post-test are (4.34), (7.47) and (7.75) respectively. The deviations are more in pre-test compared with the post-test and the delayed post test. It indicates that the scores of the pre-test are around the mean and there is a higher deviation in the post-test and the delayed post test. The kurtosis value of the pre-test (-1.360), the post test (0.105) and the delayed post test (-0.139) is less than three. This indicates that these tests of the Experimental group are platy kurtic. The skewness value of Experimental group the the post test (0.676) and the delayed post test

(0.599) are greater than zero, the distribution is right skewed: which means most of the distribution of the scores are existing below the mean and only the exception performance are existing above the mean. But, the skewness value of Experimental group in the pre test (-0.003) is less than zero, the distribution is left skewed: Which directs few students are to be improved upon their English language Skills.

The descriptive analysis indicates that there is a significant difference in the mean of the Control group in the pre test, the post test, the delayed post test are 32.59, 66.59 & 60.18 and Experimental group are 32.69, 80.84 & 80.87 respectively. This shows that the Experimental group is very high improvement in the post-test and the delayed post test scores compared with the post test and the delayed post test scores of Control group. These values show that Neurocognition intervention strategies had significant impact on the development of English language skills in the Experimental group students. The marvelous increase in the post-test and the delayed post scores of Experimental group on the development of English language skills shows the Neurocognition intervention strategies are more impactful as this increase greater than the traditional methods to develop the undergraduate students from rural areas. Figure 6.F.1 shows the increase of Experimental group than the Control group in the pre- test, the post-test and the delayed post test. It is also noted that Experimental group students scored better than the Control group students in the post test and the delayed post test.

6.F.1 Comparison of mean scores of Control group and Experimental group scores on English language skills in the pre test, post test and delayed post test

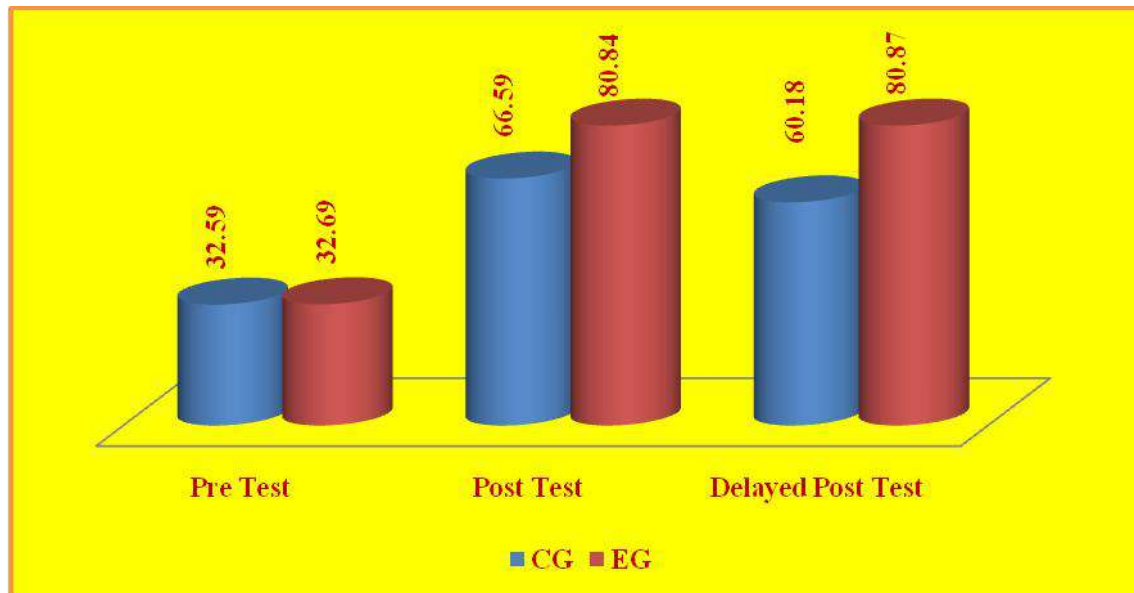


Table: 6.T.3 Descriptive analysis of Control group and Experimental group scores on Dimensions wise English language skills in the pre test, post test, delayed post test

Dimensions	Group	No	Test	Mean	Median	SD	Kurtosis	Skewness
Reading skills	CG	32	Pre Test	16.59	16.50	2.80	-1.010	-0.237
			Post Test	33.21	33.5	5.26	-0.619	0.277
			Delayed Post Test	29.71	29	3.64	-1.152	-0.15
	EG	33	Pre Test	16.42	16	2.85	-0.957	0.032
			Post Test	40.33	41	4.53	-0.867	-0.173
			Delayed Post Test	39.66	40	4.87	-0.81	0.66
Writing skills	CG	32	Pre Test	16	16	2.34	-0.546	0.016
			Post Test	33.37	33	6.43	-0.77	0.414
			Delayed Post Test	30.46	30	5.03	-0.807	-0.012
	EG	33	Pre Test	16.27	16	1.98	-0.575	-0.200
			Post Test	40.51	40	3.61	0.549	0.411
			Delayed Post Test	41.21	41	3.31	0.605	0.75

The table 6.T.3 shows the distribution of the Control group scores on dimensions wise performance in the pre test, the post test and the delayed post test. The mean scores of the reading skills in Control group obtained with the highest for post test (M= 33.21) and it is followed by delayed post - test (M=29.71). It revealed that there is a greater increase in the mean from the pre- test (M = 16.59) to the post- test (M = 33.21). And also there is a gradual decrease in the mean (M = 29.71) in the delayed post –test. The median for the pretest, the post - test and the delayed post - test are (16.50), (33.50) and (29.00) respectively. It is also noted that there is slight difference in the values of standard deviation between the pre-test, the post test and the delayed post-test are (2.80), (5.26) and (3.64) respectively. The deviations are more in pre - test compared to the post - test. It indicates that the reading skill scores of the pre-test are around the mean and there is a higher deviation in the post-test. The kurtosis value of the pre-test (-1.010), the post test (-0.619) and the delayed post-test (-1.152) is less than three. This indicates that these tests of reading skill in the Control group are platy kurtic. Similarly, The skewness value of the Control group the post test (0.277) are greater than zero, the distribution is right skewed: which means most of the distribution of the scores are existing below the mean and only the exception performance are existing above the mean. But, the skewness value of Control group in the pre-test (-0.237), the delayed post test (-0.15) is less than zero, the distribution is left skewed: Which directs few students are to be improved upon their reading Skills.

Table 6.T.3 reveals that, the mean scores of the reading skills in Experimental group obtained with the highest for post test (M= 40.33) and it is followed by delayed post - test (M=39.66). It revealed that there is a greater increase in the mean from the pre- test (M = 16.42) to the post- test (M = 40.33). And also there is a gradual decrease in the mean (M =

39.66) in the delayed post –test. The median for the pretest, the post - test and the delayed post - test are (16), (41) and (40) respectively. It is also noted that there is slight difference in the values of standard deviation among the pre-test, the post test and the delayed post-test are (2.85), (4.53) and (4.87) respectively. The deviations are more in pre - test compared to the post - test. It indicates that the reading skill scores of the pre-test are around the mean and there is a higher deviation in the post-test. Hence the distribution of Experimental group reading skill scores in the post-test has recorded a deviation in the low and high scores of the undergraduate students. The kurtosis value of the pre-test (-0.957), the post test (-0.867) and the delayed post-test (-0.81) is less than three. This indicates that these tests of reading skill in the Experimental group are platy kurtic. Similarly, the skewness value of the pre-test (0.032), and the delayed post test (0.66) are greater than zero. This means the distribution of the pre and the delayed post test scores are right skewed. It indicates that most of the distributions of the reading skill scores exist below the mean and only the exception performance exists above the mean. But, the skewness value of reading skill in the post test (-0.173) is less than zero. This means the distribution of the post test scores are left skewed; which directs few students are to be improved upon their reading skills.

It can be seen from the above Table 6.T.3, the mean scores of the writing skills in Control group obtained with the highest for post test (M= 33.37) and it is followed by delayed post - test (M=30.46). It revealed that there is a greater increase in the mean from the pre- test (M = 16) to the post- test (M = 33.37). And also there is a gradual decrease in the mean (M = 30.46) in the delayed post –test. The median for the pretest, the post - test and the delayed post - test are (16), (33) and (30) respectively. It is also noted that there is slight difference in the values of standard deviation between the pre-test, the post test and the delayed post-test are

(2.34), (6.43) and (5.03) respectively. The deviations are more in pre - test compared to the post - test. It indicates that the writing skill scores of the pre-test are around the mean and there is a higher deviation in the post-test. Hence the distribution of Control group writing skill scores in the post-test has recorded a deviation in the low and high scores of the undergraduate students. The kurtosis value of the pre-test (0.546), the post test (-0.77) and the delayed post-test (-0.807) is less than three. This indicates that these tests of the Control group are platykurtic. Similarly, the skewness value of the pre-test (0.016), and the post test (0.414) are greater than zero. This means the distribution of the pre-test, the post- test and the delayed post- test scores are right skewed. The right values of the skewness indicate that most of the distributions of the scores exist below the mean and only the exception performance exist above the mean. But, the skewness value of reading skill in the delayed post test (-0.012) is less than zero. This means the distribution of the pre test scores are left skewed; which directs few students are to be improved upon their writing skills.

Table 6.T.3 reveals that, the mean scores of the writing skills in Experimental group obtained with the highest for the delayed post test (M= 41.21) and it is followed by the post - test (M=40.51). It revealed that there is a greater increase in the mean from the pre- test (M = 16.27) to the post- test (M = 40.51). And also there is a slight increase in the mean (M = 41.21) in the delayed post –test. The median for the pretest, the post - test and the delayed post - test are (16), (40) and (41) respectively. It is also noted that there is slight difference in the values of standard deviation between the pre-test, the post test and the delayed post-test are (1.98), (3.61) and (3.31) respectively. The deviations are more in pre - test compared to the post - test. It indicates that the writing skill scores of the pre-test are around the mean and

there is a higher deviation in the delayed post-test. Hence the distribution of Experimental group writing skill scores in the post-test has recorded a deviation in the low and high scores of the undergraduate students. The kurtosis value of the pre-test (-0.575), the post test (0.549) and the delayed post-test (0.605) is less than three. This indicates that these tests of the Experimental group are platy kurtic. The skewness value of Experimental group in the pre-test (-0.200) is less than zero, the distribution is left skewed: Which directs few students are to be improved upon their English language Skills. But the skewness value of the post test (0.411) and the delayed post test (0.75) are greater than zero. This means the distribution of the post-test and the delayed post- test scores are right skewed. The right values of the skewness indicate that most of the distributions of the scores exist below the mean and only the exception performance exist above the mean.

It is evident from the descriptive analysis that there is very much development in the post-test scores of the Experimental group both reading and writing skills. Thus the Neurocognition intervention strategies had significant impact on the development of reading and writing skills in the Experimental group students. The significant increase in the post-test scores of Experimental group on the development of English language skills shows the Neurocognition intervention strategies are more impact as than the traditional methods. And also the table 6.T.3 evident to indicate the mean score in the delayed post-test slightly higher than that of the post-test, this reveals the significant influence of Neurocognition intervention strategies on the development of writing skills as on long term memory level.

Figure : 6.F.2 Descriptive analysis of Control group and Experimental group scores on Dimensions wise English language skills in pre test, post test, delayed post test

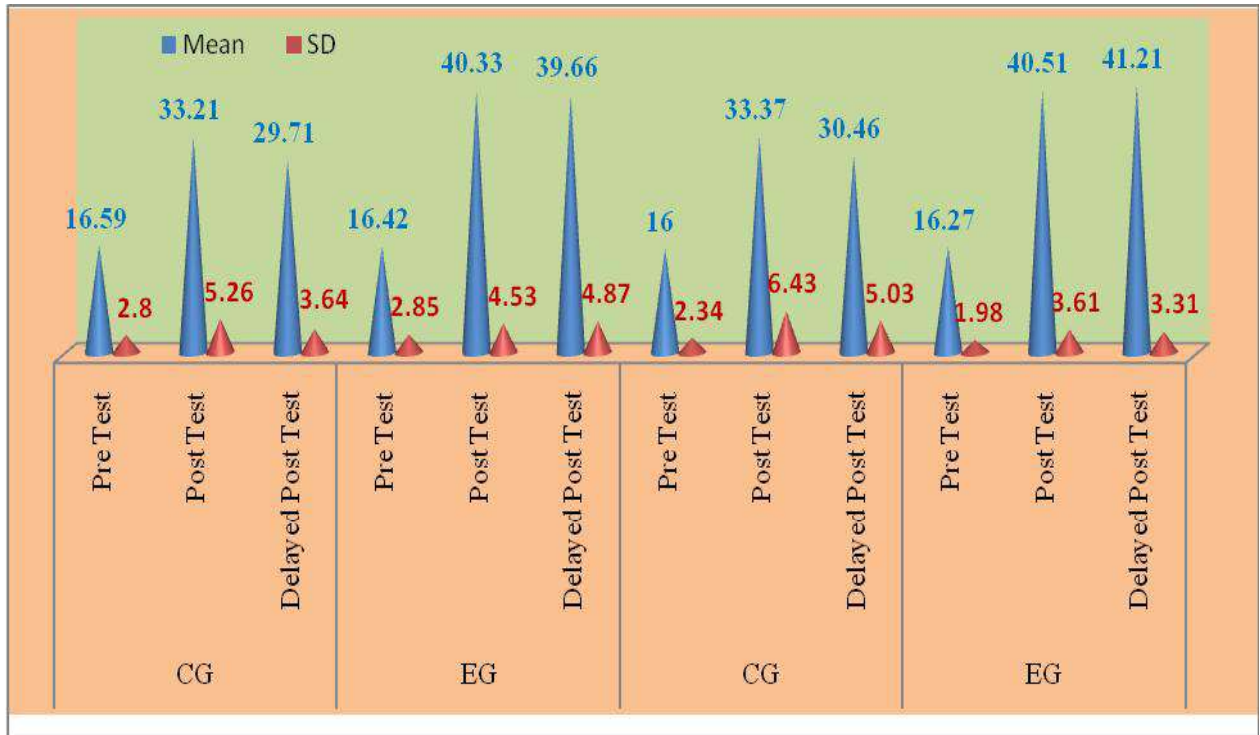


Table: 6.T.4 Mean and SD of the Control and Experimental group on English language skills performance with reference to reading and writing components

Reading and Writing components	Group	Number of Students	Pre test		Post test		Delayed Post test	
			Mean	SD	Mean	SD	Mean	SD
Vocabulary	CG	32	7.56	1.52	15.22	2.43	13.91	1.99
	EG	33	7.06	1.58	18.97	2.39	18.76	2.42
Grammar	CG	32	5.56	1.46	15.25	3.14	14.28	2.17
	EG	33	6	1.77	17.85	2.88	18.24	2.91
Reading comprehension	CG	32	9.25	1.02	16.59	3.28	15.00	2.51
	EG	33	8.82	1.1	20.94	1.78	20.70	1.79
Graphical representation	CG	32	10.22	1.48	19.53	3.17	17.00	2.29
	EG	33	9.03	1.49	23.09	1.74	23.18	1.76

The table 6.T.4 shows the distribution of Mean and Standard deviation of the Control group and the Experimental group on reading and writing skills components in English of the undergraduate students with reference to different components in the pre-test, the post test and the delayed post-test.

The mean scores of the Reading and Writing components viz., vocabulary, grammar, reading comprehension and graphical representation in Control group obtained with the highest for post test (M= 15.22), (M=15.25), (M=16.59), (M=19.53) and it is followed by delayed post - test (M=13.91), (M=14.28), (M=15.00), (M=17.00) respectively. It revealed that there is a significant increase in the mean from the pre- test (M = 7.56), (M=5.56), (M=9.25), (M=10.22) to the post- test (M= 15.22), (M=15.25), (M=16.59), (M=19.53) respectively. And there is a gradual decrease in the delayed post – test mean score (M=13.91), (M=14.28), (M=15.00), (M=17.00) respectively. It is also noted that there is slight difference in the values of standard deviation among the components of vocabulary, grammar, reading comprehension and graphical representation in the pre-test (1.52), (1.46), (1.02), (1.48) the post test (2.43), (3.14), (3.28), (3.17) and the delayed post-test (1.99), (2.17), (2.51), (2.29) respectively. The deviations are more in pre - test compared to the post – test and delayed post test. It indicates that the components of reading and writing skills scores of the pre-test are around the means and there are higher deviations in the post-test. Hence the distribution of Control group scores in the post-test has recorded a deviation in the low and high scores of the undergraduate students. This shows that the significant influence of traditional methods on the development in components of reading and writing skills of the undergraduate students of Control group.

Table 6.T.4 reveals that, the mean scores of the Reading and Writing components viz., vocabulary, grammar, reading comprehension and graphical representation in Experimental group obtained with the highest for post test (M= 18.97), (M=17.85), (M=20.94), (M=23.09) respectively. It revealed that there is a greater increase in the means from the pre- test (M = 7.06), (M=6), (M=8.82), (M=9.03) to the post- test ((M= 18.97), (M=17.85), (M=20.94), (M=23.09) respectively. And there is a similar level in the delayed post –test mean scores (M= 18.76), (M=18.24), (M=20.70), (M=23.18) respectively. It is also noted that there are slight difference in the values of standard deviation among the components of vocabulary, grammar, reading comprehension and graphical representation in the pre-test (1.58), (1.77), (1.1), (1.49) the post test (2.39), (2.88), (1.78), (1.74) and the delayed post-test (2.42), (2.91), (1.79), (1.76) respectively. The deviations are more in pre - test compared to the post – test and delayed post test. It indicates that the components of reading and writing skills scores of the pre-test are around the means and there are higher deviations in the post-test. Hence the distribution of Experimental group scores in the post-test has recorded a deviation in the low and high scores of the undergraduate students. These indicate that the undergraduate students of Experimental group achieved high scores in the post test when compare the other two tests. This reveals that the significant influence of Neurocognition intervention strategies on the development of English language skills.

The table 6.T.4 also shows the distribution of the Control and Experimental groups' performance in components of reading and writing skills viz., vocabulary, grammar, reading comprehension and graphical representation in post test. The mean scores in the

Control group are (M= 15.22), (M=15.25), (M=16.59), (M=19.53)) and that of the Experimental group are (M= 18.97), (M=17.85), (M=20.94), (M=23.09) respectively. These values clearly indicate that Neurocognition intervention strategies had significant impact on the development of components in reading and writing skills. Figure 6.F.3 shows the comparison of means scores increase in reading and writing components of Experimental group than the Control group in the pre- test, the post-test and the delayed post test. It is also noted that Experimental group students scored better than the Control group students in the post test and the delayed post test.

Figure: 6.F.3 Comparison of Mean scores of the Control and Experimental group on English language skills performance with reference to reading and writing components

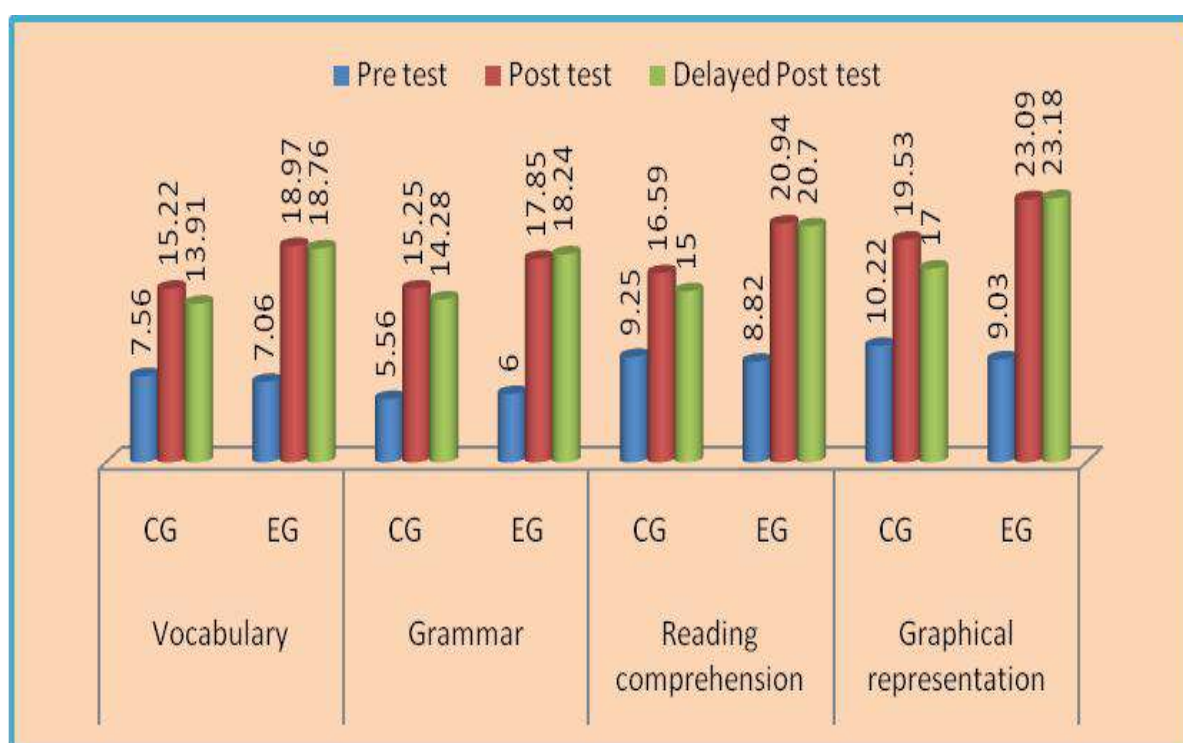


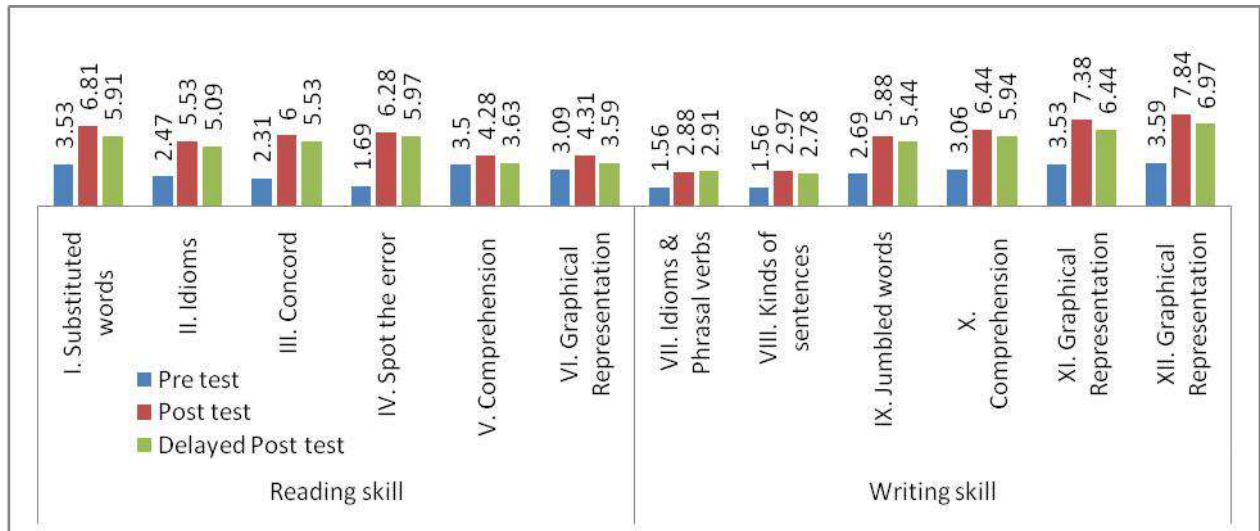
Table: 6.T.5 Mean and SD of the Control and Experimental groups on competitive exam based English language skills performance with reference to Questions

ELS	Q. No.	Topics	Group	No	Pre test		Post test		D-Post test	
					Mean	SD	Mean	SD	Mean	SD
Reading skill	I	Substituted words	CG	32	3.53	0.76	6.81	1.28	5.91	1.00
			EG	33	3.03	0.98	8.58	1.12	8.33	1.16
	II	Idioms and phrasal verbs	CG	32	2.47	0.67	5.53	0.84	5.09	0.64
			EG	33	2.42	0.71	7.18	1.21	6.97	1.31
	III	Subject verb agreement	CG	32	2.31	0.74	6.00	1.16	5.53	0.84
			EG	33	2.30	0.98	7.48	1.35	7.58	1.28
	IV	Spot the error	CG	32	1.69	0.69	6.28	1.22	5.97	0.90
			EG	33	1.91	0.88	7.18	1.24	7.21	1.29
	V	Comprehension passage (essay/paragraph)	CG	32	3.50	0.51	4.28	0.77	3.63	0.49
			EG	33	3.42	0.61	4.97	0.17	4.58	0.50
	VI	Graphical Representation (graph, chart, table etc.)	CG	32	3.09	0.82	4.31	0.82	3.59	0.56
			EG	33	3.33	0.69	4.94	0.35	5.00	0.00
Writing skill	VII	Idioms and phrasal verbs	CG	32	1.56	0.56	2.88	0.83	2.91	0.78
			EG	33	1.61	0.61	3.21	0.74	3.45	0.62
	VIII	Kinds of sentences	CG	32	1.56	0.62	2.97	1.03	2.78	0.75
			EG	33	1.79	0.74	3.18	0.73	3.45	0.71
	IX	Jumbled words	CG	32	2.69	0.59	5.88	1.52	5.44	1.27
			EG	33	2.36	0.70	7.88	1.22	7.94	1.17
	X	Comprehension passage (essay/paragraph)	CG	32	3.06	0.76	6.44	1.32	5.94	1.29
			EG	33	3.03	0.81	8.09	0.80	8.18	0.58
	XI	Graphical Representation (graph, chart, table etc.)	CG	32	3.53	0.76	7.38	1.39	6.44	1.19
			EG	33	3.82	0.68	9.15	0.97	9.18	0.98
	XII	Graphical Representation (graph, chart, table etc.)	CG	32	3.59	0.50	7.84	1.44	6.97	1.12
			EG	33	3.67	0.54	9.00	1.00	9.00	1.00

The table 6.T.5 shows the distributions of Mean, Standard deviation of Control group and Experimental group in the pre –test, the post-test and the delayed post - test in competitive exam based English language skills among undergraduate students in the questions from the topics of reading and writing skills namely Substituted words, Idioms and phrasal verbs, Subject verb agreement, Spot the error, Comprehension passage, Graphical Understanding, Kinds of sentences, and Jumbled words. The data revealed that there is no marked difference in the mean scores of the Control and Experimental group with respect to pre test score of the topics. This value shows that the two groups had almost similar level of previous knowledge in competitive exam based English language skills.

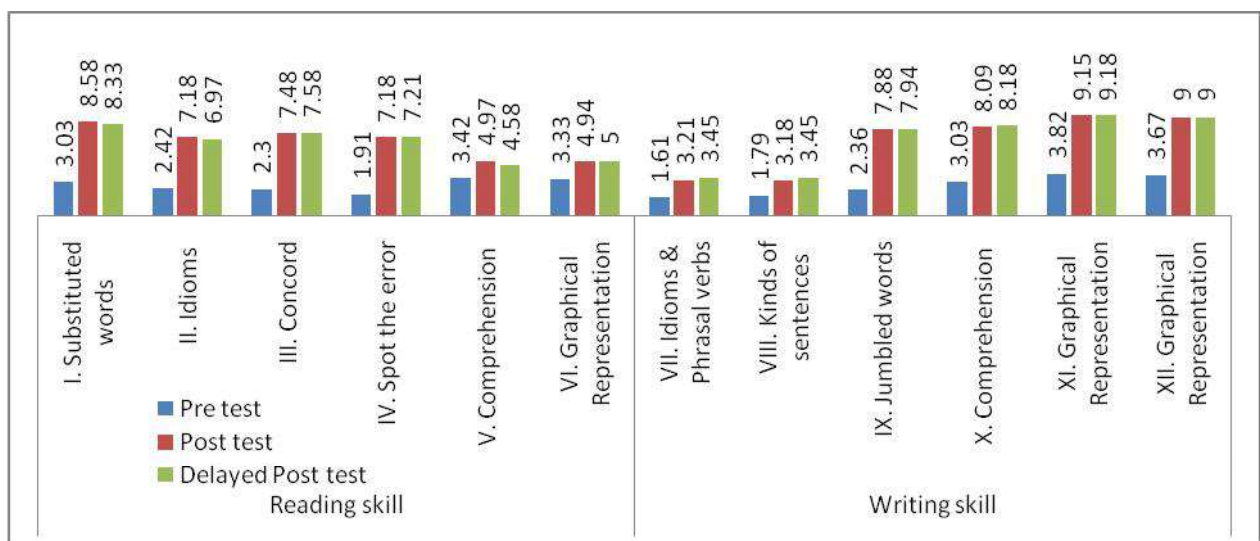
The descriptive analysis indicates that there is a significant difference between the Control group and the Experimental group in the mean scores of the post test and the delayed post test. This shows that the Experimental group is very high improvement in the post-test and the delayed post test mean scores compare with the post test and the delayed post test mean scores of Control group. These values show that Neurocognition intervention strategies had significant impact on the development of competitive exam based English language skills’ topics in the Experimental group students. The tremendous increase in the post-test scores of Experimental group on the development of English language skills shows the Neurocognition intervention strategies are more impact as this increase is greater than the traditional methods to develop the undergraduate students who are in rural areas.

Figure- 6.F.4- Difference among the means of pre-test, the post-test and the delayed post-test in the Control group scores in the competitive exam based English language skills with reference to questions.



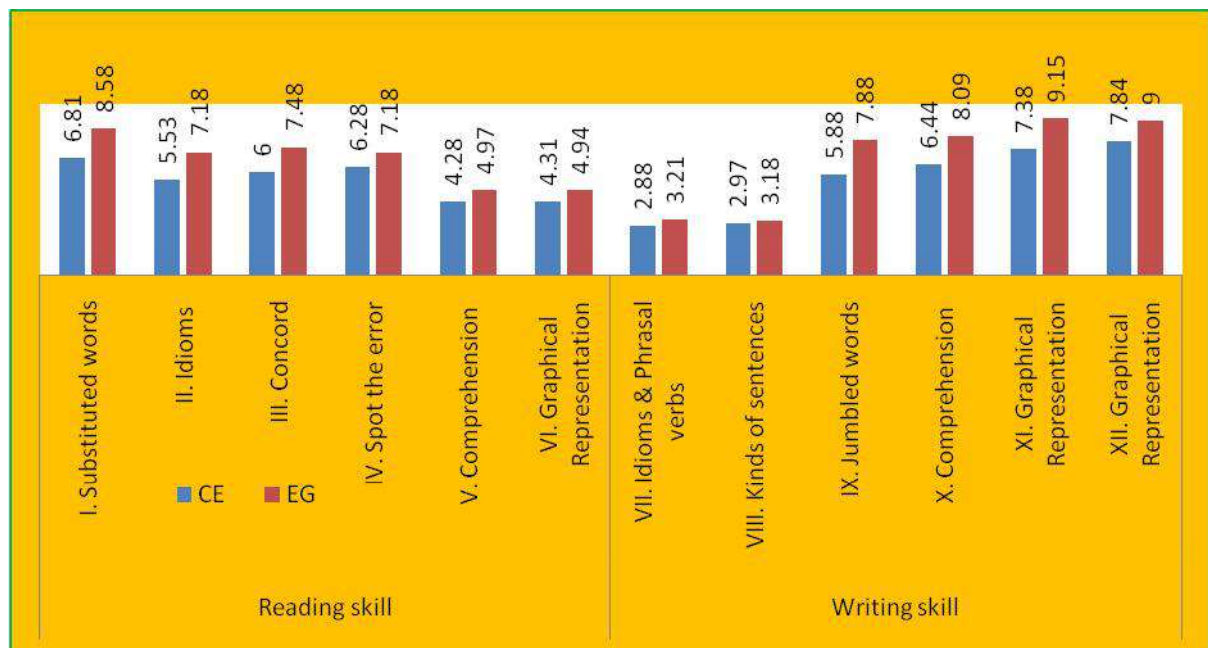
The figure 6.T.4- exhibits the difference among the means of pre-test, the post-test and the delayed post-test in the Control group scores in the competitive exam based English language skills with reference from questions.

Figure- 6.F.5A- Difference among the means of pre-test, the post-test and the delayed post-test in the Experimental group scores in the competitive exam based English language skills with reference to questions.



The figure 6.T.5A- exhibits the difference among the means of pre-test, the post-test and the delayed post-test in the Experimental group scores in the competitive exam based English language skills with reference from questions.

Figure- 6.F.5B- Difference among the means of Control group and Experimental group scores in the post test of the competitive exam based English language skills with reference to questions.



The result of the figure 6.T.5B indicates that there is a significant difference among the competitive exam based English language skills in their questions which are observed through the obtained means scores in the post-test. The highest mean difference between mean scores of Control and Experimental group is in the eleventh questions that tests the graphical representation among the students. It involves giving suitable answers from the given questions. This graphical representation is also one of the very important topics in competitive exams. The means scores of all the topics show a noticeable difference between Control and Experimental groups in the post-test. Least mean scores difference is in the sixth question which tests the undergraduate students' skill to picking up the suitable meaning idioms or

phrasal verbs for underline word and frame a sentence from selected options. This is also one of the important topics in competitive exams.

To sum up, the mean difference analysis of the scores of independent samples in the pre test, the post test and delayed post test shows that before being subjected to the instructional strategies, the two groups were more or less equivalent with reference to their previous level of English language skills. But after the treatment the students in the Experimental group is superior to the students in the Control group in their development of English language skills. From that it is concluded that Neurocognition intervention strategies is more effective than the traditional method of teaching learning of English language skills among the undergraduate students.

6.3 Differential Analysis

The differential statistics is used to make inferences from the data applicable to more general conditions; hence the descriptive statistics simply describes the nature of the data collected. Inferential statistics are valuable when it is not convenient or possible to examine each member of an entire population.

Hypothesis: 1

Control group and Experimental group do not differ significantly in English language skills in the pre test.

Table 6.T.6. Comparison of mean scores of Control group and Experimental group in the pre – test

Dimensions	Group	No	Mean	SD	Mean Difference	df	‘t’ value	P	Sig.
Reading skill	Control	32	16.593	2.803	0.169	63	0.242	0.810	NS
	Experimental	33	16.424	2.850					
Writing skill	Control	32	16	2.341	0.272	63	0.507	0.614	NS
	Experimental	33	16.272	1.988					
English Language Skills	Control	32	32.593	4.324	0.103	63	0.096	0.924	NS
	Experimental	33	32.697	4.340					

Comparison of mean scores of the Table 6.T.6 indicates that the rural undergraduate students in Control group and Experimental group do not differ significantly in the dimension of reading skill, writing skill and English language skills at 0.01 level of significance ($P < 0.01$) in the pre test. Since the 't' value for the above mention variables were found insignificant.

As far as reading skill, writing skill and English language skills are concerned, although there is no marked difference in the score of means, and standard deviation, it is found that the mean scores of Control group are slightly greater than that of Experimental group. Hence students of Control group and Experimental group have almost similar level of competitive exam based English language skills in the pre-test.

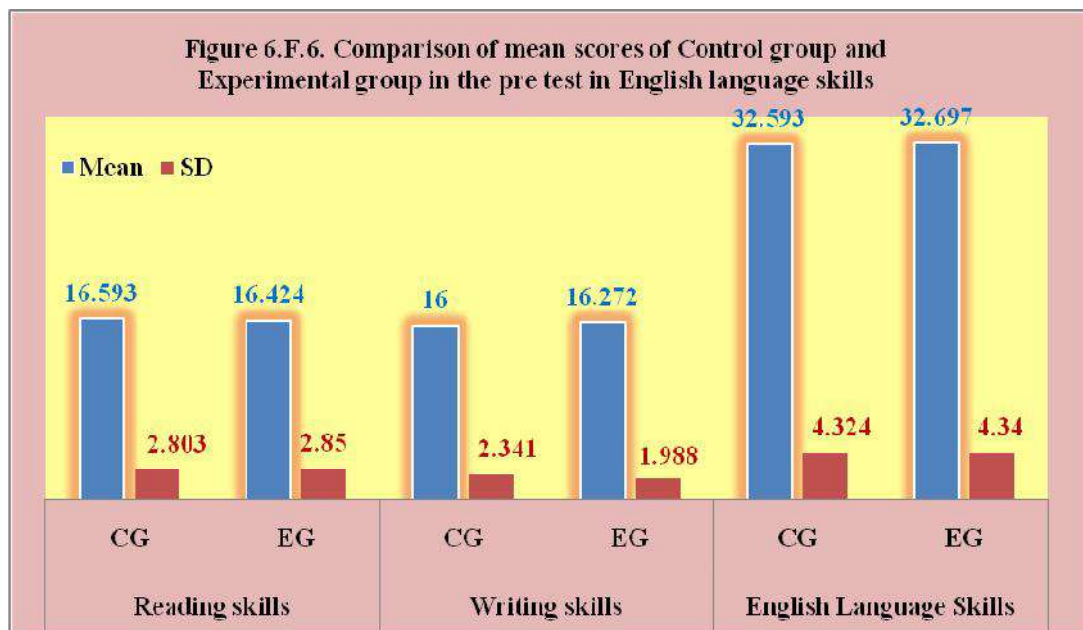


Figure. 6.F.6 shows that there is no significant difference in the value of mean between the Control and Experimental groups in the pretest for the dimensions viz., reading skills, writing skills and English language skills. It is also noted that Control and Experimental groups are similar in competitive exam based English language skills.

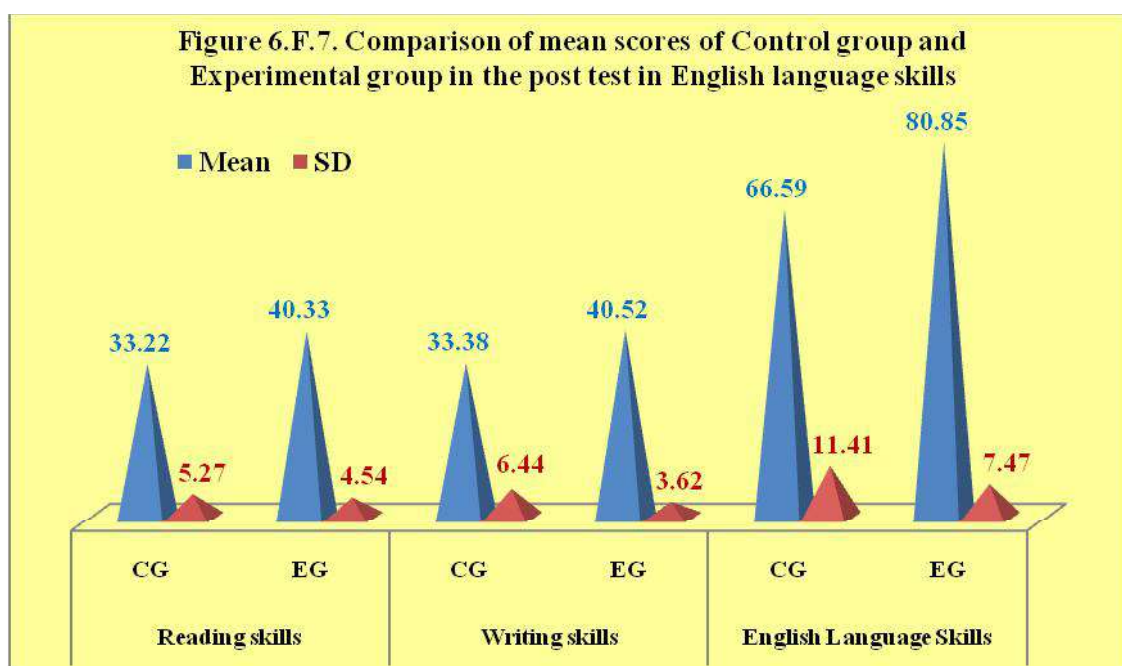
Hypothesis: 2

Control group and Experimental group do not differ significantly in English language skills in the post test.

Table 6.T.7. Comparison of mean scores of Control group and Experimental group in the post test

Dimensions	Group	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	Control	32	33.22	5.27	7.11	63	5.840	0.00	S
	Experimental	33	40.33	4.54					
Writing skills	Control	32	33.38	6.44	7.14	63	5.489	0.00	S
	Experimental	33	40.52	3.62					
English Language Skills	Control	32	66.59	11.41	14.25	63	5.940	0.00	S
	Experimental	33	80.85	7.47					

From the table 6.T.7 't' test analysis indicates that rural undergraduate student of Control group (N=32) and rural undergraduate students of Experimental group (N=33) differ significantly in their reading, writing and English language skills in the post-test at 0.01 level. The post test mean scores of Experimental group (M= 40.33), (M= 40.52) and (M=80.85) are greater than that of the post-test mean score of Control group (M=33.22 (M=33.37) and (M=66.59) respectively. As far as the standard deviations of these two groups are concerned, there is a significant difference in Experimental group is (4.53), (3.62), (7.47) and Control group is (5.26), (6.44), (11.41). Hence it is inferred that the Neurocognition intervention strategies opens up possibilities to influence more in learning of English language skills. The mean scores of Experimental group are greater than that of the mean scores of the Control group which indicated that Neurocognition Interventionstrategic model helped the rural undergraduate students to develop their English language skills. Hence, the impact of the Neurocognition intervention strategies proved that on the development of English language skills. It can also be seen from the figure 6.F.7 that Experimental group outperformed the Control group in developing English language skill in the post – test.



Hypothesis: 3

Control group students do not differ significantly between the pre test and the post test in English language skills.

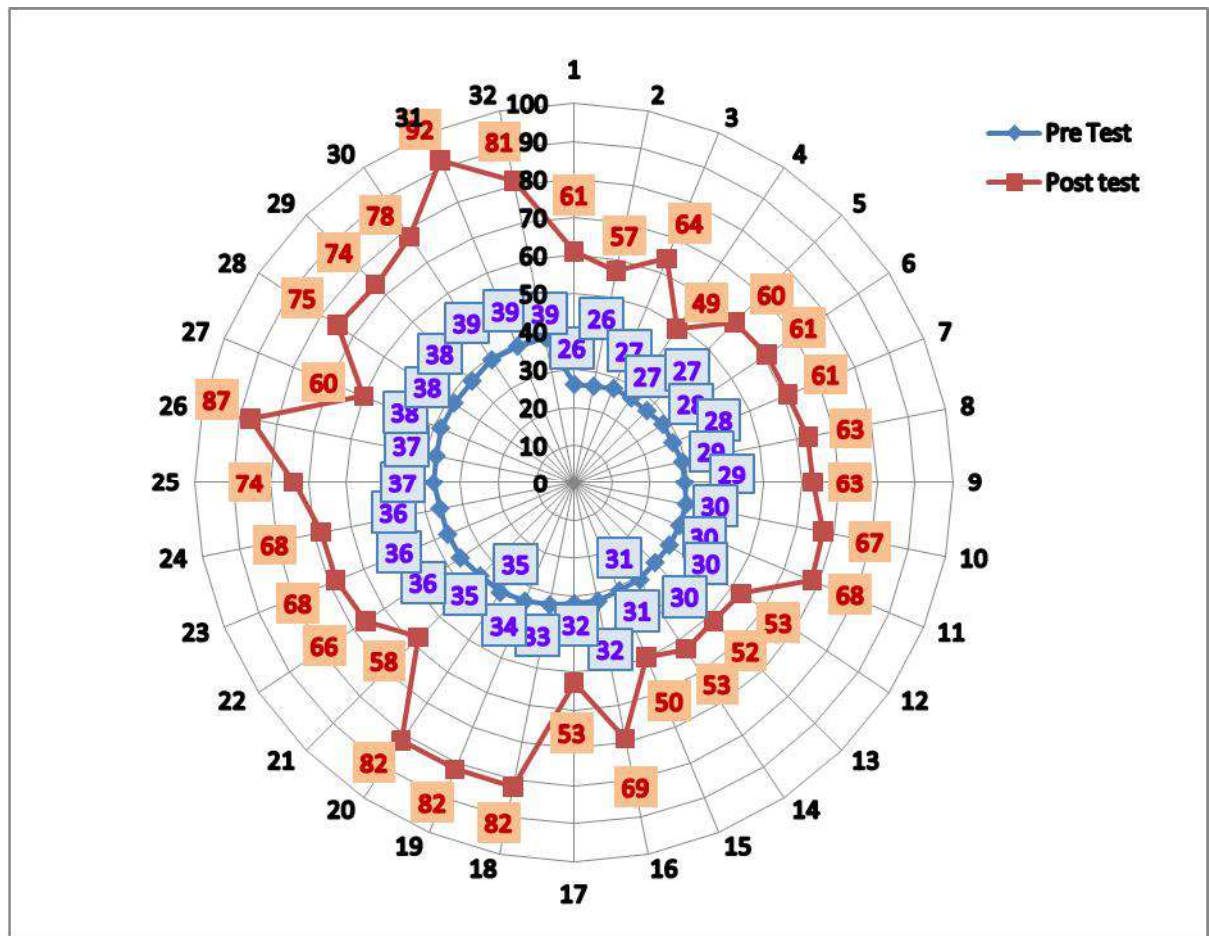
Table 6.T.8. Comparative mean scores of the pre-test and the post-test of Control group in English language skills

Dimensions	Test	No	Mean	SD	r	df	"t" value	P	Sig.
Reading skills	Pre-test	32	16.59	2.80	0.548	31	21.350	0.000	S
	Post-test	32	33.22	5.26					
Writing skills	Pre-test	32	16.00	2.34	0.479	31	17.241	0.000	S
	Post-test	32	33.38	6.44					
English Language Skills	Pre-test	32	32.59	4.32	0.618	31	20.518	0.000	S
	Post-test	32	66.59	11.41					

From the table 6.T.8, 't' test analysis indicates rural undergraduate students of Control group (N=32) differ significantly in their competitive exam based English language skills between the pre-test and the post-test at 0.01 level. The mean scores of the reading skills, writing skills and English language skills in post-test (M=33.22), (M=33.38), (M=66.59) are very greater than the mean scores of the pre-test (M=16.59), (M=16.00) and (M=32.59) respectively. When the mean scores of pre-test and post-test are compared in the Control group, there is a significant difference in the mean scores of Control group. Therefore, it is inferred that traditional method could have its own influence in developing the English language skills.

As far as the standard deviation of the reading skills, writing skills and English language skills in the post-test (S.D=5.26), (S.D=6.44), (S.D=11.41) and the pretest (S.D = 2.80), (S.D=2.34), (S.D=4.32) scores of the undergraduate students in the Control group are concerned, there is a significant difference in their English language skills which in turn helped to develop the English language skills. Also reading skill, the writing skill and English language skills have positive high correlation obtained from the pre – test and the post – test scores. From the above statistics, it can be seen that the undergraduate students of Control group have developed their competitive exam based English language skills as they have significant difference in their English language skills between the post – test and the pre-test. It revealed that the traditional method of teaching was found to impact on the development the English language skills among undergraduate students of Control group.

Figure- 6.F.8 Control group undergraduate students' competitive exam based English language skills



The above figure 6.F.8 gives the scores obtained by the undergraduate students of Control group in the pre – test and post - test. The pre-test scores are marked in sky blue colour and the post-test scores are given in maroon colour. The extensive increase in the post - test score is shown. The researcher has selected participants between the minimum score is 26 and the maximum score is 39 as average scores in the pre-test. On the other hand, they obtained scores in the post-test after the traditional method teaching; the score has increased level between the minimum 49 to the maximum 92. The considerable increase in the competitive exam based English language skills' score is portrait as a chart. It shows more clearly, a subject (Sl.No.31 in the chart) who has scored 39 marks in the pre-test, and the

subject has scored 92 marks in the post- test. This makes clear that there is greater gain among the learners in the traditional methods. Consequently, the traditional method of English language teaching in developing the competitive exam based English language skills is more evident.

Hypothesis: 4

Experimental group students do not differ significantly between the pre test and the post test in English language skills.

