AN INVESTIGATION OF SELECT FAMILIAL, COGNITIVE AND INSTRUCTIONAL VARIABLES LEADING TO READING DIFFICULTY IN MALAYALAM AMONG LOWER PRIMARY STUDENTS

Thesis
Submitted for the degree of
DOCTOR OF PHILOSOPHY IN EDUCATION

By

REMIA K.R.

Supervised By

Dr. ABDUL GAFOOR K.
Associate Professor

DEPARTMENT OF EDUCATION
UNIVERSITY OF CALICUT
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DECLARATION

I, **REMIA K.R.,** do here by declare that this thesis entitled as "**AN INVESTIGATION OF SELECT FAMILIAL, COGNITIVE AND INSTRUCTIONAL VARIABLES LEADING TO READING DIFFICULTY IN MALAYALAM AMONG LOWER PRIMARY STUDENTS**" is a genuine record of the research work done by me under the supervision of **Dr. ABDUL GAFOOR K**. Associate Professor, **Department of Education, University of Calicut**, and that no part of the thesis has been presented earlier for the award of any Degree, Diploma or Associateship in any University.

Place: Calicut University **REMIA K.R.**

Date:

Certificate

This is to certify that the thesis entitled **"AN INVESTIGATION OF SELECT FAMILIAL, COGNITIVE AND INSTRUCTIONAL VARIABLES LEADING TO READING DIFFICULTY IN MALAYALAM AMONG LOWER PRIMARY STUDENTS"** is an authentic record of research work carried out by **REMIA K.R.**, for the degree of Doctor of Philosophy in Education, University of Calicut, under my supervision and guidance and that no part thereof has been presented before any other degree, Diploma or Associateship in any other University.

The thesis is revised as per the modifications and recommendations reported by the adjudicators and re-submitted.

Place: Calicut University
Date:

Dr. ABDUL GAFOOR, K.
(Supervising teacher)

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Sankaracharya Madhyamam

Asmat aacharya Paryantham

Vande Guru Paramparaa"

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LIST OF ABBREVIATIONS

ANOVA	:	Analysis of Variance
APL	:	Above Poverty Line
BPL	:	Below Poverty Line
IQ	:	Intelligence Quotient
MA	:	Morphological Awareness
MANOVA	:	Multivariate Analysis of Variance
MISIC	:	Malin's Intelligence Scale for Indian Children
NAPLAN	:	National Assessment Program – Literacy and Numeracy
NCERT	:	National Centre for Educational Research and Training
NR	:	Normal Reader
PA	:	Phonological Awareness
PIRLS	:	Progress in International Reading Literacy Study
PPVT-4	:	Peabody Picture Vocabulary Test - 4^{th} edition.
RAN-L	:	Rapid Automatized Naming of Letters
RD	:	Reading Difficult
SES	:	Socio Economic Status
TOWRE	:	Test of Word Reading Efficiency
TPI	:	Teacher Pupil Interaction
WISC	:	Weschlers Intelligence Scale for Children
WMTB-C	:	Working Memory Test Battery for Children
WRMT-R	:	Woodcock Reading Mastery Test- Revised

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Chapter I

Introduction

- Need and Significance of the Study
- Statement of the Problem
- Definition of Key Terms
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- Delimitations of the Study

Reading is an educational outcome essential to academic achievement and ultimately, success in life. Children who develop good language skills are more likely to succeed at school and become productive members of our society. In other words, children who develop poor language skills are prone to experience academic difficulties at school and beyond. The varying abilities of children in reading can be related to cognitive, classroom and familial factors. The training in reading begins from the early age when the children enter into primary school.

Researches show that many and varied factors complexly interact in causing the differences in the achievement level. Such factors clearly come from beyond the limits of school and teachers, to family related factors like the income level and education. However fairly many school related factors are also known to influence students' reading achievements at school (Goodwin, 2000), beyond the cognitive and intellectual elements within the child. For instance, whether parents read aloud for their children at home, and whether possess the children wholesome and positive approach attitude to learning are important too.

For many reasons, it is important that dynamics of reading difficulties in young learners to be identified early in school. This is important because as the learner advances in age, developmental factors and students' perceptions about their own abilities have greater role in their level of engagement with learning tasks including reading. For example, the older students get, the less likely they are to engage themselves sufficiently in activities at which they are

not certain that they will succeed. Young children tend to maintain high expectations for success even in the face of repeated failure, while older students do not (Lumsden, 1994).Without suspicion, lower primary stage is the most important arena in the development of basic reading skills of the child. Hence, this study probes familial, cognitive and instructional variables reading difficulty in Malayalam in lower primary schools.

Need and Significance

Both globally and locally, reading performance of school students are below satisfactory level, and does not show marks of improvement despite the efforts at varied levels. According to the National Assessment Education Progress Report, 38% of fourth graders and 29% of eighth graders read below basic levels (National Center for Education Statistics, 2005) .According to the Annual Status of Education Report (Rural) 2009 on the reading achievement of fourth graders in Malayalam, 3.4 percent of students can read letters only, 11percent of students can read words only, 25.8 percent of students can read Grade 1 text only and only 59.2 percent of students can read Grade 2 text. A considerable number of students have not acquired basic reading skills even though reading is the fundamental skill which helps survive and thrive in their academic lives. Studies on reading outcomes are generally conducted in pre-primary grades to elementary grades, though studies on older students and adults are not rare. Variables most often studied are working memory, with both verbal and non-verbal contents, and phonological and morphological task performances.

Memory has an important role in reading ability. Irrespective of the indicator of reading performance, influence of memory on reading related

outcomes like reading comprehension (Lopez-Escribano, DeJuan, Gomez-Veiga & Garcia-Madruga, 2013; Elver, 2014), reading skills (Da Fortoura & Siegel, 1995; Alloway & Gatherole, 2005; Gatherole, Alloway, Willis & Adams, 2006; Kurvers & Vande Craats, 2007; Alloway, 2009), reading fluency (O'Brien, Segalowitz, Freed & Collentine, 2007; Pae & Sevcik, 2011) and reading speed (Babayigit & Stainthoop, 2007) in languages other than Malayalam were evident. Memory is important in determining other indicators of language learning like literacy (Alloway & Alloway, 2010), grammar (Brill, 2001) and vocabulary (Masoura & Gatherole, 1999).

