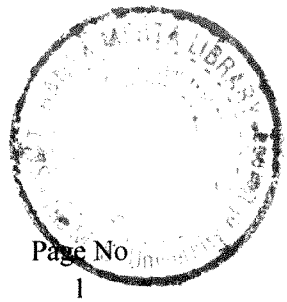

CONTENTS

CHAPTER 1: INTRODUCTION

	Page No
1.0 Introduction	1
1.1 History of learning disability	2
1.2 Theories and models of language development	3
1.3 Early language development and associated Implications	8
1.4 Indices of children's early language development.	9
1.4.1 Stages of early language development	9
1.4.2 Indicators of early language development	11
1.4.3 Normal reading development	12
1.4.4 Reading comprehension	13
1.5 Major components of oral language	13
1.5.1 Phonology	13
1.5.2 Morphology	14
1.5.3 Vocabulary	16
1.6 Factors affecting learning disability	17
1.6.1 Constitutional aspect of learning disability	17
1.6.2 Aspects of phonological processing	19
1.6.3 Phonological awareness and its role in children at families at risk of learning disability	20
1.6.4 Poor learners and normal learners	21
1.6.5 Naming deficit and speed deficit and its role in learning disability	22
1.6.6 Tip of the tongue and its relationship with learning disability	24
1.6.7 Visual spatial abilities and learning disability	26
1.7 Implications of learning disability	28
1.7.1 Psychosocial problems	28
1.7.2 Later problem due to learning disability	28
1.8 Theories of Dyslexia	29
1.8.1 Traditional theories of dyslexia	29
1.8.2 The modern theories of dyslexia	30
1.9 Methods used to identify learning disability	34
1.9.1 Need for early identification of learning disability	34
1.9.2 Strategies for identification in preschool areas	35
1.9.3 Preschool programs for children with learning disability	36
1.10 Intervention for learning disability	37
1.10.1 Intervention through teaching	38
1.10.2 Medical intervention	38
1.10.3 Psychosocial intervention	39
1.10.4 Behavioral intervention	39
1.10.5 Models for Intervention	39
1.10.6 Developmental Orientation as intervention	41
1.10.7 Emerging research questions	42

1.11 Objectives of the study 43
1.12 Hypothesis of the study 43

CHAPTER 2: METHODOLOGY I

2.0 Phase I 45
2.1 Development of the tool 45
2.1.1 Assessment and review of the existing measures to identify learning disability 45
2.1.1.1 The Stanford Binet Intelligence scale fourth edition 45
2.1.1.2 WISC (Indian adaptation) 48
2.1.1.3 Comprehensive test of non verbal intelligence (C-TONI) 51
2.1.1.4 Comprehensive test of phonological processing (C-TOPP) 54
2.1.1.5 Test of phonological awareness (TOPAS) 56
2.1.1.6 Lindamood Auditory conceptualization test(LAC-3) 57
2.1.1.7 Nimhans index of SLD test (NIMHANS-SLD) 59
2.2 Item development 60
2.2.1 Phonemic decoding skills 60
2.2.2 Auditory processing skills 62
2.2.3 Visual spatial motor skills 63
2.2.4 Attention 65
2.3 Dimensions of the newly developed tool (including the adaptation and modification) 65
2.3.1 Attention and concentration 66
2.3.2 Visual discrimination 66
2.3.3 Spatial orientation 67
2.3.4 Left and right recognition 68
2.3.5 Top and bottom recognition 68
2.3.6 Visual organization 69
2.3.7 Visual motor skills 70
2.3.8 Visual memory 71
2.3.9 Auditory discrimination 71
2.3.10 Auditory memory 72
2.3.11 Receptive language 72
2.3.12 Expressive language 73
2.3.13 Picture sequence 73
2.3.14 Story sequence 74
2.3.15 Literacy readiness 74
2.3.16 Phonemic awareness 75
2.3.17 Rhyming words 76
2.3.18 Blending 76
2.3.19 Rapid naming objects 77

CHAPTER 3 : METHODOLOGY II

3.0 Phase II 78
3.1 Selection of sample and pilot study 78
3.1.1 Developmental measures 78
3.1.2 Sample 79
3.2 Phase III Modification of the tool and administration of the tool 81
3.3 Phase IV Administering the NIMHANS specific learning disability Index 82
3.4 Phase V Standardization of the developed tool 83

CHAPTER 4 : RELIABILITY, VALIDITY AND DISCRIMINANT ANALYSIS

4.0 Introduction 84
4.1 Reliability 84
4.1.1 Reliability analysis –scale (alpha) 86
4.2 Validity 88
4.2.1 Content validity 89
4.2.2 Correlation of researcher's test and teacher's rating scale 90
4.2.3 Predictive validity 92
4.2.4 Correlation researcher's test and N IMHANS SLD scale 93
4.3 Profile of children with and without learning difficulty by the researcher's Test 95
4.4 Profile graph 96
4.5 Analysis of scores of children with and without learning difficulty by the researcher's test 97
4.6 Analysis of scores of children with learning difficulty by the researcher's test and children with learning difficulty by the NIMHANS test 98
4.7 Discriminant analysis 99
4.7.1 Box's test of equality of covariance matrices 102
4.7.2 Summary of canonical discriminant functions 102
4.7.3 Separate-groups graphs 105
4.8 Discriminant report 107

CHAPTER 5: NORMS

5.0 Introduction 108
5.1 Age norms 108
5.1.1 Age norm for color cancellation test 109
5.1.2 Age norm for visual discrimination test 1 111
5.1.3 Age norm for visual discrimination test 2 113
5.1.4 Age norm for spatial orientation test 1 115
5.1.5 Age norm for spatial orientation test 2 117
5.1.6 Age norm for spatial orientation test 3 119