Table 6.T.9. Comparative mean scores of the pre-test and the post-test of Experimental group in English language skills

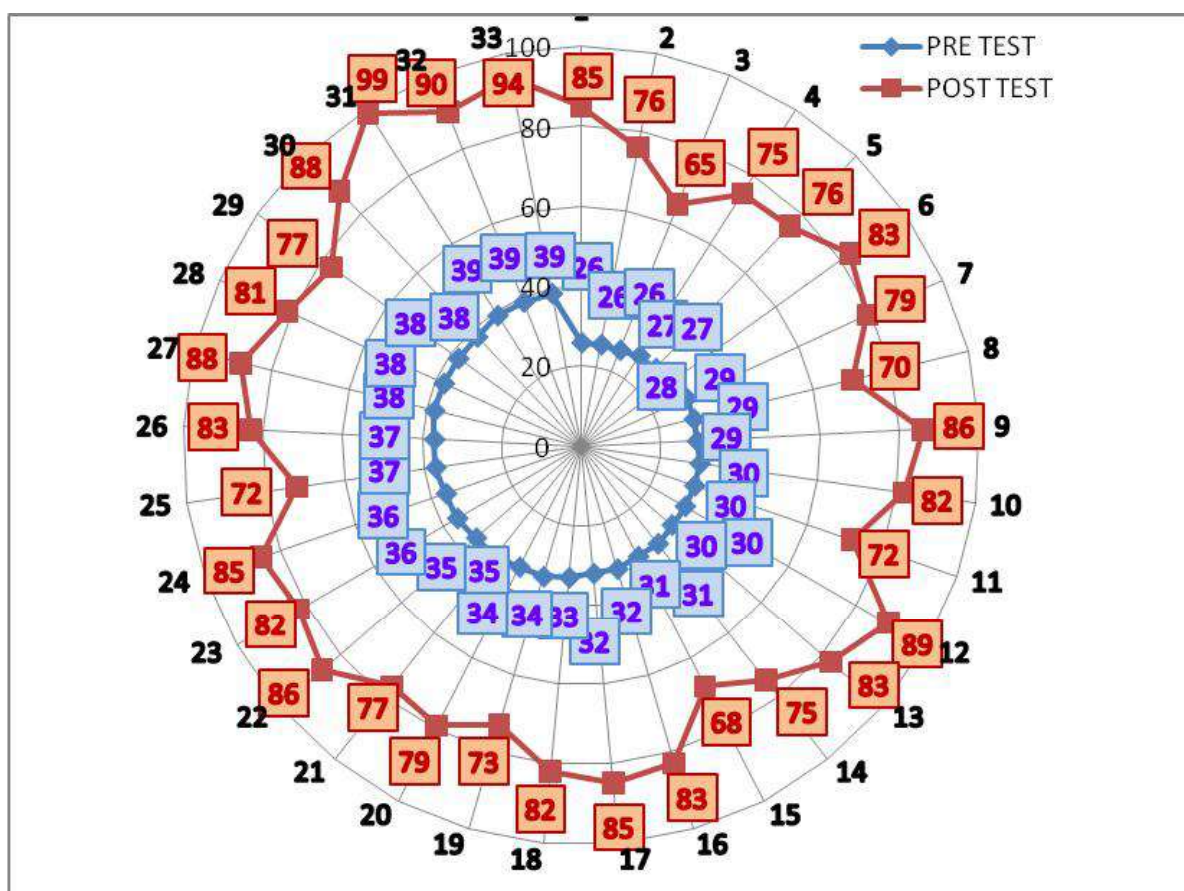
Dimensions	Test	No	Mean	SD	r	df	‘t’ value	P	Sig.
Reading skills	Pre-test	33	16.42	2.85	0.394	32	31.913	0.000	S
	Post-test	33	40.33	4.53					
Writing skills	Pre-test	33	16.27	1.98	0.358	32	40.409	0.000	S
	Post-test	33	40.51	3.61					
English Language Skills	Pre-test	33	32.69	4.34	0.482	32	41.996	0.000	S
	Post-test	33	80.84	3.59					

From the table 6.T.9, ‘t’ test analysis indicates rural undergraduate students of Experimental group (N=33) differ significantly in their competitive exam based English language skills between the pre-test and the post-test at 0.01 level. The mean scores of the reading skills, writing skills and English language skills in post-test (M=40.33), (M=40.51), (M=80.84) are very greater than the mean scores of the pre-test (M=16.42), (M=16.27) and (M=32.69) respectively. This showed the Experimental group of rural undergraduate students might have been aware of Neurocognition intervention strategies as the scores showed a great difference.

As far as the standard deviation of the reading skills, writing skills and English language skills in the post-test (S.D=4.53), (S.D=3.61), (S.D=3.59) and the pretest (S.D =

2.85), (S.D=1.98), (S.D=4.34) scores of the Experimental group of rural undergraduate students are concerned, there is a significant difference in their English language skills which in turn helped to develop the English language skills. Also the reading skill has a positive high correlation and writing skill and English language skills have moderate positive correlation obtained from the pre – test and the post – test scores. From the above statistics, it can be seen that undergraduate students of Experimental group have developed their competitive based English language skills as they have significant difference in their English language skills between the post – test and the pre-test. It is evident that the Neurocognition intervention strategies were found to impact on the development of the English language skills among undergraduate students of Experimental group.

Figure- 6.F.9 Experimental group undergraduate students' competitive exam based English language skills



The above figure 6.F.9 gives the scores obtained by the undergraduate students of Experimental group in the pre – test and post - test. The pre-test scores are marked in sky blue colour and the post-test scores are given in maroon colour. The extensive increase in the post - test score is shown. The researcher has selected participants between the minimum score is 26 and the maximum score is 39 as average scores in the pre-test. On the other hand, they obtained scores in the post-test after the traditional method teaching; the score has increased level between the minimum 65 to the maximum 99. The considerable increase in the competitive exam based English language skills’ score is portrait as a chart. It shows more clearly, a subject (Sl.No.31 in the chart) who has scored 39 marks in the pre-test, and the subject has scored 99 marks in the post- test. This makes clear that there is greater gain among the learners in the Neurocognition intervention strategies utilization in classroom teaching. Consequently, the impact of Neurocognition intervention strategies develop the competitive exam based English language skills are more evident.

Hypothesis: 5

The undergraduate students of Arts and Science in the Control group do not differ significantly in their English language skills in the pre-test.

Table 6.T.10. Comparison of mean scores of Control group arts and science students in the pre test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	‘t’ value	P	Sig.
Reading skills	Arts	17	17.235	2.658	1.368	30	1.399	0.172	NS
	Science	15	15.866	2.875					
Writing skills	Arts	17	16.117	2.368	0.250	30	0.298	0.768	NS
	Science	15	15.866	2.386					
English Language Skills	Arts	17	33.352	4.581	1.619	30	1.059	0.298	NS
	Science	15	31.733	3.990					

It can be seen from the table 6.T.10 that the undergraduate students of Arts and Science in the Control group do not differ in their English language skills and its dimensions reading skill, writing skill at 0.01 level of significance ($P < 0.01$) in the pre-test. Since the 't' value for the above mention variables were found insignificant.

As far as reading skill, writing skills and English language skills are concerned, although there is no marked difference in the score of means, and standard deviations, it is found that the mean scores of undergraduate students of Arts are slightly greater than that of undergraduate students of science. Hence Arts and Science students have almost same level of competitive exam skill in reading skills, writing skills and its total English language skills in the pre-test.

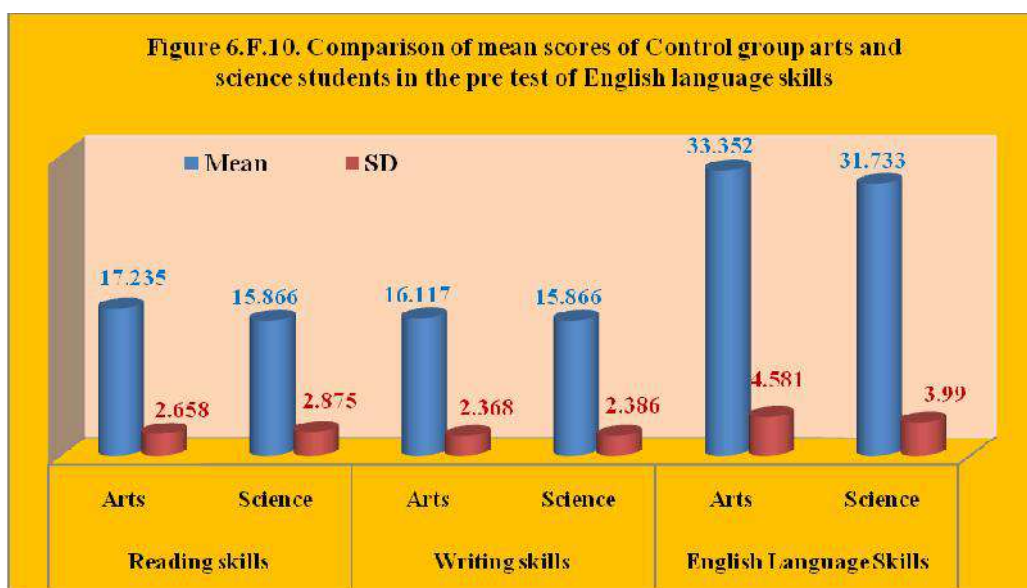


Figure. 6.F.10 reveals that there is no significant difference in the value of mean between the undergraduate students of Arts and Science in the pre-test for the dimensions viz., reading skills, writing skills and English language skills. It is also noted that undergraduate students of Arts and Science are similar in competitive exam based English language skills.

Hypothesis: 6

The undergraduate students of Arts and science in the Control group do not differ significantly in their English language skills in the post-test.

Table 6.T.11 Comparison of mean scores of Control group arts and science students in the post- test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	‘t’ value	P	Sig.
Reading skills	Arts	17	36.29	4.13	6.56	30	4.464	0.00	S
	Science	15	29.73	4.17					
Writing skills	Arts	17	36.18	6.49	5.97	30	2.921	0.00	S
	Science	15	30.20	4.83					
English Language Skills	Arts	17	72.47	10.31	12.53	30	3.674	0.00	S
	Science	15	59.93	8.80					

From the table 6.T.11, ‘t’ test analysis indicate that undergraduate students of Arts and Science in Control group differ in their reading skill and English language skills in post test at 0.01 level. The post test mean scores of the Control group arts students in reading skill (M=36.29), writing skill (M=36.18) and English language skills (M=44.71) are greater than that of the post test mean scores of Control group science students in reading skill (M=29.73), writing skill (M=30.20) and English language skills (M=59.93). As far as the standard deviations of these two groups undergraduate students are concerned, there is a significant difference in Control group arts students in reading skill (4.13) writing skill (6.49), English language skills (10.31) and Control group science students in reading skills (4.17), writing skill (4.83) and English language skills (8.80). Hence it is inferred that the traditional method opens up possibilities to influence more in learning English language skills.

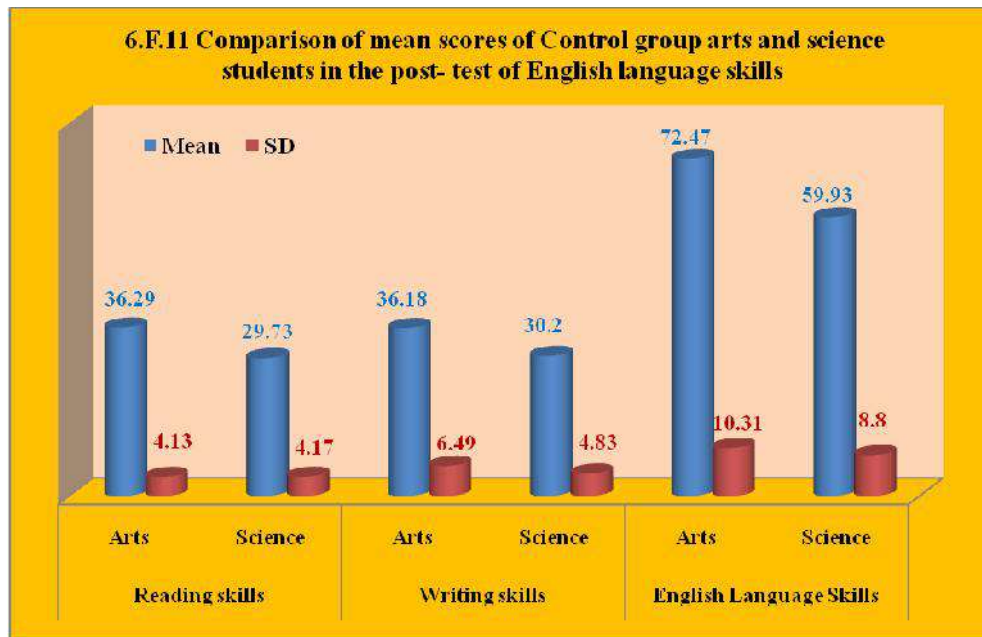


Figure. 6.F.11 reveals that there is a significant difference in the mean scores between the undergraduate students of Arts and Science in the post test of English language skills and its dimension, reading skill. It is also noted that undergraduate students of Arts and Science are differed in their competitive exam based English language skills.

Hypothesis: 7

The undergraduate students of Arts and Science in the Experimental group do not differ significantly in their English language skills in the pre-test.

Table 6.T.12. Comparison of mean scores of Experimental group Arts and Science students in the pre-test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	Arts	14	16.00	3.11	0.736	31	0.728	0.472	NS
	Science	19	16.74	2.68					
Writing skills	Arts	14	15.86	1.92	0.721	31	1.032	0.310	NS
	Science	19	16.58	2.04					
English Language Skills	Arts	14	31.86	4.77	1.458	31	0.953	0.348	NS
	Science	19	33.32	4.01					

Comparison of mean scores of the table 6.T.12 indicates that the undergraduate students of Arts and Science in the Experimental group do not differ in their English language skills and its dimensions viz., reading skill, writing skill at 0.01 level of significance in the pre test. Since the 't' value for the above mention variable and its dimensions were found insignificant.

The pre-test mean scores of the Experimental group arts students in reading skill, (M=16.00) writing skills (M=15.86) and English language skills (M=31.86) are slightly greater than that Experimental group science students in reading skill (M=16.74), writing skills (M=16.58) and English language skills (M=33.32). As far as standard deviation is concerned the Arts students in reading skill (3.11), writing skills (1.92), English language skills (4.77) are close to the standard deviation of the Science students in reading skill (2.68) writing skills (2.04), English language skills (4.01). There was no remarkable variation between the undergraduate students of Art and Science.

Hence, the undergraduate students of Arts and Science in Experimental group have almost similar level of competitive exam based English language skills. It shows that the undergraduate students of arts and science in Experimental group do not differ in their competitive exam based English language skills is proved.

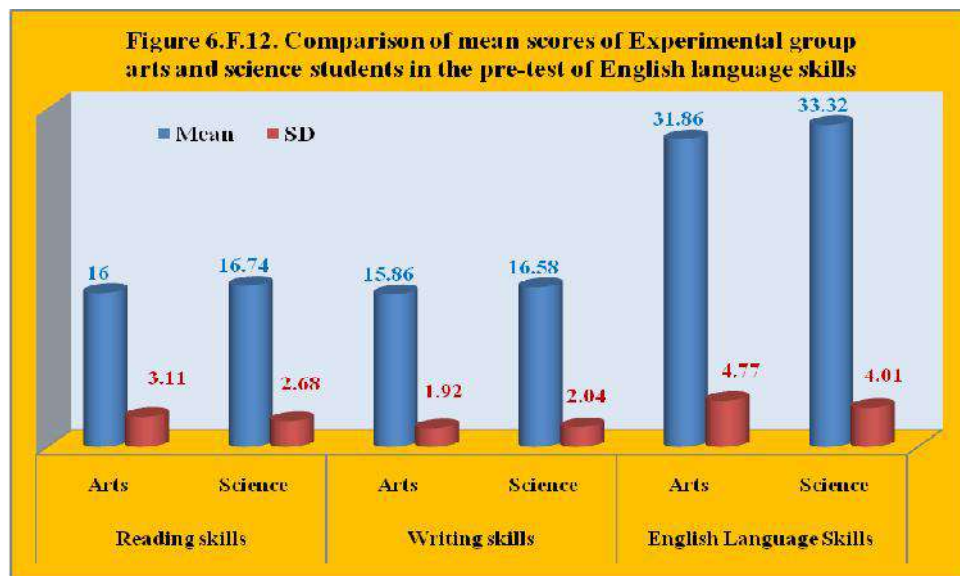


Figure. 6.F.12 reveals that there is no significant difference in the value of mean between the Experimental group students of Arts and Science undergraduate in the pre test. It is also noted that undergraduate students of Arts and Science are similar in competitive exam based English language skills.

Hypothesis: 8

The undergraduate students of Arts and Science in the Experimental group do not differ significantly in their English language skills in the post-test.

Table 6.T.13. Comparison of mean scores of Experimental group Arts and Science students in the post-test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	‘t’ value	P	Sig.
Reading skills	Arts	14	41.28	4.17	1.65	31	1.036	0.308	NS
	Science	19	39.63	4.77					
Writing skills	Arts	14	41.07	3.66	0.96	31	.754	0.457	NS
	Science	19	40.10	3.61					
English Language Skills	Arts	14	82.35	6.89	2.62	31	.996	0.327	NS
	Science	19	79.73	7.86					

The above table 6.T.13 displays the undergraduate students of Arts and Science in the Experimental group do not differ in their English language skills and its dimensions viz., reading skill, writing skill at 0.01 level of significance in the post test. Since the ‘t’ value for the above mention variable and its dimensions were found insignificant.

The post-test mean scores of the Experimental group arts students in reading skill, (M=41.28) writing skills (M=41.07) and English language skills (M=82.35) are close to the Experimental group science students in reading skill (M=39.63), writing skills (M=40.10) and English language skills (M=79.73). As far as standard deviation is concerned the Arts students

in reading skill (4.17), writing skills (3.66), English language skills (6.89) are slight varied to the standard deviation of the Science students in reading skill (4.77) writing skills (3.61), English language skills (7.86). There was no remarkable variation between the undergraduate students of Art and Science. Hence it is inferred that the Neurocognition intervention strategies opens up possibilities to influence both the undergraduate students of arts and science to learn the English language skills.

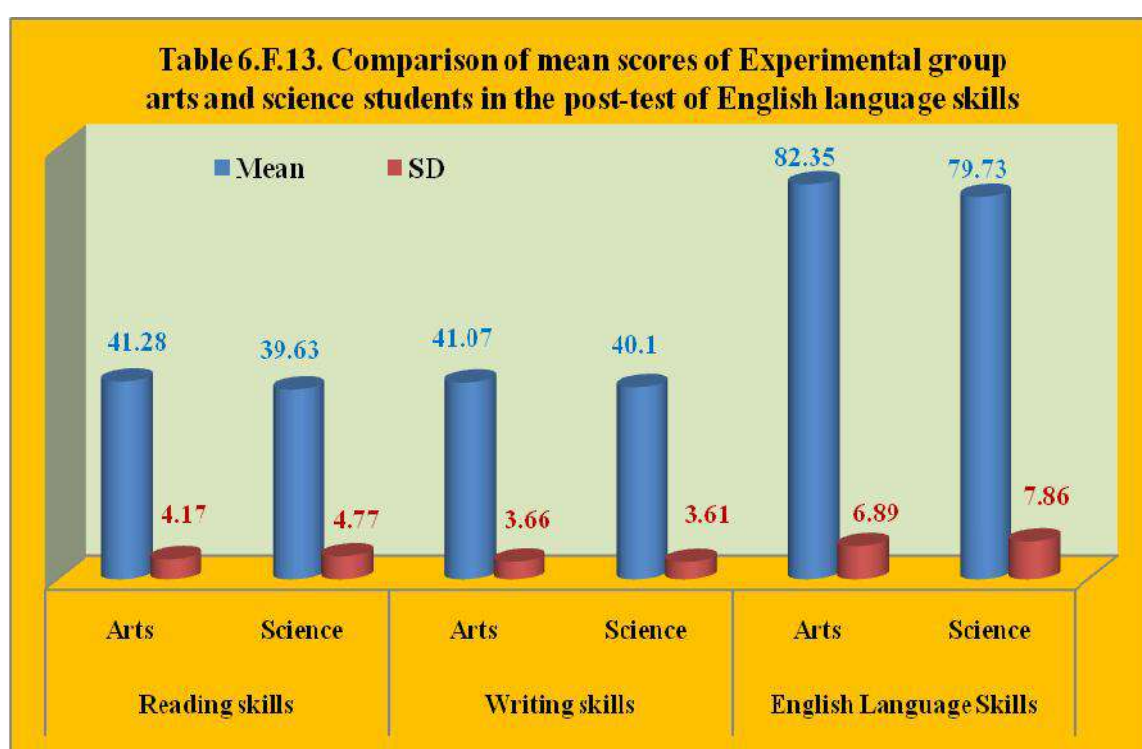


Figure. 6.F.13 reveals that there is no difference in the value of mean between the Experimental group students of Arts and Science undergraduate in the post test. It is also noted that undergraduate students of Arts and Science are similar in competitive exam based English language skills.

Hypothesis: 9

The undergraduate students of Arts in the Control group and Experimental group do not differ significantly in their English language skills in the post-test.

Table 6.T.14. Comparison of mean scores of Control and Experimental group arts students in the post-test of English language skills.

Dimensions	Group	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	Control	17	36.29	4.13	4.99	29	3.330	0.00	S
	Experimental	14	41.28	4.17					
Writing skills	Control	17	36.17	6.49	4.89	29	2.639	0.01	S*
	Experimental	14	41.07	3.66					
English Language Skills	Control	17	72.47	10.30	9.88	29	3.184	0.00	S
	Experimental	14	82.35	6.89					

* Significance at 0.05 level

From the table 6.T.14, 't' test analysis indicates that undergraduate students of Arts in Control group (N=17) and Experimental group (N= 14) differ significantly in their reading skill, writing skill and English language skills in post test at 0.05 level. The post test mean scores of the Experimental group arts students in reading skill, (M=41.28) writing skills (M=41.07) and English language skills (M=82.35) are greater than that of the post test mean scores of Control group arts students in reading skill (M=36.29), writing skills (M=36.17) and English language skills (M=72.47). As far as the standard deviation is concerned the Arts students of Experimental group in reading skill (4.17), writing skills (3.66), English language skills (6.89) are varied to the standard deviation of the Control group Arts students in reading skill (4.13) writing skills (6.49), and English language skills (10.30). There is a remarkable variation between the undergraduate students of Arts in the Control group and Experimental

group. This result indicates that Neurocognition intervention strategies helped the undergraduate students of arts in Experimental group to develop their reading skill, writing skill and English language skills. Hence it is inferred that the Neurocognition intervention strategies opens up possibilities to influence more in learning English language skills.

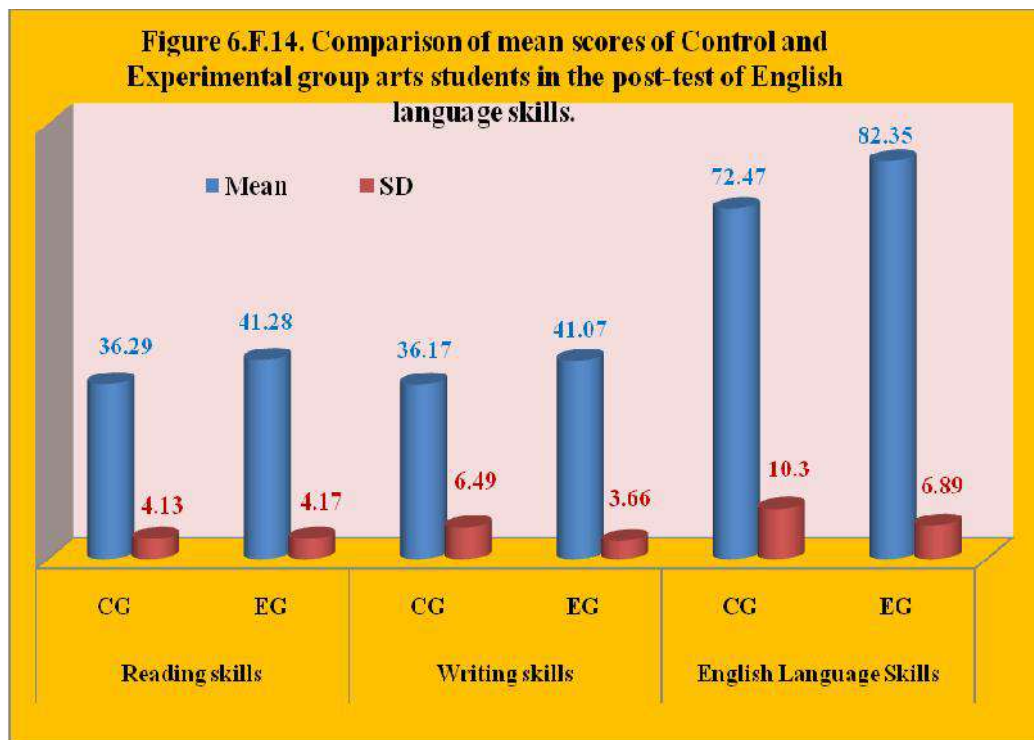


Figure. 6.F.14 reveals that there is a significant difference in the mean scores between the Arts students of Control and Experimental groups in the post test. It is also noted that Arts undergraduate students of Control and Experimental groups have difference in their competitive exam based English language skills.

Hypothesis: 10

The undergraduate students of Science in the Control group and Experimental group do not differ significantly in their English language skills in the post-test.

Table 6.T.15. Comparison of mean scores of Control and Experimental group Science students in the post-test of English language skills

Dimensions	Group	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	Control	15	29.73	4.16	9.898	31	6.342	0.00	S
	Experimental	19	39.63	4.77					
Writing skills	Control	15	30.20	4.82	9.905	31	6.842	0.00	S
	Experimental	19	40.10	3.61					
English Language Skills	Control	15	59.93	8.79	19.803	31	6.920	0.00	S
	Experimental	19	79.73	7.86					

From the table 6.T.15, 't' test analysis indicated that the undergraduate students of Science in Control group (N=15) and Experimental group (N= 19) differ significantly in their reading skill, writing skill and English language skills in post test at 0.01 level. The post test mean scores of the Experimental group Science students in reading skill, writing skills and English language skills (M=39.63), (M=40.10) and (M=79.73) are greater than that of the post test mean scores of Control group Science students (M=29.73), (M=30.20) and (M=59.93) respectively. As far as the standard deviation is concerned the Science students of Experimental group in reading skill (3.56), writing skill (2.96), English language skills (5.74) are varied to the standard deviation of the Control group Science students in reading skills (4.17), writing skills (4.83), and English language skills (8.80). There is a remarkable variation between the undergraduate students of Science in the Control and Experimental groups. Hence it is inferred that the Neurocognition intervention strategies open up possibilities to influence English language skills. It is evident that the Neurocognition intervention strategies were found to impact on development of the English language skills among science students of Experimental group.

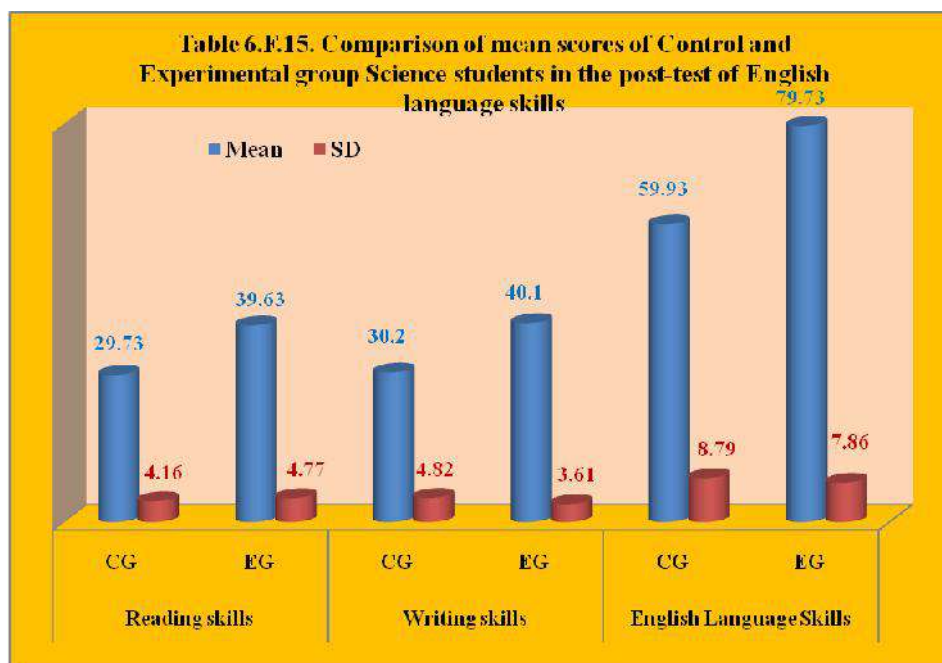


Figure. 6.F.15 reveals that there is a significant difference in the mean scores between the Science students of Control and Experimental groups in the post test. It is also noted that Science undergraduate students of Control and Experimental groups have difference in their competitive exam based English language skills.

Hypothesis: 11

First generation undergraduate students and their counterparts in the Control group students do not differ significantly in their English language skills in the pre-test.

Table 6.T.16. Comparison of mean scores of Control group first generation undergraduate and their counterparts students in the pre-test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	“t” value	P	Sig.
Reading skills	1 st Graduate	19	16.578	2.433	0.036	30	0.033	0.974	NS
	Counterparts	13	16.615	3.379					
Writing skills	1 st Graduate	19	16.000	2.581	0.000	30	0.000	1.000	NS
	Counterparts	13	16.000	2.041					
English Language Skills	1 st Graduate	19	32.578	4.167	0.036	30	0.023	0.982	NS
	Counterparts	13	32.615	4.717					

Comparison of mean score of the table 6.T.16 indicates that the First generation undergraduate students and their counterparts in the Control group do not differ in their English language skills and its dimensions viz., reading skill, writing skill at 0.01 level of significance in the pre test. Since the ‘t’ value for the above mention variable and its dimensions were found insignificant.

As far as reading skill, writing skill and English language skills are concerned, although there is no remarkable difference in the mean scores, and standard deviations, it is found that the mean scores of first generation undergraduate students are slightly greater than that of their counterpart students in Control group. Hence first generation undergraduate students in Control group and their counterparts have almost similar level of competitive exam based English language skills. It shows that the First generation undergraduate students and their counterparts in Control groups do not differ in their competitive exam based English language skill is proved in pre- test.

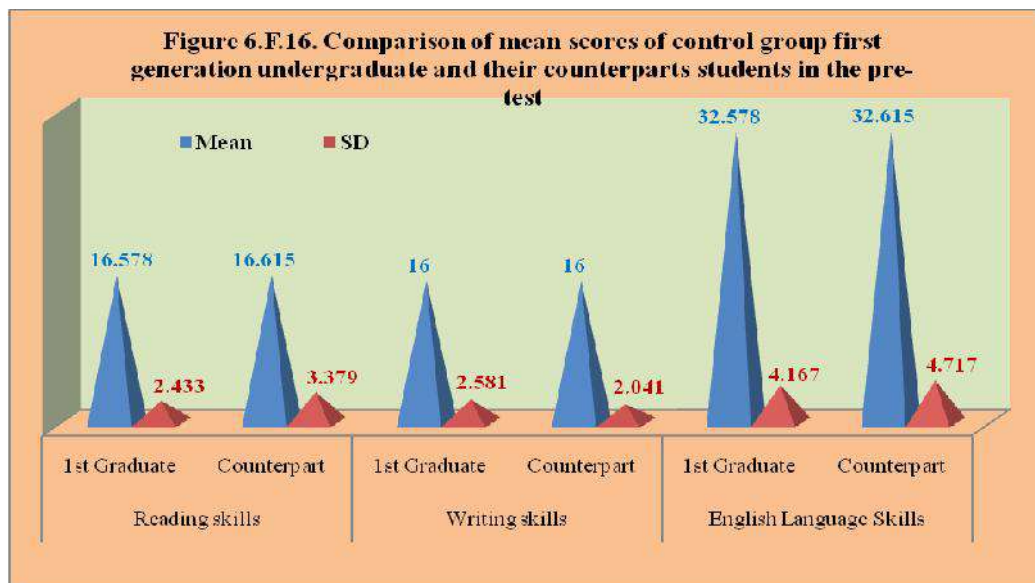


Figure. 6.F.16. reveals that there is no significant difference in the value of mean between the Control group students of First generation undergraduate students and their

counterparts in the pre test. It is also noted that First generation undergraduate students and their counterparts are similar in competitive exam based English language skills.

Hypothesis: 12

First generation undergraduate students and their counterparts in the Control group students do not differ significantly in their English language skills in the post-test.

Table 6.T.17. Comparison of mean scores of Control group first generation undergraduate students and their counterparts in the post-test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	‘t’ value	P	Sig.
Reading skills	1 st Graduate	19	31.26	4.48	4.81	30	2.808	0.00	S
	Counterparts	13	36.08	5.16					
Writing skills	1 st Graduate	19	30.53	4.99	7.01	30	3.545	0.00	S
	Counterparts	13	37.54	6.17					
English Language Skills	1 st Graduate	19	61.79	9.17	11.82	30	3.310	0.00	S
	Counterparts	13	73.62	10.97					

Comparison of mean score of the table 6.T.17 indicates that the First generation undergraduate students and their counterparts in the Control group differ significantly in their reading skill, writing skill and English language skills in the post test at 0.01 level. Since the ‘t’ value for the above mention variable and its dimensions were found significant.

The post test mean scores of the Control group First generation undergraduate students in reading skill, writing skills and English language skills (M= 31.26), (M= 30.53), (M= 61.79) are smaller than that of the post test mean scores of counterparts of the first generation undergraduate students (M=36.08), (37.54), (73.62) respectively.

As far as standard deviation is concerned the Control group’s Counterparts of First generation undergraduate students (5.16), (6.17), (10.97) are varied to the standard deviation of the First generation undergraduate students (4.48), (4.99), (9.17) respectively. There was a

significant variation between the First generation undergraduate students and their counterparts in Control group.

Hence First generation undergraduate students and their counterparts differ in their competitive exam based English language skills. It shows that the undergraduate students of Control groups are significant difference between the First generation undergraduate students and their counterparts in the post test.

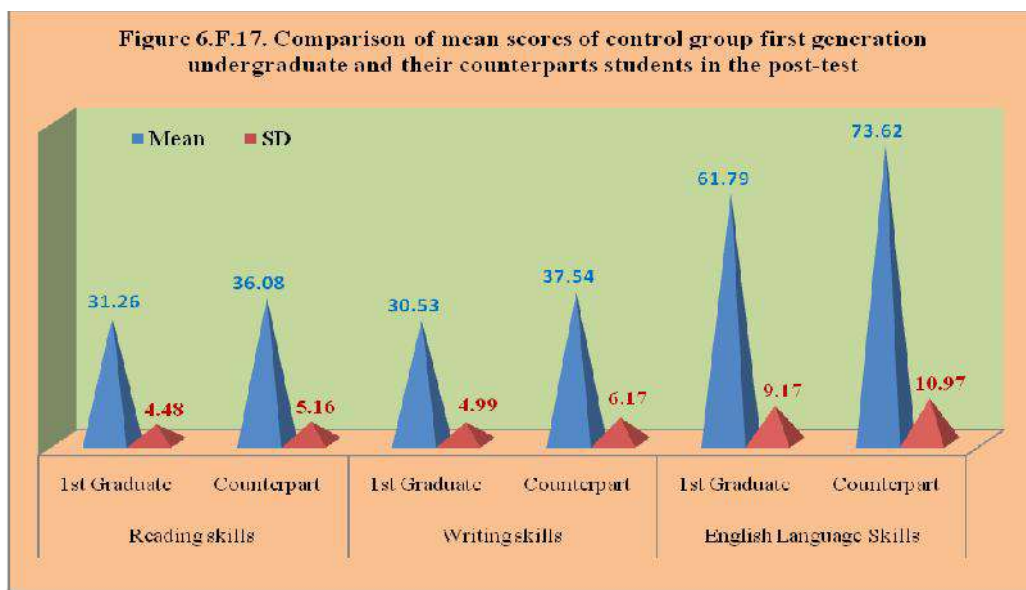


Figure. 6.F.17 reveals that there is a significant difference in the value of mean between the Control group students of First generation undergraduate and their counterparts in the post test. It is also noted that counterparts of first generation undergraduate students are high level of competitive exam based English language skills.

Hypothesis: 13

First generation undergraduate students and the counterparts in the Experimental group students do not differ significantly in their English language skills in the pre-test.

Table 6.T.18. Comparison of mean scores of Experimental group first generation undergraduate and their counterparts in the pre-test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	1 st Graduate	16	17.062	2.489	1.238	31	1.259	0.217	NS
	Counterparts	17	15.823	3.107					
Writing skills	1 st Graduate	16	16.312	2.120	0.077	31	0.110	0.913	NS
	Counterparts	17	16.235	1.921					
English Language Skills	1 st Graduate	16	33.375	4.318	1.316	31	0.867	0.393	NS
	Counterparts	17	32.058	4.394					

Comparison of mean score of the table 6.T.18 indicated that the First generation undergraduate students and their counterparts in the Experimental group do not differ in their English language skills and its dimensions viz., reading skill, writing skill at 0.01 level of significance in the pre test. Since the 't' value for the above mention variable and its dimensions were found insignificant.

The post test mean scores of the First generation undergraduate students in reading skill (M=17.062) and writing skill (M=16.312) and English language skills (M=33.375), are close to the mean score of the Counterparts students in Experimental group (M= 15.823), (M= 16.235), (M= 32.058) respectively. As far as standard deviation is concerned the First generation undergraduate students in reading skill (2.489), writing skill(2.120) and English language skills (4.318) are slightly varied to the standard deviation of the Counterparts students in Experimental group (3.107), (1.921), (4.394) respectively. There was no

remarkable variation between the First generation undergraduate students and their counterparts students.

Hence First generation undergraduate students and their counterparts in the Experimental group are similar level of competitive exam based English language skills. It reveals that the First generation undergraduate students and their counterparts undergraduate students in the Experimental group do not differ significantly in their competitive exam based English language skills.

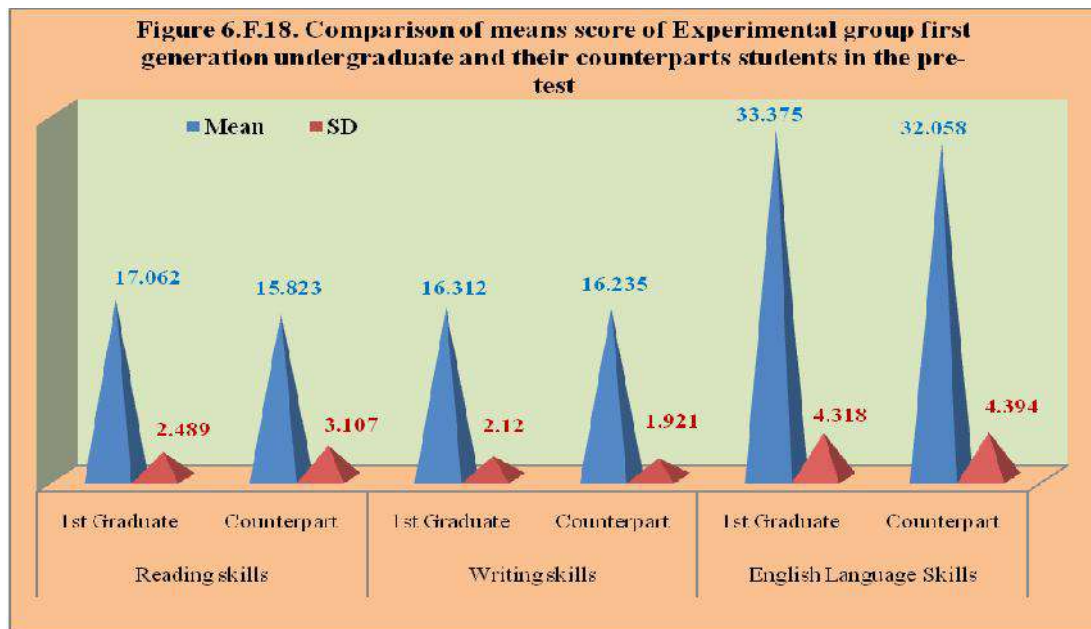


Figure. 6.F.18 reveals that there is no significant difference in the value of mean between Experimental group students of the first generation undergraduate and their counterparts in the pre test. It is also noted that First generation undergraduate students and their counterparts are similar in competitive exam based English language skills.

Hypothesis: 14

First generation undergraduate students and the counterparts in the Experimental group students do not differ significantly in their English language skills in the post-test.

Table 6.T.19 Comparison of mean scores of Experimental group first generation undergraduate students and their counterparts in the post-test

Dimensions	Variables	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	1 st Graduate	16	39.75	4.88	1.132	31	0.711	0.483	NS
	Counterparts	17	40.88	4.27					
Writing skills	1 st Graduate	16	40.44	4.05	0.150	31	0.118	0.907	NS
	Counterparts	17	40.59	3.28					
English Language Skills	1 st Graduate	16	80.19	8.07	1.283	31	0.487	0.630	NS
	Counterparts	17	81.47	7.05					

Comparison of mean score of the table 6.T.19 indicates that the First generation undergraduate students and their counterparts in the Experimental group students do not differ significantly in their English language skills in the post test at 0.01 level. Since the 't' value for the above mention variable and its dimensions were found insignificant.

As far as reading skill, writing skill and English language skills are concerned, although there is no remarkable difference in the mean scores, and standard deviation, it is found that the mean scores of first generation undergraduate students are slightly smaller than that of their counterparts in Experimental group. Hence the First generation undergraduate students in Experimental group and their counterparts have almost similar level of competitive exam based English language skills. It shows that the First generation undergraduate students and their counterparts in the Experimental group students do not differ in their competitive exam based English language skills are proved in post- test.

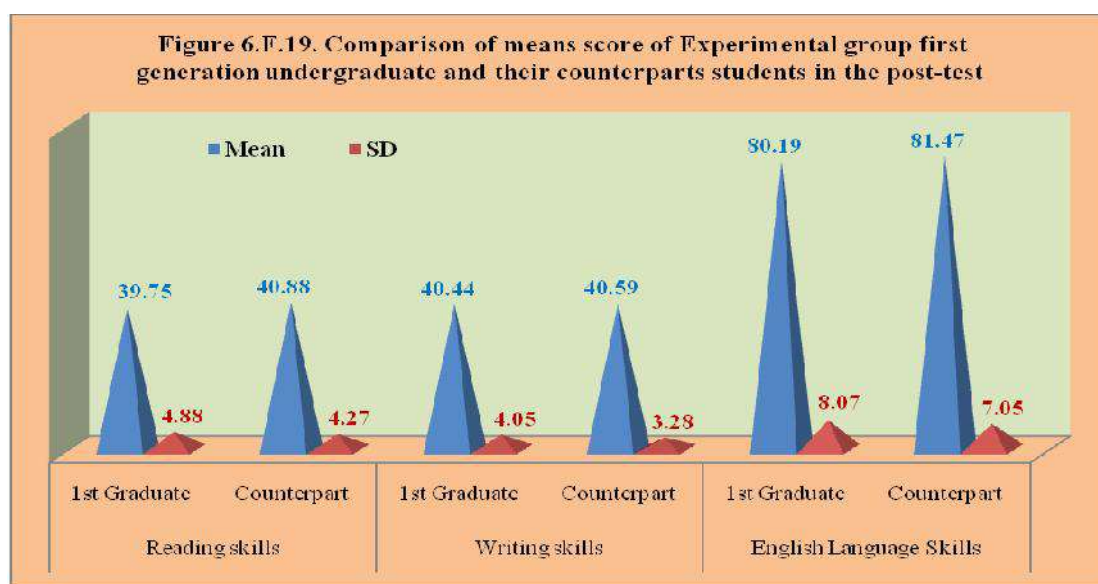


Figure. 6.F.19 reveals that there is no significant difference in the value of mean between the Experimental group students of First generation undergraduate students and their counterparts in the post test. It is also noted that First generation undergraduate and their counterparts' students are similar in competitive exam based English language skills.

Hypothesis: 15

First generation undergraduate students in the Control group and Experimental group do not differ significantly in their English language skills in the post-test.

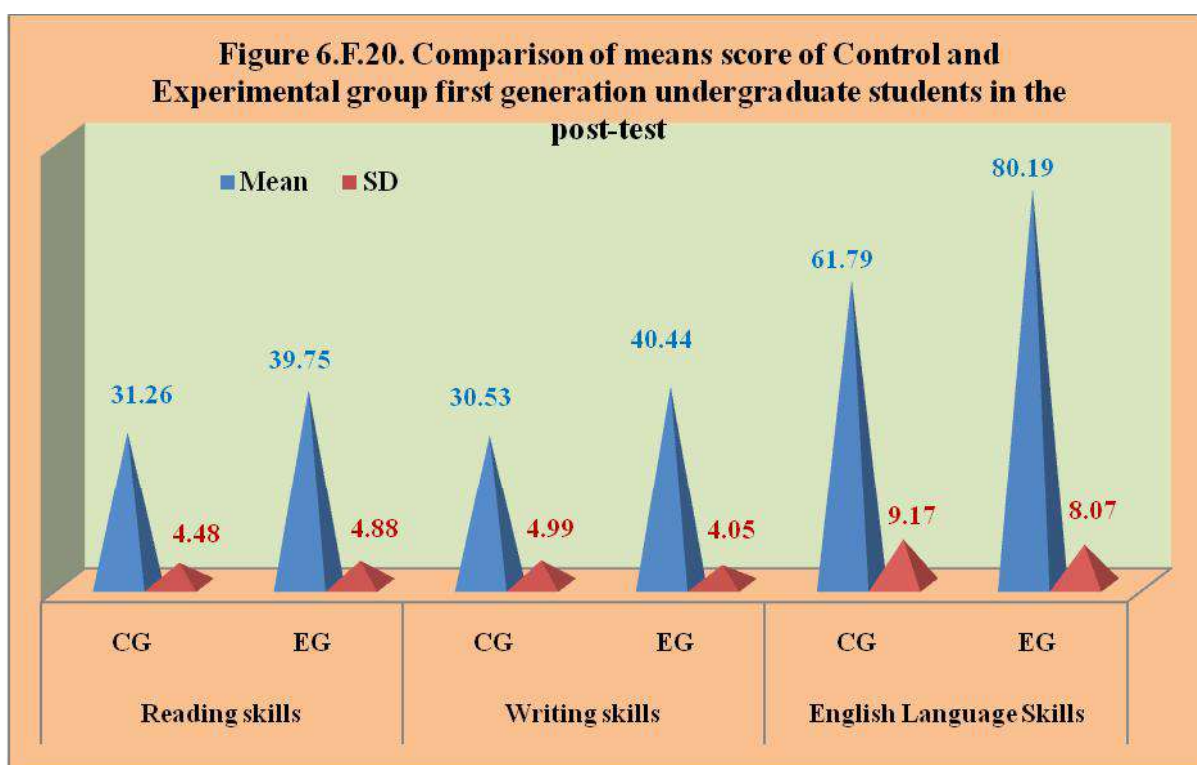
Table 6.T.20 Comparative mean scores of first generation undergraduate students in Control and Experimental group in the post-test

Dimensions	Group	No	Mean	SD	Mean Difference	Df	't' value	P	Sig.
Reading skills	Control	19	31.26	4.48	8.486	33	5.360	0.00	S
	Experimental	16	39.75	4.88					
Writing skills	Control	19	30.53	4.99	9.911	33	6.366	0.00	S
	Experimental	16	40.44	4.05					
English Language Skills	Control	19	61.79	9.17	18.398	33	6.243	0.00	S
	Experimental	16	80.19	8.07					

From the table 6.T.20, 't' test analysis indicates that first generation undergraduate students of Control group (N=19) and Experimental group (N= 16) differ significantly in their competitive exam based English language skills in post test at 0.01 level. The mean scores of reading skill, writing skill and English language skills of the first generation graduates of Experimental group (M=39.75), (M=40.44) and (M=80.19) are greater than that of the post test mean scores of first generation graduates of Control group (M=31.26), (M=30.53) and (M=61.79) respectively. This showed that the first generation undergraduates of the Experimental group have been aware of Neurocognition intervention strategies as the scores showed a great difference.