While majority of studies confirmed that Phonological Awareness has strong influence on reading, less but significant number of studies failed to reveal such relation between Phonological Awareness and reading (Babayigit & Stainthorp, 2007; Tong, McBride-Chang, Shu and Wong, 2009; Caglar-Ryeng, 2010). Likewise the relationships between reading difficulty, reading errors and phonological awareness were also in anticipated direction (Mann, 1986; Chiappe & Siegel, 1999; Chung & Ho, 2010). It has already been proven that Phonological Awareness intervention was effective in treating reading disorders even in different educational and cultural settings (Sadasivan, 2009), though each phonological factor has a different role in predicting reading performance in each language (Luk & Bialystok, 2008). However, favorable effect of the experimental interventions with Phonological Awareness on reading was more ambiguous with some studies (Casalis & Cole, 2009) whereas the others failed to create a significant effect (Dallasheh-Khatib Ibrahim & Karani, 2014). Phonemic awareness is found to be important in alphabetic language like English, but not in non-alphabetic

language, like Chinese (Chung & Ho 2010). Also, extreme transparency of Turkish orthography made the role of Phonological Awareness unnecessary in reading (Babayigit & Stainthorp, 2007). These robust but unsettled results indicate the need for further studies, especially in languages like Malayalam hitherto not where in studies have explored the relationship of Phonological Awareness on reading.

Just as the relationship of phonological awareness to reading outcomes is less than firmly established, positive relationship of morphological awareness to reading outcomes to even elder learners than those studied for phonological indicators, is muddled. A few but significant number of studies revealing negative relationship between morphological awareness and reading (Casalis & Cole, 2009; Caglar-Ryeng, 2010; Dallasheh-Khatib Ibrahim & Karani, 2014;) even with experimental interventions (Casalis & Cole, 2009; Caglar-Ryeng, 2010).

Even more damaging than the lack of studies on how cognitive-linguistic abilities like memory, phonological and morphological abilities impact reading outcomes of primary school students in Malayalam, is the failure to investigate how instructional factors impact student learning of mother tongue in classrooms. This failure becomes more shocking in view of the consistent reports that the reading ability of students in languages including Malayalam does not seem to improve (Gafoor & Kaleeludeen, 2011). During the period 2006-2014, reading performance of grade three and five remained stagnant in the first half and then had a sharp fall during the second half (ASER, 2014). This is despite the efforts and investments of money in teacher training, infrastructure development and parental and

community participation to improve quality of learning in schools. However, an array of studies from places other than Kerala and India indicate the impact of instruction on reading outcomes. All those studies support that instructional activities have a significant role in student learning. Instructional aspects studied comprised of teacher knowledge, student relatedness with teachers, teacher behavior, teacher perception of students, teacher evaluation scores, teacher training in reading instruction, teaching style, reflectivity, self-efficacy, classroom practices, teacher sensitivity and productivity, classroom engagement, behaviour management, instructional learning format quality feedback, concept development, library reading programmes, library hours of access and library staffing and activities.

While tracking factors that impact reading of younger learners, it is not sensible to neglect their home environment and familial factors. Most of the studies in this respect highlight the importance of parental and familial factors like, home environment (Molfese, Modglin & Molfese,2003), parent- child interaction (Baker, Mackler, Sonnenschein & Serpell, 2001), family resources (Ngorosho & Lahtinen, 2010), parental attitudes (Abu-Rabia & Yaari, 2012), and family background, family characteristics, and demographics (Duursma, Romero-Contreras, Szuber, Proctor, Snow, August & Calderon, 2007). However studies on these variables in relation to language outcomes in Malayalam cannot be described rare.

Most of the studies are on western languages, a few are on East Asian languages and very few studies could be traced in Indian languages, especially, south Indian languages. Though Malayalam is being used in education and communication by nearly 40 million people, tests of phonological awareness

and morphological awareness in Malayalam are non-existent. Likewise, factors that lead to reading difficulty in Malayalam among elementary school students are not explored, though a lot of effort is being made by the government, teachers and curriculum makers in improving the language learning, especially of Malayalam language among lower primary students in Kerala.

Reading is studied as reading comprehension, reading fluency, or else letter or word reading. Studies that deal with reading difficulty, especially among children without learning disabilities are rare, if not nil.

It is in this context that this study longitudinally investigates Familial, Cognitive, and Instructional Variables Leading to Difficulties in Reading Malayalam among lower primary Students, by incorporating verbal and nonverbal memory measures, phonological and morphological awareness, instructional and teacher-pupil interaction quality indicators and familial variables from Grade 1 through Grade 4 into a single study to explain reading difficulty status in Grade 4.

Special Significance of the Study

Now-a-days, facilities for learning have been increased both in school and at home. Language learning environment is available through media. However, language achievement has not reached at a significant level (NCERT Learning achievement of Class V children A Mid Term National Survey, 2008). There are very few studies on language difficulties in Indian context, especially in Malayalam. Longitudinal studies on language problems

are also rare in Malayalam. Students face difficulties in reading even after completing 4 years of formal instruction in their mother tongue. Language skills are not acquired by most of the students at the expected levels. Despite this, studies on factors related to difficulties in reading and also on writing in Malayalam among lower primary students are rare. It is necessary to find reasons behind reading difficulties in Malayalam among lower primary students. This study also intends to investigate the stage at which these difficulties occur. This will be very useful for the teachers, educationists and the generations to come.

Statement of the Problem

An Investigation of Select Familial, Cognitive and Instructional Variables Leading to Reading Difficulty in Malayalam among Lower Primary Students

Definition of Key Terms

I. Reading Difficulty in Malayalam

Difficulty in this study denotes failure to perform at par with the peers. Difficulty denotes failure to achieve at the expected level.

Reading in this study denotes oral reading of Malayalam passages and stories with fluency, right pronunciation and comprehension of what is read.

Malayalam in this study denotes the language being taught as the first language in lower primary schools affiliated to and recognized by directorate of public instruction in Kerala.

Lack of fluency, Lack of right pronunciation, Lack of comprehension in reading Malayalam are the difficulties in reading considered in this study. A score below the first quartile on a test on the above dimensions is used as the criterion to identify a student as reading difficult. Others are considered as Normal on reading attainment.

Cognitive Variables

Cognitive ability is the aptitude for or skill at performing mental tasks such as memory, perception, judgment, decision making, comprehension, attention, reasoning of various kinds, intuition, language, and mathematics (Matsumoto, 2009). Cognitive variables in this study denote a set of learner ability variables, including Non-verbal intelligence, Memory, and linguistic ability variable namely spelling.

Instructional Variables

In this study, instructional variables stand for a set of classroom instructional processes and resources that are conceived to have influence on reading development and related difficulty among lower primary students.

Teacher-Pupil Interaction, Quality of Teacher-Pupil Relationship, Clarity of verbal communication, Quality of Blackboard work, Course Completion, Reinforcement in the whole class, Engaged Time, Books in the class library, Books issued per Student in one year and periodicals per student in the class library are the instructional variables selected for the study.

Familial Variables

"Familial means relating to or occurring in a family or its members" (Oxford Dictionaries).