5.1.7 Age norm for directionality (left and right) test 121
5.1.8 Age norm for top and bottom test 123
5.1.9 Age norm for test of proximity 125
5.1.10 Age norm for test of similarity 127
5.1.11 Age norm for test of closure 129
5.1.12 Age norm for test of synthesis and analysis 131
5.1.13 Age norm for visual motor skill test 1 133
5.1.14 Age norm for visual motor skill test 2 135
5.1.15 Age norm for visual motor skill test 3 137
5.1.16 Age norm for visual memory test 139
5.1.17 Age norm for auditory discrimination test 141
5.1.18 Age norm for auditory memory test 143
5.1.19 Age norm for receptive language test 145
5.1.20 Age norm for verbal expressive language test 147
5.1.21 Age norm for picture sequencing test 149
5.1.22 Age norm for story sequencing test 151
5.1.23 Age norm for literacy readiness test 153
5.1.24 Age norm for phonemic awareness test 155
5.1.25 Age norm for letter and beginning sound test 157
5.1.26 Age norm for letter and phonemic match test 159
5.1.27 Age norm for rhyming test 161
5.1.28 Age norm for blending 1 test 163
5.1 29 Age norm for blending 2 test 165
5.1.30 Age norm for rapid naming object test 167
5.2 Percentile norms 169
5.2.1 Percentile norm for color cancellation test 169
5.2.2 Percentile norm for visual discrimination test 1 171
5.2.3 Percentile norm for visual discrimination test 2 172
5.2.4 Percentile norm for spatial orientation test 1 173
5.2.5 Percentile norm for spatial orientation test 2 174
5.2.6 Percentile norm for spatial orientation test 3 175
5.2.7 Percentile norm for directionality (left and right) test 176
5.2.8 Percentile norm for top and bottom test 177
5.2.9 Percentile norm for test of proximity 178
5.2.10 Percentile norm for test of similarity 179
5.2.11 Percentile norm for test of closure 180
5.2.12 Percentile norm for test of synthesis and analysis 181
5.2.13 Percentile norm for visual motor skill test 1 182
5.2.14 Percentile norm for visual motor skill test 2 183
5.2.15 Percentile norm for visual motor skill test 3 184
5.2.16 Percentile norm for visual memory test 185
5.2.17 Percentile norm for auditory memory test 186
5.2.18 Percentile norm for auditory discrimination test 187
5.2.19 Percentile norm for receptive language test 188

5.2.20 Percentile norm for verbal expressive language test 189
5.2.21 Percentile norm for picture sequencing test 190
5.2.22 Percentile norm for story sequencing test 191
5.2.23 Percentile norm for literacy readiness test 192
5.2.24 Percentile norm for phonemic awareness test 193
5.2.25 Percentile norm for letter and beginning sound test 194
5.2.26 Percentile norm for letter and phonemic match test 195
5.2.27 Percentile norm for rhyming test 196
5.2.28 Percentile norm for blending 1 test 197
5.2 29 Percentile norm for blending 2 test 198
5.2.30 Percentile norm for rapid naming object test 199

CHAPTRER 6 : MANUAL

6.1 TESTS 200
6.1.1 Attention and concentration test 200
6.1.2 Visual discrimination test 1 200
6.1.3 Visual discrimination test 2 201
6.1.4 Spatial orientation test 1 202
6.1.5 Spatial orientation test 2 203
6.1.6 Spatial orientation test 3 203
6.1.7 Left and right recognition tests 204
6.1.8 Top and bottom recognition test 205
6.1.9 Test of proximity 207
6.1.10 Test of similarity 208
6.1.11 Test of closure 208
6.1.12 Synthesis and analysis 209
6.1.13 Visual motor skills test I 210
6.1.14 Visual motor skills test II 211
6.1.15 Visual motor skills test III 211
6.1.16 Visual memory test 212
6.1.17 Auditory discrimination test 213
6.1.18 Auditory memory test 213
6.1.19 Receptive language test 214
6.1.20 Verbal language expression test 213
6.1.21 Picture sequence test 215
6.1.22 Story sequence test 215
6.1.23 Literacy readiness test 216
6.1.24 Phonemic awareness test I 216
6.1.25 Phonemic awareness test II 217
6.1.26 Phonemic awareness test III and letter identification 218
6.1.27 Rhyming 218
6.1.28 Blending I test 219
6.1.29 Blending II test 219

6.1.30 Rapid naming object test 220
6.2 Classification to identify the degree of learning difficulty in 4-5 year old children 221

CHAPTER VII : DISCUSSION

7.0 Introduction 223
7.1 Standardization of the constructed measure 224
7.2 Validation of the constructed measure 226
7.2.1 Content validity 226
7.2.2 Predictive validity 226
7.2.3 Discriminant validity 226
7.3 Difference between the profile of children with and without learning disability 227
7.4 Difference in the test scores of children with learning difficulty and children without learning difficulty 227
7.5 Classifiction of children using the potential discriminating ability of the constructed measure further way to validation. 228
7.6 Limitations 228
7.7 Implications 229
7.8 Directions and suggestions for future research 230
7.9 Conclusion 231

REFERENCES 232

APPENDICES

Appendix I- Interview 249
Appendix II- Diagnostic criteria for diagnosing Attention deficit (hypeactivity) Disorder 250
Appendix III- Diagnostic criteria for Autistic disorder 253
Appendix IV- Standford Binet intelligence Scale –Form L-M 255
Appendix V- Teacher's rating questionnaire 262
AppendixVI- NIMHANS Index for Specific learning disability 263