As far as the standard deviation is concerned the first generation undergraduates students of Experimental group in reading skill (4.88), writing skill (4.05), English language skills (8.07) are varied to the standard deviation of the first generation undergraduates students of Control group (4.48), (4.99), and (9.17) respectively. There is a remarkable variation between the first generation undergraduate students in Experimental and Control groups. Hence it is inferred that Neurocognition intervention strategies opens up possibilities to influence more in English language skills.

The mean scores of first generation undergraduate students in Experimental group are greater than that of the mean scores of the first generation undergraduate students in Control group which indicated that Neurocognition intervention strategies helped the rural undergraduate students to develop their English language skills. Hence, the impact of the Neurocognition intervention strategies proved that on the development of English language skills. It can also be seen from the figure 6.F.20 that first generation undergraduate students in Experimental group outperformed the Control group in developing English language skill in the post – test.



Hypothesis: 16

The counterparts of the first generation undergraduate students in the Control group and Experimental group do not differ significantly in their English language skills in the post-test.

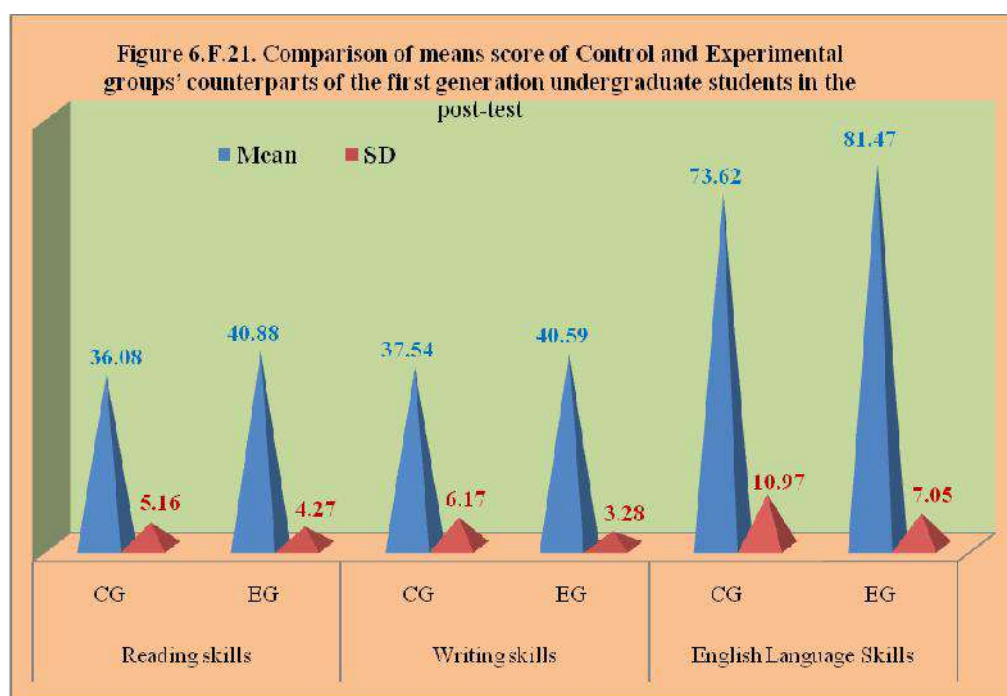
Table 6.T.21 Comparative mean scores of counterparts of the first generation undergraduate students in Control and Experimental groups in the post-test

Dimensions	Group	No	Mean	SD	Mean Difference	Df	't' value	P	Sig.
Reading skills	Control	13	36.08	5.16	4.805	28	2.793	0.00	S
	Experimental	17	40.88	4.27					
Writing skills	Control	13	37.54	6.17	3.049	28	1.616	0.09	NS
	Experimental	17	40.59	3.28					
English Language Skills	Control	13	73.62	10.97	7.855	28	2.251	0.03	S
	Experimental	17	81.47	7.05					

From the table 6.T.21, 't' test analysis indicates that counterparts of the first generation undergraduates in Control group (N=13) and Experimental group (N= 17) differ significantly in their reading and English language skills in post test at 0.01 level. The post test mean scores of the counterparts of the first generation undergraduate students of Experimental group in reading skill (M=40.88), and English language skills (M=80.47) are greater than that of the post test mean scores of the counterparts of first generation undergraduate students in Control group as reading skill (M=36.08), and English language skill (M=73.62). As far as the standard deviation is concerned, the counterparts of the first generation undergraduate students of Experimental group in reading skill (4.27) and English language skills (7.05) are varied to the standard deviation of the counterparts of the first generation undergraduate in Control group (5.16) and (10.97) respectively.

It can be seen from the table 6.T.21 that the counterparts of the first generation undergraduate students between the Control group and Experimental group do not differ significantly in their writing skill at 0.01 level in the post test. There is no remarked difference in mean scores and standard deviation of writing skill between the two groups; it is found that the counterparts of first generation undergraduate students in Experimental group in writing skill (M=40.59) and (SD=3.28) are slight difference with counterparts of the first generation undergraduate students of Control group in writing skill (M=37.54) and (SD=6.17). Hence counterparts of the first generation undergraduate students of the Control group and Experimental group have similar level of writing skill.

Hence it is inferred that the Neurocognition intervention strategies opens up possibilities to influence more in learning of reading skill, and English language skills than traditional method. It is evident that the Neurocognition intervention strategies have impact on the development of the English language skills among counterparts of first generation undergraduate students.



Hypothesis: 17

Father's Educational qualification does not differ significantly in English language skills of undergraduate students in the Control group in the post test.

Table 6.T.22 ANOVA for Comparison of mean scores in father's educational qualification with respect to English language skills of undergraduate students in the Control group in the post test

Dimensions	Source of Variation	Sum of Squares	df	Mean Square	F	P	Sig
Reading skill	Between Groups	80.278	2	40.139	1.494	0.241	NS
	Within Groups	779.191	29	26.869			
Writing skill	Between Groups	93.696	2	46.848	1.14	0.334	NS
	Within Groups	1191.804	29	41.097			
English language skills	Between Groups	334.371	2	167.185	1.31	0.285	NS
	Within Groups	449.549	29	15.502			

It can be inferred from the Table 6.T.22 that one way analysis of variance (ANOVA) was used to examine whether fathers' educational qualification has an impact on the competitive exam based English language skills of the undergraduate students. The samples were divided into three groups such as illiterate, 1 to 8 std., and 9 to 12 std., studied. This categorization is the independent variable and the score on competitive exam based English language skills is the dependent variable. The obtained F (32) value of dimensions: reading skill (1.494), writing skill (1.14) and English language skills (1.31) with $p = (0.241), (0.334), (0.285)$ were found insignificant difference between the groups based on the fathers' educational qualification at 0.01 level of significance and there by the stated null hypothesis is **accepted**. Hence father's educational qualification does not significantly influence in English language skills of undergraduate students in the Control group in the post test.

Hypothesis: 18

Father's Educational qualification does not differ significantly in English language skills of undergraduate students in the Experimental group in the post test.

Table 6.T.23 ANOVA for Comparison of mean scores in father's educational qualification with respect to English language skills of undergraduate students in the Experimental group in the post test

Dimension	Source of Variation	Sum of Squares	df	Mean Square	F	P	Sig
Reading skill	Between Groups	7.537	2	3.769	0.173	0.842	NS
	Within Groups	651.796	30	21.727			
Writing skill	Between Groups	19.059	2	9.53	0.716	0.497	NS
	Within Groups	399.183	30	13.306			
English language skill	Between Groups	45.534	2	22.767	0.392	0.679	NS
	Within Groups	400.408	30	13.347			

One way analysis of variance (ANOVA) was used to examine whether fathers' educational qualification has an impact on the competitive exam based English language skills of the undergraduate students; the result is displayed in the table 6.T.23. The samples were divided into three groups such as illiterate, 1 to 8 std., and 9 to 12 std., studied. This categorization is the independent variable and the score on competitive exam based English language skills is the dependent variable. The obtained F (33) value of dimensions: reading skill (0.173), writing skill (0.716) and English language skills (0.392) with $p = (0.842), (0.497), (0.679)$ were found insignificant difference between the groups based on the fathers' educational qualification at 0.01 level of significance and thereby the stated null hypothesis is accepted. Hence father's educational qualification does not significantly influence in the English language skills of undergraduate students in the Experimental group in the post test.

Hypothesis: 19

Mother's Educational qualification does not differ significantly in English language skills of undergraduate students in the Control group in the post- test.

Table 6.T.24 ANOVA for Comparison of mean scores in Mother's educational qualification with respect to English language skills of undergraduate students in the Control group in the post test

Dimension	Source of Variation	Sum of Squares	df	Mean Square	F	P	Sig
Reading skill	Between Groups	16.288	2	8.144	0.28	0.758	NS
	Within Groups	843.181	29	29.075			
Writing skill	Between Groups	55.391	2	27.696	0.653	0.528	NS
	Within Groups	1230.109	29	42.418			
English language skill	Between Groups	123.307	2	61.653	0.457	0.638	NS
	Within Groups	3912.412	29	134.911			

The above table 6.T.24 displays that one way analysis of variance (ANOVA) was used to examine whether mothers' educational qualification has an impact on the competitive exam based English language skills of the undergraduate students. The samples were divided into three groups such as illiterate, 1 to 8 std., and 9 to 12 std., studied. This categorization is the independent variable and the score on competitive exam based English language skills is the dependent variable. The obtained F (32) value of dimensions: reading skill (0.28), writing skill (0.653) and English language skills (0.457) with $p = (0.758), (0.528), (0.638)$ were found insignificant difference between the groups based on the mothers' educational qualification at 0.01 level of significance and thereby the stated null hypothesis is **accepted**. Hence mother's educational qualification does not significantly influence in the English language skills of undergraduate students in the Control group in the post- test.

Hypothesis: 20

Mother's Educational qualification does not differ significantly in English language skills of undergraduate students in the Experimental group in the post test.

Table 6.T.25 ANOVA for Comparison of mean scores in Mothers' educational qualification with respect to English language skills of undergraduate students in the Experimental group in the post test

Dimension	Source of Variation	Sum of Squares	df	Mean Square	F	P	Sig
Reading skill	Between Groups	29.517	2	14.758	0.703	0.503	NS
	Within Groups	629.817	30	20.994			
Writing skill	Between Groups	1.665	2	0.833	0.06	0.942	NS
	Within Groups	416.577	30	13.886			
English language skill	Between Groups	30.948	2	15.474	0.264	0.769	NS
	Within Groups	1755.294	30	58.51			

One way analysis of variance (ANOVA) was used to examine whether mothers' educational qualification has an impact on the competitive exam based English language skills of the undergraduate students; the result is displayed in the table 6.T.25. The samples were divided into three groups such as illiterate, 1 to 8 std., and 9 to 12 std., studied. This categorization is the independent variable and the score on competitive exam based English language skills is the dependent variable. The obtained F (33) value of dimensions: reading skill (0.703), writing skill (0.06) and English language skills (0.264) with $p = (0.503), (0.942), (0.769)$ were found insignificant difference between the groups based on the mothers' educational qualification at 0.01 level of significance and thereby the stated null hypothesis is accepted. Hence mother's educational qualification does not significantly influence in the English language skills of undergraduate students in the Experimental group in the post- test.

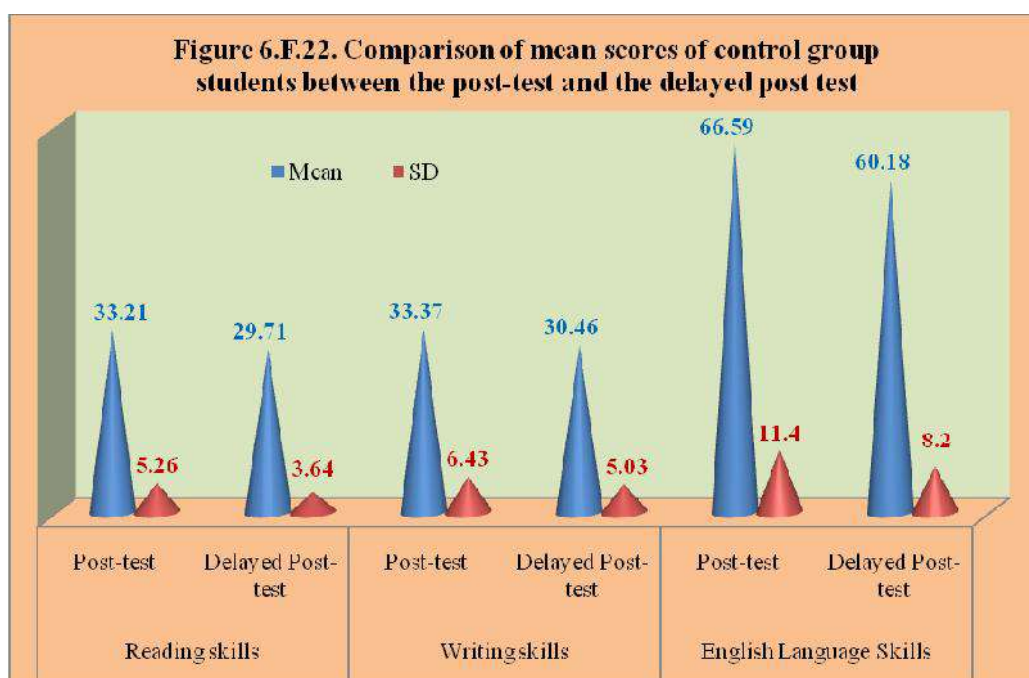
Hypothesis: 21

Students of Control group do not differ significantly between the post test and delayed post test in English language skills.

Table 6.T.26 Comparison of mean scores of Control group students between the post-test and the delayed post test

Dimensions	Test	No	Mean	SD	r	df	't' value	P	Sig.
Reading skills	Post-test	32	33.21	5.26	0.909	31	7.997	0.000	S
	Delayed Post test	32	29.71	3.64					
Writing skills	Post-test	32	33.37	6.43	0.930	31	6.429	0.000	S
	Delayed Post test	32	30.46	5.03					
English Language Skills	Post-test	32	66.59	11.40	0.962	31	8.669	0.000	S
	Delayed Post test	32	60.18	8.20					

The above table 6.T.26, 't' test analysis indicates that rural undergraduate students of Control group (N=32) differ significantly in their competitive exam based English language skills between the post-test and the delayed post-test at 0.01 level. The mean scores of the reading skills, writing skills and English language skills in the delayed post-test (M=29.71), (M=30.46), (M=60.18) are lesser than the mean scores of the post-test (M=33.21), (M=33.37), (M=66.59) respectively. As far as the standard deviation of the reading skills, writing skills and English language skills in the delayed post-test (S.D = 3.64), (S.D=5.03), (S.D=8.20) and the post-test (S.D=5.26), (S.D=6.43), (S.D=11.40) scores of the undergraduate students of Control group are concerned, there is a significant difference in their competitive exam based English language skills which in turn helped to develop the English language skills. Also the reading skill, writing skill and English language skills are high positive correlation obtained from the post – test and the delayed post – test scores. From the above statistics, it can be seen that substantial amount of score decreased in the delayed post test which is depicted by the obtained highly significant 'p' value (0.00). This result indicates that the undergraduate students of Control group achieved high scores in the post test but slightly decreased in the delayed post tests. This reveals that the traditional method of teaching have similar level of impact on the development of English language skills.



Hypothesis: 22

Students of Experimental group do not differ significantly between the post test and delayed post test in English language skills.

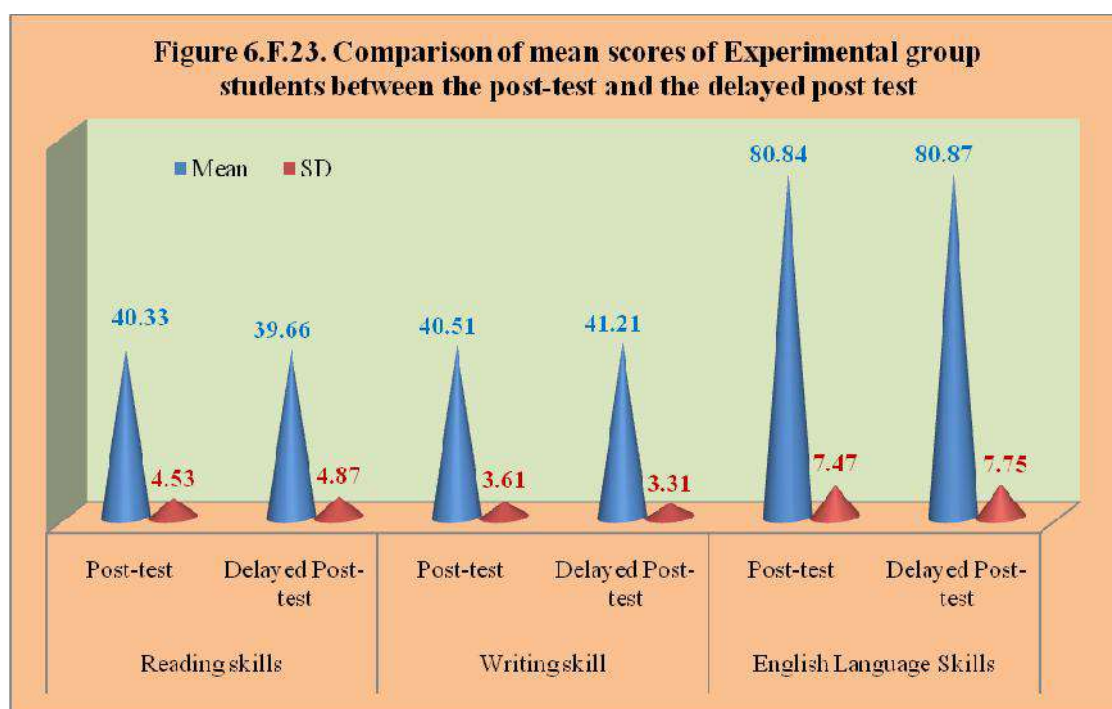
Table 6.T.27 Comparison of mean scores of Experimental group students between the post-test and the delayed post test

Dimensions	Test	No	Mean	SD	r	df	't' value	P	Sig.
Reading skills	Post-test	33	40.33	4.53	0.948	32	2.464	0.019	S
	Delayed Post test	33	39.66	4.87					
Writing skill	Post-test	33	40.51	3.61	0.890	32	2.429	0.021	S
	Delayed Post test	33	41.21	3.31					
English Language Skills	Post-test	33	80.84	7.47	0.955	32	0.075	0.940	NS
	Delayed Post test	33	80.87	7.75					

From the table 6.T.27, 't' test analysis indicates that rural undergraduate students of Experimental group (N=33) was found significant difference in the dimensions of reading and

writing skills in the post-test and the delayed post-test at 0.05 level. The mean scores of the reading skill and writing skill in post-test ($M=40.33$) and ($M=40.51$) are slight varied the mean scores of the delayed post-test ($M=39.66$) and ($M=41.21$) respectively. As far as the standard deviation of the reading skill and writing skill in the post-test ($S.D=4.53$), ($S.D=4.87$), and the delayed post test ($S.D = 3.61$), ($S.D=3.31$) scores of the undergraduate students of Experimental group. Also the reading skill, writing skill and English language skills have positive high correlation obtained from the post – test and the delayed post – test scores. From the above statistics, it can be seen that undergraduate students of Experimental group have maintained long time their knowledge about competitive based English language skills especially reading and writing skills as they have significant difference in the post – test to the delayed post-test.

From the table 6.T.27, ‘t’ test analysis indicates that rural undergraduate students of Experimental group ($N=33$) do not differ significantly in their competitive exam based English language skills between the post-test and the delayed post-test at 0.01 level. The mean scores of English language skills in the post-test and the delayed post test are similar level. This reveals that great impact among the undergraduate students of Experimental group have been utilized the Neurocognition intervention strategies in English language learning, Neurocognition intervention strategies played a vital role in enhancing memory of the subject after a long time. It is evident that the Neurocognition intervention strategies were found to have impact on the development of the English language skills among undergraduate students of Experimental group.



Hypothesis: 23

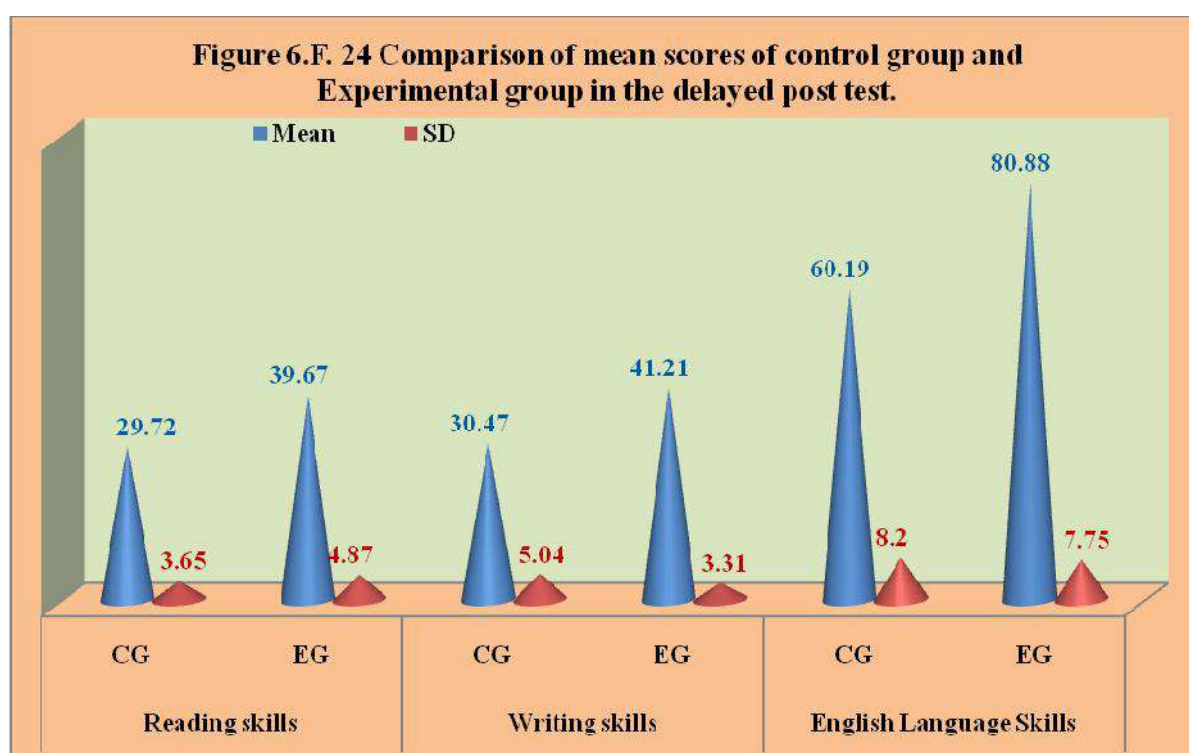
Students of Control group and Experimental group do not differ significantly in their English language skills in the delayed post test.

Table 6.T. 28 Comparison of mean scores of Control group and Experimental group in the delayed post test.

Dimensions	Group	No	Mean	SD	Mean Difference	df	't' value	P	Sig.
Reading skills	Control	32	29.72	3.65	9.947	63	9.297	0.00	S
	Experimental	33	39.67	4.87					
Writing skills	Control	32	30.47	5.04	10.743	63	10.128	0.00	S
	Experimental	33	41.21	3.31					
English Language Skills	Control	32	60.19	8.20	20.691	63	10.456	0.00	S
	Experimental	33	80.88	7.75					

From the table 6.T.28 't' test analysis indicates that undergraduate student of Control group (N=32) and undergraduate students of Experimental group (N=33) differ significantly in their reading, writing and English language skills in the delayed post-test at 0.01 level. The

delayed post test means scores of Experimental group (M= 39.67), (M= 41.21) and (M=80.88) are greater than that of the delayed post-test means scores of Control group (M=29.72), (M=30.47) and (M=60.19) respectively. As far as the standard deviations of these two groups are concerned, there is a significant difference in Experimental group is (4.87), (3.31), (7.75) and Control group is (3.65), (5.04), (8.20). Hence it is inferred that the Neurocognition intervention strategies opens up possibilities to retrieval the English language skills more than the traditional method. It is evident that the Neurocognition intervention strategies were found to impact on the development of English language skills among undergraduate students of Experimental group.



Hypothesis: 24

Attitude of Control group students towards English language skills is related to their performance in competitive exam based English language skills in the pre-test.

Table 6.T.29 Control group : Pre-test correlations between attitude towards English language skills and competitive exam based English language skills

		Attitude towards English language skills	Competitive exam based ELS
Attitude towards ELS	Pearson Correlation	1	0.297
	Sig. (2-tailed)		0.099
	N	32	32
Competitive exam based ELS	Pearson Correlation	0.297	1
	Sig. (2-tailed)	0.099	
	N	32	32

It can be seen from the table 6.T.29 that there exists a low positive correlation between attitude towards English language skills and competitive exam based English language skills in the pretest among the rural undergraduate students of Control group. The table of correlation matrix indicated that attitude towards English language skills and competitive exam based English language skills of undergraduate student of the Control group was not significantly associated in the pre-test.

Hypothesis: 25

Attitude of Control group students towards English language skills is related to their performance in competitive exam based English language skills in post-test.

Table 6.T.30 Control group: Post-test correlations between attitude towards English language skills and competitive exam based English language skills

		Attitude towards ELS	Competitive exam based ELS
Attitude towards ELS	Pearson Correlation	1	.376*
	Sig. (2-tailed)		.034
	N	32	32
Competitive exam based ELS	Pearson Correlation	.376*	1
	Sig. (2-tailed)	.034	
	N	32	32

* Significance at 0.05 level.

It can be seen from the table 6.T.30 that there is significant moderate positive correlation between attitude towards English language skills and competitive exam based English language skills in the post test among the rural undergraduate students of Control group. The table of correlation matrix indicated that the $p < .05$ show a statistically significant result on the relationship between the post - test scores of CEBELSAS and the ASTELS. Hence the stated alternate hypothesis accepted. The correlation value 0.376 indicates a moderate positive correlation coefficient between the attitude towards English language skills learning and competitive exam based English language skills in the post – test.

Hypothesis: 26

Attitude of Experimental group students towards English language skills is related to their performance in competitive exam based English language skills in pre-test.

Table 6.T.31 Experimental group: Pre-test correlations between attitude towards English language skills and competitive exam based English language skills

		Attitude towards ELS	Competitive exam based ELS
Attitude towards English language skills	Pearson Correlation	1	0.198
	Sig. (2-tailed)		0.269
	N	33	33
Competitive exam based ELS	Pearson Correlation	0.198	1
	Sig. (2-tailed)	0.269	
	N	33	33

It can be seen from the table 6.T.31 that there exists a low positive correlation between attitude towards English language skills and competitive exam based English language skills in the pretest among the rural undergraduate students of Experimental group. The table of correlation matrix indicated that attitude towards English language skills and competitive exam based English language skills of undergraduate student of the Experimental group was not significantly associated in the pre-test.

Hypothesis: 27

Attitude of Experimental group students towards English language skills is related to their performance in competitive exam based English language skills in post-test.

Table 6.T.32 Experimental group: Post-test correlations between attitude towards English language skills and competitive exam based English language skills

		Attitude towards ELS	Competitive exam based ELS
Attitude towards ELS	Pearson Correlation	1	0.952**
	Sig. (2-tailed)		0.000
	N	33	33
Competitive exam based ELS	Pearson Correlation	0.952**	1
	Sig. (2-tailed)	0.000	
	N	33	33

** Significance at 0.01 level.

It can be seen from the table 6.T.32 that there is significant very high positive correlation between attitude towards English language skills and competitive exam based English language skills in the post test among the rural undergraduate students of Experimental group. The table of correlation matrix indicated that the $p < .01$ show a statistically significant result on the relationship between the post - test scores of CEBELSAS and the ASTELS. Hence the stated alternate hypothesis accepted. The correlation value 0.952 indicates a very high positive correlation coefficient between the attitude towards English language skills learning and competitive exam based English language skills in the post – test.

Hypothesis: 28

Neurocognition intervention strategies are significantly associated with the components of attitude of Experimental group in the pre-test.

Table 6.T.33 Association between Neurocognition Intervention Strategies and the components of attitude of Experimental group in the pre-test

Dimensions	Chi-Square	df	Sig.	Sig. at 0.05 level
Attitude towards English learning	15.333	10	0.120	NS
Attitude towards Vocabulary learning	14.727	14	0.397	NS
Attitude towards Grammar learning	13.667	19	0.803	NS
Attitude towards Reading Comprehension	8.121	22	0.997	NS
Attitude towards Graphical Representation	11.545	13	0.565	NS
Attitude towards writing	8.455	23	0.997	NS

It above table 6.T.33 shows that the calculated ' χ^2 ' value of the first components of attitude towards English learning (15.333) with df (10) is not significant at 0.05 level of significance. Hence, the alternative hypothesis is rejected. Therefore, the Neurocognition intervention strategies are not significantly associated with the first components of attitude towards English learning of the Experimental group students in the pre-test.

From the table it is inferred that the calculated ' χ^2 ' value of the second components of attitude towards vocabulary learning (14.727) with df (14) is not significant at 0.05 level of significance. Hence, the alternative hypothesis is rejected. Therefore, the Neurocognition intervention strategies are not significantly associated with the second components of attitude towards vocabulary learning of the Experimental group students in the pre-test.

From the table it is inferred that the calculated ' χ^2 ' value of the third components of attitude towards grammar learning (13.667) with df (19) is not significant at 0.05 level of significance. Hence, the alternative hypothesis is rejected. Therefore, the Neurocognition intervention strategies are not significantly associated with the third components of attitude towards grammar learning of the Experimental group students in the pre-test.

From the table it is inferred that the calculated ' χ^2 ' value of the fourth components of attitude towards reading comprehension (8.121) with df (22) is not significant at 0.05 level of significance. Hence, the alternative hypothesis is rejected. Therefore, the Neurocognition intervention strategies are not significantly associated with the fourth components of attitude towards reading comprehension of the Experimental group students in the pre-test.

From the table it is inferred that the calculated ' χ^2 ' value of the fifth components of attitude towards graphical representation (11.545) with df (13) is not significant at 0.05 level of significance. Hence, the alternative hypothesis is rejected. Therefore, the Neurocognition intervention strategies are not significantly associated with the fifth components of attitude towards graphical representation of the Experimental group students in the pre-test.

From the table it is inferred that the calculated ' χ^2 ' value of the sixth components of attitude towards writing (8.455) with df (23) is not significant at 0.05 level of significance. Hence, the alternative hypothesis is rejected. Therefore, the Neurocognition intervention strategies are not significantly associated with the sixth components of attitude towards writing of the Experimental group students in the pre-test.

Therefore, the Neurocognition intervention strategies are not significantly associated with the components of attitude towards English language skills of the Experimental group students in the pre-test.

Hypothesis: 29

Neurocognition intervention strategies are significantly associated with the components of attitude of Experimental group in the post-test.

Table 6.T.34 Association between Neurocognition Intervention Strategies and the components of attitude of Experimental group in the post-test

Dimensions	Chi-Square	df	Sig.	Sig. at 0.05 level
Attitude towards English learning	32.667	10	0.000**	S
Attitude towards Vocabulary learning	10.182	4	0.037*	S
Attitude towards Grammar learning	37.455	14	0.001**	S
Attitude towards Reading Comprehension	41.091	14	0.000**	S
Attitude towards Graphical Representation	15.576	6	0.006**	S
Attitude towards writing	18.818	9	0.027*	S

*Significance at 0.05 level

** Significance at 0.01 level

It above table 6.T.34 shows that the calculated ' χ^2 ' value of the first components of attitude towards English learning (32.667), vocabulary learning (10.182), grammar learning (37.455), reading comprehension, (41.091), graphical representation (15.576), writing (18.818) with df English learning (10), vocabulary learning (4), grammar learning (14), reading comprehension (14), graphical representation (6) and writing (9) are significant at 0.5 level of significance. Hence, the alternative hypothesis is accepted. Therefore, the Neurocognition intervention strategies are significantly associated with the components of attitude towards English learning of the Experimental group students in the post-test.

Hypothesis: 30

Neurocognition intervention strategies significantly estimate the extent of the components of attitude of Experimental group in the post-test.

Table 6.T.35 Regression Analysis for Experimental group in the post-test with different components of attitude towards English language skills

a. Model summary of attitude towards English language skills with different components

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.985 ^a	.970	.963	1.43914

a. Predictors: (Constant), attitude towards English learning, vocabulary learning, grammar learning, reading comprehension, graphical representation, writing

b. ANOVA of attitude towards English language skills with different components

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1732.393	6	288.732	139.409	.000 ^a
	Residual	53.849	26	2.071		
	Total	1786.242	32			

a. Predictors: (Constant), Attitude towards English learning, Vocabulary learning, Grammar learning, Graphical Representation, Reading Comprehension, Writing

b. Dependent Variable: Neurocognition Intervention Strategies (CEBELSAS-post test)

C. Coefficient of attitude towards English language skills with different components

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11.590	4.621		2.508	.019
Attitude towards English learning	.326	.153	.154	2.123	.043
Attitude towards Vocabulary learning	.517	.133	.160	3.903	.001
Attitude towards Grammar learning	.605	.100	.422	6.054	.000
Attitude towards Reading Comprehension	.374	.087	.401	4.319	.000
Attitude towards Graphical Representation	-.377	.113	-.148	-3.347	.002
Attitude towards Writing	.088	.042	.106	2.104	.045

a. Dependent Variable: Neurocognition Intervention Strategies (CEBELSAS-post test)

It can be seen from the table 6.T.35, a value of R (.985) indicates high level of prediction and the adjusted R square (0.963) value indicated that as many as 96.3 % of the variances could be positively predicted from the different components of attitude towards English language skills such as attitude towards English learning, vocabulary learning, grammar learning, reading comprehension, graphical representation, and writing of Experimental group undergraduate students in the post-test. This indicated that the Neurocognition intervention strategies with the above said components was found impactful and played a paramount role for developing their English language skills. The ANOVA table 6.T.35 (b) shows that the components of attitude towards English language skills are statistically significant to predict the Neurocognition Intervention Strategies, $F(6, 26) = 139.409$, $p < 0.05$ (i.e., the regression model is one of the best fit of the data).

The multiple correlation co-efficient showed that there was a moderate positive correlation among the components of attitude towards English language skills such as grammar learning, reading comprehension and there was a small positive correlation among the components of attitude towards English language skills such as attitude towards English learning, vocabulary, writing but there was a small negative correlation in the component of graphical representation. These are not equally influencing Neurocognition intervention strategies for the development of English language skills among the rural undergraduate students. This indicates that the rural undergraduate students of Experimental group could improve their English language skills by utilizing the above mentioned Neurocognition Intervention Strategies.

It was also impressive to note that the other attitude towards English language skills along with its components was also contributing to develop the English language skills as its value was very close to the value of significance. It might also have contributed for the development of English language skills of the Experimental group of rural undergraduate students.

Hence it was inferred through regression analysis that Neurocognition intervention strategies were found impact on the development of the attitude towards English language among the rural undergraduate students of Experimental group in post test. It was suggested on the basis of the findings that teachers of English should take cognizance to implement the Neurocognition intervention strategies during their teaching – learning process of English language skills at all levels.

6.4 Qualitative Analysis: Case Analysis

Qualitative approach is a verification of proposition, which takes into consideration the totality of a phenomenon and does not attempt at analyzing it into measurable components. It makes use of naturalistic inquiry. Noor (2008) pointed out that case analysis is an empirical inquiry that investigates a contemporary phenomenon within its real life context using multiple sources of evidence, which is used in a case analysis as qualitative in nature and focuses on in-depth rather than broad, simple understanding. In the present study, the researcher has taken two students from the Experimental group as cases to study their performance in competitive exam based English language skills through the utilization of Neurocognition intervention strategies in teaching and learning.

6.4.1 Selection of Cases

The qualitative analysis was involved in two case analyses. R. Sasikala and R. Nanthini were chosen based on their achievement in competitive exam based English language skills (least and high) in the pre-test. The competitive exam based English language skills performance of these students was observed by the researcher during different phases of the experimentation. The competitive exam based English language skills achievement of them was analysed component wise to find out the impact of Neurocognition intervention strategies with the rural undergraduate students.

6.4.2. Analysis of Case One

Name of the student: R.Sasikala

Table. 6. T. 36 Achievement of Case one in CEBELSAS

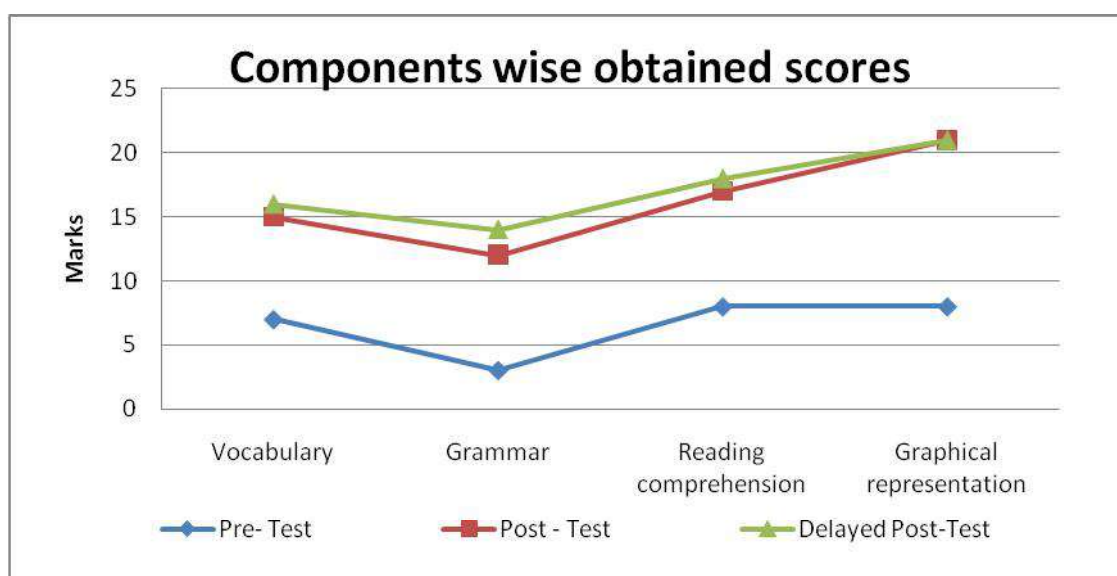
Dimension wise obtained scores				
Sl.No	Tests	Score in reading Skill	Score in Writing skill	Total (CEBELSAS)
1	Pre test	11	15	26
2	Post test	31	34	65
3	Delayed Post test	32	37	69

From the post-test scores of achievement in competitive exam based English language skills, the researcher found that R. Sasikala scored lowest marks in all the components of English language skills when compared with other rural undergraduate students in the Experimental group. She is one of the students obtained average scores in the pre-test of competitive exam based English language skills. As she scored low marks in both pre and post test, it indicated that the girl might encounter difficulties in competitive exam based English language skills. The students who are brought up by rural schools where mother tongue as medium of instruction and find difficulties in English. She is not supportive of academic help intended by her parents, as they were not educated. And she is the first generation learner. It may be the minor factor for the lack of knowledge in competitive exam based English language skills. Therefore the researcher has taken her as a case to analyse her performance in competitive exam based English language skills through the Neurocognition intervention strategies model based teaching learning during different phases of the experimentation. The student's progress in English language skills during experimentation was graphically presented below in the Table 6.T.37.

Table- 6.T. 37 Achievement of Case one in Components wise obtained scores

Components wise obtained scores				
Sl.No	Components	Pre- Test	Post - Test	Delayed Post-Test
1	Vocabulary	7	15	16
2	Grammar	3	12	14
3	Reading comprehension	8	17	18
4	Graphical representation	8	21	21
Total		26	65	69

Figure – 6.F. 25 Components wise obtained scores: Case-1



As it can be seen from the table 6.T.37 and the figure 6.F.25 that there is a gradual progress from pre test to post test and delayed post test in the components of English language skills such as vocabulary (7), (15), and (16), grammar (3), (12), and (14), reading comprehension (8), (17), and (18), and graphical representation (8), (21), and (21) respectively. This indicated that she was progressive in English language skills. The delayed post test revealed that the Neurocognition intervention strategies impacted on the components of English language skills. The student expressed that the strategy was found useful. She also expressed her difficulty in learning phrases, idiom, subject verb agreement, and spots the error. A number of research studies highlighted that difficulties in English language skills especially

in reading and writing, the students need to be provided remedial intervention for longer duration to reduce their difficulties in reading (Dehdari, 2019; Varisoglu, 2016) and writing (Sadaffunisha and Vijayakumar, 2020; Rahimi & Farjadnia 2019; Yusuf et al., 2019; Abedianpour & Omidvari, 2018; Zarei & Feizollahi, 2018).

Researchers (Keat et al., 2020; Chaudhury et al., 2019; Ortiz, 2019) reported that Neurocognition strategies enhanced the language processes, the students who have difficulties to acquire second or foreign language. It is the evident in the case of R. Sasikala. Although the 21 days of Neurocognition intervention strategies impacted on her performance of her competitive exam based English language skills, the strategies did not completely help her English language skills.

6.4.3. Analysis of Case Two

Name of the student: R. Nanthini

Table- 6. T. 38 Achievement of Case Two in CEBELSAS

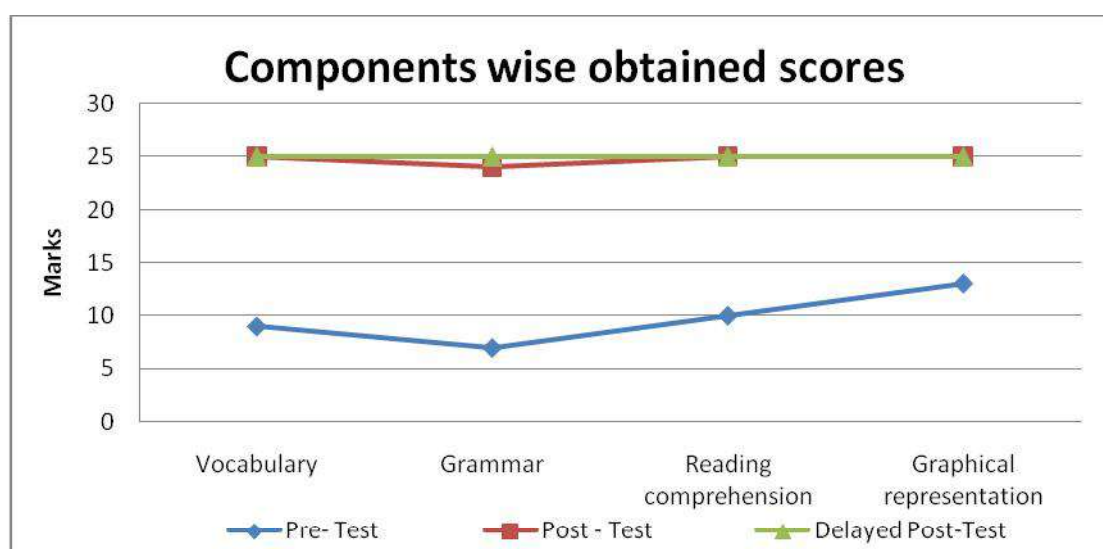
Dimension wise obtained scores				
Sl.No	Tests	Score in reading Skill	Score in Writing skill	Total (CEBELSAS)
1	Pre test	20	19	39
2	Post test	49	50	99
3	Delayed Post test	50	50	100

From the pre-test scores on competitive exam based English language skills performance, the researcher found that R.Nanthini secured high marks than other students in the Experimental group. Her performance in competitive exam based English language skills' indicated that she was progressive in learning of English language skills. Her progress in English language skills during experimentation was graphically presented in the table- 6.T.39.

Table- 6.T. 39 Achievement of Case one in Components wise obtained scores

Components wise obtained scores				
Sl.No	Components	Pre- Test	Post - Test	Delayed Post-Test
1	Vocabulary	9	25	25
2	Grammar	7	24	25
3	Reading comprehension	10	25	25
4	Graphical representation	13	25	25
Total		39	99	100

Figure – 6.F. 26 Components wise obtained scores: Case-2



As it can be seen from the table 6.T.39 and the figure 6.F. 26 that there is a gradual progress from pre test to post test and delayed post test in the components of English language skills such as vocabulary (9), (25), and (25), grammar (7), (24), and (25), reading comprehension (10), (25), and (25), and graphical representation (13), (25), and (25) respectively. This indicated that she was progressive in English language skills. The delayed post test revealed that the Neurocognition intervention strategies reinforced components of English language skills where the case was interviewed by the researcher; she responded that the classroom instructional activities such as concept mapping, cooperative learning,

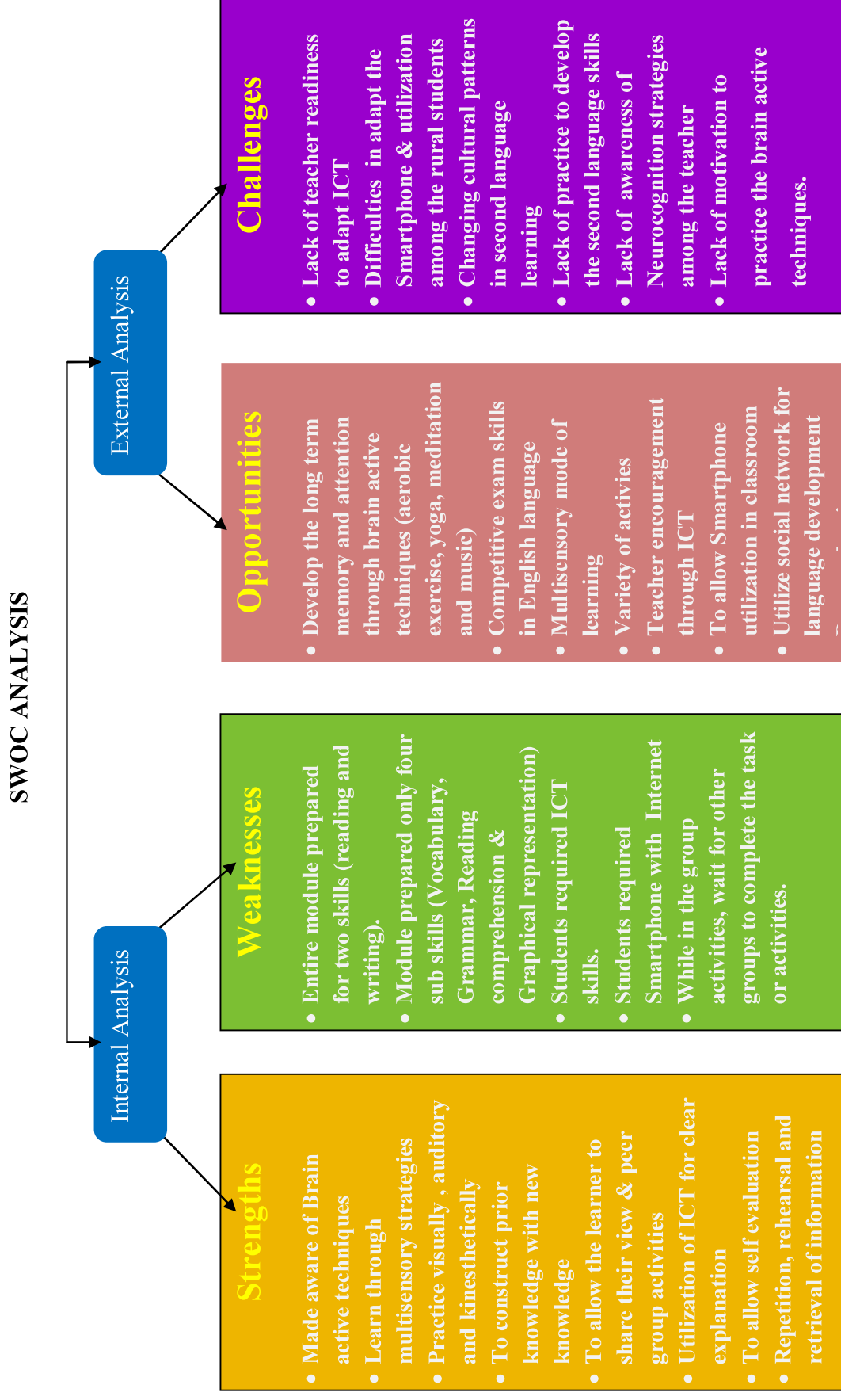
interactive activities etc., helped her to evince interest and to learn the language skills at ease. Especially, utilization of ICT and teaching methods grabbed her attention towards learning. The strategies made her active participant. A number of research studies indicated that difficulties in English language learning ICT integration could reduce the learners' difficulties in English (Erkulova, et al. 2020; Gubbels et al., 2020; Olentsova, 2019; Pham & Nguyen, 2018; Tervaniemi et al., 2018; Maduabuchi & Emechebe, 2016; Boudjadar, 2015). May et al., (2017) revealed that aerobic exercises provided four weeks as an intervention tool to increase working memory and cognitive functioning in reading. Similarly another one study by Vhavle et al., (2017) examined that yoga utilized as an intervention tool improved learning (listening, reading & writing), and cognitive abilities. Other research studies confirmed that remedial interventions such as aerobic exercise, yoga, music, meditation and ICT significantly improved the language performance of the students (Eccles et al, 2020; Wongsathorn & Yordchim, 2020; Gubbels et al., 2020; Olentsova, 2019; Fotidzis et al., 2018; Jois et al., 2017). Thus, it is evident in the case of R. Nanthini proved that Neurocognition intervention strategies reinforced her language skills. This case analysis was an eye opener for the researcher to provide valuable recommendations for the teachers to take cognizance of the Neurocognition intervention strategies on the development of English language skills.