Socio-Economic Status, Education of Father, Education of Mother, Highest Education in the Family, Occupation of Father, Occupation of Mother, Highest Occupation in the Family and Home Language Environment are the familial variables selected for the study.

Lower Primary Students

Students belonging to the Government and Aided lower primary Schools of Kerala.

Variables of the Study

The independent variables and the dependent variable selected for the study are the following.

Dependent Variable

Dependent variable in this study is reading achievement in Malayalam at the end of Grade 4. Reading achievement in Malayalam at the end of Grade 4 is measured in terms of pronunciation, reading fluency and reading comprehension with equal weightage to all three dimensions. Difficulty in Malayalam is denoted as falling below the 25th percentile on any two of the three dimensions of reading achievement viz., pronunciation reading fluency, and reading comprehension, and teacher identification of the student as reading difficult.

Independent Variables

Independent variables studied are a set of cognitive, instructional and familial variables as follows.

Cognitive variables.

- Non-verbal intelligence
- Picture recall
- Digit span
- Story recall
- Phonological awareness
- Morphological awareness
- Letter reading
- Dictated spelling

Instructional variables.

- Teacher pupil interaction (in Grade 1, 2, 3 and 4)
- Quality of teacher pupil relationship (in Grade 1, 2, 3 and 4)
- Clarity of verbal communication (in Grade 1, 2, 3 and 4)
- Blackboard work (in Grade 1, 2, 3 and 4)
- Course Completion (in Grade 1, 2, 3 and 4)
- Reinforcement (in Grade 1, 2, 3 and 4)
- Engaged time (in Grade 1, 2, 3 and 4)
- Books per student in class library (in Grade 1, 2, 3 and 4)
- Periodical per student in class library (in Grade 1, 2, 3 and 4)
- Books issued per student (in Grade 1, 2, 3 and 4)

Familial variables.

- Socio-Economic Status (APL/BPL)
- Education level of father
- Education level of mother
- Highest education level in the family
- Occupation level of father
- Occupation level of mother
- Highest occupation level in the family
- Home Language Environment

Research Questions

Do cognitive, instructional and familial variables in Grades 1 to 4 lead to reading difficulty in Malayalam in Grade 4? If yes, which among the select cognitive instructional and familial variables in Grades 1 to 4 help predict reading difficulty in Grade 4? Can the set of variables from among the original list of variables are sensitive enough to specifically predict reading status in Grade 4? If so, which combination of variables helps predict reading difficulty in Malayalam of Grade 4 students?

Objectives of the Study

The major objective of this study is to identify the cognitive, instructional and familial factors associated with Reading Difficulty in Malayalam of students in lower primary schools of Kerala. Specific objectives set for this study are the following.

1) To identify the cognitive, instructional and familial variables significantly influencing Reading Achievement in Malayalam by the end of Lower Primary Schooling.
2) To identify significant predictors of Reading Difficulty in Malayalam at the end of Lower Primary Schooling from among each set of variables viz.,
    a. Cognitive
    b. Instructional
    c. Familial
3) To estimate efficiency of the significant cognitive, instructional and familial variables in predicting in Malayalam Reading Difficulty status of students at the end of lower primary schooling.

Hypotheses

1. Reading Achievement in Malayalam among Lower Primary students differ significantly by the level of cognitive variables viz.,
    a. Letter reading
    b. Phonological awareness
    c. Morphological awareness
    d. Dictated spelling
    e. Non verbal intelligence
    f. Picture recall
    g. Digit span
    h. Story recall
2. Reading Achievement in Malayalam among Lower Primary students differ significantly by the level of Teacher Pupil Interaction.

3. Reading Achievement in Malayalam of Lower Primary students is significantly dependent on the instructional variables namely,
    a. Quality of teacher pupil relationship
    b. Clarity of teacher's verbal communication
    c. Quality of Blackboard work
    d. Course completion
    e. Teacher reinforcement
    f. Engaged time
    g. Books per student in the class library
    h. Periodicals per student in the class library
    i. Books issued per student in the class library
4. Reading achievement in Malayalam among Lower Primary students differ significantly by the level of Home Language Environment.
5. Reading achievement in Malayalam of Lower Primary students is significantly dependent on their
    a. Socio-Economic Status (APL/BPL)
    b. Education level of father
    c. Education level of mother
    d. Highest education level in the family
    e. Occupation level of father
    f. Occupation level of mother
    g. Highest occupation level in the family
6. There will be significant combined influence of cognitive variables on reading status in Malayalam of Grade 4 students.

7. There will be significant combined influence of instructional variables on reading status in Malayalam of Grade 4 students.
8. There will be significant combined influence of familial variables on reading status in Malayalam of Grade 4 students.
9. The reading status in Malayalam by Grade 4 students can be significantly predicted from a set of cognitive, instructional and familial variables.

Methodology

This study adopted a longitudinal design. Longitudinal research intends to find out the cause and process of a phenomenon. According to Kelly and McGrath (1988) longitudinal study is multiple waves of observations over a substantial calendar time involving months or years. Longitudinal research is predicated on the investigation and interpretation of change over time and process in social contexts (Holland, Thomson and Henderson, 2006). This study conducted a series of cross sectional observations using appropriate tools and techniques in a select sample for a period of 3 ½ years covering Grades 1 to 4 in lower primary schools.

Sample

This study began with Grade 1 students of 11 lower primary schools in two villages, Perinjanam and Kaipamangalam in Thrissur district. The follow up of students was carried out from Grade 1through to Grade 4 (N=156). The sample also included the teachers (N=52) who instructed Malayalam language (mother tongue) to these students.

Tools Used for the Study

The following measures and data collection devices were employed for this study.

1. Test of Phonological Awareness
2. Test of Morphological Awareness
3. Test of Letter Reading
4. Coloured Progressive Matrices
5. Test of Dictated Spelling in Malayalam
6. Picture recall (memory) Test
7. Story recall (memory) Test
8. Digit span (memory) Test
9. Home Language Environment Scale
10. General Information Blank
11. Battery of Observation Schedules for Classroom Practices
12. Teacher Pupil Interaction Scale
13. Scale of Course Completion for teachers
14. Class Library information Blank
15. Reading Comprehension Test
16. Test of Reading Fluency and Pronunciation

Statistical Techniques

Basic descriptive statistics, Shapiro Wilk statistic, Standardized Skewness and Kurtosis, Independent samples t-test, Chi square Test of Independence and Multiple Binary Logistic Regression were used for data analysis.

Scope and Delimitations of the Study

This study is intended to find out the cognitive, classroom and familial factors that lead to language difficulties, especially in reading Malayalam, of lower primary students. This study also investigates the cognitive and classroom factors related to language difficulties of the students. The study focuses on students of 11 lower primary schools and their Malayalam language teachers in Thrissur District. Practical consideration of administrating tests to an adequately representative sample within the prescribed time period forced the investigator to confine sample to comparatively a smaller number.

Present study provides scope for making the educational system aware of the difficulties faced by the lower primary students in language learning. This study examines the stages at which factors contributing to the language difficulties occur. This will be very much beneficial to the teachers in improving their teaching with focused intervention that help students to become better readers and learners in different stages of lower primary education.

This study though conducted on a sample of students from Thrissur District of Kerala will derive results that are generalizable to the lower primary student population in Kerala. The study employs a longitudinal survey design with multiple observations, in regular intervals for duration of four academic years, of different language relevant factors in exploring the factors that impact student reading

performance in Malayalam. Longitudinal studies of language learning in schools are rare especially in languages like Malayalam.

Another significant effort in this study was the development of locally relevant standardized observational and testing procedures to the development of mother tongue, especially its reading ability. An array of tests specific to Malayalam language namely Test of Phonological Awareness, Test of Morphological Awareness, Test of Letter Reading, Story recall (memory) Test, Dictated Spelling Test, Reading Comprehension Test and Test of Reading Fluency and Pronunciation were developed and standardized as part of this study. Language independent test that can be used by teachers and future researchers with lower primary students like Picture-recall (memory) Test was also developed as part of this study.

The study employed suitable parametric and non-parametric data analysis procedures like mean difference analysis, chi-square test of independence, and binary logistic regression to test the set hypotheses. The results of this study are to shed light on the familial, instructional and cognitive factors that lead to reading difficulties especially in mother tongue of lower primary students.

Based on the review of literature, the study is confined only to those cognitive variables which have a direct bearing on the reading difficulty in the elementary school level. An array of instructional variables that might influence reading attainment in mother tongue at the lower primary level are

built into the study design. However, mainly due to time constraints, many variables of this category are excluded from the scope of this study. The observed learner variables in this study are measured only once during the span of this study, though instructional and process variables were observed per grade level.

Chapter II

Review of Related Literature

- **Overview of Reading Skill, Its Elements, Related Difficulties and Influencing Factors**
- **Studies on Cognitive, Instructional and Familial Variables Influencing Reading Acquisition**

REVIEW OF RELATED LITERATURE

Language is an organized symbolic system which functions as a tool for communication for human beings. Language ability is recognized through a group of language skills. Language skills are generally considered as listening, speaking, reading and writing. Listening comprehension is a receptive skill which means listening and understanding what we hear. It is a complex process than it feels. Listening situation can be face-to-face conversations, telephone calls, listening to radio, TV, films and lectures. Speaking is more than just pronouncing words and it is a productive skill in the oral form. Speaking Situations can be interactive, partially interactive, and non-interactive. Reading is receptive skill in the written mode. Sometimes it develops with listening and speaking skills, but can also develop independently. Writing is the productive skill in the written form. It is the most complicated and hardest of the skills, even for native learners. In writing we present our thoughts in a structured manner.

Present study looks at the theoretical aspects of the variables, reading achievement and reading difficulties and also the cognitive, familial and instructional variables which affect reading acquisition in elementary grades. Printed journals, online journals and books are used as the source for the literature survey. This chapter includes an overview of reading skill, framework of reading acquisition, components of reading, factors influencing reading, reading difficulty, types of reading difficulty and its causes. The review of literature consists of the various studies conducted on the variables

reading achievement, reading difficulty, cognitive, instructional and familial factors affecting reading outcomes in children especially during school stage.

The reviewed literature is presented in two major sections namely,

1. Overview of Reading Skill, Its Elements, Related Difficulties and Influencing Factors
2. Studies on Cognitive, Instructional and Familial Variables Influencing Reading Acquisition

Overview of Reading Skills, Its Elements, Related Difficulties and Influencing Factors

Reading is a multifaceted act. Many explanations of reading have been offered. Each explanation attempts to describe the essential components of skilled reading. Reading is being influenced by many factors, from the bio-neurological to psychological and sociological. This section gives an account of reading and a frame work of reading acquisition which includes language comprehension and decoding. Also explains oral reading, skilled reading, components of reading such as reading comprehension, reading fluency and pronunciation. Factors influencing reading; intelligence, memory, phonological awareness, morphological awareness, letter knowledge, vocabulary, decoding, dictated spelling are also discussed in this section. Reading difficulty, types of reading problems and causes of reading problems are analyzed such that the understanding of reading problems and their causes in school guides the measurement of reading difficulty and the possible causal factors thereof.

Theoretical Framework of Reading

"Reading is the process by which the meaning of a written text is understood"(Richards,1992). It is the ability to recognize written representations of words. According to Ridgway (1994) reading is a form of human cognition and it works on variety of cognitive activities.

Kennedy., Dunphy., Dwyer., Hayes., McPhillips., Marsh., Moura O' Connor and Shiel (2012) described different types of theories on reading. They are cognitive theories, psycholinguistic theories, meta-cognitive theories, cognitive apprenticeship theories, socio cultural theories, socio linguistic theories, constructivist and socio constructivist models and critical theory.

Theories of reading try to explain factors affecting reading development and the interrelationship among such factors. In general reading process is explained in terms of both lower order processes (bottom-up approach) and higher order processes (top-down approach). Theories that explain reading in terms lower order processes explain reading process as starting with simpler raw input which passes through increasingly complex synthesis to form the meaningful reading and comprehension of text. In top-down approach the reading employs higher order processes that guide process choices at lower levels. It is clear that neither bottom-up nor purely top-down models can fully explain the reading process (Rayner & Reichle, 2010; Stanovich, 2000) and hence an integration of factors that affect reading from the perspectives of top-down and bottom-up approaches that consider both graphic and contextual features in reading (Perfetti, Landi, & Oakhill, 2005;Verhoeven & Perfetti, 2008) will be more valuable. Hence this study adopts factors to

explain reading from various theoretical viewpoints. Such major attempts to explain reading development in children are summarised hereunder.

Cognitive theory at times referred to as schema theory views human memory as semantically organized. Meanings stored in cognitive structure get activated during reading process. Schemata described as "building blocks of cognition" (Rumelhart, 1977) are used in the process of interpreting sensory data, in retrieving information from memory, in organising goals and subgoals, in allocating resources, and in guiding the flow of the processing system (Vaezi, 2006). Thus information-processing models occupy an important art of cognitive explanation of reading process. Problems in reading arises if schemata are incomplete and do not provide an understanding of the incoming data from the text. Information-processing factors like attention, perception, working memory are important in language-processing mechanisms (Vaezi, 2006). Cognitive structure schemata, formed by generic concepts stored in memory, acts as cognitive filter through which one views the world.