6.5 SWOC Analysis

The researcher while in the process of experimentation after a few classes ascertained some students felt difficulties in getting along with teacher. Therefore, it was determined to study the difficulties of English language learning of the representative sample, to aid the experimentation. For this reason a SWOC analysis was done among the undergraduate students from rural areas. SWOC analysis that is identification of Strengths, Weaknesses,

Opportunities and Challenges is an analysis of internal and external factors that incite the attainment of objectives. It helps the researcher proceed further with a strategic plan to overcome the difficulties, utilise the opportunities using the strengths and to overcome the challenges. The strengths and weaknesses leads to the identification of current status and the opportunities and challenges focuses on the future. Systematic Network Analysis, a technique evolved by Bliss, Monk and Ogborn (1983) was used for triangulation of the data obtained through SWOC analysis the responses are discussed below.

Figure 6.F.27 Neurocognition Intervention Strategies for Language Learning- SWOC Analysis



The collection of information which all given under the four headings viz., strengths, weaknesses, opportunities and challenges help out in analyzing the systems approach of Neurocognition intervention strategies on the development of English language skills. As part of the research strategies, it was planned to triangulate through the following primary sources of data:

- i. Experts comments
- ii. Findings of the study
- iii. Review documented

The information gathered through these sources was amenable to analyze qualitatively and they only substantiated the following observations. The Neurocognition intervention strategies were impact on the development of English language skills of undergraduate students in rural areas. To summarize, Strengths need to be maintained, built upon or leveraged, Weaknesses need to be remedied, changed or supported. Opportunities need to be prioritized, captured, built on and optimized and Challenges need to be countered or minimized and managed.

6.6 Conclusion

Quantitative and qualitative data are analyzed and interpreted in detail in this chapter. Summary of the major findings are discussed with previous research supports, and based on the major findings of the present study, the recommendations for the English teachers and policy makers are discussed in the next chapter.

CHAPTER - VII

SUMMARY OF THE FINDINGS, DISCUSSION, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

The aim of present investigation is to find out the impact of Neurocognition intervention strategies on the development of English language skills in undergraduate students from rural areas. The relation between language and the brain has been an interesting subject of scientific inquiry in present scenario. Language is a vital route by which everyone can express feelings, wants thoughts, emotions, considerations, and so forth. All the important colleges and universities in India exploit English as their medium of trend. A new development in language teaching is Neurocognition based learning which explores the application of the findings of neuroscience in education. Neurocognitive learning is a dynamic interdisciplinary system-wide approach based on the way current research in neuroscience suggests our brain naturally learns best.

The researcher presents a consummate and analytic inference of his research findings. The researcher utilized the inclusive framework of the finding to expound on how the objectives of the study have been fulfilled and examine the tenability of the hypothesis that had been presented for assessment. And also this chapter is to deal with discussion, implications, recommendations, suggestions for further research and conclusion.

7.2 Summary of Findings Based on the Objectives

Neurocognition intervention strategies are relatively a new area of research. Thus it is a vital to uncover the educational and pedagogical impact on the development in English language skills. An investigation of the impact based on qualitative approaches and quantitative approaches has revealed the following picture of Neurocognition intervention strategies. A simple statistic was utilized to bring out result of the quantitative study are as follows:

7.2.1 Findings of Quantitative Analysis

Neurocognitive learning is a new area of research in education. Thus it is necessary to uncover the educational and pedagogical impact of Neurocognition intervention strategies on the development of English language skills. An investigation of the impact based on qualitative approaches and quantitative approaches has revealed the following picture of Neurocognition intervention strategies. The following findings are obtained by testing the hypotheses quantitatively and by answering the research questions qualitatively:

1. The rural undergraduate students were found to have difficulties in English language skills especially Substituted Words, Idioms and phrasal verbs, Concord, Spot the error, Kinds of sentences, Reading comprehension, Graphical representation, and Jumbled words.
2. Students of control group and experimental group were found to differ significantly in the pre-test, the post-test and the delayed post-test. But it was found that there was a remarkable increase in their English language skills, sub skills (reading and writing), components (vocabulary, grammar, reading comprehension and graphical representation)

and performance of the topics in the post-test and the delayed post-test from the pre-test which indicates that both the traditional method and Neurocognition intervention strategies of teaching were found influencing on the development of English language skills of students. But the role of impact of Neurocognition intervention strategies was more than that of the traditional method.

3. The students of control group and experimental group were found to have same level of did not differ significantly in English language skills in their dimensions in the pre-test.
4. The students of control and experimental group differ significantly in their English language skills and its dimensions viz., reading and writing skills in the post- test. It is also found that there was a marked increase in performance of English language skills with regard to its dimensions such as reading and writing skills of the Experimental group than that of the Control group. It shows that the Neurocognition intervention strategies were found more effective on the development of English language skills.
5. The post –test score of undergraduate students in Control group in their English language skills with regard to its dimensions viz., reading and writing skills were significantly greater than that of them in the pre-test. Hence the traditional method was found effective.
6. The post –test score of undergraduate students in Experimental group in their English language skills with regard to its dimensions viz., reading and writing skills were significantly greater than that of them in the pre-test. Hence the Neurocognition intervention strategies were found effective on the development English language skills of undergraduate students from rural areas.

7. It was found from the differential analysis that there exists no marked difference between arts and science students of control group in their English language skills in the pre- test.
8. The undergraduate students of Arts and Science students of control group differ significantly in their English language skills with regard to dimensions viz., reading and writing skills in the post- test. It is also found that there was a marked increase in performance of English language skills of Control group with regard to its dimensions such as reading and writing skills of the undergraduate arts students than that of their counterparts.
9. Arts students and Science undergraduate students of experimental group were found to have similar level of English language skills and its dimensions viz., reading and writing skills in the pre- test.
10. The undergraduate students Arts and Science of experimental group were found to have similar level of English language skills with regard to its dimensions viz., reading and writing skills after the intervention. Hence Neurocognition intervention strategies were equally beneficial to both the Arts and Science students.
11. The undergraduate students of Arts in the control and experimental groups differ significantly in their English language skills. It is also found that there was a marked increase in performance of English language skills undergraduate students of Arts in the Experimental group than that of their counterparts. It shows that the Neurocognition intervention strategies were found more effective on the development of English language skills.
12. The undergraduate students of science in the control and experimental groups differ significantly in their English language skills in the post- test. It is also found that there

was a marked increase in performance of English language skills of the undergraduate students of Experimental group than that of their counterparts. It shows that the Neurocognition intervention strategies were found effective on the development of English language skills.

13. It was found from the differential analysis that first graduate undergraduate students and their counterparts undergraduate students of control group was found to have similar level of English language skills and its dimensions viz., reading and writing skills in the pre- test.
14. The first generation undergraduate students and their counterparts in the control group differ significantly in their English language skills in the post- test. It is also found that there was a marked increase in performance of English language skills of students who are not first generation than that of the first generation undergraduate students in Control group.
15. The first generation undergraduate students and their counterparts in the experimental group were found to have similar level of English language skills in the pre- test.
16. The first generation undergraduate students and their counterparts in the experimental group were found to have similar level of English language skills. Hence the Neurocognition intervention strategies were equally beneficial to both the categories.
17. The first generation undergraduate students of control and the experimental group differ significantly in their English language skills in the post- test. It is also found that there was a marked increase in performance of English language skills of the First generation undergraduate students of Experimental group than that of the Control group. It shows

that the Neurocognition intervention strategies were found effective on the development of English language skills.

18. The counterparts of first generation undergraduate students of control and the experimental group differ significantly in their English language skills in the post- test. It is also found that there was a marked increase in performance of English language skills of first generation undergraduate students of Experimental group than that of the Control group. It shows that the Neurocognition intervention strategies were found effective on the development of English language skills.
19. The undergraduate students in the Control group did not differ significantly in their English language skills in the post-test with reference to fathers' educational qualification. Hence, Fathers' education did not influence in the performance in English language skills of students in the post-test.
20. The undergraduate students in the experimental group did not differ significantly in their English language skills in the post-test with reference to fathers' educational qualification. Hence fathers' education did not influence in the performance in English language skills of students in the post-test.
21. The undergraduate students in the control group did not differ significantly in their English language skills in the post-test with reference to mothers' educational qualification. Hence mothers' education did not have significant influence in the performance in English language skills of students in the post-test.
22. The undergraduate students in the experimental group did not differ significantly in their English language skills in the post-test with reference to mothers' educational

qualification. Hence mothers' education did not have significant influence in the performance in English language skills of students in the post-test.

23. The undergraduate students in the control group did differ significantly in their English language skills in the post-test and the delayed post-test. There was a slight decrease in their English language skills in the delayed posttest than that of the post-test. Hence, the students need to be provided intervention for longer duration to alleviate their difficulties in English language skills.
24. The undergraduate students in the experimental group did not differ significantly in English language skills in the post-test and the delayed post-test. There was a difference in the posttest compared to the delayed post-test.
25. The students of control and experimental group differ significantly in their English language skills in the delayed post- test. It is also found that there was a marked increase in performance of English language skills of the Experimental group than that of the Control group. It shows that the Neurocognition intervention strategies were found effective.
26. Attitude of control group students towards English language skills is not related to their performance in competitive exam based English language skills in the pre-test.
27. Attitude of control group students towards English language skills is related to their performance in competitive exam based English language skills in post-test.
28. Attitude of Experimental group students towards English language skills is not related to their performance in competitive exam based English language skills in pre-test.
29. Attitude of Experimental group students towards English language skills is related to their performance in competitive exam based English language skills in post-test.

30. Neurocognition intervention strategies are not significantly associated with the components of attitude of Experimental group students in the pre-test.
31. Neurocognition intervention strategies are significantly associated with the components of attitude of Experimental group students in the post-test.
32. Neurocognition intervention strategies significantly (96.3 %) estimate the extent of the components of attitude such as English learning, vocabulary learning, grammar learning, reading comprehension, graphical representation and writing of Experimental group students.

7.2.2 Findings of Qualitative Analysis

The present study adopted the case analysis and SWOC analysis as qualitative analysis. In the case analysis two informants were selected from all the levels of competitive exam based English language skills. An informant with low level marks secured, and another one informant secured high marks in English language skills were selected for an interview. To gain further understanding of the performance of the undergraduate students in individual test items were analyzed in order. The findings from this qualitative analysis are given here.

- Brain based active techniques increase the students' attention.
- Mobile phone used as an ICT tool made them more interest to learn the subjects.
- Rural students enjoyed interactive activities and cooperative learning but in the beginning they hesitated to participate due to cultural factors to pair with opposite sex.
- Positive feedback gave better results.
- Through the structured questionnaire it was found that the undergraduate students from rural areas enjoyed overall experiences of English language class during experimentation done through Neurocognition intervention strategies.

- More particularly, undergraduate students from rural areas could raise their understanding in competitive exam based English language skills such as i) vocabulary, ii) grammar iii) reading comprehension and iv) graphical representation
- The undergraduate students also responded that they enjoyed the taught through Neurocognition intervention strategies better than traditional method.

Consequently, the findings of the qualitative study helped to demonstrate the findings of quantitative study. Furthermore, the findings from a variety of sources used in this study helped to contextualize the area of study, contributing to our understanding on the language requirements of undergraduate students from rural areas for employment and need to change the teaching method for making the students obtain English language skills.

7.3 Discussion

Difficulties of undergraduate students in English language skills provide an ideal case for researchers to investigate the Neurocognition intervention strategies to improve the English language skills (eg. vocabulary, grammar, reading and writing skills). The relative contribution of these sub skills in English increases the language processes. Although, some of the research studies examined to develop the language processes utilized Neurocognition intervention (brain active techniques viz., aerobic exercise, yoga, meditation, music and ICT) because Neurocognition intervention strategies are not a single strategy. It is used as a multisensory strategy in various studies to develop teaching and learning processes. Very few research studies tried to develop the language skills (reading and writing skills) utilized cognitive or Neurocognition strategies at school level but rarely at college level. Besides, the researchers like Naglieri & Das (2005), Keat & Ismail (2011) Kendeou et al., (2015), Filickova et al., (2016) Chaudhury et al., (2019) Keat et al., (2020) Naveenkumar, (2020)

whose studies argued already in the chapter II of review of related literature also exposed the positive aspects of the Neurocognition strategies on the development of language processes. The findings of the present study also supported their findings stating that Neurocognition intervention strategies improved English language skills of the undergraduate students from rural areas.

The mean scores value shows that the undergraduate students of both experimental and control groups were almost similar level of previous knowledge in competitive exam based English language skills. But, the experimental group students secured high mean scores in vocabulary, grammar, reading comprehension and graphical representation in post test (18.97), (M=17.85), (M=20.94), (M=23.09) compared than that of control group students secure mean scores in post test (M= 15.22), (M=15.25), (M=16.59), (M=19.53) respectively. Hence it was concluded that Neurocognition intervention strategies have an impact on the development of English language skills of the students. The result confirms that the undergraduate students need to be provided appropriate language teaching intervention based on their needs to reduce their English language difficulties. There are pretty good research studies substantiated the statement that need based language intervention helps to improve the language skills of undergraduate students than that of the traditional method of teaching (Eccles et al., 2020; Alenizi, 2019; May et al., 2017; Smalle et al., 2017). A number of empirical research studies have suggested those undergraduate students' difficulties of language skills in English can be reduced through providing severe and systematic interventions (Giaouri et al., 2020; Chaudhury et al., 2019; Rahimi and Farjadnia, 2019; Zarei and Feixzollahi, 2018; May et al., 2017). Thus, the finding of the present study concord the findings of the previous research studies (Eccles et al., 2020; Alenizi, 2019; Farahani et al.,

2019; May et al., 2017; Smalle et al., 2017; Nabizadeh et al., 2016) that Neurocognition intervention strategies develop the English language skills.

Undergraduate students in the Experimental group significantly improved in their language skills in English achievement in the post-test. The mean score of the experimental group in the pre-test and the post- test are 32.69 and 80.85 respectively. It is interesting to note that there was high increase in the post-test than that of the pre-test of the Experimental group. Thus, the result revealed that Neurocognition intervention strategies on the development of English language skills of undergraduate students from rural areas. It can be inferred that the Neurocognition intervention strategies focused on providing explicit and implicit instruction based on their needs in English language skills. In addition, Brain active techniques and ICT was used as a supplementing device in the process of teaching English language skills to gain the attention of the students. The finding of the present study is concorded with the findings of the studies conducted in English language (Giaouri et al., 2020; Alenizi, 2019; Plourde et al., 2017; Jois et al., 2017). As English language skills performance in the post-test is significantly greater than that of the pre-test of experimental group, the intervention is proved to be more impactful.

As it is noticed from the result of the 't' test (Table 6.T.15) that the students in the Experimental group have shown high improvement on English language skills than that of the Control group students in the post-test. The mean scores of the Control group and the Experimental group differ significantly in their reading, writing and its total of English language skills in the post-test. The post test mean score of Experimental group (M= 40.33), (M= 40.52) and (M=80.85) are greater than that of the post-test mean score of control group (M=33.22 (M=33.37) and (M=66.59) respectively. Hence, the Neurocognition intervention

strategies supplemented with ICT was found effective on the development of English language skills among the undergraduate students from rural areas. The finding of the present study is in agreement with the findings of the previous research. A lot of studies had shown a significant improvement in the English language skills of the students who were given Neurocognition intervention (brain active trainings) such as aerobic exercise (May et al., 2017), yoga (Vhavle et al., 2017, Jois et al., 2017), meditation (Wongsothorn and Yordchim, 2020) and ICT (Erkulova et al., 2020; Gubbels et al., 2020; Klichowski & Patrício, 2017). And also, many studies had shown a significant development in English language skills while utilized the Neurocognition strategies (Giaouri et al., 2020; Chaudhury et al., 2019; Farahani et al., 2019; Ortiz, 2019; Plourde et al., 2018) based on their needs.

The undergraduate students of Arts and Science in the experimental group significantly improved in their English language skills in the post-test compared than that of control group. The mean scores of the undergraduate students of Arts and Science in experimental group in the post-test are (82.38), (79.73) and control group students (72.47), (59.93) respectively. It is interesting to note that there was high increase in the post-test of the Experimental group than that of the post-test of the control group. Thus, the result revealed that Neurocognition intervention strategies were effective on the development of English language skills among undergraduate students from rural areas.

Also in the experimental group, the undergraduate students of Arts and Science did not differ significantly in their reading skills, writing skills in the post-test. The mean score of the undergraduate students of Arts in experimental group (M=41.28), (M=41.07) and (M=82.35) were close to the experimental group science students (M=39.63), (M=40.10) and (M=79.73) respectively. The results indicated that there is no significant difference in the English language skills of the undergraduate students of Arts and Science in the experimental group.

The finding can be inferred that both undergraduate students of Arts and Science in the Experimental group equally benefitted by Neurocognition intervention strategies on the development of English language skills.

First generation undergraduate students and their counterparts in the Experimental group significantly improved in their English language skills in the post-test compared to the pre test. It is interesting to note that there was high increase in the post-test than that of the pre-test of the Experimental group. First generation undergraduate students and their counterparts in the Experimental group significantly improved in their English language skills in the post-test compared to the control group. The mean scores of the first generation undergraduate students and their counterparts of experimental group in the post- test are 80.19, 81.47 and that of the control group students are (61.79), (73.62) respectively. Thus, the result revealed that Neurocognition intervention strategies on the development of English language skills of undergraduate students from rural areas were effective.

Both father and mothers' educational qualification of the rural undergraduate students did not contribute to difference in the development of the reading skill, writing skill and English language skills among the undergraduate students in experimental groups. The result is disagreed with the finding of the study done by Ponmozhi & Thenmozhi (2017).

This study also investigated the attitude of the students towards English language skills as Tulgar (2018) pointed out that attitude of learners played a vital role in their language learning. Therefore, the investigator assessed attitude of English as a second language before and after the intervention and its findings were also discussed. The attitude of the students toward English language skills learning was increased after the treatment and also there was a significant improvement in their competitive exam based English language skills. So, it was inferred that the 'Neurocognition Intervention Strategies' sustained their attitude of the

students towards English language skills learning. The development of students' attitude on English language learning is considered to be necessary for bringing improvement in the field of education. In that way the Neurocognition intervention strategies got its own merit.

Neurocognition intervention strategies were effective on the development of reading and writing skills of the undergraduate students from rural areas than that of conventional method. The statistical outcome revealed that the Neurocognition intervention strategies recorded a significant improvement in the English language skills of the students. It can be inferred that the strategic orientation was developed based on the needs of the students through diagnosing their difficulties in English language skills was influencing. Research studies emphasized the need based remedial Neurocognition interventions for the students. The findings of the empirical studies conducted by Chaudhury et al., (2019) and Farahani et al., (2019), confirmed that need based differentiated intervention improved English language skills. The present study is in agreement with the above mentioned studies.

The development of English language skills with regard to different variables and dimensions showed that the Neurocognition intervention strategies played a pivotal role among undergraduate students from rural areas.

7.4 Recommendations and Educational Implications of the Present Study

It was found that there was a significant difference between the pre-test and the post-test in the English language skills which clearly shows the positive influence of Neurocognition intervention strategies on the development of English language skills of undergraduate students hailing from rural areas.

. It is also noted that there is a marked increase in the post test in reading and writing skills, when compared to the pre-test which claims the impact of Neurocognition intervention

strategies on the development of English language performance of undergraduate students from rural areas. On the basis of the statistical treatment and qualitative analysis of the data, the recommendations and educational implications have been evolved and discussed:

- Since Neurocognition interventions were found effective among rural undergraduate students in their English language skills especially reading and writing, the interventions may be taken as one of the curriculum transaction practices to teach the foreign language.
- Since Neurocognition intervention strategies are based on sound neuropsychological principles and theoretical assumptions, they are the implication in all areas related to language skills facilitation viz., methods, materials, teacher role, environment etc.
- The findings of the study further recommend that Neurocognition interventions may be incorporated as one of the practices to have pedagogical implications in teaching of English in teacher education curriculum at all levels.
- Neurocognition intervention strategies maximize the integral function of left and right brain section. So the abilities viz., learning attitude, learning habits, learning methods, learning interest, creativity, self conception, self confidence, memory and concentration can be increased to the maximum possible extend.
- The Neurocognition intervention strategies could be taken up the staff development agencies like Human Resource Development Centre (HRDC) as an important component of in-service training programmes to ensure a widespread application of these strategies by arts and science college teachers across the nation.

7.5 Recommendations for Policy Decisions

Research in general and educational research in particular must be committed to contribute to recommendations for future policy decisions on the basis of the findings of the research. Out of the scientific observations of the present study, the researcher recommends for policy decisions. Consequently the concept of language skills in English outlined in this study validated with conceptual validation, technical validation and empirical validation offers valuable insights into the notion of English language skills with special reference to the neurocognition. In that way the present study suggests the following recommendations for policy decisions for developing English language skills performance of undergraduate students who are from rural areas:

- As the Neurocognition intervention strategies were prepared only for the undergraduate students who are from rural areas by the researcher of the present study. Initiatives may be taken to orient the teachers at college level for developing similar types of intervention strategies.
- PASS cognitive processes used in Neurocognition intervention strategies helps in effective English language skills learning; hence Neurocognition intervention strategies may be included in the repository of English language teaching.
- As Neurocognition intervention strategies were found effective, efforts may be taken by the concerned authorities along with educational institutions to establish 'Neurocognitive Lab' with accessories to train students and teachers in language development.
- Neurocognition based theoretical courses should be included in master degree or teacher education courses. This will provide a confidence for college teachers to understand students or classroom situations.

- Colleges should conduct in-service training or faculty development programme about neuroscience based teaching learning usage. Initiative may be taken to provide neuroscience based educational journals, scientific magazine, papers etc., in libraries for perspective teachers to acquire the knowledge about usage of the Neurocognition strategies in teaching learning process.
- As brain based teaching as part of neurocognition is a evidence based approach to improve the performance of students, the Neurocognition interventions such as aerobic exercise, yoga, meditation, musical therapies may be taken cognizance and an hour be inclusively allotted in the time table at undergraduate level for these practices.
- It was found that the rural students were not aware of the competitive exam based English language learning resources. They may be trained upon competitive exam skills in English. Consequently, awareness programmes and orientation programmes may be provided to utilize the available resources for preparing competitive examinations.

7.6 Suggestions for the Further Research

Any good research even after answering its research questions must be inclined to renew and bring new ideas for further contributions to the needy people. In that way, the major findings of the present study open up the following suggestions for further investigation.

- Through administering a diagnostic assessment it was found that students in the present study had difficulties in competitive exam based English language skills. A further study may be attempted to explore the difficulties of communicative skills in English of undergraduate students from rural areas in this regard.
- This investigation ventured to study the impact of Neurocognition intervention strategies based on Luria's Neurocognitive processes of PASS theory. The further study may investigate the impact by relating with some other model.

- The present study used Neurocognition intervention strategies on the development of only reading and writing skills due to want of time construction for experimentation. This could be rectified by taking up a further research to concentrate on all the four skills (LSRW) with reference to their language learning with neurocognition.
- The present study though slightly touched upon the learning styles of learners by concentrating their sensory input, visual perception, auditory perception, implicit and explicit learning, emotional regulation, sequential representation and cognitive association a further study can be attempted with the integration of Neurocognition intervention strategies in teaching along with the identification of learning styles of the learners to make this strategy more effective.
- This research attempted to make the undergraduate students to prepare competitive exam based English language skills. Hence a new study is needed to take up the undergraduate students to the next level of language skills in English.
- This study was conducted to develop English language skills of the undergraduate students with Neurocognition strategies integrating brain active techniques and ICT. It is suggested to conduct a study to develop language skills in English only using Neurocognition strategies without ICT in order to avoid the problems related to the access of ICT.
- Another research may be needed to study the impact of Neurocognition intervention strategies on the development in teaching competitive skills in mother tongue separately since this study just correlated mother tongue with second language competitive skills.
- As it is noted from the case analysis, there were inconsistencies in competitive exam based English language skills performance of the undergraduate student from rural areas. Due to the time constraints and access to the sample, the intervention was given

for twenty one days only. A study may be attempted to ascertain the efficacy of Neurocognition intervention strategies so as to address the causes of inconsistency in the English language skills performance of the undergraduate students from rural areas.

7.7 Conclusion

Reading and Writing are essential skills for competitive exam success in India. It is prime duty of the teachers to provide this “extraordinary thing” to learn any subject aesthetically. Neurocognition intervention strategies are very broad which can be applied by teaching of English to develop the students’ competitive exam skills in English. Neurocognition intervention strategies adopted by the researcher to improve the undergraduate students’ competitive exam skills in English had two-fold result i.e (i) the undergraduate students have improved their competitive exam based English language skills and (ii) they have improved their attitude towards English language skills to adopt Neurocognition Intervention Strategies. The Neurocognition intervention strategies had made significant impact on the development of English language skills in its dimensions such as reading and writing. It would be very difficult to separate a particular strategy to identify its impact on any one dimension. The statistical data revealed that the total development of English language skills in the post-test. However, the researcher has observed through his experiment that the Neurocognition intervention strategies can develop different types of language skills of the students, so that their performance in the classroom can be made achievement related. A meticulous adoption of these Neurocognition intervention strategies would doubtlessly develop competitive exams skills in English among rural undergraduate students.

REFERENCES

- Abas, I. H., & Abd Aziz, N. H. (2017). Classification of L2 writing process and writing strategies. *Proceedings of the ICECRS*, 1(1). Retrieved from <http://ojs.umsida.ac.id/index.php/icecrs/article/viewFile/505/427>
- Abbott, R. D., Berninger, V. W., & Fayol, M. (2010). Longitudinal relationships of levels of language in writing and between writing and reading in grades 1 to 7. *Journal of Educational Psychology*, 102(2), 281–298. Retrieved from <https://doi.org/10.1037/a0019318>.
- Abdel Latif, M. M. (2019). Using think-aloud protocols and interviews in investigating writers' composing processes: combining concurrent and retrospective data. *International Journal of Research & Method in Education*, 42(2), 111-123. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/1743727X.2018.1439003>
- Abedianpour, S., & Omidvari, A. (2018). Brainstorming strategy and writing performance: Effects and attitudes. *Journal of Language Teaching and Research*, 9(5), 1084-1094. Retrieved from <http://www.academypublication.com/ojs/index.php/jltr/article/viewFile/jltr090510841094/1771>
- Abilasha, R., & Ilankumaran, M. (2018). English Language Teaching: Challenges and Strategies from the Indian Perspective. *International Journal of Engineering & Technology*, 7(3.6), 202. <https://doi.org/10.14419/ijet.v7i3.6.14970>
- Adams, W., Graham, J. N., Han, X., & Riecke, H. (2019). Top-down inputs drive neuronal network rewiring and context-enhanced sensory processing in olfaction. *PLoS computational biology*, 15(1), e1006611. <https://doi.org/10.1371/journal.pcbi.1006611>
- Afrin, S. (2016). Writing problems of non-English major undergraduate students in Bangladesh: An observation. *Open journal of social sciences*, 4(3), 104-115. Retrieved from https://file.scirp.org/pdf/JSS_2016031710191743.pdf
- Afzal, N. (2019). A Study on Vocabulary-Learning Problems Encountered by BA English Majors at the University Level of Education. *Arab World English Journal (AWEJ)* Volume, 10. <https://dx.doi.org/10.24093/awej/vol10no3.6>

- Agor, J. (2018). Undergraduate Writing in a Second Language Context: Analysis of English Intra-Sentence Issues. *Ghana Journal of Linguistics*, 7(1), 32-64. Retrieved from <http://dx.doi.org/10.4314/gjl.v7i1.2>
- Agostino, J. (2005). Empirical Methods for Evaluating Educational Interventions. (G..D.Phye, Ed.). *Academic Press*.
- Ahmed, B. S. (2020). The Effect of Using Concept Mapping on Developing EFL Students' Writing Skills. *Journal of the University of Garmian*, 7, 1. Retrieved from http://jgu.garmian.edu.krd/article_108259_6efbc1431bf99582942dbee400ac74f3.pdf
- Ahmed, S. (2015). Attitudes towards English Language Learning among EFL Learners at UMSKAL. *Journal of Education and Practice*, 6 (18), 6-17. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1079681.pdf>
- Ahmed, S. B., & Mani, K. R. S. (2020). Most Common Problems of ESL Learners in Writing: An Analysis. *Tathapi*, 19(29), 297-307.
- Ahmed, S. S. (2019). Whats App and Learn English: a Study of the Effectiveness of WhatsApp in Developing Reading and Writing Skills in English. *ELS Journal on Interdisciplinary Studies in Humanities*, 2(2), 148-156. Retrieved from <http://journal.unhas.ac.id/index.php/jish>
- Akbar, M., Pathan, H., & Ali Shah, S. W. (2018). Problems Affecting L2 Learners' English Writing Skills: A Study of Public Sector Colleges Hyderabad City, Sindh, Pakistan. *Language in India*, 18(5).
- Akyol, H., Çakiroğlu, A., & GülKuruyer, H. (2014). A Study on the Development of Reading Skills of the Students Having Difficulty in Reading: Enrichment Reading Program. In *International Electronic Journal of Elementary Education*, 6, (2).
- Alderson, J. C., Brunfaut, T., & Harding, L. (2015). Towards a theory of diagnosis in second and foreign language assessment: Insights from professional practice across diverse fields. *Applied Linguistics*, 36(2), 236-260. Retrieved from <https://watermark.silverchair.com/amt046.pdf?>
- Alenizi, M.A. (2019). Effectiveness of a Program Based on A Multi-Sensory Strategy in Developing Visual Perception of Primary School Learners with Learning

Disabilities: A Contextual Study of Arabic Learners. *International Journal of Educational Psychology*, 8(1),72-104. doi: 10.17583/ijep.2019.3346

Al-Ghabra, I. M. M. M., & Najim, A. S. (2019). Analyzing errors committed in paragraph writing by undergraduates. *Journal of Language Teaching and Research*, 10(2), 264-270. Retrieved from <http://dx.doi.org/10.17507/jltr.1002.07>

Alghail, A.A.A. & Mahfoodh, O.H.A. (2016). Academic reading difficulties encountered by international graduate students in a Malaysian university. *Issues in Educational Research*, 26(3), 369-386. Retrieved from <http://www.iier.org.au/iier26/alghail.pdf>

Alharbi, M. A. (2019). Saudi Arabia EFL university students' voice on challenges and solution in learning academic writing. *Indonesian Journal of Applied Linguistics*, 8(3), 576-587. Retrieved from <http://ejournal.upi.edu/index.php/IJAL/article/view/15276>

Alhaysony, M., & Alhaisoni, E. (2017). EFL teachers' and learners' perceptions of grammatical difficulties. *Advances in Language and Literary Studies*, 8(1), 188-199. Retrieved from <http://dx.doi.org/10.7575/aiac.all.v.8n.1p.188>

Ali, A. M., & Razali, A. B. (2019). A Review of Studies on Cognitive and Metacognitive Reading Strategies in Teaching Reading Comprehension for ESL/EFL Learners. *English Language Teaching*, 12(6), 94-111. Retrieved from <https://doi.org/10.5539/elt.v12n6p94>

Al-Jarrah, T. M., Mansor, N., Talafhah, R. H., & Al-Jarrah, J. M. (2019). The application of metacognition, cognitivism, and constructivism in teaching writing skills. *European Journal of Foreign Language Teaching*, 3 (4), 199-212. Retrieved from <https://www.oapub.org/edu/index.php/ejfl/article/view/2189/4826>

Al-Jarrah, T. M., Mansor, N., Talafhah, R. H., Al-Jarrah, J. M., & Al-Shorman, F. M. (2019). The Role of Metacognitive Technique for Enhancing the Writing Skills of Arab EEFL Students. *Journal of Education in Black Sea Region*, 4(2), 191-205.

Al-Momani, A. (2020). Measuring Vocabulary Knowledge of English as a Foreign Language among Undergraduate Jordanian Students. *International Journal of Linguistics, Literature and Translation*, 3(7), 107-111. DOI: 10.32996/ijllt.2020.3.7.12

- Al-Nouh, N. A., Abdul-Kareem, M. M., & Taqi, H. A. (2017). EFL College Students' Perceptions of the Difficulties in Oral Presentation as a Form of Assessment. *International Journal of Higher Education*, 4(1), 136-150. Retrieved from <http://dx.doi.org/10.5430/ijhe.v4n1p136>
- Altalhab, S. (2018). Short-and long-term effects of repetition strategies on vocabulary retention. *Advances in Language and Literary Studies*, 9(2), 146-149.
- Altamimi, D., & Ab Rashid, R. (2019). Spelling problems and causes among Saudi English language undergraduates. *Arab World English Journal (AWEJ)*, 10. Retrieved from <https://dx.doi.org/10.24093/awej/vol10no3.12>
- Amin, M. (2019). Developing Reading Skills through Effective Reading Approaches. *International Journal of Social Science and Humanities*, 4(1), 35-40.
- Amutha, S. (2010). *Empowerment of Science Teaching Competence of B.Ed. trainees in the rural areas through e-Content with a Metacognitive Instructional Design*. Doctoral Thesis submitted to Bharathidasan University, Tiruchirappalli, Tamilnadu, India.
- Anderson, J. R. (1996). *Cognitive psychology and its implications* (4th ed.). New York: Freeman.
- Anderson, O. R. (2009). Neurocognitive theory and constructivism in science education: A review of neurobiological, cognitive and cultural perspectives. *Brunei International Journal of Science & Mathematics Education*, 1/1, 1-32.
- Anderson, O.R., Love and Tsai, (2014). Neuroscience Perspectives for Science and Mathematics Learning in Technology-Enhanced Learning Environments. *International Journal of Science and Mathematics Education*, 12, 467-474. Retrieved from http://bradlove.org/papers/anderson_etal_2014.pdf
- Andoko, B. S., Hayashi, Y., & Hirashima, T. (2019). An Analysis of Concept Mapping Style in EFL Reading Comprehension from the Viewpoint of Paragraph Structure of Text. *The Journal of Information and Systems in Education*, 18(1), 63-68. https://www.jstage.jst.go.jp/article/ejsise/18/1/18_63/_pdf
- Angelica, M., & Katz, I. (2020). Emotion regulation and need satisfaction shape a motivating teaching style. *Teachers and Teaching*, 1-18. Retrieved from <https://doi.org/10.1080/13540602.2020.1777960>

- Anisaa. S. A., and Hameed. M. S. (2016). Challenges of Rural Students in English Language Acquisition. *International Journal of English language, Literature and Humanities*, IV (VII), 47-51.
- Ansari, D., & Coch, D. (2006). Bridges over troubled waters: education and cognitive neuroscience. *Trends in Cognitive Sciences*, 10(4), 146-151. doi:10.1016/j.tics.2006.02.007
- Ardiansyah, W., & Ujihanti, M. (2018). Social Constructivism-Based Reading Comprehension Teaching Design at Politeknik Negeri Sriwijaya. *Arab World English Journal*, 9(1), 447–467. Retrieved from <https://doi.org/10.24093/awej/vol9no1.31>
- Ardila, A. (2011). There are two different language systems in the brain. *Journal of Behavioral and Brain Science*, 1(02), 23. Retrieved from https://file.scirp.org/pdf/JBBS20110200002_61720451.pdf
- Aref, G. S., & Mojavezi, A. (2019). The Impact of Pre-task Instruction and Task Rehearsal on Fluency, Accuracy and Complexity of Iranian EFL Learners' Writing. *Journal of Language Teaching and Research*, 10(2), 281-288.
- Arifin, S. (2017). L2 Writing Strategies Used by EFL Graduate Students. *Journal of ELT Research: The Academic Journal of Studies in English Language Teaching and Learning*, 115-129. DOI: 10.22236/JER_Vol2Issue2pp115-129
- Aripin, N., & Rahmat, N. H. (2019). Exploring Metacognitive Writing Strategies in the Writing Process using Think Aloud Protocol: A Study across Gender. *Humanities*, 4(1), 178-187. Retrieved from [http://www.onlinesciencepublishing.com/assets/journal/JOU0022/ART00327/1565157631_AJSSH-2019-4\(1\)-178-187.pdf](http://www.onlinesciencepublishing.com/assets/journal/JOU0022/ART00327/1565157631_AJSSH-2019-4(1)-178-187.pdf)
- Arthi, M., & Srinivasan, R. (2018). Influence of reading comprehension strategies on english language teaching at the tertiary level. *Reading*, 2(3).
- Atayeva, M., Putro, N. H. P. S., Kassymova, G., & Kosbay, S. (2019). Impact of reading on students' writing ability. In *Materials of International Practical Internet Conference "Challenges of Science"* (pp. 5-13). Retrieved from <https://doi.org/10.31643/2019.001>
- Avdresh, J. (2014). *Social Research Methods*. McGraw Hill Foundation

- Ayana, T. G. (2020). An Investigation of EFL Students' Essay Writing: Problems and Suggestions: Ambo University First Year Students in Focus. Retrieved from <https://core.ac.uk/reader/287193296>
- Bapitha F. L., &Gunasekaran, S. (2019). Strategies to Improve Speed Reading and Its Effect on Comprehension in Student Teachers of English-An Experimental Study. *International Journal of Engineering and Advanced Technology (IJEAT)*, 6, 2249–8958. Retrieved from <https://doi.org/10.35940/ijeat.F8461.088619>
- Barquero LA, Davis N, Cutting LE. 2014. Neuroimaging of reading intervention: a systematic review and activation likelihood estimate meta-analysis. *PLoS One*. 9:e83668.
- Basavayya, D. & Venkataiah, N. (2016). *Essence of Educational Research Methodology*. New Delhi: Neelkamal Publications.
- Bauer-Kealey, M., & Mather, N. (2019). Use of an online reading intervention to enhance the basic reading skills of community college students. *Community College Journal of Research and Practice*, 43(9), 631-647. Retrieved from <https://doi.org/10.1080/10668926.2018.1524335>
- Beins, Bernard; McCarthy, M. (2012). Research Methods and Statistics. Retrieved from http://www.petronet.ir/documents/10180/2323250 /Research_ Methods _and_ Statistics-Bernard_C._Beins_ Maureen_A._McCarthy_Prentice_Hall
- Bellocchi, S., Muneaux, M., Huau, A., Lévêque, Y., Jover, M., & Ducrot, S. (2017). Exploring the Link between Visual Perception, Visual–Motor Integration, and Reading in Normal Developing and Impaired Children using DTVP-2. *Dyslexia*, 23(3), 296-315. DOI: 10.1002/dys.1561
- Benet, D. E. (2018). A Case for Domain-Specific English Language Teaching at the Undergraduate Level in Arts and Science Colleges in Tamilnadu. *International Journal of Research in Humanities, Arts and Science*, 150. Retrieved from http://www.bodhijournals.com/pdf/spl/November2018/Bodhi_V3S10.pdf#page=16
- Berninger, V. W., Cartwright, A. C., Yates, C. M., Swanson, H. L., & Abbott, R. D. (1994). Developmental skills related to writing and reading acquisition in the intermediate grades. Shared and unique functional systems. *Reading and Writing:*

An Interdisciplinary Journal, 6, 161–196. Retrieved from <https://doi.org/10.1007/BF01026911>.

Berninger, V., Abbott, R., Cook, C. R., & Nagy, W. (2017). Relationships of attention and executive functions to oral language, reading, and writing skills and systems in middle childhood and early adolescence. *Journal of learning disabilities*, 50(4), 434-449. Doi:10.1177/0022219415617167.

Bernstein, E. E., & McNally, R. J. (2017). Acute aerobic exercise helps overcome emotion regulation deficits. *Cognition and emotion*, 31(4), 834-843. Retrieved from <https://doi.org/10.1080/02699931.2016.1168284>

Best, J.W and Kahn. J.V. (2008). *Research in education*, New Delhi: Prentice Hall of India PVT. Ltd.

Bhuvaneswari, M., & Nandhini, R. (2017). Teachers' Perspective on the English Syllabus of Tamil Nadu Equitable Education System. *International Journal of Educational Sciences*, 17(1-3), 1-8. Retrieved from <https://doi.org/10.1080/09751122.2017.1317163>

Bilová, Š. (2018). Collaborative and individual vocabulary building using ICT. *Studies in Logic, Grammar and Rhetoric*, 53(1), 31-48. Retrieved from https://www.researchgate.net/deref/http%3A%2F%2Fdx.doi.org%2F10.2478%2Fslgr-2018-0002?sg%5B0%5D=Ug5cQXzh9vINjUyjZsMc4odyjyx57Cqc6M0ThwWEPR1k3mZqQ2P8cu1IGExqkv8rLkK0yzRxxhAUs37S6-FE9krk0aw.E81x31BBg3bGSuzkaMWr6PBEp9G_fXyg6DCiKTe4Nif4q3Ux8gsSMmjvTX3W-3LwYqRqdwDmpy82PJniDHriVw

Boggio, P. S., Giglio, A. C. A., Nakao, C. K., Wingenbach, T. S. H., Marques, L. M., Koller, S., & Gruber, J. (2019). Writing about gratitude increases emotion-regulation efficacy. *The Journal of Positive Psychology*, 1-12. Retrieved from <https://doi.org/10.1080/17439760.2019.1651893>

Borghesani, V., & Piazza, M. (2017). The neuro-cognitive representations of symbols: The case of concrete words. *Neuropsychologia*, 105, 4-17. Retrieved from <http://dx.doi.org/10.1016/j.neuropsychologia.2017.06.026>

- Bornkessel-Schlesewsky, I., & Schlewsky, M. (2012). Linguistic sequence processing and the prefrontal cortex. *The Open Medical Imaging Journal*, 6(1). Retrieved from <https://benthamopen.com/contents/pdf/TOMIJ/TOMIJ-6-47.pdf>
- Boudjadar, T. (2015). ICT in the writing classroom: The pros and the cons. *International Journal of Applied Linguistics and English Literature*, 4(1), 8-13. Retrieved from <http://www.journals.aiac.org.au/index.php/IJALEL/article/viewFile/1233/1223>
- Brevik, L. M. (2019). Explicit reading strategy instruction or daily use of strategies? Studying the teaching of reading comprehension through naturalistic classroom observation in English L2. *Reading and writing*, 32(9), 2281-2310. Retrieved from <https://link.springer.com/content/pdf/10.1007/s11145-019-09951-w.pdf>
- Britt, M., Pribesh, S., Hinton-Johnson, K., & Gupta, A. (2018). Effect of a mindful breathing intervention on community college students' writing apprehension and writing performance. *Community College Journal of Research and Practice*, 42(10), 693-707. Retrieved from <https://doi.org/10.1080/10668926.2017.1352545>
- Brown, C. M., & Hagoort, P. (1999). The cognitive neuroscience of language: challenges and future directions. *The neurocognition of language*, 3-14. Retrieved from https://pure.mpg.de/rest/items/item_68208_7/component/file_527056/content
- Budak, S., & Reeves, J. (2019). How Teachers Enhance Reading by Blending in Grammar. *Journal of Education and Practice*, 15 (10). DOI: 10.7176/JEP
- Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research on teaching*. In N. L. Gage (Ed.), *Handbook of research on teaching*. Chicago: Rand McNally.
- Cao, F. (2016). Neuroimaging studies of reading in bilinguals. *Bilingualism*, 19(4), 683. Retrieved from <http://dx.doi.org/10.1017/S1366728915000656>
- Cao, F., & Perfetti, C. A. (2016). Neural signatures of the reading-writing connection: greater involvement of writing in Chinese reading than English reading. *PLoS One*, 11(12), e0168414. Retrieved from <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0168414&type=printable>

- Carillo, E. C. (2017). Reading and Writing Centers: A Primer for Writing Center Professionals. *The Writing Center Journal*, 117-145. Retrieved from <https://www.jstor.org/stable/pdf/44594853.pdf>
- Carota, F., & Sirigu, A. (2008). Neural bases of sequence processing in action and language. *Language learning*, 58, 179-199. Retrieved from https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1467-9922.2008.00470.x?casa_token=elp1g9TpWQAAAAA:vVyAlgdWRqQ6RHA_m5YcWwTe7LAP8dLNKRXVcRR5dEDsYbCLJZXahfZxddxlfAo6Cslg1-r1q6kPC-zm
- Carreiras, M., et al. (2012). Broca's area plays a causal role in morphosyntactic processing. *Neuropsychologia*. Doi:10.1016/j.neuropsychologia.2012.01.016
- Carson, J. & Leki, I. (Eds.). (1993). *Reading in the composition classroom: Second language perspectives*. Boston: Heinle & Heinle.
- Ceylan, N. O. (2016). Using short stories in reading skills class. *Procedia-Social and Behavioral Sciences*, 232, 311-315.
- Chakraborty, T., & Bakshi, S. K. (2016). English language premium: Evidence from a policy experiment in India. *Economics of Education Review*, 50, 1-16. Retrieved from <https://doi.org/10.1016/j.econedurev.2015.10.004>
- Chalasani, S. (2020). Importance of LSRW Skills in English Language. *Sustainable Humanosphere*, 16(1), 2034-2038. Chaudhury, P., Roy, P.K., and Saha, P.K. (2019). Efficacy of PASS Reading Enhancement Programme on Neuropsychological Functions of a Child with Mild Vascular Neurocognitive Disorder and Comorbid Attention Deficit Hyperactivity Disorder: A Case Study. *Indian J Psychol Med.* 2019 May-Jun; 41(3): 271-275. Doi: 10.4103/IJPSYM.IJPSYM_473_18: 10.4103/IJPSYM.IJPSYM_473_18
- Chen, Z. (2016). Grammar learning strategies applied to ESP teaching. *Theory and Practice in Language Studies*, 6(3), 617-621.
- Cherrier, S., Le Roux, P. Y., Gerard, F. M., Wattelez, G., & Galy, O. (2020). Impact of a neuroscience intervention (NeuroStratE) on the school performance of high school students: Academic achievement, self-knowledge and autonomy through a metacognitive approach. *Trends in Neuroscience and Education*, 18, 100125. Retrieved from <https://doi.org/10.1016/j.tine.2020.100125>

- Choi, J. W., Han, D. H., Kang, K. D., Jung, H. Y., & Renshaw, P. F. (2015). Aerobic exercise and attention deficit hyperactivity disorder: brain research. *Medicine and science in sports and exercise*, 47(1), 33. Doi:10.1249/MSS.0000000000000373.
- Choi, J., Moon, Y., Paek, J. K., & Kang, Y. (2018). Examining the relationship between reading and writing of advanced Korean EFL Learners. *응용언어학*, 34(1), 91-116. Retrieved from <http://dx.doi.org/10.17154/kjal.2018.3.34.1.91>
- Chomsky, N. (1957). *Syntactic Structure*, The Hague: Mouton.
- Clement, A., & Murugavel, T. (2015). English for Employability: A Case Study of the English Language Training Need Analysis for Engineering Students in India. *English language teaching*, 8(2), 116-125. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1075200.pdf>
- Coakes, S. (2005). *SPSS Analysis without Anguish Version 12 for Windows*. (D. Rule, Ed.). John Wiley and Sons Australia. Retrieved from <http://doi.org/10.1017/CBO9781107415324.004>
- Conway, C. M., & Pisoni, D. B. (2008). Neurocognitive basis of implicit learning of sequential structure and its relation to language processing. *Annals of the New York Academy of Sciences*, 1145, 113-131. DOI: 10.1196/annals.1416.009
- Cooper, H. M. (1985). *A taxonomy of literature reviews*. Annual meeting of the American Educational Research Association, Chicago: ERIC Document Reproduction services No.ED254541.
- Course, S. (2017). Reading strategies and reading diaries for autonomous learning in a Turkish context. *The Reading Matrix*, 17(1), 124-144.
- Creswell, J. W. (1994). *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage Publications. Retrieved from <http://www.cehd.umn.edu/trio/mcnair/attributes/PDFs/ResearchParadig>
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications, Incorporated. New Delhi.
- Creswell, J. W. (2012). *Qualitative enquiry and research design: Choosing among five approaches*. New Delhi: SAGE Publications Inc; Third edition.