Psycholinguistic theory focuses on reading for meaning. Reader comprehends the meaning of text with the help of previous knowledge. Reading is very much dependent on knowledge of world and printed word. Psycholinguistic theory on reading minimizes the importance of decoding. Here, reading is a constructive process and facilitation is more useful than teaching. Reading involves dual process of understanding linguistic features like, letters, spelling patterns, phonological cues as well as the process of predicting meaning based on the reader's knowledge of oral language context, syntax, and the semantic and syntactic environment (Sheridan, 1981).

Meta-cognitive theory explains the meta-cognitive processes in reading. Readers who can use meta-cognitive strategies will be aware of the resources of cognition. Readers attempt to solve problems, monitor and evaluate themselves. Meta-cognitive strategies can be developed through instruction. Klein et al. (1991) stated that strategic readers during the process of reading attempt, Identifying the purpose and form or type of the text, discerning the general character and features of the form or type of the text, guessing the author's purpose for writing the text, choosing, scanning, or reading in detail, and engaging in continuous predictions about what will occur next. Thus from meta-cognitive point of view, meaningful reading readers to attempt metacognitive acts like classifying, sequencing, establishing whole-part relationships, comparing and contrasting, determining cause-effect, summarizing and hypothesizing, and predicting, infer, and formulating conclusion of what is read.

Socio-cultural theories consider the role that played by culture in the development of literacy. Literacy is developed in the social and cultural practices of learners in particular settings for particular purposes. Sociocultural theories are especially useful in explaining why certain cultural groups fall behind others in reading related performance even when there are no doubt about child's innate abilities. Sociocultural theory suggests that any true understanding of learning to read must extend beyond a child's innate abilities to social and cultural factors including family functioning and community background (Lanter, 2006). Sociocultural perspective like cognitive perspective emphasizes the role of experience and background knowledge in learning reading. Sociocultural perspective holds that reading meaningfully is

mediated by culture, child's participation in events, and social activity. Culture not only determines what language knowledge and skills are needed but also limits it through social capital available via dyadic adult interaction that a child experiences concerning academic and personal matters. Cultural capital through quality and quantity of the social and community support systems determines literacy expectations, opportunities, instructional qualities and even motivation which can become inhibiting factors under negative conditions.

Sociolinguistic theory concentrates on the instructional and non-instructional context for language and community literacy situations. The linguistic aspect is concerned with communication and meanings among language users. From this perspective language is not simply an abstract construct. It is used by people for real purposes and language variation reflects differences in patterns of behaviour related to user purposes. Accordingly, patterns of language variation occur in accent – pronunciation of Words, and grammatical and pragmatic patterns. Consequently dialects occur on the basis of physical, social or cultural differences (Cregan, 2008).

Constructivist and socio-constructivist theories focus on the process of constructing meaning through discourse in a social context. This happens in the interpersonal level and then is transferred into intrapersonal level. The ultimate goal of reading is “the construction of meaning from text. It is a cognitive and affective process where readers “actively engage with the text and build their own understanding” (Braunger& Lewis, 1998). Vygotskian perspective of zone of proximal development and scaffolding are the part of cognitive apprenticeship theory.

Critical theory believes that critical literacy will support the children to understand how texts influence and change them as members of the society. This theory gives the idea of 'resistant perspective' in reading.

Elements of Reading

To understand the process of reading deeply, sub skills and components of reading are identified, especially for reading. Davis (1968) identified eight micro skills for reading. They are 1) Recalling word meanings, 2) Drawing inferences about the meaning of a word from content, 3) Following the structure of a passage, 4) Formulating the main thought of a passage, 5) Finding answers to questions answered explicitly or merely in paraphrase in the content, 6) Weaving together ideas in the content, 7) Drawing inferences from the content, and 8) Identifying a writer's techniques, literary devices, tone, and mood and Recognizing a writer's purpose, intent, and point of view.

Heaton (1988) also identifies some of the specific skills engaged in reading. They are the capability to recognize words, word groups, relating sounds with their corresponding graphic symbols, deduce the meaning of words by understanding word formation and contextual clues, understand explicitly stated information; understand relations within the sentence, especially elements of sentence structure negation, fronting and theme, and complex embedding; understand relations between parts of a text through both lexical devices and grammatical cohesive devices, especially cataphoric and anaphoric reference and connectives; perceive temporal and spatial relationships, series of ideas, understand conceptual meaning, especially (a) quantity and amount (b) definiteness and indefiniteness (c) comparison and

degree (d) means and instrument (e) cause, result, purpose, condition, reason, addition, contrast; anticipate and predict what will be next in the text by identifying the main idea and other salient features in a text; generalize and draw conclusions, making inferences understanding figurative language; skim and scan; read critically; adopt a flexible approach and vary reading strategies according to the type of material being read and the purpose for which it is being read.

A Framework for Reading Acquisition

Wren (2000) constructed a framework for reading acquisition. The main frame is formed by language comprehension and decoding. These apply to both silent reading and oral reading.

1. Language comprehension

Language comprehension assists to construct the meaning of spoken language which works on variety of abilities that are interdependent. The most important knowledge domains required for the success of language comprehension are knowledge of the formal structures of a language (linguistic knowledge) and background knowledge (knowledge of the world).

Linguistic knowledge

Linguistic knowledge is divided into three large domains, Phonology, Semantics and Syntax. Phonology explains awareness of the sound structure of a language and of the basic elements that differentiate meaning, including their internal structure and interrelationships. Semantics deals with the meaning system of language which includes individual units, morphemes and

at the higher levels that unite morphemes into words, words into sentences and sentences into discourse (Wren, 2000). Syntax is the rule behind the combination of different classes of words to form sentences in language, like nouns, verbs and adjectives. It shows the structural relationship between the phonological combinations of a language and the meaning of those combinations.

Background knowledge

Knowledge of the function of the world in terms of content and procedures is an essential component of language comprehension. Background knowledge represents the subject on which language manages.

2. Decoding

Ability to identify types of relationships between written and spoken words is decoding. Decoding is essential for word recognition. Understanding of these methodical relationships allows reading even new words which are not familiar for the reader. Cipher knowledge and lexical Cipher knowledge are the part of decoding. Cipher knowledge is the understanding about systematic relationships between written and spoken words. Decoding ability depends upon letter knowledge, phoneme awareness, knowledge of the alphabetic principle and concepts about print.

Oral Reading

Language comprehension, linguistic knowledge, background knowledge and decoding are about silent reading of the text. The other type of reading of the text is oral reading or reading aloud. Oral reading is generally used for

establishing grapheme-phoneme correspondences and learning to distinguish sense groups in a text. Fluency and pronunciation are important factors in oral reading.

Fluency-related processes in oral reading

Wolf and Katzir-Cohen (2001) summarized fluency-related processes and components. They include phonological representation and phoneme awareness, auditory perception, lower level attention and visual perception, orthographic representation and identification, short-term and long-term memory, semantic representation, lexical access and retrieval, word identification and decoding, morphosyntactic and prosodic knowledge, and comprehension and connected-text knowledge. Rasinski (2004) identified three components of fluency. They are Accuracy, or accurate decoding of words in text; Automaticity, or decoding words with minimal use of attentional resources; and Prosody, or the appropriate use of phrasing and expression to convey meaning.

Hişmanoğlu (2006) emphasized on the meaningful communication in the teaching of pronunciation. Proper pronunciation skills enable the learner to communicate effectively and clearly. Production of sounds to make meaning is regarded as pronunciation and that contains attention to the particular sounds in a language. Each sound has a way of pronunciation in every language. Accuracy in pronunciation makes meaning and leads to understanding. Phonetics explains the production of speech sounds in a language and it gives the idea of correct pronunciation.

Skilled Reading and its Components

Reading development begins early in life and gets transformed both qualitatively and quantitatively based on the age and experience. The reader who is efficient will have accuracy and speed in identifying strings of letters as words and will have good comprehension of their identification. Those readers will be better in drawing suitable inferences from the text.

Snow and Strucker (1999) identified the features of skilled reading. The characteristics of skilled readers spotted by him are: they read all of the words on the page, notice most of the letters in each word and use them to access a phonological representation, read words quickly, rely greatly on context cues for comprehension, use context cues only minimally for word recognition and always read with a purpose focused on the meaning, and also monitor comprehension by themselves.

This study has considered three components for reading skill, they are reading comprehension, fluency and pronunciation. First one is connected to silent reading and the last two are connected to oral reading.

1. Reading comprehension

Reading comprehension is the act of understanding and interpreting the information within a text. Comprehension is about construction of meaning more than about passive recollection (Shanahan, 2005). It is the process of understanding description in the text than finding meaning from isolated words or sentences. Spiro (1980) believed that availability of appropriate background knowledge is necessary for comprehension. So there will be individual difference among readers because each reader has different

background knowledge on content. “Comprehension that is based on clues in the text is referred to as bottom-up-processing, and comprehension that makes use of information outside of the text is known as top-down processing” (Richards, 1992).

Types of reading comprehension

Different types of reading comprehension are also found, in relation to the reader’s purposes in reading and reading nature. First one is Literal comprehension, in which reading is performed to understand, and recall the information clearly contained in a passage. The second is Inferential comprehension which incorporates reader’s experience, intuition and inference in reading with the intention of finding information which is not openly stated in a passage. The third one, Critical or evaluative comprehension helps the reader compare information in a passage with the reader’s own understanding and values. The Appreciative comprehension reading supports the reader to achieve an emotional and esteemed response from a passage (Richards, 1992).

Factors affecting reading comprehension

Reading comprehension difficulties are linked with many factors such as short-term and/or working memory, general ability, phonological awareness, morphological awareness and the economic and social circumstances of the home. Timely interventions can reduce reading comprehension difficulties.

2. Reading fluency

Natural reading of a text with accuracy, swiftness and expression without any hindrance can be considered as fluent reading. “Oral reading fluency is the ability to read text aloud with accuracy, speed and proper

expression" (Richards, 1992) which means the reader is able to understand and decode words precisely and naturally and can understand the words while reading. Meyer and Felton (1999) also defined fluency in reading as "the ability to read connected text rapidly, smoothly, effortlessly, and automatically with little conscious attention to the mechanics of reading such as decoding". Report of National Reading Panel (2000) says that fluency is based on well-developed word recognition skills and fluent readers can read with speed, accuracy, and proper expression. Thus fluency is a vital component of skillful reading.

Elements of fluent reading

Rasinski (2004) points out that the three distinct elements distinguishing fluent reading are rate, accuracy and prosody. Accuracy is the ability to decode words in the text correctly. Rate means the ability to naturally decode words. Rate can also be explained as the age appropriate chunking strategies and a collection of sight words. Prosody is the use of suitable phrasing and expression and a key factor in comprehension.

Factors contributing to reading fluency development

Wolf and Katzir-Cohen (2001) explained the multiple processes contributing to fluency development. They are lower level attention and visual perception, orthographic representation and identification, phonological representation and phoneme awareness, short-term and long-term memory, auditory perception, lexical access and retrieval, semantic representation, morphosyntactic and prosodic knowledge, decoding and word identification and connected-text knowledge and comprehension. He assumed that the

development of rapid rates of processing in the components of reading influenced fluency. Fluency can vary, in every individual even for expert readers. It depends on the type of text vocabulary knowledge, the number of sight words, background knowledge of the subject of the text and the amount of practice in reading.

3. Pronunciation

Pronunciation is "the way a certain sound or sounds are produced" (Richards, 1992). Pronunciation stresses more the way sounds are identified by the hearer. An accurate pronunciation of any language is unavoidable for the real and easy understanding of the utterance, i.e., exact pronunciation makes communication possible. Pronunciation has always been supposed to be a complicated area for teachers and learners and most of the time it was neglected in the process of language teaching by favouring reading and writing skills (Setter, 2008). Pronunciation is very sensitive to emotional factors and that its nature is strongly related to ego of the student, identity and self-confidence level (Hişmanoğlu, 2006). The first language is not trained by formal instruction for the early years of a child even though deficiencies in pronunciation can be found.

Elements of pronunciation

Pronunciation involves attention to sounds of a language i.e., segments, aspects of speech other than individual sound like intonation, stress, phrasing, timing, rhythm, also called suprasegmental aspects, voice quality, and finally attention to gestures and expressions related to the way of speaking a language.

Factors Influencing Reading and its Development

Reading is influenced by numerous factors. This section defines the factors: memory, phonology, morphology, makes their components clear, and describes how they are related to language learning. A brief description of intelligence, vocabulary, letter reading and decoding are also given.

1. Intelligence and language learning

Intelligence is an important factor that influences teaching learning process. In general, children with high intelligence will be successful in learning language and arithmetic. Different theories were evolved on the concept of intelligence. Charles Spearman's two factor theory, L.L. Thurston's (Thurston, 1938)theory on seven primary mental abilities; verbal reasoning, perceptual speed, numerical ability, comprehension, word fluency, associate memory and spatial visualization, Howard Gardener's (Gardner,1983) Multiple Intelligence theory (bodily kinesthetic intelligence, verbal spatial intelligence, verbal linguistic intelligence, logical and mathematical intelligence, intrapersonal intelligence and naturalistic intelligence) and Robert Sternberg's Triarchic Theory of Intelligence (Analytical, Creative and Practical Intelligence) are the prominent intelligence theories evolved. Initial theories of intelligence considered intelligence as an innate factor; later that concept has been changed that it can be developed through new educational interventions.