- Cui, J., Zhang, Y., Wan, S., Chen, C., Zeng, J., & Zhou, X. (2019). Visual form perception is fundamental for both reading comprehension and arithmetic computation. *Cognition*, 189, 141-154. Retrieved from <https://doi.org/10.1016/j.cognition.2019.03.014>
- Danner, D., Hagemann, D., & Funke, J. (2017). Measuring individual differences in implicit learning with artificial grammar learning tasks. *Zeitschrift für Psychologie*, 225(1), 5–19. DOI: 10.1027/2151-2604/a000280
- Davidson, M., & Berninger, V. (2016). Thinking aloud during idea generating and planning before written translation: Developmental changes from ages 10 to 12 in expressing and defending opinions. *Cogent psychology*, 3(1), 1276514. Retrieved from <https://cogentia.com/article/10.1080/23311908.2016.1276514.pdf>
- De Cates, A. N., Rees, K., Jollant, F., Perry, B., Bennett, K., Joyce, K., ... & Broome, M. R. (2017). Are neurocognitive factors associated with repetition of self-harm? A systematic review. *Neuroscience & Biobehavioral Reviews*, 72, 261-277. Retrieved from https://ora.ox.ac.uk/objects/uuid:1233fe97-3224-47e3-b02a-9360d8edbf7c/download_file?file_format=pdf&safe_filename=AOA%2Bde%2BCates%2Bet%2Bal%2BNBR%2Bmanuscript%2B-%2Bamended%2Bfollowing%2Brevison.pdf&type_of_work=Journal+article
- De Wit, L., O'Shea, D., Chandler, M., Bhaskar, T., Tanner, J., Vemuri, P., ... & Smith, G. (2018). Physical exercise and cognitive engagement outcomes for mild neurocognitive disorder: a group-randomized pilot trial. *Trials*, 19(1), 573. Retrieved from <https://doi.org/10.1186/s13063-018-2865-3>
- Defri, A. T., & Syafei, A. F. R. (2020). ENHANCING JUNIOR HIGH SCHOOL STUDENTS' READING COMPREHENSION IN REPORT TEXT BY USING CONCEPT MAPPING STRATEGY. *Journal of English Language Teaching*, 9(1), 1-9. Retrieved from <http://ejournal.unp.ac.id/index.php/jelt/article/viewFile/107890/103181>
- Dehdari, E. (2019). The Comparative Effect of Concept Mapping and Marginal Glossing on EFL Learners' Reading Comprehension and Vocabulary Retention. *International Journal of Academic Research in Business and Social Sciences*, 9(9), 697 - 709. Retrieved from <http://dx.doi.org/10.6007/IJARBS/v9-i9/6360>

- DelMas, R. O. B. E. R. T., Garfield, J. O. A. N., & Ooms, A. (2005). Using assessment items to study students' difficulty reading and interpreting graphical representations of distributions. In *Fourth Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-4)*. Retrieved from http://apps3.cehd.umn.edu/artist/articles/SRTL4_ARTIST.pdf
- Diamond, A., & Ling, D. S. (2019). Aerobic-exercise and resistance-training interventions have been among the least effective ways to improve executive functions of any method tried thus far. *Developmental Cognitive Neuroscience*, 37, 1-14. Retrieved from <https://www.sciencedirect.com/journal/developmental-cognitive-neuroscience/vol/37/suppl/C>
- Dolors, G. (2007), Neurocognitive Approach to the Study of Private Speech. *The Spanish Journal of Psychology*, Vol. 10, No. 1, 41-51
- Dunsky, A., Abu-Rukun, M., Tsuk, S., Dwolatzky, T., Carasso, R., & Netz, Y. (2017). The effects of a resistance vs. an aerobic single session on attention and executive functioning in adults. *PloS one*, 12(4), e0176092. Retrieved from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0176092>
- Durukan, E. (2011). Effects of cooperative integrated reading and composition (CIRC) technique on reading-writing skills. *Educational Research and Reviews*, 6(1), 102. Retrieved from https://www.researchgate.net/profile/Erhan_Durukan/publication/228436698_Effects_of_cooperative_integrated_reading_and_composition_CIRC_technique_on_reading-writing_skills/links/0f31752dc169e6ebe2000000.pdf
- Eccles, R., van der Linde, J., le Roux, M., Holloway, J., MacCutcheon, D., Ljung, R., & Swanepoel, D. W. (2020). Effect of music instruction on phonological awareness and early literacy skills of five-to seven-year-old children. *Early Child Development and Care*, 1-15. Retrieved from <https://doi.org/10.1080/03004430.2020.1803852>
- Elhassan, Z., Crewther, S. G., & Bavin, E. L. (2017). The contribution of phonological awareness to reading fluency and its individual sub-skills in readers aged 9-to 12-years. *Frontiers in psychology*, 8, 533. Retrieved from <https://doi.org/10.3389/fpsyg.2017.00533>

- Eloirdi, A., Ahami, A., & Mammad, K. (2019). Neurocognitive study of school performance among Moroccan high school students: The role of working memory. *Dementia & Neuropsychologia*, 13(2), 232-237. Retrieved from <http://dx.doi.org/10.1590/1980-57642018dn13-020013>
- Erçetin, G., & Alptekin, C. (2013). The explicit/implicit knowledge distinction and working memory: Implications for second-language reading comprehension. *Applied Psycholinguistics*, 34(4), 727-753. DOI:10.1017/S0142716411000932
- Erkulova, F., Samandarov, U., & Samandarova, G. (2020). The use of ICT in teaching English grammar in secondary schools. *International Journal on Integrated Education*, 3(1), 129-131. Retrieved from <https://media.neliti.com/media/publications/333804-the-use-of-ict-in-teaching-english-gramm-3f238af6.pdf>
- Ettlinger, M., Margulis, E. H., & Wong, P. (2011). Implicit memory in music and language. *Frontiers in psychology*, 2, 211. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2011.00211/full>
- Farahani, M. V., Rezaei, O., & Masoomzadeh, M. (2019). Teaching implicit vs explicit reading comprehension skills and translation performance of Iranian undergraduate students. *Journal of Applied Research in Higher Education*. 11 (4), 844-862, Retrieved from DOI 10.1108/JARHE-12-2018-0262.
- Fareed, M., Ashraf, A., & Bilal, M. (2016). ESL learners' writing skills: Problems, factors and suggestions. *Journal of Education and Social Sciences*, 4(2), 81-92. Retrieved from http://lcwu.edu.pk/oed/cfiles/Professional%20Studies/PGDT/ELT-507/Handout1ESLLearnerswritingskills_2.pdf
- Faretta-Stutenberg, M., & Morgan-Short, K. (2018). The interplay of individual differences and context of learning in behavioral and neurocognitive second language development. *Second Language Research*, 34(1), 67-101. Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/0267658316684903>
- Farooq, M. S., Uzair-Ul-Hassan, M., & Wahid, S. (2020). Opinion of second language learners about writing difficulties in English language. *South Asian Studies*, 27(1). Retrieved from <http://journals.pu.edu.pk/journals/index.php/IJSAS/article/viewFile/2847/1092>

- Farrugia, P., Petrisor, B. A., Farrokhyar, F., & Bhandari, M. (2010). Research questions, hypotheses and objectives. *Canadian Journal of Surgery*, 53(4), 278–281.
- Filickova, M., Kovalcikova, I., & Ropovik, I. (2016). The role of simultaneous and successive processing in EFL reading. *International Journal of Psychology*, 51(5), 383-391. DOI: 10.1002/ijop.12171
- Fogarty, M., Coyne, M. D., Simmons, L. E., Simmons, D. C., Henri, M., Kwok, O. M., ... & Wang, H. (2020). Effects of Technology-Mediated Vocabulary Intervention for Third-Grade Students with Reading Difficulties. *Journal of Research on Educational Effectiveness*, 13(2), 271-297. Retrieved from <https://www.tandfonline.com/action/showCitFormats?doi=10.1080/19345747.2019.1698086>
- Foncubierta, J. M., Machancoses, F. H., Buyse, K., & Fonseca-Mora, M. C. (2020). The Acoustic Dimension of Reading: Does Musical Aptitude Affect Silent Reading Fluency?. *Frontiers in Neuroscience*, 14, 399. Retrieved from <https://doi.org/10.3389/fnins.2020.00399>
- Fotidzis, T. S., Moon, H., Steele, J. R., & Magne, C. L. (2018). Cross-Modal Priming Effect of Rhythm on Visual Word Recognition and Its Relationships to Music Aptitude and Reading Achievement. *Brain sciences*, 8(12), 210. Retrieved from <http://dx.doi.org/10.3390/brainsci8120210>
- Fracasso, L. E., Bangs, K., & Binder, K. S. (2016). The contributions of phonological and morphological awareness to literacy skills in the adult basic education population. *Journal of Learning Disabilities*, 49(2), 140-151. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4268102/pdf/nihms589277.pdf>
- Fusar-Poli, L., Bieleninik, Ł., Brondino, N., Chen, X. J., & Gold, C. (2018). The effect of music therapy on cognitive functions in patients with dementia: a systematic review and meta-analysis. *Aging & mental health*, 22(9), 1103-1112. Retrieved from <https://doi.org/10.1080/13607863.2017.1348474>
- Gabrieli JD, Christodoulou JA, O'Loughlin T, Eddy MD. 2010. *The reading brain: cognitive neuroscience of reading development and difficulty*. In: Sousa DA, editor. *Mind, brain, & education: neuroscience implications for the classroom*. Bloomington, IN: Solution Tree. 113–138.

- Galvan, J. L. (2013). *Writing literature reviews: A guide for students of the social and behavioral sciences*. Glendale, CA: Pyrczak.
- Ganchev, I. (2020). Top-Down Or Bottom-Up? Employing a Middle-Ground Approach in Designing a UK Academic Writing Course for Advanced Chinese Graduates. *Journal of Teaching English for Specific and Academic Purposes*, 095-110. Retrieved from <https://doi.org/10.22190/JTESAP2002095G>
- Gay, L.R. and Airasian, P. (2000). *Educational Research: Competence for analysis and application (6th ed.)*. New Jersey: Merrill Prentice Hall.
- Geake, J., and Cooper, P. (2003). Cognitive Neuroscience: implications for education?. *Westminster Studies in Education*, 26, 7–20. Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/0140672030260102>
- Geraldo, A., Dores, A. R., Coelho, B., Ramião, E., Castro-Caldas, A., & Barbosa, F. (2018). Efficacy of ICT-Based Neurocognitive Rehabilitation Programs for Acquired Brain Injury. *European Psychologist*. Retrieved from https://recipp.ipp.pt/bitstream/10400.22/14198/1/ART_ArtemisaDores_2018.pdf
- Ghasemi, B., & Vaez-Dalili, M. (2019). Effect of Three Methods of Morphological Awareness on Iranian Intermediate EFL Learners' Reading Comprehension. *International Journal of Instruction*, 12(2), 623-638. Retrieved from <https://doi.org/10.29333/iji.2019.12239a>
- Giaouri, S., Rachanioti, E., Antoniou, A. S., & Alevriadou, A. (2020). Revisiting the Role of Visual Perception on the Reading Skills of Students with Learning Disabilities: Some Educational Planning Challenges. *European Journal of Special Education Research*. Retrieved from <http://dx.doi.org/10.5281/zenodo.3666758>
- Gilbert, F. (2019). Mindfulness and Creative Writing. *Writing in Education*, (77). Retrieved from https://research.gold.ac.uk/26035/3/FGilbert_NAWE_magazine_Jan_2019%20%20%282%29.pdf
- Gokula, R., Sharma, M., Cupples, L., & Valderrama Valenzuela, J. T. (2019). Comorbidity of auditory processing, attention, and memory in children with word reading difficulties. *Frontiers in psychology*, 10, 2383. Retrieved from <https://doi.org/10.3389/fpsyg.2019.02383>

- Gomathi, B. S. (2014). Enriching the skills of rural students with effective methods of teaching English language using LSRW Skills. *International Journal of Education and Information Studies*, 4(2), 65-69. Retrieved from http://www.ripublication.com/ijeisv1n1/ijeisv4n2_01.pdf
- Goswami, U (2004) Neuroscience and education and special education. *British journal of Special Education*. Volume 31, number 4, 2004, pp. 175-183. Cambridge: NASEN.
- Goswami, U. (2004). Neuroscience and education. *British Journal of Educational Psychology*, 74, 114.
- Goswami, U. (2006). Neuroscience and education: from research to practice? *Nature Reviews Neuroscience*, 7, 406–413.
- Goswami, U. (2008). Principles of learning, implications for teaching: A cognitive neuroscience perspective. *Journal of Philosophy of Education*, 42(3-4), 381-399. Retrieved from <https://doi.org/10.1111/j.1467-9752.2008.00639.x>
- Goswami, U. (2015). Sensory theories of developmental dyslexia: Three challenges for research. *Nature Reviews Neuroscience*, 16, 43–54. Retrieved from <http://dx.doi.org/10.1038/nrn3836>
- Gotseva, M. (2017). A Neurocognitive perspective on language acquisition in Ullman's DP model. *East European Journal of Psycholinguistics*, 4(2), 24–33. DOI: 10.5281/zenodo.1149076
- Gowri, K. J., & Ilankumaran, M. (2018). Application of Theories, Techniques, Methods and Approaches to Develop Second Language Skills-a Study Based on Transition From Schooling to College. *International Journal of Engineering & Technology*, 7(3.6), 210-215.
- Graham, S., Liu, X., Bartlett, B., Ng, C., Harris, K. R., Aitken, A., ... Talukdar, J. (2018). Reading for writing a meta-analysis of the impact of reading interventions on writing. *Review of Educational Research*, 88(2), 243–284. DOI:10.3102/0034654317746927.
- Gubbels, J., Swart, N. M., & Groen, M. A. (2020). Everything in moderation: ICT and reading performance of Dutch 15-year-olds. *Large-scale Assessments in Education*, 8(1), 1. Retrieved from <https://link.springer.com/content/pdf/10.1186/s40536-020-0079-0.pdf>

- Guci, R. I., & Drajadi, N. A. (2019). Implicit Teaching Strategies on Grammar Instruction: Students' Prevailing Stance. *AKSARA: Jurnal Bahasa dan Sastra*, 20(2), 109 – 124. Retrieved from <http://jurnal.fkip.unila.ac.id/index.php/aksara>
- Gustafson Sr., D.H., McTavish, F., Gustafson Jr., D.H., Mahoney, J.E., Johnson, R.A., Lee, J.D., Quanbeck, A., Atwood, A.K., Isham, A., Veeramani, R., Clemson, L. and Shah, D., (2015), “The effect of an information and communication technology (ICT) on older adults' quality of life: study protocol for a randomized control trial,” *Trials*, vol. 16, no. 1, pp. 1-12, doi:10.1186/s13063-015-0713-2.
- Hadar, A.A., Eliraz, D., Lazarovits, A., Alyagon, U. and Zangen, A., (2015), “Using longitudinal exposure to causally link smartphone usage to changes in behavior, cognition and right prefrontal neural activity,” *Brain Stimulation*, vol. 8, no. 2, pp. 318-318, doi:10.1016/j.brs.2015.01.032.
- Hafenbrack, A. C., & Vohs, K. D. (2018). Mindfulness meditation impairs task motivation but not performance. *Organizational Behavior and Human Decision Processes*, 147, 1-15. Retrieved from <https://doi.org/10.1016/j.obhdp.2018.05.001>
- Harmer, J. (2001). The practice of English language teaching. *London/New York*, 401-405.
- Hashemi, A., & Daneshfar, S. (2018). The impact of different teaching strategies on teaching grammar to college students. *Theory and Practice in Language Studies*, 8(3), 340-348.
- Hashimoto, T., Higuchi, H., Uno, A., Yokota, S., Asano, K., Taki, Y., & Kawashima, R. (2020). Association between resting-state functional connectivity and reading in two writing systems in Japanese children with and without developmental dyslexia. *Brain Connectivity*, 10 (6), 254-266. <https://doi.org/10.1089/brain.2020.0759>
- Heeney, M. C. (2015). *Cognitive Modelling: A Case Study of Reading-to-Write Strategy Instruction and the Development of Second Language Writing Expertise in a University English for Academic Purposes Writing Course* (Doctoral dissertation). Retrieved from [https://tspace.library.utoronto.ca/bitstream/1807/69313/3/Heeney Margaret C 201506 PhD thesis.pdf](https://tspace.library.utoronto.ca/bitstream/1807/69313/3/Heeney_Margaret_C_201506_PhD_thesis.pdf)
- Hidayanti, I. N., & Gunawan, I. D. (2018). *The Implementation of Cooperative Integrated Reading and Composition (CIRC) Method in Improving Students' Writing Skills*.

Isti Nurani Hidayanti 147010036 (Doctoral dissertation, Sastra Inggris). Retrieved from <http://repository.unpas.ac.id/40061/4/Chapter%20II.pdf>

- Him, C. Y. (2018). Contexts, problems and solutions in international communication: Insights for teaching English as a lingua franca. *Journal of Asia TEFL*, 15(2), 257. DOI:10.18823/asiatefl.2018.15.2.1.257
- Hirvela, A. (2004). Connecting reading and writing in second language writing instruction. Ann Arbor: University of Michigan Press.
- Hoen, M., Pachot-Clouard, M., Segebarth, C., & Dominey, P. F. (2006). When Broca experiences the Janus syndrome: An ER-fMRI study comparing sentence comprehension and cognitive sequence processing. *Cortex*, 42(4), 605-623. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.653.704&rep=rep1&type=pdf>
- Hook, C.J & Martha J. Farah, M.J., (2012). Neuroscience for Educators: What Are They Seeking, and What Are They Finding?. *Neuroethics*. DOI 10.1007/s12152-012-9159-3
- Hossain, M. M. (2016). English language teaching in rural areas: A scenario and problems and prospects in context of Bangladesh. *Advances in Language and Literary Studies*, 7(3), 1-12. DOI:10.7575/aiac.all.v.7n.3p.1
- Howard-Jones, P. (2014a). Neuroscience and education: A review of educational interventions and approaches informed by neuroscience. *Education Endowment Foundation, Millbank, UK*. Retrieved from https://educationendowmentfoundation.org.uk/public/files/Publications/EEF_Lit_Review_NeuroscienceAndEducation.pdf
- Huang, J., Li, Y., Zhang, J., Wang, X., Huang, C., Chen, A., & Liu, D. (2017). fMRI Investigation on Gradual Change of Awareness States in Implicit Sequence Learning. *Scientific Reports*, 7(1), 1-8. Retrieved from <https://www.nature.com/articles/s41598-017-16340-2.pdf>
- Hussain, S. S. (2019). Strategies for Teaching Academic Writing to Saudi L2 Learners. *English Language Teaching*, 12(12), 1-11. Retrieved from <https://doi.org/10.5539/elt.v12n12p1>

- Ilahiyah, A. I., Andina, D. M., Tiven, P. A., & Cahyono, B. Y. (2019). Indonesian EFL students' reading motivation and writing achievement across gender. *EduLite: Journal of English Education, Literature and Culture*, 4(2), 119-131. Retrieved from <http://dx.doi.org/10.30659/e.4.2.119-131>
- Jalal, A., & Mahmood, M. (2019). Students' behavior mining in e-learning environment using cognitive processes with information technologies. *Education and Information Technologies*, 24(5), 2797-2821. Retrieved from <https://doi.org/10.1007/s10639-019-09892-5>
- James, K. H., & Engelhardt, L. (2012). The effects of handwriting experience on functional brain development in pre-literate children. *Trends in Neuroscience and Education*, 1(1), 32-42. Retrieved from <https://doi.org/10.1016/j.tine.2012.08.001>
- Janus, M., Lee, Y., Moreno, S., & Bialystok, E. (2016). Effects of short-term music and second-language training on executive control. *Journal of experimental child psychology*, 144, 84-97. DOI: 10.1016/j.jecp.2015.11.009
- Järvenoja, H., Malmberg, J., Törmänen, T., Mänty, K., Haataja, E., Ahola, S., & Järvelä, S. (2020). A Collaborative Learning Design for Promoting and Analyzing Adaptive Motivation and Emotion Regulation in the Science Classroom. In *Frontiers in Education*, 5, 1-16. Retrieved from <https://doi.org/10.3389/feduc.2020.00111>
- Järvenoja, H., Näykki, P., & Törmänen, T. (2019). Emotional regulation in collaborative learning: when do higher education students activate group level regulation in the face of challenges?. *Studies in Higher Education*, 44(10), 1747-1757. Retrieved from <https://doi.org/10.1080/03075079.2019.1665318>
- Javadipour, S., Nejati, V., Yadegari, F., Javadipour, S., & Fazele, S. A. A. (2018). A Visual Attention Training Program for the Improvement of Auditory Comprehension in Aphasia. *NeuroQuantology*, 16(1). DOI:10.14704/nq.2018.16.1.1167
- Jennifer, J. M., & Ponniah, R. J. (2018). Acquisition of writing by reading and its impact on cognition. In *The idea and practice of reading* (pp. 41-56). Springer, Singapore. Retrieved from https://www.researchgate.net/profile/Kshema_Jose/publication/325014517_Blending_Cognitive_and_Socio-constructive_Pedagogies_Building_Autonomous_Readers_in_the_ESL_Classroom

</links/5b7ac99a92851c1e122279d3/Blending-Cognitive-and-Socio-constructive-Pedagogies-Building-Autonomous-Readers-in-the-ESL-Classroom.pdf#page=53>

- Jennifer, J. M., & Ponniah, R. J. (2019). Improving the Writing Abilities of First Year Undergraduates through Extensive Reading. *Journal of Asia TEFL*, 16(4), 1404-1412. DOI:10.18823/asiatefl.2019.16.4.24.1404
- Jiang, H., Johnstone, S. J., Sun, L., & Zhang, D. W. (2018). Effect of Neurocognitive Training for Children With ADHD at Improving Academic Engagement in Two Learning Settings. *Journal of attention disorders*, 1087054718799931. Retrieved from https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=4353&context=gc_etds
- Jiang, S., & Yan, X. (2020). Research on the Effect of Supervisor Feedback for Undergraduate Thesis Writing. *English Language Teaching*, 13(1), 43-50. Retrieved from <https://doi.org/10.5539/elt.v13n1p43>
- John, A. D., Chithra, M., & Jayanthi, V. (2017). LSRW and its Importance for Engineering Students. *IMPACT: International Journal of Research in Engineering & Technology*, 5 (11), 41-46.
- Johnson, A. P (2016), The Neurocognitive Processes Involved in Reading, Corwin press. Retrieved from https://www.academia.edu/26721773/THE_NEUROCOGNITIVE_PROCESSES_INVOLVED_IN_READING
- Johnson, A. P. (2018). Theoretical Models of Reading. Retrieved from https://d1wqtxts1xzle7.cloudfront.net/57600312/THEORETICAL_MODELS_OCT_17_2018.pdf?
- Johnson, N. (2012). *Effect of Self-Regulatory Strategies with Interactive Multimedia on Problem Solving Ability of Higher Secondary Students in Physics*. Doctoral Thesis submitted to Bharathidasan University, Tiruchirappalli, Tamilnadu, India.
- Jois, S. N., D'Souza, L., & Moulya, R. (2017). Beneficial effects of Superbrain yoga on short-term memory and selective attention of students. *Indian journal of Traditional knowledge*, 16, 35-39. <http://nopr.niscair.res.in/bitstream/123456789/42283/1/IJTK%2016%28Suppl%29%2035-39.pdf>

- Joseph, N. P. (2019). THE SIGNIFICANCE OF ENGLISH LANGUAGE IN INDIA. *International Journal of Scientific Research and Review* , 7 (3), 2620-2624. Retrieved from http://ijsrr.co.in/images/full_pdf/1553758579_R1148.pdfSeidler,
- Jouhar, M. R., & Rupley, W. H. (2020). The Reading–Writing Connection based on Independent Reading and Writing: A Systematic Review. *Reading & Writing Quarterly*, 1-21. Retrieved from <https://doi.org/10.1080/10573569.2020.1740632>
- Justina, M. (2016). Use of Whatsapp to Enhance Reading and Writing Skills at Undergraduate College Level. *Language in India*, 16(11), 47-60.
- Kalia, P. (2017). English language teaching in India: Trends and challenges. *IJEAST*, 2(3), 33-37. Retrieved from <https://www.ijeast.com/papers/33-37,Tesma203,IJEAST.pdf>
- Kamdideh, Z., Vaseghi, R., & Talatifard, S. (2019). The Effects of Reciprocal Teaching of Reading and Cooperative Integrated Reading and Composition on the Reading Comprehension of Iranian EFL Intermediate Students. *Theory and Practice in Language Studies*, 9(9), 1111-1117.
- Karakoç, D., & Köse, G. D. (2017). The impact of vocabulary knowledge on reading, writing and proficiency scores of EFL learners. *Journal of language and linguistic studies*, 13(1), 352-378.
- Kasparian, K., & Steinhauer, K. (2017). When the second language takes the lead: Neurocognitive processing changes in the first language of adult attriters. *Frontiers in Psychology*, 8, 389. Retrieved from <https://doi.org/10.3389/fpsyg.2017.00389>
- Keat, O. B., & Ismail, K. B. H. (2011). Pass cognitive processing: Comparison between normal children with reading difficulties. *International Journal of Humanities and Social Science*, 2, 53-60. Retrieved from https://www.researchgate.net/profile/Ooi_K/publication/298654297_Pass_Cognitive_Processing_Comparison_between_Normal_Children_with_Reading_Difficulties/links/56ea243408ae95bddc2a58be.pdf
- Keat, O. B., Rajaratnam, M. L., & Yuniardi, M. S. (2020). The Profiling of PASS Cognitive Processing among Children with Learning Difficulties. *International Journal of Psychosocial Rehabilitation*, 24(05). DOI: 10.37200/IJPR/V24I5/PR202028

- Keezhatta, M. S., & Omar, A. (2019). Enhancing Reading Skills for Saudi Secondary School Students through Mobile Assisted Language Learning (MALL): An Experimental Study. *International Journal of English Linguistics*, 9(1), 437-447.
- Kemmerer, D. (2015). *Cognitive Neuroscience of Language*. New York & London: Psychology press.
- Kendeou, P., Papadopoulos, T. C., & Spanoudis, G. (2015). Reading comprehension and PASS theory. In *Cognition, intelligence, and achievement*, Academic Press. 117-136. DOI: [10.1016/B978-0-12-410388-7.00007-5](https://doi.org/10.1016/B978-0-12-410388-7.00007-5)
- Kerry, S. J., Aguilar, O. M., Penny, W., Crinion, J. T., Leff, A. P., & Woodhead, Z. V. (2019). How does iReadMore therapy change the reading network of patients with central alexia?. *Journal of Neuroscience*, 39(29), 5719-5727. <https://www.jneurosci.org/content/jneuro/39/29/5719.full.pdf>
- Khalil, J. A. (2020). Syntactic Analysis of Grammatical Mistakes in English Writing among Iraqi EFL Undergraduate Students. *The Asian ESP Journal*, 298.
- Khanum, K., & Siddiqui, F. H. (2018). Difficulties of students in English as a medium, a sociolinguistic study of the government colleges in the rural areas of Quetta and Zhob divisions of Baluchistan. *International journal of social sciences*, 1(1), 18-30. <https://doi.org/10.31295/ijss.v1n1.14>
- Kikas, E., Pakarinen, E., Soodla, P., Peets, K., & Lerkkanen, M. K. (2018). Associations between reading skills, interest in reading, and teaching practices in first grade. *Scandinavian Journal of Educational Research*, 62(6), 832-849.
- Kim, A. S., Binns, M. A., & Alain, C. (2012). Neuroelectric evidence for cognitive association formation: an event-related potential investigation. *PloS one*, 7(4), e34856. Retrieved from <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0034856&type=printable>
- Kim, J. S., Hemphill, L., Troyer, M., Thomson, J. M., Jones, S. M., LaRusso, M. D., & Donovan, S. (2017). Engaging struggling adolescent readers to improve reading skills. *Reading Research Quarterly*, 52(3), 357-382. DOI:10.1002/rrq.171

- Kim, S. Y. (2017). ESL college learners' interactive perspective and its influence on reading-writing practices and development. *Linguistic Research*, 34, 1-24. DOI: 10.17250/khisli.34..201709.001
- Klichowski, M., & Patrício, C. (2017). *Does the human brain really like ICT tools and being outdoors? A brief overview of the cognitive neuroscience perspective of the Cyber Parks concept*. Retrieved from [https://www.um.edu.mt/library/oar/bitstream/123456789/47033/1/Does the human brain really like ICT tools and being outdoors %20A brief overview of the e%20 cognitive neuroscience perspective 2017.pdf](https://www.um.edu.mt/library/oar/bitstream/123456789/47033/1/Does_the_human_brain_really_like_ICT_tools_and_being_outdoors_%20A_brief_overview_of_the_cognitive_neuroscience_perspective_2017.pdf)
- Korkmaz1 & Karatepe, (2018). The Impact of Multi-sensory Language Teaching on Young English Learners' Achievement in Reading Skills. *Novitas-ROYAL (Research on Youth and Language)*, 12(2), 80-95.
- Kothari.C.R. (2008). *Research Methodology Methods and Techniques*. New Delhi: New age international (P) limited, Publishers.
- Koukourikou, M., Manoli, P., & Griva, E. (2018). Explicit collaborative reading strategy instruction: A pilot intervention in the EFL context. *Research Papers in Language Teaching & Learning*, 9(1). Retrieved from <http://rpplt.leap.gr/>
- Krishnaveni, Anandha, A.R, & Maheswari, D. G. (2018). A Study on Learning Difficulties of High School Students in English Language Learning. *Journal of AKCE*, 1(2). Retrieved from http://www.akcequest.com/wp-content/uploads/AKCE_V1_N2_002.pdf
- Kuhl, P.K. (2011). Early Language Learning and Literacy: Neuroscience Implications for Education. *Mind Brain Education*, 5(3): 128–142. DOI:10.1111/j.1751-228X.2011.01121.x.
- Kumar, T. V. (2017). Difficulties in teaching English to rural students. *International Journal of Research and Analytical Reviews*, 4 (1), 31-41. Retrieved from <http://www.ijrar.org/papers/IJRAR1903996.pdf>
- Kweldju, S. (2019). EDUCATIONAL NEUROSCIENCE FOR SECOND LANGUAGE CLASSROOMS. *J-ELLiT (Journal of English Language, Literature, and Teaching)*, 3(2), 1-9. Retrieved from <http://journal2.um.ac.id/index.php/jellit/article/view/11567/pdf>

- Latha, M. (2018). Importance of English Language in India: It's Role in Present Scenario. *International Journal of Advance Engineering and Research Development*, 5(2). Retrieved from http://www.ijaerd.com/papers/special_papers/ICTIMES020.pdf
- Li, H., Qu, J., Chen, C., Chen, Y., Xue, G., Zhang, L., ... & Mei, L. (2019). Lexical learning in a new language leads to neural pattern similarity with word reading in native language. *Human Brain Mapping*, 40(1), 98-109. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1002/hbm.24357>
- Li, T. K., Chung, S. T., & Hsiao, J. H. W. (2016). Music reading expertise modulates visual spans in both music note and English letter reading. In *Proceedings of the 38th Annual Conference of the Cognitive Science Society, CogSci 2016*. Cognitive Science Society. Retrieved from <http://mindmodeling.org/cogsci2016/index.html>. <https://cogsci.mindmodeling.org/2016/papers/0265/paper0265.pdf>
- Liao, S., Kruger, J. L., & Doherty, S. (2020). The impact of monolingual and bilingual subtitles on visual attention, cognitive load, and comprehension. *Journal of Specialised Translation*, 33, 70-98. Retrieved from https://www.jostrans.org/issue33/art_liao.pdf
- Liew, S. L., Thompson, T., Ramirez, J., Butcher, P. A., Taylor, J. A., & Celnik, P. A. (2018). Variable neural contributions to explicit and implicit learning during visuomotor adaptation. *Frontiers in neuroscience*, 12, 610. Retrieved from <https://doi.org/10.3389/fnins.2018.00610>
- Lin, J., Chan, S. K., Lee, E. H., Chang, W. C., Tse, M., Su, W. W., ... & Khong, P. L. (2015). Aerobic exercise and yoga improve neurocognitive function in women with early psychosis. *NPJ schizophrenia*, 1(1), 1-7.
- Lin, S. F. (2018). The Effect of Group Work on English Vocabulary Learning. *Journal of Education and Learning*, 7(4), 163-178. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1179662.pdf>
- Lisle, A.M. (2006). Cognitive Neuroscience in Education: Mapping neuro-cognitive processes and structures to learning styles, can it be done? Retrieved from <http://www.leeds.ac.uk/educol/documents/157290.htm>

- Liu, B. (2016). Application of Associative Teaching Strategy in College English Vocabulary Teaching. *Open Journal of Modern Linguistics*, 6(03), 225. <http://dx.doi.org/10.4236/ojml.2016.63024>
- Liu, L. (2018). Teaching EFL reading skills with instructional scaffolding microlectures: Chinese non-English major undergraduates' performances and perceptions. *Advances in Social Sciences Research Journal*, 5(1).
- Llorente, A. M. P., Gómez, M. C. S., & García-Peñalvo, F. J. (2016). Assessing the effectiveness of interactive and collaborative resources to improve reading and writing in English. *International Journal of Human Capital and Information Technology Professionals (IJHCITP)*, 7(1), 66-85. Retrieved from https://www.researchgate.net/profile/Francisco_Garcia-Penalvo/publication/316118440_Assessing_the_Effectiveness_of_Interactive_and_Collaborative_Resources_to_Improve_Reading_and_Writing_in_English/links/58f1f2b30f7e9b6f82df1dd9/Assessing-the-Effectiveness-of-Interactive-and-Collaborative-Resources-to-Improve-Reading-and-Writing-in-English.pdf
- Longcamp, M., Velay, J. L., Berninger, V. W., & Richards, T. (2016). Neuroanatomy of handwriting and related reading and writing skills in adults and children with and without learning disabilities: French-American connections. *Pratiques. Linguistique, littérature, didactique*, (171-172). Retrieved from <https://journals.openedition.org/pratiques/3175>
- Luria, A. (1974). *El cerebro en acción* (5th ed.). Barcelona: Editorial Fontanella.
- Maduabuchi, C. H., & Emechebe, V. I. (2016). ICT and the Teaching of Reading Comprehension in English as a Second Language in Secondary Schools: Problems and Prospects. *International Journal of Education and Literacy Studies*, 4(3), 18-23. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1149221.pdf>
- Mahadi, T. S. T., Husain, F. M., Jaganathan, P., Hassan, A., Fesal, S. N. H. S., & Mohamad, A. (2018). Developing narrative writing skills via a reading programme for low english language proficiency undergraduates. *GEMA Online® Journal of Language Studies*, 18(2). Retrieved from <http://doi.org/10.17576/gema-2018-1802-01>

- Mahapatra, S., & Mishra, S. (2019). *Teaching in Higher Education Critical Perspectives Articulating identities-the role of English language education in Indian universities*. Retrieved from <https://doi.org/10.1080/13562517.2018.1547277>
- Malik, M and Din, N (2019). Writing Skills Development among Students with Deafness at Elementary Level. *Bulletin of Education and Research*, 41(1), 1-16. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1217863.pdf>
- Mancilla-Martinez, J., Hwang, J. K., Oh, M. H., & McClain, J. B. (2019). Early elementary grade dual language learners from Spanish-speaking homes struggling with English reading comprehension: The dormant role of language skills. *Journal of Educational Psychology*.
- Marashi, H., & Khatami, H. (2017). Using cooperative learning to boost creativity and motivation in language learning. *Journal of Language and Translation*, 7(1), 43-58. Retrieved from http://tlt.azad.ac.ir/article_529573_7dcf06f1f8f0f9222e44bc6e5cb4b653.pdf
- Maria, A. (2019). Implementing English Morphological Awareness of Derivation in the Teaching of Vocabulary for Adult Learners. *Journal of ELT Research: The Academic Journal of Studies in English Language Teaching and Learning*, 4 (2), 178-188. DOI: 10.22236/JER_Vol4Issue2pp178-188
- Martin, R. E., & Ochsner, K. N. (2016). The neuroscience of emotion regulation development: Implications for education. *Current opinion in behavioral sciences*, 10, 142-148. DOI:10.1016/j.cobeha.2016.06.006.
- Mathews, S. M. (2018). Language Skills and Secondary Education in India. *Economic and political weekly*, LIII (15), 20-22. Retrieved from https://www.researchgate.net/profile/Sajit_M_Mathews/publication/324538650_Language_Skills_and_Secondary_Education_in_India/links/5ad4815f458515c60f5408b1/Language-Skills-and-Secondary-Education-in-India.pdf
- May, R. W., Hutchinson, M., Seibert, G. S., Fincham, F., & Sanchez-Gonzalez, M. A. (2017). Improving cognitive performance via high intensity interval aerobic exercise: A randomized controlled trial. *J Exerc Physiol Online*, 20, 141-147. Retrieved from https://www.asep.org/asep/asep/JEPonlineOCTOBER2017_Sanchez-Gonzalez.pdf

- McCandliss, B.D., Cohen, L., Dehaene, S., 2003. The visual word form area: expertise for reading in the fusiform gyrus. *Trends Cognitive Science*, 7, 293–299. Retrieved from [http://dx.doi.org/10.1016/S1364-6613\(03\)00134-7](http://dx.doi.org/10.1016/S1364-6613(03)00134-7).
- Melnichuk, M. V., Osipova, V. M., & Kondrakhina, N. G. (2017). Market-oriented LSP training in higher education: towards higher communicative skills. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(8), 5073-5084. Retrieved from <http://www.ejmste.com/,76380,0,2.html>
- Memiş, A., & Sivri, D. A. (2016). The analysis of reading skills and visual perception levels of first grade Turkish students. *Journal of Education and Training Studies*, 4(8), 161-166. Retrieved from <http://dx.doi.org/10.11114/jets.v4i8.1663>
- Metsala, J. L., Parrila, R., Conrad, N. J., & Deacon, S. H. (2019). Morphological awareness and reading achievement in university students. *Applied Psycholinguistics*, 40(3), 743-763. Retrieved from <https://doi.org/10.1017/S0142716418000826>
- Mishra, B. (2015). Innovative ways of English language teaching in rural India through technology. *International Journal of English and Literature*, 6(2), 38-44. Retrieved from https://www.researchgate.net/profile/Binod_Mishra/publication/287972354_Innovative_ways_of_English_language_teaching_in_rural_India_through_Technology/links/5a8ac0c9a6fdcc6b1a42d53b/Innovative-ways-of-English-language-teaching-in-rural-India-through-Technology.pdf
- Mishra, J., Sagar, R., Parveen, S., Kumaran, S., Modi, K., Maric, V., ... & Gazzaley, A. (2020). Closed-loop digital meditation for neurocognitive and behavioral development in adolescents with childhood neglect. *Translational psychiatry*, 10(1), 1-13. Retrieved from <https://doi.org/10.1038/s41398-020-0820-z>
- Mittal, S., Lamb, A., Goyal, A., Voleti, V., Shanahan, M., Lajoie, G., ... & Bengio, Y. (2020). Learning to combine top-down and bottom-up signals in recurrent neural networks with attention over modules. *arXiv preprint arXiv:2006.16981*. Retrieved from <https://arxiv.org/pdf/2006.16981.pdf>
- MohdYussof, Y., RasidJamian, A., Roslan, S., Hamzah, Z. A. Z., & KamarulKabilan, M. (2012). Enhancing Reading Comprehension through Cognitive and Graphic Strategies: A Constructivism Approach. *Procedia - Social and Behavioral*

Sciences, 64, 151–160. Retrieved from
<https://doi.org/10.1016/j.sbspro.2012.11.018>

Moreira, B. F. T., Pinto, T. S. D. S., Justi, F. R., & Jaeger, A. (2019). Retrieval practice improves learning in children with diverse visual word recognition skills. *Memory*, 27(10), 1423-1437. Retrieved from
<https://doi.org/10.1080/09658211.2019.1668017>

Morgan-Short, K., Steinhauer, K., Sanz, C., & Ullman, M. T. (2012). Explicit and implicit second language training differentially affect the achievement of native-like brain activation patterns. *Journal of cognitive neuroscience*, 24(4), 933-947, DOI:10.1162/jocn_a_00119.

Mountoufaris, G., Canzio, D., Nwakeze, C. L., Chen, W. V., & Maniatis, T. (2018). Writing, reading, and translating the clustered protocadherin cell surface recognition code for neural circuit assembly. *Annual review of cell and developmental biology*, 34, 471-493. Retrieved from
<https://www.annualreviews.org/doi/pdf/10.1146/annurev-cellbio-100616-060701>

Mowla.S., Rao, P. & Sarojini, B.B. (2012). *Methods of Teaching English*. New Delhi: Neelkamal Publications PVT. LTD.

Mueller, J. L., Friederici, A. D., & Männel, C. (2012). Auditory perception at the root of language learning. *Proceedings of the National Academy of Sciences*, 109(39), 15953-15958. Retrieved from
<https://www.pnas.org/content/pnas/109/39/15953.full.pdf>

Muflih, M. K. M. (2019). The Effectiveness of Using Visual Organizations in Improving Reading and Writing Skills for Students with Learning Disabilities from the Teachers' Point of View. *International Education Studies*, 12(3), 135-147. Retrieved from <https://doi.org/10.5539/ies.v12n3p135>

Mujis, D. (2004). *Doing Quantitative Research in Education: with SPSS*. SAGE publications.

Mukhlif, Z., & Amir, Z. (2017). Investigating the metacognitive online reading strategies employed by Iraqi EFL undergraduate students. *Arab World English Journal (AWEJ)* Volume, 8. Retrieved from
https://www.researchgate.net/profile/Zaini_Amir/publication/315941162_Investigating_the_Metacognitive_Online_Reading_Strategies_employed_by_Iraqi_EFL_Un

[dergraduate_Students/links/5992b131a6fdcc53b79b7641/Investigating-the-Metacognitive-Online-Reading-Strategies-employed-by-Iraqi-EFL-Undergraduate-Students.pdf](#)

- Myers, J. C., Mock, J. R., & Golob, E. J. (2020). Sensorimotor integration can enhance Auditory perception. *Scientific reports*, 10(1), 1-13. Retrieved from <https://www.nature.com/articles/s41598-020-58447-z.pdf>
- Nabizadeh, A., Taghinezhad, A., & Azizi, M. (2016). the effect of implicit/explicit instruction on learning English grammar. *Modern Journal of Language Teaching Methods*, 6(4), 218.
- Naglieri, J. A., & Das, J. P. (2005). *Planning, Attention, Simultaneous, Successive (PASS) Theory: A Revision of the Concept of Intelligence*. In D. P. Flanagan & P. L. Harrison (Eds.), *Contemporary Intellectual Assessment: Theories, Tests, and Issues*, The Guilford Press, 120-135. Retrieved from <https://pedverket.no/wp-content/uploads/2016/08/PASS-Theory-Chapter-2004c-1.pdf>
- Naglieri, J.A., and Das, J.P.(1997). *Intelligence revised: The planning, attention, simultaneous, successive (PASS) cognitive processing theory*. In: Dillon RF, editor. *Handbook on Testing*. Westport, CT: Greenwood Press, 136–163.
- National Council of Educational Research and Training (2011). *National Curriculum Framework 2005*, (No. id: 1138).
- Naveenkumar, N. (2020). PASS Theory of Intelligence and Academic Achievement: A Meta-Analytic Review. Retrieved from https://era.library.ualberta.ca/items/0620117b-da43-4aed-bfe6-8f008d742b72/view/334916de-8b33-4da7-9999-905bef9a576a/Naveenkumar_Nithya_202003_MEd.pdf
- Nikolopoulou, K., Akriotou, D., & Gialamas, V. (2019). Early Reading Skills in English as a Foreign Language Via ICT in Greece: Early Childhood Student Teachers' Perceptions. *Early Childhood Education Journal*, 47(5), 597-606.
- Nowrouzi, S., Tam, S. S., Zareian, G., & Nimehchisalem, V. (2015). Iranian EFL students' listening comprehension problems. *Theory and Practice in language studies*, 5(2), 263-269. Retrieved from <http://dx.doi.org/10.17507/tpls.0502.05>

- Ntereke, B. B., & Ramoroka, B. T. (2017). Reading competency of first-year undergraduate students at University of Botswana: A case study. *Reading & Writing*, 8(1), 1-11. <http://www.scielo.org.za/pdf/rw/v8n1/01.pdf>
- Nugraheni, R. A. H., & Priyana, J. (2017). Developing interactive reading and writing learning multimedia for “Bahasa Inggris” grade x of senior high school. *Diksi*, 25(1).
- Nwokenna, E. N., Nwosu, N., Igbokwe, U. L., Victor-Aigbodion, V., Nnamani, O., & Nwefuru, B. C. (2019). Music Intervention for Perceived Stress Among English Education Students. *Global Journal of Health Science*, 11(8), 23-28. Retrieved from <https://doi.org/10.5539/gjhs.v11n8p23>
- Olentsova, J. A. (2019). Using information technology in teaching foreign language grammar. *АГПАФНОЇ* *НАУКИ*, 473. <http://www.kgau.ru/new/all/konferenc/konferenc/2019/g31.pdf>
- Oliver, R., & Young, S. (2016). Improving Reading Fluency and Comprehension in Adult ESL Learners Using Bottom-Up and Top-Down Vocabulary Training. *Studies in Second Language Learning and Teaching*, 6(1), 111-133. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1134397.pdf>
- Olson, C. B., & Land, R. (2007). A cognitive strategies approach to reading and writing instruction for English language learners in secondary school. *Research in the Teaching of English*, 269-303.
- Ortiz, Y. O. O. (2019). A Neurocognitive Video Game Intervention Effects on the Reading Skills and Cognitive Abilities of English Language Learners. *Revista Puertorriqueña de Psicología*, 30(1), 122-137. Retrieved from <https://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=19462026&AN=138473744&h=JOb3Tvo2aKLD78R9pcJONqjmuoT%2fHxNldyIKekKqeI9WlNnJm28koO%2bGO%2bbJvK7VlCImch0i%2ba4vVGifKXC5YQ%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d19462026%26AN%3d138473744>
- Ostrolenk, A., d’Arc, B. F., Jelenic, P., Samson, F., & Mottron, L. (2017). Hyperlexia: Systematic review, neurocognitive modelling, and outcome. *Neuroscience & Biobehavioral Reviews*, 79, 134-149. Retrieved from

<https://reader.elsevier.com/reader/sd/pii/S014976341630639X?token=D15960DA897AC8A69916C17D9C1AFAD4DA262F94A4B4B4F766BDF2A245C395240333D7B6F9CBC8403E4DB4DAF21263C7E>

- Otero, T. M., Gonzales, L., & Naglieri, J. A. (2013). The neurocognitive assessment of Hispanic English-language learners with reading failure. *Applied Neuropsychology: Child*, 2(1), 24-32. DOI: 10.1080/21622965.2012.670547
- Pae, T. I. (2019). A simultaneous analysis of relations between L1 and L2 skills in reading and writing. *Reading Research Quarterly*, 54(1), 109-124.
- Paulraj, Joseph Milton (2016) *Development of technology enabled psycho NLP for developing spoken English among std. IX students*. Doctoral Thesis submitted to Bharathidasan University, Tiruchirappalli, Tamilnadu, India.
- Pawlak, M. (2019). Grammar learning strategies as a key to mastering second language grammar: A research agenda. *Language Teaching*, 1-13. DOI:10.1017/S0261444819000314
- Perkins, K., & Jiang, X. (2019). Neuroimaging and Reading Comprehension. *Online Submission*, 8(2), 74-94. Retrieved from <https://files.eric.ed.gov/fulltext/ED602247.pdf>
- Persaud, N. (2010). Primary data source. In N. Salkind (Ed.), *Encyclopedia of research design*. (pp. 1095-1098). Thousand Oaks, CA: SAGE Publications, Inc
- Petrus, S. L., & Shah, P. M. (2020). Relationship between Reading Anxiety, Reading Strategies and Language Competence of Rural ESL Secondary Learners. *Creative Education*, 11(2), 126-142. Retrieved from <https://doi.org/10.4236/ce.2020.112010>
- Pham, H. T., & Nguyen, H. B. (2018). Teachers' perceptions about power point use as an ICT tool for teaching vocabulary in Vietnam. *European Journal of Foreign Language Teaching*. Retrieved from <https://oapub.org/edu/index.php/ejfl/article/viewFile/2012/4649>
- Pirnay-Dummer, P., & Ifenthaler, D. (2011). Reading guided by automated graphical representations: How model-based text visualizations facilitate learning in reading comprehension tasks. *Instructional Science*, 39(6), 901-919. Retrieved from <https://link.springer.com/article/10.1007/s11251-010-9153-2>

- Plis, S. M., Amin, M. F., Chekroud, A., Hjelm, D., Damaraju, E., Lee, H. J., ... & Calhoun, V. D. (2018). Reading the (functional) writing on the (structural) wall: multimodal fusion of brain structure and function via a deep neural network based translation approach reveals novel impairments in schizophrenia. *Neuroimage*, 181, 734-747. DOI:10.1016/j.neuroimage.2018.07.047
- Plourde, V., Boivin, M., Brendgen, M., Vitaro, F., Robaey, P., Tremblay, R. E., & Dionne, G. (2018). Cognitive mechanisms underlying the associations between inattention and reading abilities. *Developmental neuropsychology*, 43(1), 92-105. Retrieved from <https://doi.org/10.1080/87565641.2017.1422508>
- Ponmozhi, D., & Thenmozhi, A. (2017). Difficulties Faced By the Rural Students in Learning English at High School Level. *IOSR Journal of Humanities and Social Science*, 22(6), 31-34. DOI: 10.9790/0837-2206133134
- Pontifex, M. B., Saliba, B. J., Raine, L. B., Picchietti, D. L., & Hillman, C. H. (2013). Exercise improves behavioral, neurocognitive, and scholastic performance in children with attention-deficit/hyperactivity disorder. *The Journal of pediatrics*, 162(3), 543-551. DOI:10.1016/j.jpeds.2012.08.036.
- Pugh, K. R., Mencl, W. E., Jenner, A. R., Katz, L., Frost, S. J., Lee, J. R., et al. (2001). Neurobiological studies of reading and reading disability. *Journal of Communication Disorders*, 34(6), 479-492. Retrieved from [https://doi.org/10.1016/S0021-9924\(01\)00060-0](https://doi.org/10.1016/S0021-9924(01)00060-0).
- Qasem, F. A. A., & Zayid, E. I. M. (2019). The Challenges and Problems Faced by Students in the Early Stage of Writing Research Projects in L2, University of Bisha, Saudi Arabia. *European Journal of Special Education Research*. Retrieved from <http://dx.doi.org/10.5281/zenodo.2557036>
- Qrquez, M., & Ab Rashid, R. (2017). Reading comprehension difficulties among EFL learners: The case of first and second year students at Yarmouk University in Jordan. *Arab World English Journal (AWEJ) Volume*, 8. Retrieved from <https://awej.org/images/AllIssues/Volume8/Volume8number3September/27.pdf>
- R. D., & Carson, R. G. (2017). Sensorimotor learning: neurocognitive mechanisms and individual differences. *Journal of neuroengineering and rehabilitation*, 14(1), 74. Retrieved from <https://jneuroengrehab.biomedcentral.com/track/pdf/10.1186/s12984-017-0279-1>

- Radel R, Tempest G, Denis G, Besson P, Zory R (2017). Extending the limits of force endurance: Stimulation of the motor or the frontal cortex? *Cortex*, 97, 96-108.
- Rahimi, M., & Farjadnia, F. (2019). The Effect of Interactive Read-alouds on Language Learners' Development of Writing Skill. *International Journal of Applied Linguistics and English Literature*, 8(3), 5-11. Retrieved from <http://dx.doi.org/10.7575/aiac.ijalel.v.8n.3p.5>
- Rahmat, N. H. (2019). Problems with rhetorical problems among academic writers. *American Journal of Social Sciences and Humanities*, 4(4), 506-515. <https://d1wqtxts1xzle7.cloudfront.net/60928843/AMERICAN RHETORICAL PROBLEMS HANIM OCT 201920191016-27682-r8nygp.pdf?1571294980=&response-content->
- Rajab, A., Rahman, H. A., Wahab, S. R. A., Nor, F. M., Zarina, W., Zakaria, W., & Rajim, W. Z. (2017). Metacognitive reading strategies among undergraduates. *International Journal of Information and Education Technology*, 7(7), 548-551. <https://d1wqtxts1xzle7.cloudfront.net/52041193/Metacognitive Reading Strategies among Undergraduates.pdf?1488793238=&response-content->
- Rajan, S. (2019). Academic Problems Encountered by Rural Students. *Shanlax International Journal of Education*, 7(2), 15-19. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1245147.pdf>
- Ramganes, E. (2003). *Effect of Metacognitive orientation on enhancing Problem Solving Competency in mathematics among the B.Ed. trainees*. Doctoral Thesis submitted to Alagappa University, Karaikudi, Tamilnadu, India.
- Ramganes, E., & Hariharan, C. (2020). Neurocognition in Education: Linking college teachers' awareness in Neurocognitive strategies to their teaching, can it be done?. *Gedrag & Organisatie Review*, 33 (2), 2695-2717. Retrieved from <https://www.doi.org/10.37896/GOR33.02/572>
- Ramganes, E., and Hariharan. C. (2021). Rural Undergraduate ESL Students' Difficulties of Understanding and Writing the Graphical Representation. *Education India Journal: A Quarterly Refereed Journal of Dialogues on Education*, 10 (2), 324-333.