Research revealed that even the beliefs about intelligence influence learning achievement (Mangels, Butter field, Lamb, Good, Dweck, 2006). Students who believe intelligence as a fixed entity have a tendency to stress

on ‘performance goals’, leave themselves vulnerable to negative feedback and stay away from challenging learning occasions. In the same time, students who believe intelligence is flexible have a tendency to stress about ‘learning goals’ and recover from occasional difficulties.

Researches were conducted on the relationship between intelligence and reading. Bonar (2005) found a connection between general intelligence and second language acquisition especially in a foreign language environment. Sarani and Lotfi (2010) has an opinion that reading comprehension is a complex process and it is a combination of simultaneous functions of verbal and non-verbal intelligences. It has also been revealed that intelligence has a role in predicting reading comprehension (Berniger, Abbot, Vermeulen & Falton, 2006). But there are studies that fail to see intelligence is not having significant relation to reading abilities (Alloway, 2009). This suggests that the role of intelligence on the language abilities is to be explored further.

2. Memory

Psychology defines memory as an ability to store, maintain and recall information and experience. Teachers should be careful about the defects of students in memory because it can cause serious problems in reading, spelling and arithmetic. To learn anything, student has to keep and connect old and new information in the cognitive domain, so memory is a very crucial factor in learning.

Heuer (1999) explained the components of memory system. He gives three components of this complex function; they are sensory information storage, short term memory and long term memory.

Sensory information storage helps make the brain to function on processing sensory experience like vision and sound for longer than the period of experience. It is an involuntary process of sense organs.

Next component of the memory system is short term memory. The information of the experience can retain for few seconds or minutes in short term memory. It can hold more complex information than sensory information storage, just like sounds to words and image to interpretation. The process of judgment also happens in short term memory. The information in the short term memory returns to the conscious mind, so the retrieval becomes easier and immediate. 'Rehearsal' is the process of repeating again, a supporting process to preserve information in short term memory. May be the rehearsal can prevent adding new items in the memory.

Selected portions of short term memory are integrated by judgement process into long term memory. This information was stored in the niches of mind and its retrieval is often difficult, compared to short term memory. Passing information from sensory information storage to short term memory and then to long term memory is based on selective perception of the individual. All these three processes combined to form the foundation for memory.

Baddeley (2004) identified three stages of memory. First stage encoding is the process of registering information from the outer world. Second one is storage, i.e., the maintenance of information for a period. Last stage is retrieval. It is the accessing of information by recognition, recall or by demonstration of a relevant task and its perfect performance as a result of prior experience.

Memory and language learning

Baddeley, Gatherole and Papagno (1998) identified that phonological loop component of working memory has a positive impact on language learning. Young (2000) pointed out that working memory is essential in reading comprehension. While reading a word, recognition of visual configuration of letters, order of letters, segmentation of words into letter sounds, and blending of sounds should be done at the same time. This can be done only by holding altogether in the working memory. For sentence comprehension, decoding of words, comprehension of syntax, retaining of word order, use of contextual cues and vocabulary knowledge should be held in working memory. Accuracy and quick retrieval of memory and encoding and retrieval of language are strongly matched (Marian & Fausey, 2006). It is clear that memory and language are intensely connected.

3. Phonology

Phonology is an important factor influencing reading. This section defines Phonology, makes the components of Phonology clear and describes how Phonology is related to language learning.

Language is the predominant medium of communication which is produced through sounds. Human language production has been studied precisely and the process is portrayed by the branch of linguistic science 'phonetics', which deals with speech sounds. The knowledge about the sound patterns of one's language and depiction of that knowledge is called phonology. It is the study of phoneme, the smallest unit of sound in language.

All languages have two types of sounds, vowels and consonants. Consonants are categorized by three processes during the production; voicing, place of articulation, and by manner of articulation .

Voicing

Voicing is based on the closure of vocal cords. When the vocal cords are apart and glottis open, the air passes without vibration forming voiceless sounds. If the vocal cords are touched together, there will be a vibration while the air passes forming voiced sounds. For example, 's' in 'saw' is voiceless and 'z' in zoo is voiced.

Place of Articulation

Sounds can be identified by their place of articulation in the oral cavity. They are classified as follows:

1. Bilabial - While producing this sound the lips has to be brought together.

	English	Malayalam
Eg: 'P' in pan, 'M' in man		'മ', 'പ'

2. Labiodental - Lower lip is raised to upper front teeth

	English	Malayalam
Eg: 'f' in leaf, 'v' in van		'വ'

3. Dental - Sounds are produced when tip of the tongue touches the upper front teeth

	English	Malayalam
Eg: 'th' in path		'ത' 'ഥ'

4. Alveolar - Tip of the tongue raises to the ridge just behind the upper teeth

	English	Malayalam
Eg:-	't' in tool	'ഠ'

5. Palato alveolar - Blade of the tongue raise towards the palate behind alveolar ridge

	English	Malayalam
Eg:	'ʒ' in pleasure	'ഴ'

6. Palatal - Blade of the tongue moves towards hard palate

	English	Malayalam
Eg:	'Y' in Yes.	'യ'

7. Velar - Back of the tongue is raised to soft palate

	English	Malayalam
Eg:	'k' in back	'ക', 'ഖ'

Manner of articulation

Sounds can be classified by the manner of articulation. It is based on the kind of impediments happens to the air while it comes out from the lungs and after passing vocal cords.

1. Plosives - After a complete closure in mouth for a fraction of a second the air comes out with a burst, plosives are formed.

	English	Malayalam
Eg:	'p' in park	'ഭ'
	'd' in dark	

2. Fricatives - Air is not completely closed in the mouth, to make a plosion, but enough to create a friction,

	English	Malayalam
Eg:	'f' in wife	'ഫ'
	'S' in sink	'സ'

3. Affricatives - These sounds begin with a complete closure, but slowly releases without friction.

	English	Malayalam
Eg:	'ʧ' in church.	'ച'

4. Nasals - A complete closure in mouth and air passes through nasal cavity by lowering velum.

	English	Malayalam
Eg:	'm' in ram	'ങ'
	'n' in ran	'മ'

5. Laterals - Air come out through the sides of tongue

	English	Malayalam
Eg:	'l' in light	'ല'

6. Approximants - The tongue approaches the top of the mouth and no more obstruction to create friction.

	English	Malayalam
Eg:	'r' in – right	'ഠ'
	'w' in why	

Vowels are classified by tongue position, length, rounding, nasality and as diphthongs. Vowels are produced without much obstruction. Phonology says vowels in a syllable cannot be left out because it is the nucleus of a syllable.