- Rao, S. (2018). Reading is power. *The Hindu Business line*. Retrieved from <https://www.thehindubusinessline.com/opinion/columns/from-the-viewsroom/reading-is-power/article10040199.ece>
- Rao,P.A., (2018). English language teaching in India: The problems and prospects. *Journal of English Language and Literature*, 5 (3), 109-112. Retrieved from <http://joell.in/wp-content/uploads/2018/11/109-112-ENGLISH-LANGUAGE-TEACHING-IN-INDIA.pdf>
- Raoofi, S., Miri, A., Gharibi, J., & Malaki, B. (2017). Assessing and validating a writing strategy scale for undergraduate students. *Journal of Language Teaching and Research*, 8(3), 624-633. Retrieved from <http://dx.doi.org/10.17507/jltr.0803.23>
- Rastle, K. (2019). EPS mid-career prize lecture 2017: Writing systems, reading, and language. *Quarterly Journal of Experimental Psychology*, 72(4), 677-692. Retrieved from <https://doi.org/10.1177/1747021819829696>
- Richlan, F. (2020). The Functional Neuroanatomy of Developmental Dyslexia Across Languages and Writing Systems. *Frontiers in Psychology*, 11, 155. Retrieved from <https://doi.org/10.3389/fpsyg.2020.00155>
- Rinekso, A. B., & Kurniawan, E. (2020). Fostering language learner autonomy through the involvement of ICT: Teachers' perception. *ELTR Journal*, 4(2), 103-116. DOI: doi.org/10.37147/eltr.2020.040201
- Robins, R.H. (1985). *General Linguistics- An Introductory Survey*, London: Longman.
- Romeo, R. R., Christodoulou, J. A., Halverson, K. K., Murtagh, J., Cyr, A. B., Schimmel, C., ... & Gabrieli, J. D. (2018). Socioeconomic status and reading disability: Neuroanatomy and plasticity in response to intervention. *Cerebral Cortex*, 28(7), 2297-2312. Retrieved from https://scholar.google.com/scholar?start=10&q=second+language+students+%2B+reading+disability&hl=en&as_sdt=0,5&as_ylo=2016
- Rosário, A. C., Candeias, A. A., & Roazzi, A. (2015). Cognitive Assessment System (CAS): Psychometric studies with Portuguese children from 7 to 15 years. In A. Roazzi, B. C. de Souza, W. Bilsky (Eds.). *Facet Theory: Searching for Structure in Complex Social, Cultural and Psychological Phenomena*, Editora Universitária da UFPE. 250-266.

- Rozimela, Y., & Wahyuni, D. (2019). The Relationship Between Students' Perceived Needs, Their Learning Preferences and Their Ability of Writing Academic Text. *International Journal on Studies in English Language and Literature*, 7(2), 1-9. Retrieved from <http://dx.doi.org/10.20431/2347-3134.0702001>
- Rungsinanont, S. (2020). Comparative Study of Factors and Problems Affecting Ability of Undergraduate Students at RMUTL Tak to Read English Language Journals. *Journal of Education and e-Learning Research*, 7(4), 446-455. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1278526.pdf>
- Rustipa, K. (2017). EFL Students' Sentence Writing Accuracy: Can "Text Analysis" Develop It?. *International Journal of English Linguistics*, 7(1), p126. Retrieved from <http://dx.doi.org/10.5539/ijel.v7n1p126>
- Sadaffunisha, S. A., and Vijayakumar, S. (2020). Effective Models of Reading: An Intervention Research. *Gedrag & Organisatie Review*, 33 (2), 1041. Retrieved from <http://lemma-tijdschriften.nl/>
- Sajid, M. K. M., & Kassim, H. (2019). Comparison of Reading Aloud Strategies Versus Silent Reading Strategies Used on Pakistani University Students' reading Comparison for Reading Proficiency & Literal Reading Skills. *European Journal of Education Studies*, 5 (9), 112-130. DOI:10.5281/zenodo.2541862
- Saleh, S. T. (2019). Chat and learn: Effectiveness of using Whatsapp as a pedagogical tool to enhance EFL learners' reading and writing skills. *International Journal of English Language and Literature Studies*, 8 (2), 61-68. Retrieved from DOI: 10.18488/journal.23.2019.82.61.68
- Samad, I. A., Jannah, M., & Fitriani, S. S. (2017). EFL students' strategies dealing with common difficulties in TOEFL reading comprehension section. *International Journal of Language Education*, 1(1). Retrieved from <https://ojs.unm.ac.id/ijole/article/viewFile/2869/1555>
- Sapir, E. (1949). *Selected Writings*, Berkeley: university of California Press.
- Sapitri, R., & Amin, T. S. (2018). Students' critical thinking skills as reflected on their IELTS reading test: case study at University of Muslim Nusantara Al-Wasliyah. *English Language Teaching and Research*, 2(1).

- Sari, E. M. P. (2018). Increasing the Students' Writing Narrative Text Ability Through Brainstorming Technique. *Pedagogy: Journal of English Language Teaching*, 5(2), 149-155.
- Sasikumar, N., Fathima, P.M., and Mohan, M. (2016). Effect of Neurocognitive Intervention Strategies on Enhancing Teaching Competency among Graduate Teacher Trainees. *American Journal of Educational Research*, 4 (11), 785-791. Retrieved from <http://pubs.sciepub.com/education/4/11/2/index.html>
- Sawi, O. M., & Rueckl, J. (2019). Reading and the neurocognitive bases of statistical learning. *Scientific Studies of Reading*, 23(1), 8-23. Retrieved from https://www.tandfonline.com/doi/pdf/10.1080/10888438.2018.1457681?casa_token=791QjGLDrecAAAAA:L47qr-Ue9ZyrnhkVvWvko_2uj6JI7czXh5IHjQ0LJW8TzGTMQ0zB8IOEYjw7U8PHPPORLloSus-VFQ
- Schoonen, R. (2019). Are reading and writing building on the same skills? The relationship between reading and writing in L1 and EFL. *Reading and Writing*, 32(3), 511-535. Retrieved from <https://doi.org/10.1007/s11145-018-9874-1>
- Schubert, T., Reilhac, C., & McCloskey, M. (2018). Knowledge about writing influences reading: Dynamic visual information about letter production facilitates letter identification. *Cortex*, 103, 302-315.
- Sermsook, K., Liamnimit, J., & Pochakorn, R. (2017). An Analysis of Errors in Written English Sentences: A Case Study of Thai EFL Students. *English Language Teaching*, 10(3), 101-110. Retrieved from <http://dx.doi.org/10.5539/elt.v10n3p101>
- Shadik, J. A., Garlington, S. B., Cluse-Tolar, T., & Abraham, G. (2018). Understanding Writing Challenges of Rural MSW Students: Preparing Students for Ethical Practice. *Contemporary Rural Social Work*, 10(1). Retrieved from https://digitalcommons.murraystate.edu/crsw/vol10/iss1/1?utm_source=digitalcommons.murraystate.edu%2Fcrsw%2Fvol10%2Fiss1%2F1&utm_medium=PDF&utm_campaign=PDFCoverPages
- Shakoori, M., Kadivar, P., & Sarami, R. (2017). The effect of concept mapping strategy as a graphical tool in writing achievement among EFL learners. *International Journal*

of *Information and Education Technology*, 7(5), 357. Retrieved from <http://www.ijiet.org/vol7/894-T004.pdf>

Shanahan, T., & Lomax, R. G. (1988). A developmental comparison of three theoretical models of the reading-writing relationship. *Research in the Teaching of English*, 22(2), 196-212. Retrieved from <http://www.jstor.com/stable/40171402>

Sharafi-Nejad, M., Raftari, S., Ismail, S. A. M. M., & Eng, L. S. (2016). Prior knowledge activation through brainstorming to enhance Malaysian EFL learners' reading comprehension. *International Journal of Linguistics*, 8(2), 187-198. Retrieved from <http://dx.doi.org/10.5296/ijl.v8i2.9397>

Sharma, R. (2001). *The Monk who Sold his Ferrari*, Vol.1, Mumbai: Jaico Publications.

Sharma, R.S.(2007). Teaching of English: Language and Literature teaching. Meerut: R. Lall Book Depot.

Sharma, V. (2019). Challenges in Teaching Communication Skills (English) to Undergraduate Students in Himachal Pradesh (India). *Indian Journal of Applied Research*, 9(10), 25-26. DOI : 10.36106/ijar

Sharoh, D., Van Mourik, T., Bains, L. J., Segaert, K., Weber, K., Hagoort, P., & Norris, D. G. (2019). Laminar specific fMRI reveals directed interactions in distributed networks during language processing. *Proceedings of the National Academy of Sciences*, 116(42), 21185-21190. Retrieved from <https://www.pnas.org/content/pnas/116/42/21185.full.pdf>

Shenoy, S., Wagner, R. K., & Rao, N. M. (2020). Factors that influence reading acquisition in L2 english for students in Bangalore, India. *Reading and Writing*, 1-30. Retrieved from <https://doi.org/10.1007/s11145-020-10047-z>

Sholeha, M., Ghozali, I., & Mahbub, M. A. (2019). Undergraduate Students' Difficulties in Writing Descriptive Paragraph. *LINGUAPEDIA: Journal of English Education, Literature, and Linguistics Studies*, 1(1).

Sieh, Y. C. (2016). Comparison of Word Recognition Strategies in EFL Adult Learners: Orthography vs. Phonology. *Taiwan Journal of TESOL*, 13(2), 35-69. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1143817.pdf>

Silva, L. H. R., & Roehr-Brackin, K. (2016). Perceived learning difficulty and actual performance: Explicit and implicit knowledge of L2 English grammar points

- among instructed adult learners. *Studies in Second Language Acquisition*, 38(2), 317-340. Retrieved from http://repository.essex.ac.uk/20759/1/Repository_Rodriguez_Silva_Roehr-Brackin_2016_SSLA.pdf
- Singh, G. P. R. (2019). Acquisition of English by Teaching LSRW Skills. *Language in India*, 19 (4), 296-299. Retrieved from <http://www.languageinindia.com/april2019/princemasteringlangaugeskills.pdf>
- Singh, P., & Pauranik, A. (2017). Effect of reading and writing based treatment approaches on verbal output. *J Neurol Neurosci*, 8, 194. Retrieved from <https://doi.org/10.21767/2171-6625.1000194>
- Singh, R. (2017). Status of Indian Education System in Globalisation. *Journal of Globalization Studies*, 8(2), 124-131. Retrieved from <https://cyberleninka.ru/article/n/status-of-indian-education-system-in-globalisation>
- Smalle, E. H., Panouilleres, M., Szmalec, A., & Möttönen, R. (2017). Language learning in the adult brain: disrupting the dorsolateral prefrontal cortex facilitates word-form learning. *Scientific reports*, 7(1), 1-9. DOI:10.1038/s41598-017-14547-x
- Song, M. J. (1998). Teaching reading strategies in an ongoing EFL university reading classroom. *Asian Journal of English Language Teaching*, 8(1), 41-54. Retrieved from <https://www.cuhk.edu.hk/ajelt/vol8/art3.htm>
- Soomro, A. H., Khan, I., & Younus, M. (2019). Top down, bottom up and classroom reading anxiety and their effect on reading performance of undergraduate engineering students in Pakistan. *Journal of Applied Research in Higher Education*. Retrieved from https://www.emerald.com/insight/content/doi/10.1108/JARHE-07-2018-0138/full/html?casa_token=x3Nbp2YKsJIAAAAA:VQmTKOxP8pG3mbW5ERohqQgOpw38Y1n673JD6jUKNfG7i56VpDfinLlv1X3vdmaeWXzzaGsineKIrtEX5jG8NlyIILklWjaUOokit7PDOLfYnFphuJLQ
- Spencer, M., & Wagner, R. K. (2017). The comprehension problems for second language learners with poor reading comprehension despite adequate decoding: A meta analysis. *Journal of research in reading*, 40(2), 199-217. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5408953/pdf/nihms-826861.pdf>

- Sripongwiwat, S., Bunterm, T., Srisawat, N., & Tang, K. N. (2016). The constructionism and neurocognitive-based teaching model for promoting science learning outcomes and creative thinking. In *Asia-Pacific Forum on Science Learning and Teaching*, 17 (2), 1-33. Retrieved from https://www.eduhk.hk/apfslt/download/v17_issue2_files/tassanee.pdf
- Straková, Z. (2013). Developing cognitive strategies in foreign language education. *Journal of Language and Cultural Education*, 1(1), 37-50. Retrieved from <http://files.jolace.webnode.sk/200000007-3c9db3d95a/Jolace-2013-1-2.pdf>
- Strijkers, K., & Costa, A. (2012). The neurocognition of language production: Introduction to the special topic. *Frontiers in psychology*, 3, 198. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2012.00198/full>
- Suarimi, S. P., & Fatimah, S. (2019). Implementing Interactive Writing Strategy in Teaching Writing to Young Learners. *Journal of English Language Teaching*, 8(3), 357-364. Retrieved from <http://ejournal.unp.ac.id/index.php/jelt>
- Sun, L. (2017). The Importance of Grammar Teaching at College. In *International Conference on Frontiers in Educational Technologies and Management Science*. Jilin: Jilin Agricultural Science and Technology College. Retrieved from https://www.webofproceedings.org/proceedings_series/ESSP/FETMS%202017/FETMS_1016002.pdf
- Suraprajit, P. (2019). Bottom-up vs top-down model: The perception of reading strategies among Thai university students. *Journal of Language Teaching and Research*, 10(3), 454-460. Retrieved from <http://dx.doi.org/10.17507/jltr.1003.07>
- Susanto, A., Malik, A. M. A., & Mitrayati, M. (2020). The Challenges of Learning English as a Foreign Language among Undergraduate Students. *Inovish Journal*, 5(1), 1-11.
- Syal, P. and Jindal, D.V. (2018). An introduction to linguistics language, grammar and semantics, Delhi: PHI Learning Private limited.
- Talapngoen and Deerajviset, (2017). EFL Students' Use of Writing Strategies via Think Aloud Protocol. *International Journal of Humanities and Management Sciences (IJHMS)*, 5, (1), 51-54. Retrieved from <http://dx.doi.org/10.15242/>
- Tan, L. H., Spinks, J. A., Feng, C. M., Siok, W. T., Perfetti, C. A., Xiong, J., ... & Gao, J. H. (2003). Neural systems of second language reading are shaped by native

- language. *Human brain mapping*, 18(3), 158-166. Retrieved from <https://onlinelibrary.wiley.com/doi/epdf/10.1002/hbm.10089>
- Tarrasch, R., Berman, Z., & Friedmann, N. (2016). Mindful reading: Mindfulness meditation helps keep readers with dyslexia and ADHD on the lexical track. *Frontiers in psychology*, 7, 578. Retrieved from <http://dx.doi.org/10.3389/fpsyg.2016.00578>
- Teo, A., Shaw, Y. F., Chen, J., & Wang, D. (2016). Using Concept Mapping to Teach Young EFL Learners Reading Skills. In *English Teaching Forum* (Vol. 54, No. 2, pp. 20-26). US Department of State. Bureau of Educational and Cultural Affairs, Office of English Language Programs, SA-5, 2200 C Street NW 4th Floor, Washington, DC 20037.
- Tervaniemi, M., Tao, S., & Huotilainen, M. (2018). Promises of music in education?. *Frontiers in Education*, 3, 74. Retrieved from <https://doi.org/10.3389/educ.2018.00074>
- The National Research Council and DBASSE (2012). Improving Adult Literacy Instruction Developing Reading and Writing, Washington: *The National Academies Press*. Retrieved from <http://sites.nationalacademies.org/DBASSE>.
- Tijms, J., Pavlidou, E. V., & Hoette, H. A. (2020). Improvements in reading and spelling skills after a phonological and morphological knowledge intervention in Greek children with spelling difficulties: a pilot study. *European Journal of Special Needs Education*, 1-11.
- Tine, M. (2014). Acute aerobic exercise: An intervention for the selective visual attention and reading comprehension of low-income adolescents. *Frontiers in Psychology*, 5, 575. Retrieved from <http://www.frontiersin.org/Psychology/editorialboard>
- Tong, X., & McBride, C. (2016). Reading comprehension mediates the relationship between syntactic awareness and writing composition in children: A longitudinal study. *Journal of psycholinguistic research*, 45(6), 1265-1285.
- Trang, P. T. (2017). THE EFFECTS OF CONCEPT MAPPING ON EFL STUDENTS' READING COMPREHENSION. *European Journal of English Language Teaching*, 2(2), 178-202. Retrieved from <http://dx.doi.org/10.5281/zenodo.581801>

- Trines, S. (2018). WENR Education in India, Retrieved from <https://wenr.wes.org/2018/09/education-in-india/print/>
- Tsuk, S., Netz, Y., Dunsky, A., Zeev, A., Carasso, R., Dwolatzky, T., ... & Rotstein, A. (2019). The Acute Effect of Exercise on Executive Function and Attention: Resistance Versus Aerobic Exercise. *Advances in Cognitive Psychology*, 15(3), 208. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6776756/pdf/acp-15-272.pdf>
- Tulgar, A. T. (2018). A tale of two skills: Attitudes of learners towards reading and writing in foreign context and target context. *The Reading Matrix: An International Online Journal*, 18(1). Retrieved from <http://readingmatrix.com/files/18-737f1400.pdf>
- Tursunovna, Z. Z. (2019). Developing writing skills in teaching foreign languages. *Вопросы науки и образования*, 4 (49), 106-108. Retrieved from <https://cyberleninka.ru/article/n/developing-writing-skills-in-teaching-foreign-languages>
- Tuyena, T., Osmana, S. B., Ahmada, N. S. B., & Danb, T. C. (2019). Developing and Validating Scoring Rubrics for the Assessment of Research Papers Writing Ability of EFL/ESL Undergraduate students: The Effects of Research Papers Writing Intervention Program using process genre model of research paper writing. Retrieved from <http://icsai.org/ijllce/archive/2018/issue1/ijllce-061.pdf>
- Tuyet, T. T. A. (2017). The effectiveness of collaborative brainstorming training procedures at pre-writing stage in intermediate English classes.
- Uddén, J. (2012). Language as structured sequences: a causal role of Broca's region in sequence processing. Retrieved from https://openarchive.ki.se/xmlui/bitstream/handle/10616/40842/Thesis_Udden.pdf?sequence=2&isAllowed=y
- Ullman, M. and Lovelett, J. (2016). Implications of the declarative / procedural model for improving second language learning: *The role of memory enhancement techniques. Second Language Research*, 1-27. DOI: 10.1177/0267658316675195
- Umar Al Faruq, A. H., Sari, Y. A., & Puspita, N. (2020). Applying of Cooperative Integrated Reading and Composition (CIRC) Strategy on Students' Reading Comprehension. *Anglophile Journal*, 1(1), 41-47. Retrieved from <https://attractivejournal.com/index.php/anglophile/article/view/80/61>

- Uopasai, S., Bunterm, T., Muchimapura, S., & Tang, K. N. (2018). The Effect of Constructivism, Metacognition and Neurocognitive-based Teaching Model to Enhance Veterinary Medicine Students' Learning Outcomes. *Pertanika Journal of Social Sciences & Humanities*, 26(4). Retrieved from [http://119.40.116.186/Pertanika%20PAPERS/JSSH%20Vol.%2026%20\(4\)%20Dec.%202018/10%20JSSH-2607-2017.pdf](http://119.40.116.186/Pertanika%20PAPERS/JSSH%20Vol.%2026%20(4)%20Dec.%202018/10%20JSSH-2607-2017.pdf)
- Uppe, A., Raghuram, M. V., & Latha, B. M. (2019). The Role of English Language and LSRW Skills in Employability. *Research Journal of English (RJOE)*, 4 (4), 16- 24. Retrieved from [https://www.rjoe.org.in/Files/VOL4ISS4/3.RJOE-APARANJANI%20UPPE\(16-24\).pdf](https://www.rjoe.org.in/Files/VOL4ISS4/3.RJOE-APARANJANI%20UPPE(16-24).pdf)
- Urmston, A., Raquel, M., & Tsang, C. (2013). Diagnostic testing of Hong Kong tertiary students' English language proficiency: The development and validation of DELTA. *Hong Kong Journal of Applied Linguistics*, 14(2), 60-82. Retrieved from https://d1wqtxts1xzle7.cloudfront.net/38065238/Diagnostic_Testing_of_Hong_Kong_Tertiary_Students_English_Language_Proficiency.pdf?
- Valerie, E. J., & John, M. H. (1997). Statistics glossary-Probability. *STEPS glossary web version*.
- Varisoglu, B. (2016). Influence of Cooperative Integrated Reading and Composition Technique on Foreign Students' Reading and Writing Skills in Turkish. *Educational Research and Reviews*, 11(12), 1168-1179. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1104555.pdf>
- Vaughn, S., Fall, A. M., Roberts, G., Wanzek, J., Swanson, E., & Martinez, L. R. (2019). Class percentage of students with reading difficulties on content knowledge and comprehension. *Journal of learning disabilities*, 52(2), 120-134. Retrieved from <https://doi.org/10.1177/0022219418775117>
- Vency, Jeraltin. (2016). *Developing Capacity Building Programmes on Communication Skills in English for Outgoing Undergraduate students through ICT enabled content and language integrated learning*. Doctoral Thesis submitted to Bharathidasan University, Tiruchirappalli, Tamilnadu, India.
- Vhavle, S., Rao, M. R., Manjunath, N. K., & Ram, A. R. (2017). Effects of a Yoga Program on Health, Behaviour and Learning Ability in School Children: A Single Arm Observational Study. *Int J Complement Alt Med*, 5(1), 00138. Retrieved from

https://www.researchgate.net/profile/Raghavendra_Rao25/publication/318765291_Effects_of_a_Yoga_Program_on_Health_Behaviour_and_Learning_Ability_in_School_Children_A_Single_Arm_Observational_Study/links/59844f02458515946723cc87/Effects-of-a-Yoga-Program-on-Health-Behaviour-and-Learning-Ability-in-School-Children-A-Single-Arm-Observational-Study.pdf

Vijayalakshmi, M., & Babu, M. S. (2014). A brief history of English language teaching in India. *International Journal of scientific and research Publications*, 4(5), 1-4.

Virdaus, V. V. (2019). The Improvement of English Writing and Students' Motivation through Brainstorming. *MOTORIC*, 3(1), 15-25.

Virdyna, N. K. (2016). Teaching writing skill by using brainwriting strategy. *OKARA: Jurnal Bahasa dan Sastra*, 10(1), 67-77.

Wardough, R. (1972). *An Introduction to linguistics*, New York: McGraw-Hill.

Weidenborner, S., & Caruso, D. (1997). *Writing research papers: A guide to the process*. New York: St. Martin's Press.

Wijaya, A. N., Suparno, S., & Supriyadi, S. (2019). Think-Aloud Protocol (TAP) Analysis: An Investigation of Writing Assessment Tool for High School Teachers. *AKSARA: Jurnal Bahasa dan Sastra*, 20(2).

Wijaya, R., Mulyati, Y., Damaianti, V. S., & Sumiyadi, S. (2018). Developing Reading Skills and Beginning Writing through Literary Literacy. In *International Conference on Language, Literature, and Education (ICLLE 2018)*. Atlantis Press.

Wild and Steele, (2018). A Model for Classroom-Based Intervention for Children with Sensory. *International journal of special education*, 33 (3), 745-765.

Williams, J. N. (2020). The neuroscience of implicit learning. *Language Learning*, 70(S2), 255-307. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/lang.12405>

Williams, J., & Rebuschat, P. (2016). *Implicit learning and second language acquisition*. Routledge. Retrieved from https://jnw12.user.srcf.net/website/Williams_2009_Implicit_learning_and_SLA.pdf

- Wilson, B., Kikuchi, Y., Sun, L., Hunter, D., Dick, F., Smith, K., ... & Petkov, C. I. (2015). Auditory sequence processing reveals evolutionarily conserved regions of frontal cortex in macaques and humans. *Nature communications*, 6(1), 1-12. Retrieved from <https://www.nature.com/articles/ncomms9901>
- Wongsothorn, A., & Yordchim, S. (2020). Reading Enhancement Activities of Students in the Rural Areas in Thailand. *THAITESOL Journal*, 33(1), 1-19. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1257623.pdf>
- Wright, A. (2020). Higher cortical functions: Association and executive processing. *Neuroscience Online: An Electronic Textbook for the Neurosciences*. Houston, TX: Department of Neurobiology and Anatomy at University of Texas Medical School at Houston. Retrieved from <https://nba.uth.tmc.edu/neuroscience/m/s4/chapter09.html>
- Xiao, H., & Lynch, R. (2017). The relationship between the use of indirect language learning strategies and Chinese language achievement in reading and writing among students in years 7 to 10 at Ascot International School in Bangkok, Thailand. *Scholar: Human Sciences*, 9(1).
- Yang, J., & Li, P. (2012). Brain networks of explicit and implicit learning. *PloS one*, 7(8), e42993. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3432050/pdf/pone.0042993.pdf>
- Yang, J., & Li, P. (2019). Mechanisms for auditory perception: A neurocognitive study of second language learning of Mandarin Chinese. *Brain sciences*, 9(6), 139. Retrieved from <http://dx.doi.org/10.3390/brainsci9060139>
- Yaseen, M. A. (2019). The Importance of Teaching Reading Skills of English Language Using Variety of Techniques in Jordanian Curriculum. *Journal of Language Studies* □ □ □ □ □ □ □ □ □ □ *Mağallaï buḥūt al-luḡaï*, 2(2), 41-61.
- Yusuf, Q., Jusoh, Z., & Yusuf, Y. Q. (2019). Cooperative Learning Strategies to Enhance Writing Skills among Second Language Learners. *International Journal of Instruction*, 12(1), 1399-1412. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1201198.pdf>
- Zaidi, N., & Malik, S. K. (2018). Effect of Reading Comprehension on Developing Writing Skill of Primary Level Students. *Grassroots*, 52(1), 1-11.

Zarei, A. A., & Feizollahi, B. (2018). Concept Mapping and Brainstorming Affecting Writing Anxiety and Accuracy. *Journal of Modern Research in English Language Studies*, 5(1), 117-144. Retrieved from http://jmrels.journals.ikiu.ac.ir/article_1641_bc9cf4adfb8df6f3ff9936ee4405d680.pdf

Zhou, Y., & Wei, M. (2018). Strategies in technology-enhanced language learning. *Studies in Second Language Learning and Teaching*, 8(2), 471-495. DOI: 10.14746/ssllt.2018.8.2.13

Zvonarev, V., Mamtani, S., Yadav, S., Sharazi, K., Syed, H., Giri, A., ... & Kotler, D. (2020). Neurocognitive Performance of African Americans and Hispanic Adults in Relation to Diet and Physical Activity: A Literature Review. *Journal of Neurology Research*, 10(3):56-68. Retrieved from <https://www.neurores.org/index.php/neurores/article/viewFile/594/565>

Appendix-I

Diagnostic Assessment in English Language skills (DAELS)

Name of the student:

Gender: Male / Female

Degree: **Year**

Major subject:

Answer the following questions

(100 Marks)

Reading Skill

I. Choose the suitable matching words with their meanings from the following (5 x1=5)

1. i) amazing - a) friend
 ii) brutal - b) wonderful
 iii) companion - c) cruel

Ans.

- | | |
|----------------------------|----------------------------|
| A) i)-b), ii)- c), iii- a) | B) i)-c), ii)- b), iii- a) |
| C) i)-c), ii)- a), iii- d) | D) i)-b), ii)- a), iii- c) |

2. i) concept - a) protector
 ii) choose - b) select
 iii) guardian - c) idea

Ans.

- | | |
|----------------------------|----------------------------|
| A) i)-b), ii)- c), iii- a) | B) i)-c), ii)- b), iii- a) |
| C) i)-c), ii)- a), iii- d) | D) i)-b), ii)- a), iii- c) |

3. i) superior - a) happy
 ii) verify - b) higher
 iii) joy - c) check

Ans.

- | | |
|----------------------------|----------------------------|
| A) i)-b), ii)- c), iii- a) | B) i)-c), ii)- b), iii- a) |
| C) i)-c), ii)- a), iii- d) | D) i)-b), ii)- a), iii- c) |

4. i) ancient - a) position
 ii) status - b) very old
 iii) tradition - c) custom

Ans.

- | | |
|----------------------------|----------------------------|
| A) i)-b), ii)- c), iii- a) | B) i)-c), ii)- b), iii- a) |
| C) i)-c), ii)- a), iii- d) | D) i)-b), ii)- a), iii- c) |

5. i) succesful - a) speechless

- Ans.

- II. Tick / circle the correct word from the given options which can be substituted for the given sentence. (5 X 1 = 5)**

- III. Check the following sentences for the subject-verb agreement and tick the correct one from Bold.** (5 x 1 = 5)

- IV. Identify the errors** (the following sentences you have to find a mistake/remove a word to make them grammatically correct.) **(5 x 1 = 5)**

- V. Identify the sentence pattern of the following:** (5 x 1 = 5)

- 21 Poongothai will become a teacher.
A) SVO B) SVC C) SVOC D) SVA

22. Manokaran met his friend.
A) SVO B) SVC C) SVOC D) SVA
23. They elected him captain yesterday.
A) SVOA B) SVC C) SVOCA D) SVCA
24. Murugaiya gave me a book.
A) SVO B) SVIODO C) SVOC D) SVOA
25. Tomorrow, I will return your book.
A) SVOA B) ASVC C) ASVO D) ASVOC

VI. Complete the statements with suitable question tag:

(5 x 1 = 5)

26. You are a student, _____?
A) aren't you B) weren't you C) are you D) were you
27. Our prime minister doesn't speak Tamil, _____?
A) do he B) doesn't he C) does he D) didn't he
28. They can reduce the cost of mobility and congestion, _____?
A) can they B) can't they C) could they D) aren't they
29. I am dancing well, _____?
A) do I B) was I C) am I D) aren't I
30. Suriyaprabha is not a teacher, _____?
A) is she B) was she C) isn't she D) wasn't she

VII. Fill in the blanks with suitable articles:

(5 x 1 = 5)

31. My friend gave me _____ apple.
A) a B) an C) the D) No article
32. I shall meet you after _____ hour.
A) a B) an C) the D) No article
33. _____ sun rises in the east.
A) a B) an C) the D) No article
34. Selvi gives _____ pen.
A) a B) an C) the D) No article
35. Christians consider _____ Bible as a Holy book.
A) a B) an C) the D) No article

VIII. Find out the kind of sentence:

(5 x 1 = 5)

36. My father gave me a pen.
A) Active voice B) Passive voice C) Complex Sentence D) Compound Sentence
37. Hari said to me, "she is poor".
A) Active voice B) Passive voice C) Direct speech D) Indirect speech
38. Ram hopes that he will get good marks
A) Simple Sentence B) Compound Sentence C) Complex Sentence D) Phrase
39. Seeing the snake, Senthil ran away.
A) Simple Sentence B) Compound Sentence C) Complex Sentence D) Clause
40. You performed well and so you were appreciated.
A) Simple Sentence B) Compound Sentence C) Complex Sentence D) Phrase

IX. Read the given passage and answer the questions that follow it: (5 x 1 = 5)

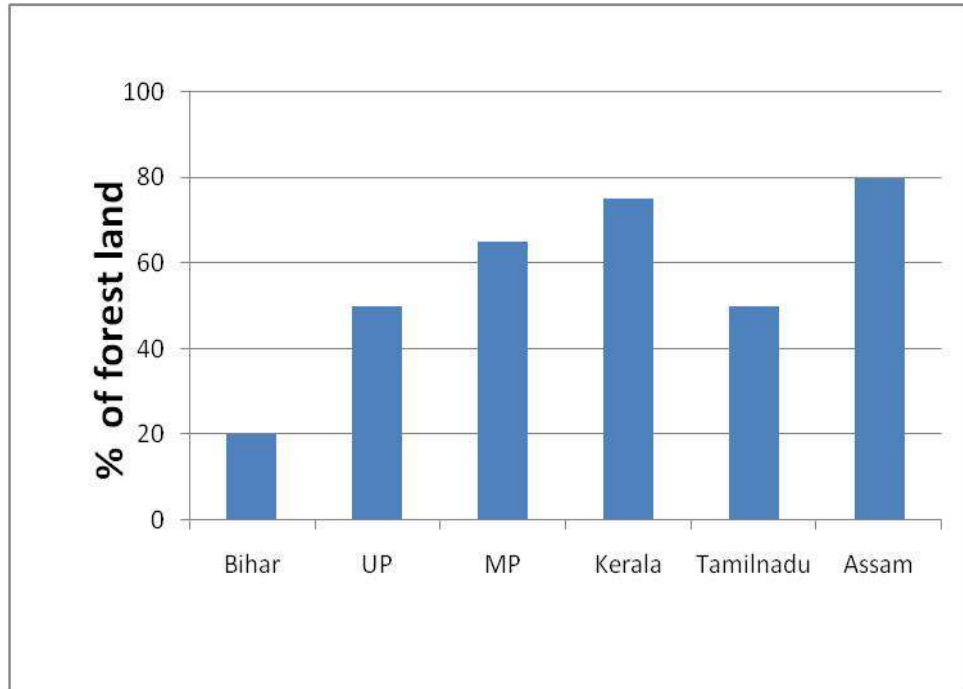
Yoga is the ancient Indian system to keep a person fit in body and mind. It is basically a system of self-treatment. According to the yogic view, diseases, disorders and ailments are the results of some faulty ways of living, bad habits, lack of proper knowledge and unsuitable food. The diseases are thus the resultant state of a short or prolonged malfunctioning of the body system. Since the root cause of disease lies in the mistakes of the individual, its cure also lies in correcting the mistakes by the same individual. Thus yoga relies entirely on the effort of the patient to cure himself. The yoga expert shows only the path and works no more than as a counsellor. The yogic practice of treatment comprises three steps namely proper diet, proper yogic practice and proper knowledge of things concerning the self.

Questions:

41. What is the benefit of yoga?
 - A) keeps a person fit in body and mind
 - B) provides a job to the person
 - C) provides entertainment to the person
 - D) keeps a person rich
42. What causes diseases, ailments and disorders?
 - A) bad habits
 - B) labour jobs
 - C) exercise
 - D) good diet
43. How does a yoga expert work?
 - A) guide
 - B) teacher
 - C) physician
 - D) counselor
44. Which one is not the part of the yogic practice of treatment?
 - A) proper diet
 - B) proper yogic practice
 - C) proper knowledge of things
 - D) proper medical treatment
45. Yoga is a system of
 - A) medical treatment
 - B) self treatment
 - C) surgical treatment
 - D) homeopathic treatment

X. Study the Bar-Chart given below and answer the questions : (5 x 1 = 5)

Status of forest in India



46. The bar chart explains _____
A) Forest land in states B) tree in forest C) depletion of forest in states D) area of states
47. The state that possesses greatest percentage of forest land have _____
A) Kerala B) Bihar C) MP D) Assam
48. The state that possesses minimum forest land _____
A) Kerala B) Bihar C) MP D) Assam
49. The states having more than 70% of forest land are _____
A) UP and MP B) Kerala and Bihar C) Kerala and Assam D) UP and Assam
50. The state that gets abundant rainfall is Assam because _____
A) Largest forest land B) lot of wild animal C) minimum forest land D) highly urbanized

Writing Skill

XI. Rewrite the sentence with replace the bolded and underlined words with given suitable Idioms and phrasal verbs : (5 x 1 = 5)

51. This is a **difficult situation** to me.

A) tight side B) tight corner C) tight place D) tight movement

Ans. _____

52. Thayammal **quarrels** with Nallammal

A) falls out B) falls off C) falls in D) falls on

Ans. _____

53. Lexmanan **reads** a novel.

A) goes for B) go by C) goes through D) goes into

Ans. _____

54. They **improve** their business.

A) pick up B) pick in C) pick on D) pick out

Ans. _____

55. Dhanapakiyam **wears** new dress

A) put off B) put out C) put up D) put on

Ans. _____

XII. Add suitable prefixes to the following words to produce antonyms: (5 x 1 = 5)

56. _____ biography (by oneself)

57. _____ possible (negative)

58. _____ employer (former)

59. _____ happy (not)

60. _____ practice (illegal)

XIII. Fill in the blanks with suitable preposition based on the picture: (5 x 1 = 5)



61. There are four people ____ the picture.
62. The couple is sitting ____ the chairs.
63. The drinks are ____ the table.
64. The lady is standing in front _____ the table.
65. _____ her is a man who is barbecuing.

XIV. Use the correct tense forms of the verbs in the given sentences: (5 x 1 = 5)

66. If you _____ (tell) me, I will help you.
67. My brother _____ (arrive) tomorrow.
68. She _____ (eat) an apple yesterday.
69. I _____ (read) a story now.
70. Columbus _____ (discover) America in 1492.

XV. Rearrange the following words/phrases to form a meaningful sentence. (5 x 1 = 5)

71. not gold/ is / all that / glitters

A B C D

72. makes / vessel / much noise/ an empty.

A B C D

73. seldom / bite / barking / dogs.

A B C D

74. ends /well / that/ all's well.

A B C D

75. actions / than / speak louder / words.

A B C D

XVI. Study the calendars have given below and answer the questions: (5 x 1 = 5)

Murugan Daily Calender
15-1-2020 Wednesday Thai, 1

JANUARY 2020				
Sunday	5	12	19	26
Monday	6	13	20	27
Tuesday	7	14	21	28
Wednesday	1	8	15	22
Thursday	2	9	16	23
Friday	3	10	17	24
Saturday	4	11	18	25

76. What is today's date?

77. On which day does January begin?

78. Which festival is celebrated by Tamil people on the day?

79. On which day does the year 2019 end?

80. On which day does the month of February 2020 start?

XVII. 81) A dialogue between two friends about the use of the internet which should be completed with suitable questions. (5 x 1 = 5)

Vaiyaburi : Hai, Dhanraj. _____ ?

Dhanraj : Hai, Vaiyaburi. I am fine.

Vaiyaburi : _____ ?

Dhanraj : I am going to browsing center.

Vaiyaburi : _____ ?

Dhanraj : Yes, I use almost daily?

Vaiyaburi : _____ ?

Dhanraj : Yes, I can tell the benefits of using internet briefly. The internet makes us knowledgeable. By using internet, we can involve in various electronic related

services like e-learning, e-banking and so on

Vaiyaburi : _____ ?

Dhanraj : We can become knowledgeable through internet browsing. Which provide us a lot of information and details.

Vaiyaburi : Thanks Dhanraj for your useful information about internet. Hereafter, I will use the internet for updating my knowledge. Bye.

Dhanraj : It's okay. Vaiyaburi. Bye.

XVIII. 82) Make a note from the following paragraph. (1 x 5 = 5)

Most people are afraid of snakes – but this fear is as irrational as the fear of ghosts. The fear of snakes, according to some biologists, may be an instinct passed on to

us by our ancestors. There may be some truth in this theory, because monkeys have a deep, instinctive fear of pythons and other tree snakes. Or, it might be that we learn the fear of snakes as children, from grown-ups. Anyway snakes have been feared and hated for thousands of years, and in the literature of many countries the snake is regarded as a symbol of evil. Whatever the truth, there is no reason for the terror which the sight of a snake causes in most people. Many more people are killed, much more frequently, by motorcycles and cigarettes than by snakes. The majority of snakes are harmless, and are only too anxious to avoid human beings. Of the poisonous snakes, only those found in the sea are always dangerous; being aggressive by nature, they can attack human beings for no reason at all taking a fisherman or swimmer by surprise in the water, where the man is somewhat helpless.

XIX. 83) Summarizing the following passage

(1 x 5 = 5)

A bat has wings. Its body is covered with short hair. It looks like a mouse. Its eyes are small. It cannot stand the day light. So, it prefers to sleep in dark corners. We too can't sleep with lights on during nights. It sleeps with its head downwards holding on to the roof with its claws in lonely houses, temples, thick woods, tall towers or dark caves. All the same, their eyes can locate moths or insects at nights on the ground or in mid air and they will feast on the moth and insects. The big bats have a very keen sense of smell like dogs. But they can smell only ripe fruits in trees. They eat them under the cover of darkness. So, a proverb has come to stay, "No need to invite the bat to eat the ripe fruits". It does not lay eggs. It gives birth to young ones. So, it is a mammal and not a bird.

XX. 84) Write a job application letter with resume for response to the advertisement.

(1 x 5 = 5)

TEACHERS WANTED A well reputed School in Salem (Tamilnadu) requires PGT, TGT, PET, PRIMARY & KG TEACHERS	Apply by Post or Mail with detailed CV within 10 days to: THE CORRESPONDENT MEENAMPARK GROUP OF SCHOOLS Parktown, M.Kalipatti (Po), Mecheri, Salem-636453 E: meenamparkschool@gmail.com www.meenamparkschools.com
---	---

Answers Keys:

Reading skill

I

1. A) i)-b), ii)- c), iii- a)
2. B) i)-c), ii)- b), iii- a)
3. A) i)-b), ii)- c), iii- a)
4. D) i)-b), ii)- a), iii- c)
5. C) i)-c), ii)- a), iii- b)

II

6. B) Omnipresent
7. D) Illiterate
8. D) Novice
9. B) Widow
10. C) Elegy

III

11. Each of the books **is** worth reading.
12. There **were** a number of business men at the party.
13. The cattle **are** grazing in the field.
14. The teacher and poet **is** coming to my home.
15. Linguistics **is** an interesting subject.

IV

16. C) he
17. B) that
18. A) of

19. B) to
20. B) of

V

21. B) SVC
22. A) SVO
23. C) SVOCA
24. B) SVIODO
25. C) ASVO

VI

26. A) aren't you
27. C) does he
28. B) can't they
29. D) aren't I
30. A) is she

VII

31. B) an
32. B) an
33. C) the
34. A) a
35. C) the

VIII

36. A) Active voice
37. C) Direct speech
38. C) Complex Sentence
39. A) Simple Sentence
40. B) Compound Sentence

IX

- 41) A) keeps a person fit
in body and mind
- 42) A) bad habits
- 43) D) counselor
- 44) D) proper medical
treatment
- 45) B) self treatment

X.

- 46) A) Forest land in states
- 47) D) Assam
- 48) B) Bihar
- 49) C) Kerala and Assam
- 50) A) Largest forest land

Writing Skill

XI.

- 51) (B). This is a **tight corner** to me.
- 52) (A). Thayammal **falls out** with Nallammal
- 53) (C). Lexmanan **goes through** a novel.
- 54) (A). They **pick up** their business.
- 55) (D). Dhanapakiyam **put on** new dress

XII

- 56) **Auto**biography (by oneself)
- 57) **Im**possible (negative)
- 58) **Ex**-employer (former)
- 59) **Un**happy (not)
- 60) **Mal**practice (illegal)

XIII.

- 61. There are four people **in** the picture.
- 62. The couple is sitting **on** the chairs.
- 63. The drinks are **on** the table.
- 64. The lady is standing in front **of** the table.
- 65. **Behind** her is a man who is barbecuing.

XIV. Use the correct tense forms of the verbs in the given sentences:

- 66. If you **tell** me, I will help you.
- 67. My brother **will arrive** tomorrow.
- 68. She **ate** an apple yesterday.
- 69. I **am reading** a story now.
- 70. Columbus **discovered** America in 1492.

XV. Rearrange the following words/phrases to form a meaningful sentence. (5 x 1 = 5)

- 71.** All that glitters is not gold
- 72.** An empty vessel makes much noise.
- 73.** Barking dogs seldom bite.
- 74.** All's well that ends well.
- 75.** Actions speak louder than words.

XVI

- 76. Today's date is **January, 15, 2020 (15.01.2020).**
- 77. January begins on **Wednesday.**
- 78. **The Pongal** festival is celebrated by Tamil people on that day

79. The year 2019 ends on **Tuesday**.

80. The month of February 2020 starts on **Saturday**.

XVII. 81) A dialogue between two friends about the use of the internet which should be completed with suitable questions.

(5 x 1 = 5)

Vaiyaburi : Hai, Dhanraj. **How are you?**

Dhanraj : Hai, Vaiyaburi. I am fine.

Vaiyaburi : **Where are you going?**

Dhanraj : I am going to browsing center.

Vaiyaburi : **Do you use internet daily?**

Dhanraj : Yes, I use almost daily?

Vaiyaburi : **Can you tell me the benefits of using internet briefly?**

Dhanraj : Yes, I can tell the benefits of using internet briefly. The internet makes us knowledgeable. By using internet, we can involve in various electronic related

services like e-learning, e-banking and so on

Vaiyaburi : **How can we become knowledgeable by using internet?**

Dhanraj : We can become knowledgeable through internet browsing. Which provide us a

lot of information and details.

Vaiyaburi : Thanks Dhanraj for your useful information about the uses of internet. Hereafter,

I will use the internet for updating my knowledge. Bye.

Dhanraj : It's okay. Vaiyaburi. Bye.

XVIII. 82) Notes making

1. Fear of snakes irrational

2. (a) Biologist's theory – fear, instinct transmitted by ancestors

e.g. Monkeys' instinctive fear of pythons, tree snakes

(b) Fear, learnt as children from grown-ups

3. (a) Snakes feared and hated for many years

(b) Regarded symbol of evil in literature of many countries

4. Fear unreasonable- more people killed by motor-cycles & cigarettes

5. Majority snakes harmless, anxious to avoid humans

6. (a) Sea snakes poisonous, dangerous

(b) Aggressive - attack fishermen, swimmer without reason, by surprise

XIX. 83) Summarizing

Title - 1 mark

Rough draft- 1 mark

Fair draft - 3 marks (with grammatical error 2marks, without grammatical errors 3 marks)

Eg.

Title: A Bat

Rough draft

A bat has wings, short hair and small eyes as mouse. It can't stand the day light. So, it sleeps with its head downwards holding on to the roof with its claws in dark corners. It eats fruits and locates moths or insects anywhere. It can smell only ripe fruits in trees. It is a mammal.

Fair draft

A bat has wings, short hair and small eyes. It can't stand the day light. So, it sleeps with its head downwards holding on to the roof with its claws in dark corners. It can locate moths or insects anywhere. It can smell only ripe fruits in trees. It is a mammal.

XX. 84) Job application letters

Mark allocation		
Covering letter (3 Marks)	Format	1 mark
	Salutation	1mark
	Body of the letter	
Resume (2 marks)	Complimentary close	1 mark
	Content	
	Writing Mechanism	
	Style	1 mark
Total		5 marks

Appendix-II

Attitude Scale Towards English Language skills (ASTELS)

Name of the student:

Gender:

Male

Female

Discipline:

Medium of instruction in school level

Medium	Primary	Secondary	Higher Secondary
Tamil			
English			

Are you a first Graduate?

Yes

No

What is your Parental Education?

Parental Education	Illiterate	1-8 std	9-12 std	Above college level
Father				
Mother				

Dear student,

Please read the statements given below and put a tick mark in the appropriate box indicating the degree of acceptance towards the statements.

Here, SA = strongly agree

A = agree

N = neither agree nor disagree

D = disagree

SD = strongly disagree

Please note that there is no right or wrong answers to the statements in this inventory.

S.No	Statements	SA	A	N	D	SD
	ENGLISH LEARNING					
1	I feel that English language skills help me to improve my social status.					
2	I believe that fluency in English language skills help me to get a good job.					
3	I realize that English is very important because all the learning resources are available only in this language.					
4	I believe that English language learning is a basic need of the time.					
5	I feel that learning English language skills give me success in my life.					
	VOCABULARY					
6	I write down the difficult words, its definition/synonym, and its pronunciation with an example.					
7	I connect the new word to my personal experience.					
8	I visualize and remember new words.					
9	I associate the new word with its related terms (e.g., Furniture: table, chair, cot).					
10	I repeat new words orally several times.					
11	I make an image of the word's meaning.					
12	I write suitable new words in sentences frequently.					
13	I use physical actions when learning a new word.					
	GRAMMAR					
14	I practice specific grammar points such as voice, direct and indirect speeches, transformation, and subject verb agreement.					
15	When my teacher corrects my grammatical mistake, I practice repeating the correct form.					
16	I memorize a new grammar rule by repeating it to myself.					
17	I emphasize the explanation of the new grammar rule and its important parts by underlining them or coloring them differently.					
18	I remember the grammar rule by thinking of the context/situation where it is used.(example: Due to rain ,I didn't come Despite of rain, I came)					
19	I practice writing sentences using the new grammar rule to help me remember its structure. Example: (S+V+O) = I went to college (S+V+O) =I came to college					
20	When I learn a new grammar rule, I try to link it to other rules that I already know. Example Though it was raining, I came to college (Positive sentence) Since it was raining , I didn't come to college (Negative sentence)					

21	I categorize the new grammar rule that I learn under a group of similar things (e.g. tenses, voices, direct and indirect etc).					
	READING COMPREHENSION					
22	While reading I take notes for my understanding.					
23	I think about what I know to help me understand what I read.					
24	I preview the text to see what it's about before reading it.					
25	When the text becomes difficult, I read aloud to help me understand.					
26	After reading the text, I summarize the important points.					
27	I think about whether the content of the text fits my reading purpose.					
28	I read slowly but carefully to be sure I understand what I'm reading					
29	I discuss, what I read with others to check my understanding.					
30	I skim the text first to get a general idea of meaning.					
31	I underline or circle information in the text, to help me remember it.					
32	I use reference material, such as a dictionary, to help my understanding.					
33	I highlight the boldface, italics, to identify key information.					
34	I critically analyze and evaluate the information presented in the text.					
35	I check my understanding when I come across conflicting information.					
36	When the text becomes difficult to understand, I re-read to increase my understanding.					
37	I make up questions for myself before I read which I think or hope the text will answer					
38	I try to check, whether my guesses about the text are right or wrong.					
39	I try to guess the meaning of unknown words or phrases.					
40	While reading, I try to understand the incorrect or jumbled sentences.					
	GRAPHICAL REPRESENTATION					
41	I think graphical representation is the simplest form used for understanding the information.					
42	While reading the text, I use tables, graphs, figures, and pictures in the text to increase my understanding					
43	While reading, I draw pictures or diagrams to remember the points in the text.					

44	While I see a picture or graph, I try to guess the meaning.					
45	While I see a picture or graph, I try to describe myself about the picture.					
46	While I study graphical representations (eg. graphs, tables, charts, pictures), I try to give different ideas and meanings.					
	WRITING STRATEGIES					
47	I organize my ideas before I start writing.					
48	I revise and make sure, that my writing includes everything, I want to discuss.					
49	I check the spelling after writing the text.					
50	While writing, I check grammatical mistakes.					
51	I evaluate and re-evaluate the ideas of my writing.					
52	I write a lot to develop my writing skills.					
53	Even if the writing activities are difficult, I don't give up but try to engage in them.					
54	I spend a lot of time and energy on writing English assignments well .					
55	I use memorized grammatical elements such as singular and plural forms, verb tenses, prefixes and suffixes, etc. in my writing.					
56	In order to generate ideas for my writing, I usually engage myself in brainstorming.					
57	I use different words that have the same meaning in writing.					
58	I use my experiences and knowledge in my writing.					
59	I try to use effective linking words to ensure clear and logical relationship between sentences or paragraphs.					
60	In order to generate ideas for my writing, I usually discuss the topic with a friend or classmate.					
61	After revising and editing my writing thoroughly, I ask a friend or my classmate to read and comment on it.					
62	When I have trouble in writing, I try to solve it with my classmates or friends.					
63	I try to write an essay in the class with confidence					
64	I try to relax whenever I feel afraid of writing.					
65	I encourage myself to write even when I am afraid of making mistakes.					

Appendix-III

Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-1)

Pre Test

Answer the following questions

(100 Marks)

Reading Skill

I. Tick / circle the correct word from given options which can be substituted for the given sentence. (10 X 1 = 10)

- 1) One who believes in God
a) agnostic b) theist c) devotee d) secularist
- 2) A book or paper written in hand
a) manuscript b) tablet c) edition d) draft
- 3) One who hate mankind
a) philanthropist b) misanthrope c) hater d) rebel
- 4) The story of a man written by himself.
a) biography b) autobiography c) life history d) history
- 5) A game in which no one wins.
a) abandoned b) postponed c) draw d) obsolete
- 6) One who acts against religion
a) atheist b) theist c) anti-religion d) heretic
- 7) One who is unable to pay-off one's debt
a) bankrupt b) client c) loaner d) debtor
- 8) One who eats human flesh
a) violetor b) man-eater c) animal d) cannibal
- 9) One who champions the cause of women
a) lady b) feminist c) queen d) mistress
- 10) One who is gifted with several talents
a) omnipotent b) omniscient c) versatile d) optimist

II. A) Choose the phrasal verb from the options given to substitute the underlined word in the following sentences (5 X 1 = 5)

- 11) The pilgrims crossed the forest.
a) passed on b) passed by c) passed away d) passed in
- 12) The president distributed the prizes.
a) gave away b) gave up c) gave in d) gave around
- 13) The inspector will investigate the matter soon.
a) look at b) look up c) look through d) look into
- 14) Ganeshan and his friends continue their travel.
a) go in b) go down c) go on d) give up
- 15) I have loved my country limitlessly
a) now bounds b) know bounds c) now no bounds d) know no bounds

B). Choose the meaning of the idioms from the options given below (5 X 1 = 5)

- 16) In a nice pickle
a) no difficult situation b) tackling situation
c) unable to pitch d) in a difficult situation
- 17) By the skin of one's teeth
a) a narrow escape b) biting one's skin
c) treatment of skin and teeth d) brushing the teeth
- 18) Zip your lip
a) kiss me b) say nothing c) close the zip d) open your mouth
- 19) Jelly belly
a) brave person b) slim person
c) an overweight person d) tallest person
- 20) Bite your tongue
a) speak loud b) little speech c) loud noise d) avoid speaking

III. Check the following sentences for the subject-verb agreement and fill the correct one. (10 x 1 = 10)

- 21) Each of the books _____ (**is / are**) worth reading.
22) Two and Two _____ (**makes / make**) four.
23) Some of the sugar _____ (**is / are**) spilt.
24) The police _____ (**has / have**) arrested five culprits
25) The bag or the purse _____ (**is / are**) in the car.
26) Can I _____ (**gives / give**) you some advice?
27) They _____ (**buy/bought**) new furniture yesterday?
28) The teacher and the poet _____ (**is / are**) coming to my home.
29) There _____ (**was / were**) a number of business men at the party.
30) Linguistics _____ (**are/ is**) an interesting subject.

IV. Identify the errors (the following sentences you have to find a mistake/remove a word to make them grammatically correct.) (10 X 1 = 10)

- 31) I don't speak of either French or German.
a) speak b) of c) either d) or
- 32) The meeting is about something which that affects only one department.
a) that b) which c) affects d) department
- 33) Please check in the packaging is satisfactory.
a) in b) the c) packaging d) is
- 34) I have already read a few books that are on the bookshelf.
a) already b) a c) that d) are
- 35) The loss of that linguistic diversity is inevitable.
a) loss b) of c) diversity d) that
- 36) Valli is the taller than any other girl in the class
a) is b) the c) than d) girl

- 37) Kamban asked to me why I was crying.
a) to b) me c) why d) was
- 38) Raman has a liking for story books.
a) has b) a c) for d) books
- 39) I want to know why did you came late.
a) to b) why c) did d) came
- 40) If you run fast, you will catch of the bus.
a) if b) fast c) will d) of

**V. Read the given passage and answer the questions that follow it: (5
x 1 = 5)**

A vexed problem facing us is the clamor to open more colleges and to reserve more seats for backward classes. But it will be a sheer folly to expand such facilities recklessly without giving any thought to the quality of education imparted. If admissions are made far more selective, it will automatically reduced the number of entrants. This should apply particularly colleges, many of which are little more than degree factories. Only then can the authorities hope to bring down the teacher-student ratio to manageable proportion. What is more, teachers should be given refresher courses, every summer to brush up their knowledge. Besides, if college managements increase their library budget it will help both the staff and the new students to a great deal.

At the same time, however, it will be unfair to deny college education to thousands of young men and women, unless employers stop insisting on degrees even for clerical jobs. For a start, why can't the Government disqualify graduates from securing certain jobs, say class III and IV posts? Once the link between degrees and jobs is severed at least in some important departments, it will make young people think twice before joining college.

41) What can automatically help to reduce admission:

- a) Though entrance tests
- b) Discouragement to open new colleges
- c) Selective admissions
- d) Abolishing reservation

42) Many of the new college are –

- a) Centres of advanced learning
- b) Research institutions
- c) Factories producing degree holders
- d) Known for their academic excellence

43) How can teachers brush up their knowledge

- a) By arranging refresher courses
- b) By providing monetary help/incentive

- c) By providing better library facilities
- d) By sending them abroad

44) **The author is in favor of restricting college admissions –**

- a) Only when degrees are used for underemployment.
- b) When alternative avenues are open for the students
- c) When the teacher student ratio is reduced
- d) Only when parents think twice before sending their children

45) **The phrase “Vexed problem” means**

- a) A serious problem
- b) A debatable problem
- c) A difficult problem
- d) An irritating problem

VI. Study the given table and answer the question

(5 x 1 = 5)

Means of transport is used by college students in Trichy city		
Type of transport	Boys	Girls
Bicycle	85	70
Bus	87	95
Bike	75	8
Moped	30	30
Scooter	65	40
Car	10	15

46) Which mode of transport is highly used by the students?

- a) Bicycle
- b) Bus
- c) Bike
- d) Car

47) Which vehicle is used least by the students?

- a) Bicycle
- b) Bus
- c) Bike
- d) Car

48) Which vehicle is used by girls and boys equally?

- a) Bicycle
- b) Bus
- c) Moped
- d) Car

49) Which vehicle is used least by boys?

- a) Car
- b) Bus
- c) Moped
- d) Bike

50) Which vehicle is used least by girls?

- a) Bicycle
- b) Bike
- c) Moped
- d) Car

Writing skill

VII. Rewrite the sentence replacing the bolded and underlined words with given suitable Idioms and phrasal verbs : (5 x 1 = 5)

51) They finally **agreed** on the business deal.

- a) saw eye to eye b) saw eye to face c) saw face to eye d) saw face to face

Ans. _____

52) Jeyanthi **wore** a new dress on her birthday.

- a) put off b) put up with c) put on d) put down

Ans. _____

53) The police asked the man to surrender his wallet and his weapons.

- a) over hand b) hand over c) hand on d) hand up

Ans. _____

54) Prabhakaran's grandfather **died** yesterday.

- a) passed out b) passed on c) passed away d) passed off

Ans. _____

55) You should **stop** your smoking habit.

- a) give up b) give away c) give in d) give off

Ans. _____

VIII. Change the Sentences as directed (5 x 1 = 5)

56) Kalingarajan give a pen. (change into Passive voice)

57) A novel was written by him. (change into Active voice)

58) Being clever, she solved the problem easily. (change into compound)

59) She is poor yet she is always cheerful. (change into complex)

60) Sindhu said, "I play chess". (change into indirect statement)

IX. Ordering of words in sentence (5 x 2 = 10)

(Look at the words, phrases or clauses below in the sentences. Each sentence are four sequence labeled as A, B, C and D. You are required to re-arrange the jumbled parts of the sentence to form meaningful sentences. Write the correct sentences in the space provided)

61) doing exercises / health / good for / is

A B C D

62) policy / is / honesty / the best .

A B C D

63) opposite in meaning / antonyms / words / are known as

A B C D

64) do not / time / waste / your precious

A B C D

65) process / is / a very simple / making a cup of tea

A B C D

X. Read the following passage carefully and answer the questions that follow-

(5 x 2 = 10)

This may sound bizarre, but its logical to expect that a whole lot of people have begun to love the novel coronavirus. Let me take a bottom -up approach, beginning with children. They have not just one or two but three reasons to thank the virus: no school and homework, and an opportunity to play with their parents locked down at home. With maids not turning up, the mindset of generations of men that are not supposed to any household work has changed. Now many of them have been compelled to learn the skills of washing utensils and sweeping and mopping the floor. Rumors are afloat that many women are contemplating doing away with the services of maids even after the lifting of lockdown. At the organizational level, the bosses enjoyed a long rest and stress free atmosphere. Work from home enabled them huge cost savings, less travel, reduced staff and lot of time to chalk out strategies for the future. The aged ones seem to be free from some of their regular ailments. The families are enjoying their togetherness for a long time. Some friends and relatives got calls after a while from their almost forgotten ones and of course, the biggest gainers are the TV channels and media service providers like Netflix. Their viewership had been increased as largely.

66) For what reasons, the children may thank the virus?

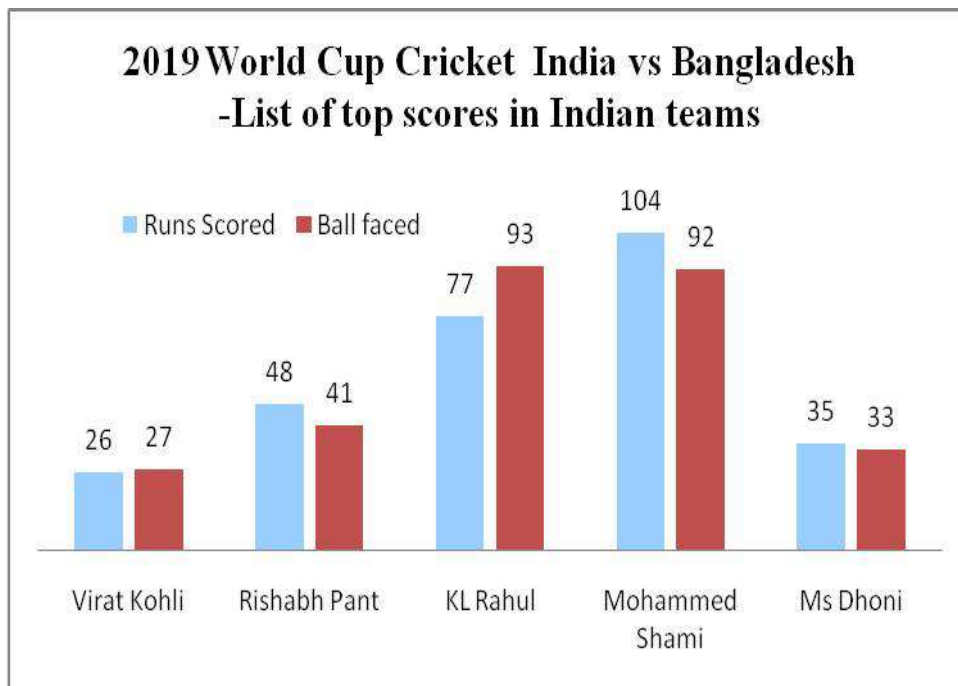
67) What was the mindset of generations of men?

68) What skills have they been compelled to learn?

69) Who are the biggest gainers?

70) Give a suitable title that fits this passage best?

XI. Study the bar chart given below and answer the questions. (5 x 2 = 10)



71) How many runs had been scored by these five players?

72) Who had scored the highest number of runs?

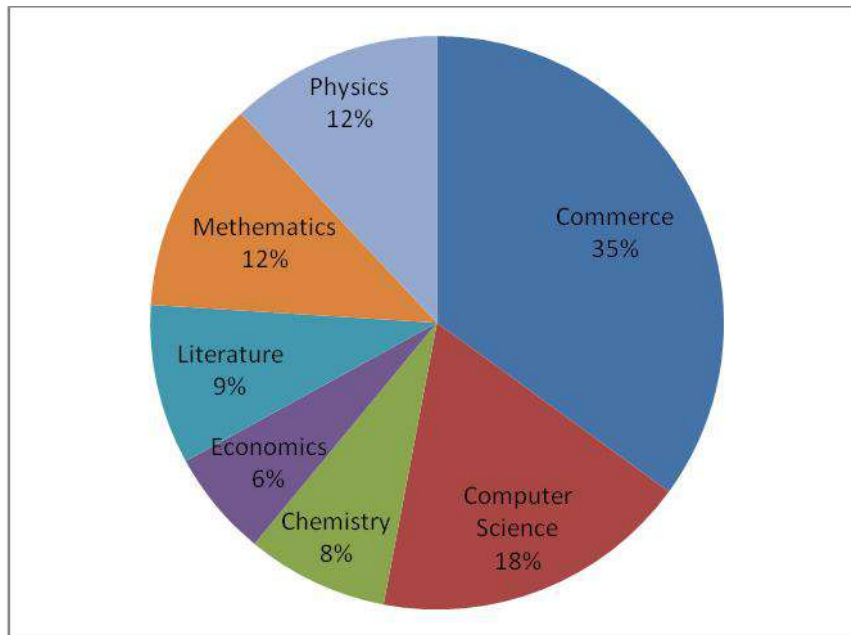
73) Who had scored the least number of runs?

74) Who had faced the maximum number of balls in the players?

75) Which teams had played in the game?

XII. Study the Pie chart given below and answer the questions. (5 x 2 = 10)

Number of students opting courses in Arts and Science Colleges (2020-2021)



- 76) Which course has the highest takers?
- 77) What is the difference in percentage between the admission to physics and chemistry?
- 78) In which course has recorded the second highest number of admissions?
- 79) In which course has recorded lowest number of admissions?
- 80) In which courses have admitted equal number of students?

Answer Keys

Reading skill

I

- 1) b) theist
- 2) a) manuscript
- 3) b) misanthrope
- 4) b) autobiography
- 5) c) draw
- 6) d) heretic
- 7) a) bankrupt
- 8) d) cannibal
- 9) b) feminist
- 10) c) versatile

II.

- 11) b) passed by
- 12) a) gave away
- 13) d) look into
- 14) c) go on
- 15) d) know no bounds
- 16) d) in a difficult situation
- 17) a) a narrow escape
- 18) b) say nothing
- 19) c) an overweight person
- 20) d) avoid speaking

III.

- 21). Each of the books **is** worth reading.
- 22). Two and Two **make** four.
- 23). Some of the sugar **is** spilt.
- 24). The police **have** arrested five culprits
- 25). The bag or the purse **is** in the car.
- 26). Can I **give** you some advice?
- 27). They **bought** new furniture yesterday?
- 28). The teacher and the poet **are** coming to my home.
- 29). There **were** a number of business men at the party.
- 30). Linguistics **is** an interesting subject.

IV.

- 31) b) of
- 32) a) that
- 33) a) in
- 34) b) a
- 35) d) that
- 36) b) the
- 37) a) to
- 38) b) a
- 39) c) did
- 40) d) of

V.

- 41) c) Selective admissions
- 42) c) Factories producing degree holders
- 43) a) By arranging refresher courses
- 44) a) Only when degrees are used for underemployment
- 45) b) a debatable problem

VI.

- 46) b) Bus
- 47) d) Car
- 48) c) Moped
- 49) a) Car
- 50) b) Bike

Writing skill

VII.

- 51) They finally **saw eye to eye** on the business deal.
- 52) Jeyanthi **put on** a new dress on her birthday.
- 53) The police asked the man to **hand over** his wallet and his weapons.
- 54) Prabhakaran's grandfather **passed away** yesterday.
- 55) You should **give up** your smoking habit.

VIII.

- 56) A pen is given by Kalingarajan
- 57) He wrote a novel.
- 58) She was clever and so she solved the problem easily.
- 59) Although she is poor, she is always cheerful.
- 60) Sindhu said that she played chess.

IX.

- 61) Doing exercises is good for health.
- 62) Honesty is the best policy.
- 63) Words opposite in meaning are known as antonyms.
- 64) Do not waste your precious time.
- 65) Making a cup of tea is a very simple process.

X.

- 66) The children thank the virus for no school and homework, and it provides an opportunity to play with their parents locked down at home.
- 67) The mindset of generations of men are not supposed to any household work has changed.
- 68) They have been compelled to learn the skills of washing utensils, sweeping and mopping the floor.
- 69) The biggest gainers are the TV channels and media service providers like Netflix as their viewership had been increased as largely.
- 70) Locked Down

XI.

- 71) 290 runs have been scored by these five players.
- 72) Mohammed Shami had scored the highest number of runs.
- 73) Virat Kohli had scored the least number of runs.
- 74) K L Rahul had faced 93 balls in the match.
- 75) India vs Bangladesh had played the cricket world cup-2019.

XII.

- 76) Commerce course has the highest admission takers in the academic year 2020-2021.
- 77) The difference between the admissions to physics and Chemistry is 4%.
- 78) Computer Science group has recorded the second highest number of admission.
- 79) Economics course has the lowest number of admissions.
- 80) Mathematics and Physics has admitted the equal number of the students.

Appendix-IV

Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-2)

Post Test

Answer the following questions

(100 Marks)

Reading skill

I. Tick / circle the correct word from given options which can be substituted for the given sentence. (10 X 1 = 10)

- 1) A speech made without preparation.
a) prepared b) debate c) extempore d) elocution
- 2) A job without salary.
a) honorary b) free service c) voluntary d) amateur
- 3) A person who opposes another
a) soldier b) fighter c) antagonist d) prophet
- 4) A person who have beautiful hand writing
a) writer b) artist c) painter d) calligraphist
- 5) One whose wife is dead.
a) celibate b) divorcee c) widow d) widower
- 6) One who walks in one's sleep.
a) somnambulist b) somniloquist c) soliloquy d) recluse
- 7) A number of ships
a) flock b) crew c) fleet d) bunting
- 8) The study of the origin and history of words
a) etymology b) phonology c) morphology d) philology
- 9) Government by the nobility
a) autonomy b) oligarchy c) democracy d) aristocracy
- 10) A record of one's life written by oneself.
a) epic b) autobiography c) biography d) elegy

II. A) Choose the suitable meaning for the underlined phrasal verb in the following sentences (5 X 1 = 5)

- 11) Sudhakar got on the bus.
a) exit b) went c) enter d) depart
- 12) Don't put off your good decisions.
a) finish b) half c) continue d) postpone
- 13) Suresh calls in a doctor to his home.
a) asks to come b) asks to go c) asks to depart d) asks to leave
- 14) The rope gave way and the bucket fell into the well.
a) mend b) break c) fix d) join
- 15) Samivel ran away with his family.
a) removed b) return c) escaped d) arrived

B). Choose the meaning of the idioms from the options given below (5 X 1 = 5)

- 16) Hit the road
a) to begin a journey b) to cancel journey
c) to plan a journey d) to collapse a journey

- 17) In panic mood
 a) courage after a night out b) fear after a night out
 c) prepare for a picnic d) in flight mood
- 18) Back to the wall
 a) in serious difficulty b) in nervous difficulty
 c) in serial difference d) going back to the wall
- 19) Tight corner
 a) happy situation b) easy situation
 c) in a difficult situation d) in a cheerful mood
- 20) Alarm bells ringing
 a) some good things happening b) warning fire accident
 c) sign of something good d) sign of something going wrong

III. Check the following sentences for the subject-verb agreement and fill the correct one. (10 x 1 = 10)

- 21) Both Dilip and Prem _____ (is / are) good friends.
 22) Neither Aravindh nor his friend _____ (has / have) the book.
 23) Each one of the girls _____ (is / are) responsible.
 24) There _____ (was / were) a number of business men at the party.
 25) Physics _____ (is / are) an interesting subject.
 26) The tiger _____ (is / are) our National animal.
 27) The Minister with his secretaries _____ (has / have) come.
 28) Slow and steady _____ (win/wins) the race.
 29) Some of the boys _____ (is/are) very intelligent.
 30) Vinitha did not _____ (came/come) yesterday.

IV. Identify the errors (the following sentences you have to remove a word to make them grammatically correct.) (10 x 1 = 10)

- 31) Rajesh, who he is my best friend, is a writer.
 a) who b) best c) he d) a writer
- 32) You should tell to me exactly what happened there.
 a) should b) to c) what d) there
- 33) You should complain of if you are not happy with the service you receive.
 a) of b) if c) with d) the
- 34) Vinitha is busy at the work and won't be home before 10.30.
 a) at b) the c) be d) before
- 35) Nithish does not resemble to either of his parents.
 a) does b) to c) of d) her
- 36) Sunil is inferior than to Gishor
 a) is b) inferior c) than d) to
- 37) Though he came late, but he was allowed
 a) though b) but c) he d) was
- 38) Our college is one of the best colleges in a Trichy.
 a) is b) of c) in d) a
- 39) We go to the temple to pray.
 a) go b) to c) the d) pray
- 40) You had better to ask permission from him
 a) had b) better c) to d) from

V. Read the given passage and answer the questions that follow it:**(5 x 1 = 5)**

There are three main groups of oils-animal, vegetable and mineral. Great quantities of animal oil come from whales, creatures of the sea, which are the largest of the animals remaining in the world. To protect the whales from the cold of the Arctic seas, nature has provided them with a thick covering of fat, called blubber. When the whale is killed, the blubber is stripped off and boiled down. It produces a great quantity of oil which can be made into food for human consumption. A few other creatures yield oil, but none so much as the whale. The livers of the cod and halibut, two kinds of fish, yield nourishing oil. Both cod liver oil and halibut oil are given to sick children and other invalids who need certain vitamins.

Vegetable oil has been known from very old times. No household can get on without it, for it is used in cooking. Perfumes may be made from the oils of certain flowers. Soaps are made from eatable and animal products and the oils of certain flowers.

- 41) The main source of animal oil, is –
a) fish b) whale c) seaweeds d) plants
- 42) Vegetable oil is mainly used for –
a) eating b) cooking c) frying d) lubricating
- 43) The.....of fish yields nourishing oil.
a) liver b) stomach c) eyes d) head
- 44) The thick protective covering of fat on a whale is called a –
a) skin b) cell c) blubber d) fins
- 45) are made from vegetable, animal products and the oils of certain flowers.
a) perfumes b) cosmetics c) cooking medium d) soaps

VI) Read the following information given in the table below and answer the questions (5 x 1 = 5)

A nice choice from Chennai to the National capital			
RAJADHANI EXPRESS TIMETABLE			
Shortest Route between Chennai and Hazrat Nizamuddin 8 Halts & 324 intermediate stations in between			
Station Name	Departs	Day	Speed
Chennai Central	06.05	1	75
Vijayawada	11.55	1	76
Warangal	14.40	1	77
Balharshah	18.00	1	78
Nagpur	20.45	1	74
Bhopal	02.10	2	89
Jhansi	05.31	2	99
Gwalior	06.32	2	85
Agra Cantt	07.57	2	76
Hazrat Nizamudin	10.25	2	-

- 46) The number of stations between Chennai Central and Hazrat Nizamudin is.....
 a) five b) ten c) eight d) eleven
- 47) The train is expected to reach around 8.45 PM
 a) Warangal b) Vijayawada c) Bhopal d) Nagpur
- 48) Between the train runs at it's maximum speed.
 a) Bhopal and Gwalior b) Bhopal and Jhansi
 c) Bhopal and Hazrat Nizamudin d) Bhopal and Agra
- 49) People prefer the Rajadhani express to travel from Chennai to reach the capital because
 a) it reaches the destination on the same day b) The charge is reasonable
 c) the train halts at Ten stations d) it is the shortest route from Chennai to New Delhi
- 50) The destination of Rajadhani express is.....
 a) Hazrat Nizamudin. b) New Delhi junction.
 c) Old Delhi. d) Rajkot.

Writing skill

VII. Rewrite the sentence replacing the bolded and underlined words with given suitable Idioms and phrasal verbs : (5 x 1 = 5)

- 51) Murugan submitted his assignment **just before the last minutes.**
 a) the twelfth hour b) the eleventh hour c) the tenth hour d) the first hour

Ans. _____

- 52) The flight will **start** in a few minutes.
 a) take out b) take up c) take on d) take off

Ans. _____

- 53) The pilgrims **started a journey** with their bag and baggage.
 a) set up b) set off c) set on d) set away

Ans. _____

- 54) Only ten boys **appeared** for the interview.
 a) turned up b) turned into c) turned down d) turned on

Ans. _____

- 55) Mayuri will **support** you in difficulty.
 a) stand up b) stand by c) stand for d) stand with

Ans. _____

VIII. Change the Sentences as directed (5 x 1 = 5)

- 56) The coach trained the team. (change into Passive voice)
- 57) The bananas were eaten by the monkeys. (change into Active voice)
- 58) Seeing the snake, Kuzhal ran away. (change into compound)
- 59) Jeevakh is rich but he is not happy. (change into complex)
- 60) Thiha said, "I am very busy now". (change into indirect statement)

IX. Ordering of words in sentence

(10 x 1 = 10)

(Look at the words, phrases or clauses below in the sentences. Each sentence are four sequence labeled as A, B, C and D. You are required to re-arrange the jumbled parts of the sentence to form meaningful sentences. Write the correct sentences in the space provided)

61) of others / good manners / win the love / and respect

A B C D

62) no man / time and tide / wait / for.

A B C D

63) for our / it is / a must / country's progress

A B C D

64) mightier/ is /than sword/ pen

A B C D

65) bears / hard work / always / fruit

A B C D

X. Read the following passage carefully and answer the questions that follow- (10 x 1 = 10)

Food can maintain or save a life. It can destroy life as well. Proper food serves the purpose of medicine. Improper food works as poison and causes diseases. We may take pride in calling ourselves civilized, but we float all the norms about the quality or quantity of food. We mostly eat processed foods. We have drifted away from Mother Nature. Thus the incidence of diabetes has increased very much. According to a survey, diabetes was rare in the natives of India a few years ago. With the advent of processed and junk foods: the incidence of diabetes has shot up within a very short time. By offering ice-creams, chocolates and cakes too often to our children and by attending panics every other day, we, in fact, invite obesity and diabetes.

Questions-

66) What is improper food?

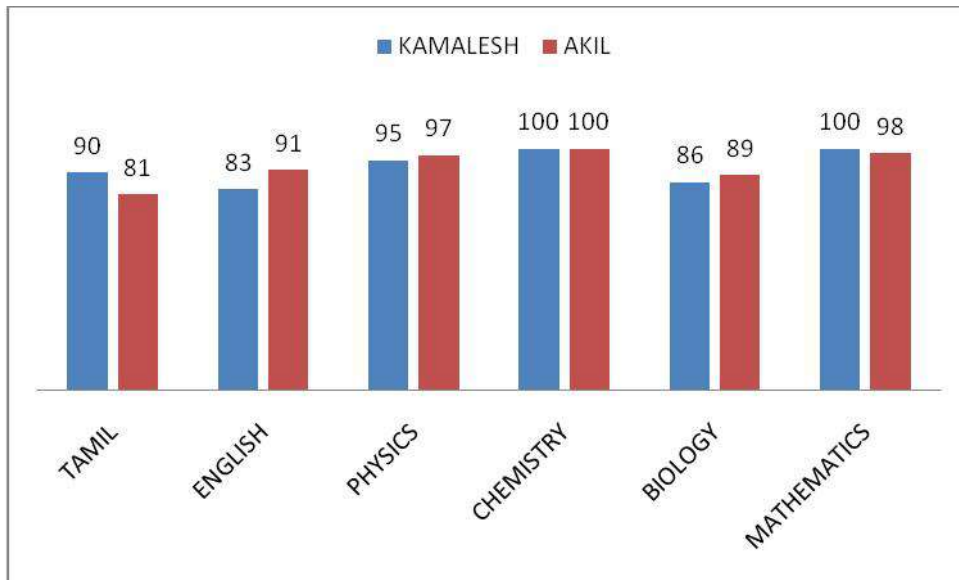
67) What is the effect of improper food?

68) How have we changed our food habits?

69) What are causes for obesity and diabetes?

70) What was the incidence of diabetes a few years ago in India?

XI. The bar graph describes two students obtained marks in final examination in XII standard, from the given bar-graph answer the following questions: (10 x 1 = 10)



71) In which subject both of the students scored centum?

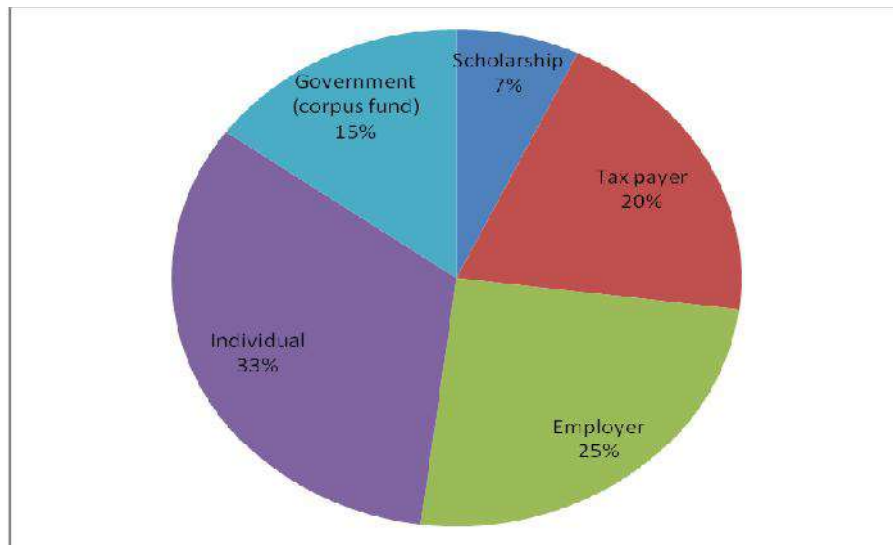
72) In how many subjects, the students got less than 90 marks?

73) Who got more centum in this examination?

74) Who got more marks in this examination?

75) In which subject, both of the students got less than 90 marks?

XII. The pie chart describes the sharing of the cost education for employed adults in a welfare state. (10 x 1 = 10)



76) How much percent more does the tax payers give when compare to government?

77) Who pays the major share?

78) Whose contribution nears that of the individual?

79) Which item gives the minimum?

80) What is the contribution of the government corpus funds?

Answer Keys

Reading skill

I

- 1) c) extempore
- 2) a) honorary
- 3) c) antagonist
- 4) d) calligraphist
- 5) d) widower
- 6) a) somnambulist
- 7) c) fleet
- 8) a) etymology
- 9) d) aristocracy
- 10) b) autobiography

II.

- 11) c) enter
- 12) d) postpone
- 13) a) asks to come
- 14) b) break
- 15) c) escaped
- 16) a) to begin a journey
- 17) b) fear after a night out
- 18) a) in serious difficulty
- 19) c) in a difficult situation
- 20) d) sign of something going wrong

III

- 21) Both Dilip and Prem **are** good friends.
- 22) Neither Aravindh nor his friend **has** the book.
- 23) Each boy and each girl **has** a story to say.
- 24) There **were** a number of business men at the party.
- 25) Physics **is** an interesting subject.
- 26) The tiger **is** our National animal.
- 27) The Minister with his secretaries **has** come.
- 28) Slow and steady **wins** the race.
- 29) Some of the boys **are** very intelligent.
- 30) Vinitha did not **come** yesterday.

IV

- 31) c) he
- 32) b) to
- 33) a) of
- 34) b) the
- 35) b) to
- 36) d) to
- 37) b) but
- 38) d) a
- 39) c) the
- 40) c) to

V.

- 41) b) whale
- 42) b) cooking
- 43) a) liver
- 44) c) blubber
- 45) d) soaps
- VI.
- 46) c) eight
- 47) d) Nagpur
- 48) b) Bhopal and Jhansi
- 49) d) it is the shortest route from Chennai to New Delhi.
- 50) a) Hazrat Nizamudin.

Writing skill

VII.

- 51) b) the eleventh hour
- 52) d) take off
- 53) b) set off
- 54) a) turned up
- 55) b) stand by

VIII.

- 56) The team was trained by the coach.
- 57) The monkeys ate the bananas.
- 58) Kuzhal saw the snake and he ran away.
- 59) Though Jeevakh is rich, he is not happy.
- 60) Thiha said that she was very busy then.

IX.

- 61) Good manners win the love and respect of others.
- 62) Time and tide wait for no man.
- 63) It is a must for our country's progress.
- 64) Pen is mightier than sword.
- 65) Hard work always bears fruit.

X.

- 66) Food that does not serve the purpose of medicine is called improper food.
- 67) Improper food works as poison and causes diseases.
- 68) We mostly eat processed food.
- 69) Processed and junk foods are the main causes for obesity and diabetes.
- 70) A few years ago diabetes was rare in the natives of India.

XI.

- 71) Both Kamalesh and Akil got centum marks in chemistry.
- 72) In three subjects (Tamil, English and Biology) the students got less than 90 marks.
- 73) Kamalesh got two centum in this examination.
- 74) Akil got more marks than Kamalesh in this examination.
- 75) Both Kamalesh and Akil got less than 90 marks in Biology subjects.

XII.

- 76) The tax payer gave 5% when compared to the government.
- 77) Individual 33% paid the major share.
- 78) Employer's contribution nears the individual.
- 79) Scholarship item gives the minimum.
- 80) The contribution of the government corpus fund is 15%.

Appendix-V

Competitive Exam Based English Language Skills Assessment Scale (CEBELSAS-3)

Delayed Post Test

Answer the following questions

(100 Marks)

Reading Skill

I. Tick / circle the correct word from given options which can be substituted for the given sentence. (10 X 1 = 10)

- 1) One who is hundred years old.
a) octogenarian b) septuagenarian
c) centenarian d) old
- 2) A poem of mourning
a) elegy b) sonnet c) lyric d) epic
- 3) A person suffering from nervous breakdown
a) eccentric b) neurotic c) lunatic d) mongrel
- 4) A long journey especially by sea
a) voyage b) flight c) odyssey d) safari
- 5) A sweet music
a) lullaby b) folk song c) melody d) duet
- 6) A place where everything is perfect
a) heaven b) platoon c) cosmos d) utopia
- 7) A thing kept in the memory of a person.
a) memento b) epitaph c) elegy d) gift
- 8) The place where clothes are washed
a) laundry b) mortuary c) kit d) wardrobe
- 9) A person who has just started learning
a) novice b) foreman c) supervisor d) apprentice
- 10) A person who has beautiful handwriting
a) writer b) calligraphist c) artist d) painter

II. A) Choose the phrasal verb from the options given to substitute the underlined word in the following sentences (5 X 1 = 5)

- 11) We respect our teacher for guidance.
a) look for b) look up to c) look out d) look forward
- 12) Maruthai distributes his business card to everyone.
a) gives out b) gives up c) gives in d) gives with
- 13) Thirumala educates the orphan as her own child.
a) bring down b) bring about c) bring up d) break off
- 14) Magamuni and his friends continue their travel.
a) go in b) go down c) go on d) give up
- 15) The army controls the rebels.
a) put by b) put off c) put up d) put down

B). Choose the meaning of the idioms from the options given below (5 X 1 = 5)

16) Under the sun

- a) particular place b) anywhere on the earth
c) above the earth d) under the earth

17) Rain cats and dogs

- a) sprinkle b) light rain c) drizzle d) raining heavily

18) Apple of one's eye

- a) one's favourite person b) one's enemy
c) one's rival d) one's desired apple

19) A drop in the ocean

- a) unimportant b) big matter c) important d) very big issue

20) In two minds

- a) sure b) decided c) in a dilemma d) certain

III. Check the following sentences for the subject-verb agreement and fill the correct one. (10

x 1 = 10)

21) Thousand miles _____ (**is / are**) a long way.

22) My spectacles _____ (**is / are**) broken.

23) What _____ (**is / are**) the time on your watch?

24) Some of the rice _____ (**is / are**) spilt.

25) The actor and politician _____ (**is / are**) coming to my office.

26) There _____ (**was/ were**) a number of teachers at the function.

27) Manimekalai _____ (**give / gives**) me a pen.

28) Chandrasekaran _____ (**meets / met**) his uncle yesterday.

29) The rose _____ (**is smelling / smells**) sweet.

30) I _____ (**use / used**) to take long walks in the morning

IV. Identify the errors (the following sentences you have to find a mistake/remove a word to make them grammatically correct.) (10

X 1 = 10)

31) Two birds are sitting above on the tree.

- a) are b) above c) on d) the

32) How do you go to college - on a foot?

- a) do b) to c) on d) a

33) My daughter has a good command to over the English language.

- a) a b) to c) over d) the

34) The pen is more mightier than the sword.

- a) more b) mightier c) than d) the

35) I prefer tea than to coffee.

- a) tea b) than c) to d) coffee.

36) The students enter into the classroom

- a) the students b) enter c) into d) the classroom

37) Siva is waiting for you.

- a) is b) waiting c) for d) you

38) The captain told to his friends that they would win the match.

- a) told b) to c) that d) would

39) Ramaswamy is busy at the work and won't be home before 12.30.

- a) at b) the c) be d) before

40) I don't speak of either Hindi or Telugu.

- a) speak b) of c) either d) or

V. Read the given passage and answer the questions that follow it: (5 x 1 = 5)

Yoga is the ancient Indian system to keep a person fit in body and mind. It is basically a system of self-treatment. According to the yogic view, diseases, disorders and ailments are the results of some faulty ways of living, bad habits, lack of proper knowledge and unsuitable food. The diseases are thus the resultant state of a short or prolonged malfunctioning of the body system. Since the root cause of disease lies in the mistakes of the individual, its cure also lies in correcting the mistakes by the same individual. Thus yoga relies entirely on the effort of the patient to cure himself. The yoga expert shows only the path and works no more than as a counsellor. The yogic practice of treatment comprises three steps namely proper diet, proper yogic practice and proper knowledge of things concerning the self.

Questions:

41. What is the benefit of yoga?

- a) keeps a person fit in body and mind
- b) provides a job to the person
- c) provides entertainment to the person
- d) keeps a person rich

42. What causes diseases, ailments and disorders?

- a) bad habits
- b) labour jobs
- c) exercise
- d) good diet

43. How does a yoga expert work?

- a) guide
- b) teacher
- c) physician
- d) counselor

44. Which one is not the part of the yogic practice of treatment?

- a) proper diet
- b) proper yogic practice
- c) proper knowledge of things
- d) proper medical treatment

45. Yoga is a system of
- medical treatment
 - self treatment
 - surgical treatment
 - homeopathic treatment

VI. Read the table carefully and answer the questions given below (5 x 1 = 5)

List of hotels in Trichy

HOTEL	TYPE OF ROOM		RENT AMOUNT PER DAY	DISTANCE (km) from Central bus stand
Hotel Tamil Nadu	Single	Non A/C	Rs. 370	3 km
Hotel Cheran	Single	Non A/C	Rs.560	4 km
Hotel Pothigai	Double	Non A/C	Rs.450	1 km
Hotel Kaveri Park	Double	Deluxe A/C	Rs.780	5 km

- 46) Which is the nearest hotel from central bus stand?
- Tamil Nadu
 - Cheran
 - Pothigai
 - Kaveri
- 47) Which is the hotel that can cater to all the requirement of a thrifty tourist?
- Tamil Nadu
 - Cheran
 - Pothigai
 - Kaveri
- 48) Which is the difference in the rent between Hotel Tamilnadu and Kaveri Park?
- 420
 - 460
 - 410
 - Car
- 49) Which is the distance between the bus stand and Hotel Cheran?
- 3 km
 - 4 km
 - 1 km
 - 8km
- 50) Why is the Kaveri Park hotel so expensive?
- very near to the bus stand
 - spacious rooms
 - double, deluxe A/C
 - double, non A/C

Writing Skill

VII. Rewrite the sentence replacing the bolded and underlined words with given suitable Idioms and phrasal verbs : (5 x 1 = 5)

- 51) The judgment of the lower court was declared **invalid** by the high court
- null and void
 - void and null
 - null void
 - void null

Ans.

52) Thanvanth **wore** a new dress on his birthday.

- a) put off b) put up with c) put on d) put down

Ans. _____

53) Amirthavalli was **extremely happy** in the moment she met her friends.

- a) every cloud has a silver b) dressed to the nine
c) double header d) on cloud nine

Ans. _____

54) Sangaralingam's father **died** last week.

- a) passed out b) passed on c) passed away d) passed off

Ans. _____

55) Mahatma Gandhi is **well known** everyone.

- a) want introduction b) get introduction
c) no need to introduce d) give introduction

Ans. _____

VIII. Change the Sentences as directed

(5 x 1

= 5)

56) Suriyaprakash ate a mango. (change into Passive voice)

57) The rules are followed by Thangavel. (change into Active voice)

58) Having written the letter, I post the letter. (change into compound)

59) Because of his hard word he passed in the exam. (change into complex)

60) Nagarjun said, "I write a poem". (change into indirect statement)

IX. Ordering of words in sentence

(5 x 2 =

10)

(Look at the words, phrases or clauses below in the sentences. Each sentence are four sequence labeled as A, B, C and D. You are required to re-arrange the jumbled parts of the sentence to form meaningful sentences. Write the correct sentences in the space provided)

doing exercises

61) to water / You can lead a horse / it drink / but you can't make.

- A B C D

62) while / the cat's away / will play / the mice .

A B C D

63) is / necessity / of invention / the mother

A B C D

64) to walk / learn /you run / before

A B C D

65) their deaths/ die many times/ before/ cowards

A B C D

X. Read the following passage carefully and answer the questions that follow- (5 x 2 = 10)

India is a secular, democratic nation. This implies that every religion is treated equally and at par with every other religion. No religion is accorded any preferential treatment of any kind. All citizens are also free to practice, preach or profess any religion of their choosing. The state does not have a unified or homogeneous religious following

This unique characteristic of India ensures its unity in diversity. India has been the birthplace of several religions and is the land where all these religions - such as Hinduism, Christianity, Buddhism, Sikhism, Zoroastrianism, Jainism and so on exist simultaneously, peacefully and harmoniously.

But, some anti-social elements have interpreted the sanctity of religions in a twisted way. No religion preaches violence or rioting. All the religions are but various ways to reach the Supreme Being, they are paths which lead to the ultimate truth and salvation, though we refer to the destination by various names such as Jesus, Krishna, Buddha. Allah and so on. It is important to realize that in order to ensure a peaceful mosaic of cultural distinctness, the path of non-violence or ahimsa, as given by the Father of the nation, must be followed unwaveringly.

God created man in his own image. Hence, it follows naturally that there is some divinity within all human beings. Thus, to kill and murder in the name of religion is blasphemy. Only once the religious fanatics understand this, will there be perpetual peace in the land.

Questions:

66) What is meant by the term "Secular"?

67) What is special about India's association with religion?

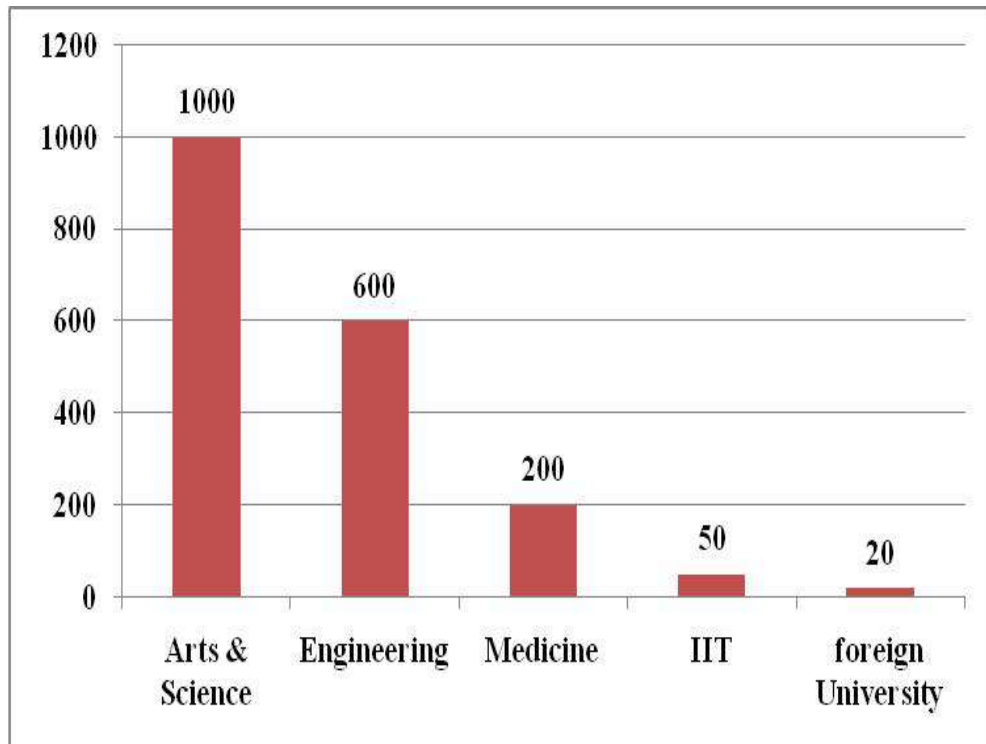
68) Why are human beings divine?

69) How can all religions co-exist peacefully?

70) Give a suitable title that fits this essay best?

XI. Study the Pie chart given below and answer the questions. (5 x 2 = 10)

Number of students opting for various courses from Thuraiyur taluk in Trichy district (2020-21)



71) Which course is the most popular?

72) Which is the lowest course sought by students?

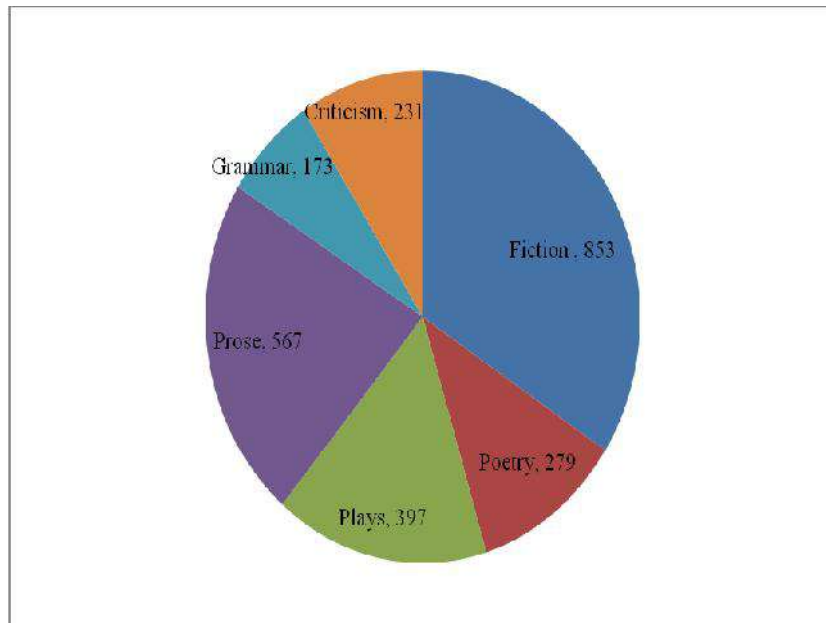
73) How much is the difference between Engineering and Medicine?

74) What is the ratio between Arts & Science and Engineering students?

75) Why is the number of students opting for foreign universities less?

XII. Study the bar chart given below and answer the questions. (5 x 2 = 10)

List of Books in English Department library, Imayam Arts and Science College



76) What does the graph represent?

77) What title has a large number of books?

78) Which titles need improvement?

79) What is the total number of books?

80) Which title has the minimum number of books?

Answer Keys

Reading Skill

I

- 1) c) centenarian
- 2) a) elegy
- 3) b) neurotic
- 4) a) voyage
- 5) c) melody
- 6) d) utopia
- 7) a) memento
- 8) a) laundry
- 9) d) apprentice
- 10) b) calligraphist

II.

- 11) b) look up to
- 12) a) gives out
- 13) c) bring up
- 14) c) go on
- 15) d) put down
- 16) b) anywhere on the earth
- 17) d) raining heavily
- 18) a) one's favourite person
- 19) a) unimportant
- 20) c) in a dilemma

III.

- 21) Thousand Miles **is** a long way.
- 22) My spectacles **are** broken.
- 23) What **is** the time on your watch?
- 24) Some of the rice **is** spilt.
- 25) The actor and politician **is** coming to my office.
- 26) There **were** a number of teachers at the function.
- 27) Manimekalai **gives** me a pen.
- 28) Chandrasekaran **met** his uncle yesterday.
- 29) The rose **smells** sweet.
- 30) I **used** to take long walks in the morning

IV.

- 31) b) above
- 32) d) a
- 33) b) to
- 34) a) more
- 35) b) than
- 36) c) into
- 37) c) for
- 38) b) to
- 39) b) the
- 40) b) of

V.

- 41) a) keeps a person fit in body and mind
- 42) a) bad habits
- 43) d) counselor
- 44) d) proper medical treatment
- 45) b) self treatment

VI.

- 46) c) Pothigai
- 47) d) Kaveri
- 48) c) 410
- 49) b) 4 km
- 50) c) double, deluxe A/C

Writing Skill

VII.

- 51) The judgment of the lower court was declared **null and void** by the high court
- 52) Thanvanth **put on** a new dress on his birthday.
- 53) Amirthavalli was **on cloud nine** in the moment she met her friends.
- 54) Sangaralingam's father **passed away** last week.
- 55) Mahatma Gandhi **no need to introduce** everyone.

VIII.

- 56) A mango was eaten by Suriyaprakash.
- 57) Thangavel follows the rules.
- 58) I wrote the address and then I posted the letter.
- 59) As he worked hard, he passed in the examination.
- 60) Nagarjun said that she wrote a poem.

IX.

- 61) You can lead a horse to water but you can't make it drink.
- 62) While the cat's away, the mice will play
- 63) Necessity is the mother of invention.
- 64) Learn to walk before you run.
- 65) Cowards die many times before their deaths.

X.

- 66) Secular - there is no state religion, all religions enjoy an equal importance
- 67) India has been the birthplace of several religions and here, all of them co-exist harmoniously
- 68) Because God created man in his own image
- 69) By adopting the path of non-violence or ahimsa
- 70) Suitable title

XI.

- 71) Arts & Science course is the most popular.
- 72) Courses in Foreign Universities is the lowest sought by students.
- 73) 400 students is the different between Engineering and Medicine students.
- 74) 5:3 is the ratio between Arts & Science and Engineering students.
- 75) Only 20 students opting for foreign Universities is less because it's very expensive.

XII.

- 76) The graph represents number of books in different titles in English department.
- 77) Fiction title has a large number of books
- 78) Grammar title poetry and criticism title need improvement.
- 79) There are 2500 books in the departmental library.
- 80) Grammar title has minimum number of books.



Home

UGC

Q Search

UGC-CARE List

Journal Details

Journal Title (in English Language)	Education India: A Quarterly Refereed Journal of Dialogues on Education
Journal Title (in Regional Language)	Education India: A Quarterly Refereed Journal of Dialogues on Education
Publication Language	English
Publisher	Education India
ISSN	NA
E-ISSN	2278-2433
Discipline	Social Science
Subject	Social Sciences (all)
Focus Subject	Education



A Quarterly Refereed Journal
of Dialogues on Education
(ISSN 2278-2435)

Vol. 10, Issue-2, May 2021

Index

Education India Journal: A Quarterly Refereed Journal of Dialogues on Education, A
UGC- CARE List Journal, ISSN 2278-2435, Vol. 10, Issue-2 May-2021. Page 1

24. Rural Undergraduate ESL Students' Difficulties of Understanding and Writing the Graphical Representation

- **Dr. E. Ramganes**, Professor, Department of Educational Technology, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India, dreramganes@bdu.ac.in
- **C. Hariharan**, Research scholar, Department of Educational Technology, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India, hariharanfive@bdu.ac.in

Abstract

The aim of this study is to identify the difficulties of understanding and writing the graphical representation among rural undergraduate students at Bharathidasan university affiliated colleges in Tiruchirappalli region. It has adopted descriptive qualitative and quantitative research method. The subjects were 109 rural undergraduate students of English department at final year. They were instructed to understand the graphical representation and answer the following questions in one or two sentences. After investigating students' writing product, the result of the research revealed that the rural students faced some difficulties in both understanding and writing the graphical representation. It was suggested that provide specific descriptions for understand the graphical representation and writing to improve students' writing.

Key Words: graphical representation, rural undergraduate students,

Introduction

English language plays a vital role in communication particularly multilingual countries like India. Every people should try hard to acquire good communication skills which are important for his/her career (Sharma, 2019; Abilasha & Ilankumaran, 2018; Gomathi, 2014). Fareed, Ashraf, & Bilal (2016) findings reveal that the major problems of English as a second language (ESL) students' writing are insufficient linguistic proficiency in writing, lack of ideas, reliance on L1 and weak structure organization. And also they provided some challenges are influenced by different factors such as untrained teachers, ineffective teaching methods, lack of reading and writing practice, large classrooms, low motivation and lack of ideas. DelMas et al., (2005) study explored that students' difficulty in reading and interpreting graphical representations of distributions. Okumus (2020) reveals that reading is a complex process and students usually have difficulties in constructing meaning from writing text. Rastle (2019) arguing that the nature of the understanding system is a reflection of the writing system and that a deep understanding of reading can be obtained only through a deep understanding of written language. Atayeva et al., (2019) investigated how college students' understanding of the reading affect

students' academic writing and they reveal that reading and writing are very necessary for the success of their studies.

Sermsook et al., (2017) stated that writing in English has been perceived as the most difficult skill among the four skills of English. Even a native speaker fails to write a well manner of writing. Moses & Mohamad (2019) have revealed that writing competence in a second language (L2) is complex, challenging and difficult for students to acquire. It will be considered as difficult and complex when writing includes discovering a proposition or an idea. A number of recent research studies world widely have been conducted on writing in the ESL context revealed that learners face different form of challenges in writing in English such as paragraphs (Melati, 2020; Al-Ghabra, & Najim, 2019), essays (Ayana, 2020) research paper writing (Tuyena et al., 2019), and thesis or project (Jiang, & Yan, 2020). Hussain (2019) believes that performance of language development in subject to improve writing skills. A text of an effective ESL writer must be cohesive, logical, clearly structured, interesting and properly organized with a wide range of vocabulary and mastery of conventions in mechanics (Al-Ghabra, & Najim, 2019). In this way, the researchers have tried to found out the difficulties of writing of undergraduate students while describe to write the graphical representation.

Review of Related studies

Khanum & Siddiqui, (2018) stated that rural areas students are not aware of the importance of English. The students do not have equal opportunities to get good English education in institutions. Similarly, Ponmozhi & Thenmozhi (2017) conducted a study on problems and the difficulties faced by the rural students in English learning. They discussed many challenges were faced by the rural students in English language skills especially in writing. This study revealed that learning difficulty of English at rural students was very high. Tuyena et al., (2019) pointed out in their study, learning English as a second language (ESL) for students have been challenging, particularly in writing skills. Similarly a previous study has conducted by Maznun et al., (2017) revealed that undergraduate ESL Students' difficulties in Writing the introduction for research reports. Sholeha, Ghozali, & Mahbub, (2019) have examined challenges of undergraduate students in writing skills. The study reveals various difficulties of students in vocabulary problems, cognitive problem, punctuation, spelling, preposition, word order and subject verb agreement as a grammatical problem and sentence structure problems. A study by Ayana, (2020) has revealed that first year university students encounter various

problems in essay writing such as sentences errors, wrong use of grammatical structures, vocabulary and others. Rozimela & Wahyuni (2019) have indicated that the college students have various writing problems in developing and organizing their ideas even though their texts contained the components of the generic structure. Also, they reveal that students have complex grammatical problems. The result of the study has shown a gap between the students' perceived needs, their learning preferences, and their writing ability. DelMas et al., (2005) have examined the high school and college students to analysis through assessment items used in a large scale class testing of graphical representations. They focused on the use of items that revealed some consistent errors and misconceptions of the students' exhibit when presented with graphical representations of data. They found out that college students' have difficulties in bar graphs and time plots; they tend to confuse bar graphs and time plots with histograms.

Objective of the study

- To ascertain the understanding of the graphical representation and writing difficulties of rural undergraduate students in Tiruchirappalli region.
- To identify the language skills influencing the difficulties of the rural undergraduate students in relation to graphical representation understanding and writing.
- To provides valuable recommendations for policy decisions towards integrating to develop the writing skills at college level.

Hypotheses of the Study

To accomplish the objectives the following hypotheses were formulated for testing:

- There is no statistically significant differences between the rural undergraduate students have problems in understanding and writing of the graphical representation.
- There is no statistically significant difference between the male and female rural undergraduate students in relation to the understanding of the graphical representation and writing.

Methodology

The investigator adopted descriptive method with a survey technique to collect the data from the sample. SPSS Package was used to analyses the data. Survey technique is generally used for the type of research that attempts to find out the normal or typical condition or practice at the present time. It is most commonly used approach to solve educational problems. The type of

information the survey technique procedure is in wide demand and is capable of rendering important service because it determines the present trends and solve current problems (Fink, 1995). A sample of 109 rural undergraduate students was chosen by simple random technique for the present study. Out of the sample 109 rural undergraduate students are male and 58 of them are female. They belong to English multi-disciplinary. The main reason for selecting the rural undergraduate students as sample of the this study is that they have difficulties in competitive exams such as Union Public Service Exam, Banking, Management and Corporate sectors commit errors in the areas of linguistic and communicative competence.

Tool

The “Understanding of Graphical Representation scale” (UGRS) was developed by the investigators and validated by the experts. The tool was administered to the sample. The questions were taken from previous competitive examinations and based on the following two language skills such as reading and writing. For establishing face validity and content validity, the tool was subjected to the advice of a panel of experts. Based on their expertise, the tool was fine –tuned with necessary modification. The UGRS has divided as two dimensions such as reading and writing, each question has given 1mark and totally 30 marks.

Results

Analysis and interpretation of the results are the most important steps after the data collection. The collected data were analyzed by use of appropriate statistical techniques for the present study.

Descriptive Statistics

Descriptive analysis summarizes the data meaningfully. It is use to measure the central tendency and the variability of the research data.

Table-1 Difficulties of Understanding (Reading) and Writing the Graphical Representation

D	Topic	0 mark	%	1 mark	%	2 marks	%	3 marks	%	4 marks	%	5 marks	%
R	Bar chart	0	0	65	59.63	7	6.42	28	25.68	4	3.66	5	4.58
	Pie chart	0	0	8	7.33	85	78	5	4.58	8	7.33	3	2.75
	Table	0	0	0	0	42	38.5	51	46.78	10	9.17	6	5.5
W	Bar chart	9	8.25	71	65.13	17	15.6	12	11	0	0	0	0
	Pie chart	11	10.1	64	58.71	18	16.5	14	12.84	2	1.83	0	0

	Table	0	0	31	28.44	45	41.3	25	22.93	8	7.33	0	0
--	-------	---	---	----	-------	----	------	----	-------	---	------	---	---

D = Dimension, R = Reading, W= Writing

Table -1 summarized proportion of (marks 0-5 each topics) responses for each the UGRS's questions. For the overall sample, a very few rural undergraduate students obtained 5 marks only in reading dimension topics such as bar chart 5 students (4.58%), pie chart 3 students (2.75) and 6 students (5.5) in understanding the graphical representation. Also, below 10 students obtained 4 marks in each topics such as bar chart 4 students (3.66%), pie chart 8 students (7.33) and 10 students (9.17) in understanding the graphical representation but in writing no student obtain marks in bar chart, 2 students obtained in pie chart and 8 students obtained marks in table. Total number of the students more than ten students obtained zero marks in writing especially bar and pie chart. An analysis of the respondent for each questions showed a lot of variation between reading and writing in the table - 1. Most of the students obtained one marks in both reading and writing, especially in writing above (65 %) students obtained one mark in answer the graphical representation. So, the result reveals that most of the students have difficulties in understating and writing the graphical representation.

Table-2 Level of Understanding and Writing the Graphical Representation

Variables	low		Average		High	
	No	%	No	%	No	%
Reading	31	28.44	67	61.46	11	10.09
Writing	78	71.55	29	26.6	2	1.83
Total	54	49.54	46	42.2	9	8.25

From the above table -2, it is inferred that most of the rural undergraduate students have low level of understanding and writing skills in graphical representation with its dimensions such as reading (28.44), writing (71.55) and total (49.54). It can be seen from the table-2, that as many as 61.46 % understanding and writing skills in graphical representation have found to be average in reading, 26.6 % students were in writing and 42.2% were in total. Very few numbers of

students have found to be high, 10.09% in reading, 1.83 in writing and only 8.25% rural undergraduate students understanding and writing skills in graphical representation.

Differential Analysis

Table -3 Difference in understanding and writing the graphical representation with its dimensions on students' Gender

Dimensions	Gender	No	Mean	S D	Df	t value	P value	Result
Reading	Male	51	3.784	1.4045	107	4.641	0.000	S
	Female	58	5.621	2.6146				
Writing	Male	51	6.118	1.0516	107	3.508	0.000	S
	Female	58	7.569	2.9446				
Total	Male	51	9.902	1.735	107	4.491	0.000	S
	Female	58	13.19	5.2598				

S= significant

From the table-3, indicates that there is significant between the male and female rural students in their graphical representation understanding and writing such as reading ($t = 4.641$), writing ($t = 3.508$) and total ($p = 0.000$, $t = 4.491$, $df = 107$). The sub skills such as reading, writing and total p value are 0.000 less than at 0.05 level. Therefore, there exists a significant difference in the male and female rural undergraduate students in graphical representation understanding and writing such as reading and writing in Tiruchirappalli region. Although, male students mean score is lower than that of counterparts, male students were found to have more difficulties in graphical representation understanding and writing than that of their female students.

Findings

To help the rural undergraduate students' understanding and writing in graphical representation for their competitive examination competence to develop, understanding the base of English grammar and linguistic aspects are the most essential. The result of the research reported that the rural undergraduate students faced various difficulties in understanding and

writing the graphical representation. Table 1 revealed some topics to be low marks in graphical representation. The major findings of the study follow as:

1. Most of the rural students have difficulties of understanding and writing the graphical representation as high such as bar chart, pie chart and table.
2. The level of understanding and writing the graphical representation is low among the rural undergraduate students.
3. Gender of the rural undergraduate students has influenced the understanding and writing the graphical representation.

Recommendations

- The teacher must train their students to read more to add their knowledge about English rules and to add their vocabulary that being the most important aspect in surviving them in the competitive world.
- The teacher must focus on students' difficulties in the research finding and apply various methods in teaching which is being the most challenging area. Therefore, teachers' feedback were mostly important after taking exercises to improve students' writing and to reduce students' difficulties.
- The teachers should provide enough challenges reading comprehension passage to transfer meaningful chart or tables and novelty by using innovative and interesting material aids or examples which will stimulate the students' brain for knowledge acquisition and the long term retention in memory.
- The teacher should be trained to create fear free, stress free environment by providing positive reinforcement, using motivational techniques such as story writing, picture description, story completion etc.

Conclusion

Rural undergraduate students' difficulty of understanding and writing the graphical representation is various. The various of difficulties can be categorized into low level, average level and high level. These facts would influence their reading and writing product as long as their understanding about graphical representation. Here, it is suggested for future work provide more

specific description of linguistic aspects in writing to help the teachers for teach the reading and writing materials that promote the importance of linguistic aspects of English language skills.

References

- Abilasha, R., & Ilankumaran, M. (2018). English Language Teaching: Challenges and Strategies from the Indian Perspective. *International Journal of Engineering & Technology*, 7(3.6), 202. Retrieved from <https://doi.org/10.14419/ijet.v7i3.6.14970>
- Al-Ghabra, I. M. M. M., & Najim, A. S. (2019). Analyzing errors committed in paragraph writing by undergraduates. *Journal of Language Teaching and Research*, 10(2), 264-270. Retrieved from <http://dx.doi.org/10.17507/jltr.1002.07>
- Atayeva, M., Putro, N. H. P. S., Kassymova, G., & Kosbay, S. (2019). Impact of reading on students' writing ability. In *Materials of International Practical Internet Conference "Challenges of Science"* (pp. 5-13). Retrieved from <https://doi.org/10.31643/2019.001>
- Ayana, T. G. (2020). An Investigation of EFL Students' Essay Writing: Problems and Suggestions: Ambo University First Year Students in Focus. Retrieved from <https://core.ac.uk/reader/287193296>
- Ayana, T. G. (2020). An Investigation of EFL Students' Essay Writing: Problems and Suggestions: Ambo University First Year Students in Focus. Retrieved from <https://core.ac.uk/reader/287193296>
- DelMas, R. O. B. E. R. T., Garfield, J. O. A. N., & Ooms, A. (2005). Using assessment items to study students' difficulty reading and interpreting graphical representations of distributions. In *Fourth Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-4)*. Retrieved from http://apps3.cehd.umn.edu/artist/articles/SRTL4_ARTIST.pdf
- Fareed, M., Ashraf, A., & Bilal, M. (2016). ESL learners' writing skills: Problems, factors and suggestions. *Journal of Education and Social Sciences*, 4(2), 81-92. Retrieved from http://lcwu.edu.pk/ocd/cfiles/Professional%20Studies/PGDT/ELT-507/Handout1ESLLearnerswritingskills_2.pdf
- Fink, A. (1995). *The survey handbook* (vol.1). Thousands oaks, CA: Sage. Retrieved from <http://www.ajol.info/viewarticle.php?jid=164&id=37030&layout=abstract>

- Gomathi, B. S. (2014). Enriching the skills of rural students with effective methods of teaching English language using LSRW Skills. *International Journal of Education and Information Studies*, 4(2), 65-69. Retrieved from http://www.ripublication.com/ijeisv1n1/ijeisv4n2_01.pdf
- Hussain, S. S. (2019). Strategies for Teaching Academic Writing to Saudi L2 Learners. *English Language Teaching*, 12(12), 1-11. Retrieved from <https://doi.org/10.5539/elt.v12n12p1>
- Jiang, S., & Yan, X. (2020). Research on the Effect of Supervisor Feedback for Undergraduate Thesis Writing. *English Language Teaching*, 13(1), 43-50. Retrieved from <https://doi.org/10.5539/elt.v13n1p43>
- Khanum, K., & Siddiqui, F. H. (2018). Difficulties of students in English as a medium, a sociolinguistic study of the government colleges in the rural areas of Quetta and Zhob divisions of Baluchistan. *International journal of social sciences*, 1(1), 18-30. Retrieved from <https://doi.org/10.31295/ijss.v1n1.14>
- Maznun, M. D. B., Monsefi, R., & Nimehchisalem, V. (2017). Undergraduate ESL Students' Difficulties in Writing the Introduction for Research Reports. *Advances in Language and Literary Studies*, 8(1), 9-16. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1127018.pdf>
- Melati, E. (2020). College student's problems in writing paragraph (A Case study at fourth semester students of informatics management of Amik Mitra Gama). *English Language and Pedagogy*, 5(1), 29-36.
- Moses, R. N., & Mohamad, M. (2019). Challenges Faced by Students and Teachers on Writing Skills in ESL Contexts: A Literature Review. *Creative Education*, 10(13), 3385-3391. Retrieved from <https://doi.org/10.4236/ce.2019.1013260>
- Okumus, S. (2020). The Effect of Cooperative Reading-Writing-Application Method on Environmental Science Learning and Writing Skills Development. *International Journal of Progressive Education*, 16(1), 168-191. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1244909.pdf>
- Ponmozhi, D., & Thenmozhi, A. (2017). Difficulties Faced By the Rural Students in Learning English at High School Level. *IOSR Journal of Humanities and Social Science*, 22(6), 31-34. DOI: 10.9790/0837-2206133134

- Rastle, K. (2016). Visual word recognition. In *Neurobiology of Language*, Academic Press, 255-264. Retrieved from <https://pdfs.semanticscholar.org/af37/46067a02a3d4b63ef541740fb9cd569d430d.pdf>
- Rozimela, Y., & Wahyuni, D. (2019). The Relationship Between Students' Perceived Needs, Their Learning Preferences and Their Ability of Writing Academic Text. *International Journal on Studies in English Language and Literature*, 7(2), 1-9. Retrieved from <http://dx.doi.org/10.20431/2347-3134.0702001>
- Sermsook, K., Liamnimit, J., & Pochakorn, R. (2017). An Analysis of Errors in Written English Sentences: A Case Study of Thai EFL Students. *English Language Teaching*, 10(3), 101-110. Retrieved from <http://dx.doi.org/10.5539/elt.v10n3p101>
- Sharma, V. (2019). Challenges in Teaching Communication Skills (English) to Undergraduate Students in Himachal Pradesh (India). *Indian Journal of Applied Research*, 9(10), 25-26. DOI : 10.36106/ijar
- Sholeha, M., Ghazali, I., & Mahbub, M. A. (2019). Undergraduate Students' Difficulties in Writing Descriptive Paragraph. *LINGUAPEDIA: Journal of English Education, Literature, and Linguistics Studies*, 1(1).
- Tuyena, T., Osmana, S. B., Ahmada, N. S. B., & Danb, T. C. (2019). Developing and Validating Scoring Rubrics for the Assessment of Research Papers Writing Ability of EFL/ESL Undergraduate students: The Effects of Research Papers Writing Intervention Program using process genre model of research paper writing. Retrieved from <http://icsai.org/ijllce/archive/2018/issue1/ijllce-061.pdf>

**SAVITRIBAI PHULE
PUNE UNIVERSITY**

[Home](#)
[UGC](#)

UGC-CARE List

Journal Details	
Journal Title (in English Language)	Research and Reflections on Education
Publication Language	English
Publisher	St. Xavier's College of Education
ISSN	0974-648X
E-ISSN	NA
Discipline	Social Science
Subject	Social Sciences (all)
Focus Subject	Education

Copyright © 2022 Savitribai Phule Pune University. All rights reserved. | Disclaimer

RESEARCH AND REFLECTIONS ON EDUCATION

ISSN 0974-648X

a peer reviewed and refereed quarterly journal

UGC- CARE Approved

Volume : 19 No : 04

RS.50

Oct - Dec 2021

*Meta-Cognitive Awareness and
Academic Self-Concept*

*Emotional Intelligence
and Self-Concept*

*Private Tutoring and
mainstream Schooling*

*Re-orienting
children's literature.*

*Well-being of secondary
school teachers*

*Career Choices of Higher
Secondary Students*

*Science process skills and
scientific attitude*

*Teachers' effectiveness
and students' academic
performance*

*Design thinking for
business management*

*Assessing English
language skills*

*Job Satisfaction of
medical personnel*

*Leadership traits of Tamil
optional B.Ed. Students*



St. Xavier's College of Education
(Autonomous)

[Re-accredited (3rd cycle) at 'A' Grade by NAAC with CGPA : 3.67]

PALAYAMKOTTAI - 627 002. TAMIL NADU.

Email: rresxce@gmail.com

Web: www.sxcejournal.com

Respected Readers!

At the outset let me wish you a great and joyous Christmas and a grace-filled New Year 2022. May the coming year bring us more meanings and happiness to our lives; let it also offer us fruitful challenges so that we grow as a human community.

Glancing the programme schedule of teacher education, we could see, the TEIs in Tamil Nadu have sent in their prospective teachers to various schools for teaching internships. Internships in the schools, an integral part of teacher education, have the major aims of practicing the steps of newly taught pedagogy and classroom management. While applying the theory, the prospective teachers undergo a sea change in their perception of students, the senior teachers, parents and the management, in their understanding of the effects of pedagogy, in their ability to create the strategies in the classroom to inculcate the content, and the effective use of social intelligence. Though the time limit for internship seems to be a long stretch, number of dimensions of the prospective teachers seem to be growing apart from the academic development; Especially, the affective domain seems to be gaining its momentum, allowing the prospective teachers to be making an inner-reading of the person.

The internship offers an experience where the prospective teacher is expected to interact with school students of individual differences, not merely in terms of academic, but also economic, social and cultural that the person is exposed to a new society of various humans. Encountering with different kinds of people has always its advantages, leave alone the risk involved but think of new thoughts and refreshment of your knowledge. Ultimately what happens to the prospective teacher is the shaping of the personality; a new person is created, sharpened in social and emotional intelligence as per the needs of the society.

It is interesting to note that some of our prospective teachers had their internship online; this means to say, teaching-learning occurred through different learning management systems, duly organised by the schools as well as the students. Albert Einstein says, "In the midst of every crisis, lies great opportunity" (University News, 59(48), 2021, p.23). Difficulties are there but they open up new horizons for blended learning and flexible learning platforms. On the whole, every event in pre-service programme of any discipline, should always mould the person so as to fit him / her for the future mission.

In this issue, we have twelve papers on various themes including emotional intelligence, well-being, job satisfaction, mobile learning, and so on. These articles and research papers have brought out a number of findings which would certainly, I hope, influence the thinking of educationists and help design a new pattern in our teaching-learning process.

Again, wishing you a happy Christmas and prosperous New Year 2022.

* Editorial Board



RESEARCH AND REFLECTIONS ON EDUCATION

(A Quarterly Journal)

Reg.No : TNENG / 2003 / 10220

ISSN : 0974-648X

CONTENT

Meta-cognitive Awareness and Academic Self-concept among Seventh Standard School Students

Dr. Nageswara Rao Mikkili

A Study of Emotional Intelligence and Self-concept of the Students of Standard Eight of Mysore District

Dr. Chidananda A.L.

Private Tutoring and its Impact on Mainstream Schooling : A Case Study

Dr. Chingthamtomba, Gyaneshwari Longjam

Re-orienting Popular Children's Literature in Second Language Classroom

Soumi Mandal

Well-being among Secondary School Teachers with respect to Category and Monthly Income

Prof. C.Madhumathi, Dr.Kurimeti Dayakar

Career Choices of Higher Secondary Students

Dr. M.Govindan

A Study on the Relationship between Science Process Skills and Scientific Attitude

Dr. Sharmila L Mascarenhas

Role of Teachers' effectiveness on Students Academic Performance at the Secondary Level

Subhabrata Ghosh

Design Thinking for Business Management-Bridging New Age Learning with Mobile Learning in Higher Education

Dr (H.C). D.M. Arvind Mallik

Assessing English Language Skills of Undergraduate ESL Learners

Dr E. Ramganes, C. Hariharan

Job Satisfaction of Medical Personnel-An Indian Perspective

Dr. Johnson R

A Study on Leadership Traits among the Tamil Optional B.Ed. Students

U. Subramanian, Rev. Dr D. Thomas Alexander, SJ

No One Encounters the Same Reality Twice

Rev. Dr. Francis P Xavier, SJ

ASSESSING ENGLISH LANGUAGE SKILLS OF UNDERGRADUATE ESL LEARNERS

UGC CARE
APPROVED

ABSTRACT

This study was conducted with 471 undergraduate students studying in the affiliated colleges of Bharathidasan University in Tiruchirappalli region to assess English language skills of undergraduate ESL learners. The participants were undergraduate students of arts and science studying English as a second language. The Diagnostic Test of English Language Skills (DTELS) consisting of 20 objective types and 10 short answer questions was administrated with the students through Google forms. The result revealed that the undergraduate ESL learners were found low in their English language skills. Also, the study indicated that they had not made a good start in writing skills.

Keys words : Diagnostic test, English language skills, undergraduate students, and ESL

Introduction

English is the most preferred language in India. Because it is a multilingual country where the local language is supposed to be as important as the culture, it comes to the link with cross-cultural communication issues. Sound knowledge of English among the youngster is a very important aspect for country development (Hossain, 2016). According to the British council, developing countries like India are recognised to produce large numbers of skilled students who communicate in English. A focus on language skills is integrated into the curriculum in English from primary to higher education which makes jobs, economic opportunity and wealth creation (Anderson and Lightfoot, 2019). Therefore, It is important to look at some of the features Common to the present situation. The researchers have proposed to diagnose language skills only in listening, reading, and writing.

Literature review

In the diagnosis of English as a second language (ESL) or English as a foreign language (EFL) regarding difficulties for students in learning language skills, there is a huge literature review to draw upon (Dhanapal, 2019; Romly et al., 2018; Maznun et al., 2017; Harding et al., 2015). Much of the diagnostic test literature is dependent on or derivative of the English language skills literature. Hidayati (2018) reported that the level of language anxiety among non-English major students living in a rural area, along with its perceived causes, was high. Harding et al. (2015) have examined that

ESL and EFL reading and listening diagnostic tests. The reading diagnostic test was critically considered.

A range of discrete tasks was put forward for listening diagnosis, acknowledging the need for further research into tools to diagnose so-called higher-level skills.

A previous study by Taghizadeh et al. (2014) revealed that undergraduate students have difficulties listening, reading and writing. Maznun et al. (2017) have investigated those ESL undergraduate students' difficulties and indicated their unawareness of the appropriate rhetorical structure in writing reports. In a study in the Malaysian context, Romly et al. (2018) encountered the difficulties of low proficiency ESL students in reading online academic texts. Similarly, Dhanapal (2019) found difficulties in reading skills among undergraduate students of King Khalid University in Saudi Arabia. The above reviews have stated undergraduate students have difficulties in English language skills such as listening, reading and writing. So, the researchers found the gap from the area to diagnose from English language skills in Indian students.

Dr. E. Ramganesha

Professor, Department of Educational Technology,
Bharathidasan University,
Tiruchirappalli

C. Hariharan

Research scholar, Department of Educational Technology
Bharathidasan University,
Tiruchirappalli

Objectives

1. To diagnose the level of English language skills of undergraduate students in the Tiruchirappalli region
2. To assess the English language skills of undergraduate students in the Tiruchirappalli region in relation to gender, locale and first graduate.
3. To provide recommendations for policy decisions.

Methodology

The investigator adopted survey technique to collect the data from the sample through Google forms. SPSS package was used for the analysis of data. DTELS was administered through Google forms with 524 undergraduate students to diagnose their English language skills. Of them, only 471 students completed the test. Among them, 227 are male, and 244 are female. **They belonged to multi-disciplinary subjects with English as a second language in their schooling and under graduation.** The main reason for selecting the undergraduate students as a sample of the study is that several studies revealed that they had difficulties in English language skills.

Tool

The "Diagnostic Test of English Language Skills" (DTELS) was developed by the investigators. For establishing face and content validity, the tool was subjected to the advice of a panel of experts in English Language Teaching (ELT). The DTELS consists of three dimensions: listening, Reading and Writing, and each dimension has 10 questions to assess their listening, reading and writing skills in English. Each question carries one mark. Audio followed by 10 multiple choice questions was set to assess their listening skills. A reading comprehension passage followed by 10 multiple choice questions assessed their reading skills and then asked students to write 10 sentences to assess their writing skills.

Results

Descriptive analysis

Based on the scores obtained by the sample in the Diagnostic Test on English language skills, it was intended to measure their English language skills. The score below 4 marks is taken as low level, above 7 as high and between 4 to seven as average.

Table-1

Level of undergraduate students' English language skills

UGC CARE
APPROVED

Dimensions	Low	%	Average	%	High	%
Listening	22	4.67	177	37.57	272	57.74
Reading	71	15.07	334	70.91	66	14.01
Writing	203	43.09	232	49.25	36	7.64
Total	296	5.52	286	60.72	159	33.75

From the above table -1, it is found that as many as 33.75% of them were found high in their English language skills where as the rest of them were in low and average level in their English language skills. As far as writing and reading are concerned, only 7.64% and 14.01% of students only were high level. This shows that a stringent mechanism is to be evaluated to improve the English language skills of ESL learners at undergraduate level.

Differential Analysis

Table-2

't' test analysis for undergraduate students in their English language skills

Variables		N	Mean	S.D	Calculated 't' value	P value	Remark
Gender	Male	227	17.674	4.472	3.558	0.00	S
	Female	244	19.053	3.895			
Locale of the students	Rural	224	15.165	3.205	22.612	0.00	S
	Urban	247	21.311	2.631			
First Graduate	1 st graduate	337	16.581	3.456	24.66	0.00	S
	Non-1 st graduate	134	22.932	2.034			

From the table-2, indicates that there is significant mean difference between the male and female undergraduate students in their English language skills ($p = 0.00$, $t = 3.558$, $df = 469$). The p value 0.000 is less than at 0.05 level. It is inferred that female students' mean score is higher than that of their counterparts. Therefore, female students were found to have English language skills better than that of their male counterparts, however, the mean score indicates that both the gender have to drive well in the English language skills.

Also, there is significant mean difference between the rural and urban undergraduate students in their English language skills ($p = 0.00$, $t = 22.612$, $df = 469$).

The p value 0.000 is less than at 0.05 level. It is inferred that urban students' mean score is higher than that of their counterparts. Therefore, urban students were found to have English language skills better than that of their rural counterparts, however, the mean score indicates that both the locale of the students have to drive well in the English language skills.

And also, there is significant mean difference between the first graduate (who is studying undergraduate first in his/her family) and non first graduate (who is studying undergraduate not first in his/her family, its means already somebody did degree in the family) students in their English language skills ($p = 0.00$, $t = 24.660$, $df = 469$). The p value 0.000 is less than at 0.05 level. It is inferred that non first graduate students' mean score is higher than that of their counterparts. Therefore, non first graduate students were found to have English language skills better than that of their first graduate counterparts, however, the mean score indicates that both the type of the graduate students have to drive well in the English language skills.

Discussion

Even though, a lot of studies revealed undergraduate students have difficulties to learn the English language skills (Dhanapal, 2019; Romly et al., 2018; Maznun et al., 2017). Especially, Dhanapal (2019) find out the distinct problems that ESL learners have while reading. The study revealed that most of the students are weak in reading skill due to various reasons viz., barrier in their basic education, poor vocabulary, lack of interest, struggle in understanding contextual meaning and problems in comprehending. Romly et al., (2018) indicated that reading difficulties become an obstacle for the students to gain knowledge. Maznun et al., (2017) found that ESL undergraduate students had difficulties in writing the background of the study, theoretical framework, and statement of the problem which indicated their unawareness of the appropriate rhetorical structure. In listening, the learners face difficulties in comprehending (Otair & Abd Aziz, 2017). Harding et al., (2015) examined SFL (second or foreign language) reading and listening skills were critically measured and whilst acknowledging the need for further research into tools aiming to diagnose so called higher-level skills. Although research on language difficulties have found that writing skill provokes the most difficulties, reading and listening comprehension difficulties have also

been considered as problematic area for EFL learners (Taghizadeh et al., 2014). In this way, the

researchers have found that the undergraduate students of Bharathidasan University affiliated colleges in Tiruchirappalli district faced difficulties in listening, reading and writing skills in English using DTELS through Google form.

The results revealed that 7.64 % of undergraduate students have high level score in writing skill; it indicated that most of the students are difficulties in writing skill. The present study correlates with the findings of Maznun et al., (2017) in writing skill. Also the result of the study revealed that 14.01% of undergraduate students have high level score in writing skill; it indicated that most of the students are difficulties in reading skill. The study concord with the findings of previous studies conducted by Romly et al., (2018) and Dhanapal, (2019). The present study results revealed that 57.74% of undergraduate students have scored high level in listening skill, it indicated that most of the students have better listening skills and comprehending the speech of English. The present study also revealed the undergraduate students who studied are the first graduate was faced more difficulties in English language skills due to lack of listening, reading and writing skills than their counterpart students. Gomathi (2014) stated that the parents are illiterate; they are not able to guide their wards as educated parents do. Hence, the students' performance lacks parental supervision and guidance which is very necessary for education and their career.

Conclusion and Recommendations

This study tried to find out the distinct problems that undergraduate students have when learning in English language skills. The study revealed many findings. Most of the students are weak in writing skill due to various reasons. The major barrier is their locale; the rural students are weaker in English language skills compared than urban students, because lack of quality teachers and language learning instruments such as language lab, ICT tools etc. this has prominent connection in other distinct problems. Other barriers include poor vocabulary, lack of interest to read in English, struggle in understanding contextual meaning

UGC CARE
APPROVED

and problems in comprehending. The present study recommends that providing solid foundation in English language skill will help the learner to overcome the difficulties.

In light of the above results, and in order to develop the English language skills among the undergraduate students in Tiruchirappalli region, it is to ratify the difficulties of English language skills for undergraduate students through remedial course in reading and writing skills. Most of the undergraduate students got low score in reading and writing skills in English. These two skills are major criteria of competitive exam and employment success. There is no uniform policy regarding the beginning of English teaching in colleges. At present; each university have different curriculum and syllabus framed for undergraduate students at which the teaching of English. Most of the rural colleges did not have the language laboratory facilities. The practical in English language skills should be made compulsory and must for all the major students. The teachers of English may be oriented with latest techniques in teaching language skills. Further exploration of this study is that first graduate students are lacking in English language skills. Special attention may be given to first graduate students to develop their English language skills. Similarly, the teacher must focus on students' difficulties in the research finding and apply various methods in teaching which is being the most challenging area. Therefore, teachers' feedback are mostly important after taking exercises to improve students' writing and to 'reduce students' difficulties. And also, the teachers should provide enough challenges in reading comprehension passage to transfer or motivate them to take notes from reading passage which will stimulate the students' curiosity and help them understand the passage. The teacher should be provided necessary ambience to use motivational techniques such as story writing, picture description, story completion etc.

References

1. Abilasha, R., & Ilankumaran, M. (2018). English Language Teaching: Challenges and Strategies from the Indian Perspective. *International Journal of Engineering & Technology*, 7(3.6), 202. <https://doi.org/10.14419/ijet.v7i3.6.14970>
2. Alhaysony, M., & Alhaisoni, E. (2017). EFL teachers' and learners perceptions of grammatical difficulties. *Advances in Language and Literary Studies*, 8(1), 188-199. Retrieved from <http://dx.doi.org/10.7575/aiac.all.v.8n.1p.188>
3. Anderson, J., & Lightfoot, A. (2019). The school education system in India: An Overview. New Delhi: British council 2019. Retrieved from https://www.britishcouncil.in/sites/default/files/school_education_system_in_india_report_2019_final_web.pdf
4. Dhanapal, C. (2019). Reading Difficulties Faced By ESL Undergraduate Learners: The Case Of King Khalid University In Saudi Arabia. *International Journal of Linguistics, Literature and Translation*, 2(6), 331-336.
5. Harding, L., Alderson, J. C., & Brunfaut, T. (2015). Diagnostic assessment of reading and listening in a second or foreign language: Elaborating on diagnostic principles. *Language Testing*, 32(3), 317-336. Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/0265532214564505>
6. Hidayati, T. (2018). Student language anxiety in learning English: Examining non-English major students in rural area. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)*, 2(2), 2018. Retrieved from https://dlwqtxts1xzle7.cloudfront.net/57162741/ijeltal_22_2018_1_Hidayati_Student_Language_Anxiety_in_Learning_English.pdf?1533865861
7. Hill, S., & Chalaux, T. (2011). Improving access and quality in the Indian education system. *Research Journal of Educational Sciences*, 2(2), 1-6. Retrieved from <https://dlwqtxts1xzle7.cloudfront.net/34405208/1.ISCA-RJEduS-2014-008.pdf?1407625008=&response-content->
8. Hossain, M. M. (2016). English language teaching in rural areas: A scenario and problems and prospects in context of Bangladesh. *Advances in Language and Literary Studies*, 7(3), 1-12. Doi:10.7575/aiac.all.v.7n.3p.1
9. Maznun, M. D. B., Monsefi, R., & Nimehchisalem, V. (2017). Undergraduate ESL students' difficulties in

UGC CARE
APPROVED

Continued on Page 46