Tongue position

Tongue position in the oral cavity classifies vowels as high, intermediate and low. It also categorizes as front, back and central.

		English	Malayalam
Eg:	high -	'i:' in beat	'ഇ'
	Intermediate -	'e' in bet	'എ'
	Low -	'a:' in bart	'അ'
	Front -	'i:'in beat	'ഇ'
	Back -	'u:' in boot	'ഉ'
	Central -	'∧' in mud.	'അ'

Length

Based on length, vowels can be called as long vowels and short vowels.

	English	Malayalam
Eg:-	i: - long vowel	'ഈ'
	i -short vowel	'ഇ'

Roundness

Rounding means the curvature happens to lips while producing vowels. So there are rounded vowels and unrounded vowels.

	English	Malayalam
Eg:	i:- unrounded	'ഈ'
	u: -rounded	'ഉ'

Nasality

Vowels which form while air passes through nasal cavity are nasal vowels and the vowels forms while air passes through oral cavity are oral vowels.

Diphthongs

Diphthongs are formed by the combination of vowels, i.e., pronunciation of vowel begins at one place and glide toward another place.

	English	Malayalam
Eg:	cow – 'ow'	'ൌ'

Phonological awareness and reading

Phonological awareness is an individual's knowledge about sound structure of spoken words in a language. According to Hund-Reid and Schneider (2013) Phonological Awareness is the awareness of sound including alliteration and rhyme which identifies and manipulates onsets and rime, syllables, words in the spoken language. Phonemic awareness, a part of phonological Awareness is the knowledge about segmenting, blending, and manipulation of individual sounds in a word. Sounds or phonemes are the basic units of language which influence meaning. So it is necessary to understand phonemes for learning any language.

Researches also support that phonological awareness is an essential factor in developing reading success (Wei, Bi, Liu, Weng & Wyndell, 2014, Caglar-Ryeng, 2010, Wei, 2005). Acquisition of mappings between phonemes

and graphemes is essential in learning to read. Word identification in the reading process requires a phonological processing that produces phonological word forms. If a student cannot achieve Phonological Awareness skills, he/she will never able to understand differences in meaning of words in a language and will not be able to achieve the grapheme representation of a language. Reading achievement or language development is an inevitable factor in academic success. Thus, Phonological Awareness has to be developed from the early ages.

4. Morphology

Morphology is an important factor influencing reading. This section defines Morphology, makes the components of Morphology clear and also describes how Morphology is related to language learning.

Morphemes are the minimum meaningful units of a language. Morphemes combine to form words or sometimes individual morphemes can be words. Morphology is the study of these minimum meaningful units of language. It defines the structure of words based on a semantic view point.

Morphemes are classified in a variety of ways.

Free morphemes and bound morphemes

Morphemes that can stand independently are called free morph or roots. Some other morpheme cannot stand alone. They are bound morphemes. Bound morphemes are found as prefixes, infixes and suffixes which come under the category affixes.

Eg:	English		Eg:	Malayalam	
	Bound Morph	Free morph/root		Free morph/root	Bound Morph
Unhappy-	'un'	happy	കുട്ടികൾ	കുട്ടി	കൾ
Going-	'ing'	go	മിടുക്കൻ	മിടുക്ക്	അൻ

Bound morphemes are further divided into two categories. They are derivational and inflectional morphemes. Derivational morphemes can make new words from other words and can change the class of words. They can be suffixes or prefixes.

Derivational

English	Malayalam
encourage-encouragement(Verb to Noun)	താമസിക്കുക-താമസം (Verb to Noun)
depend-dependable (Verb to Adjective)	ചാടുക-ചാട്ടം (Verb to Adjective)
trouble-troublesome (Noun to Adjective)	

Inflectional morphemes do not change class or words even though they can make grammatical modifications like number and tense. They will be only prefixes.

Inflectional

Eg: English	Malayalam
Boys - boy + s (number)	കുട്ടികൾ - കുട്ടി + കൾ (number)
Cried - cry + ed (tense)	കേട്ടു - കേൾ + തു (tense)

Allomorphs

According to the context of usage, morphemes have different forms called as allomorphs. They are the concrete manifestation of the idea morpheme. In the case of number, to the morphemes can be 's' as in cats, lamps.

English	Malayalam
'S' as in cats, lamps	'കൾ' - കുട്ടികൾ
'Z' as in bags, days	'മാർ' – അമ്മമാർ
'iZ' as in horses.	

In past-tense, allomorphs are

English	Malayalam
't' as in walked	'തു' – കേട്ടു (കേൾ + തു)
'd' as in begged	'ഈ' – പോയി (പോ+ഈ)
'ɘd' as in wanted	'ഉന്നു' – നടന്നു (നട + ഉന്നു)

Morphological awareness and reading

Morphological awareness is identified as the clear knowledge about the meaning and structure of a word which can contribute to reading related skills in various ways (Caglar-Ryeng, 2010). It is the knowledge and ability to manipulate the morphemic structure of words.

Understanding of morphemes, the abstract linguistic units in language is needed in the development in reading acquisition. The relationship between awareness of morphology and improvement in reading acquisition can be found as mutually facilitative (Verhoeven & Perfetti, 2003). While morphemes are the smallest units of meaning in a language, understanding of meaning

of language, listening or reading comprehension requires knowledge of morphemes.

5. Letter reading /naming

Letters are the basic unit of the written text and also the symbols of phonemes. Identification, connecting and understanding of letters according to the context is the primary process of reading. Children shift from the process of visual to sound in the reading printed letters and words. The relationship between spelling in words and pronunciations are stored with the help of letter-sound recognition memory mechanism which is operated by children's familiarity with letter names (Ehri & Wilce, 1985). If learners have letter knowledge, they need only a little help to process it and remember relationship between spellings and pronunciations. So letter knowledge is necessary to generate word spelling.

Letter knowledge can be explained by letter identification, discrimination, and letter sound and fluency. From a group of letters, the ability of a child to tell the correct name of the letter is considered as letter identification.

Letter discrimination is the understanding of distinct features of each letter, especially differentiating similar letters. Fluency means identifying the letter fluently without any hesitation. Knowledge of letter sound is an important factor of letter knowledge. After learning the shapes and sounds of letters students can advance to the next stage, word reading.

Researches also revealed that letter knowledge is an important factor in early reading. Lerkkanen (2003) found that letter knowledge predicted reading performance in Grade, word reading and literal text comprehension.

Denton and West (2002) revealed that the children who recognized letters successfully in kindergarten were better in understanding letter-sound relationship in words, sight word reading and understanding words according to the context in first grade.

Denton and West (2002) have considered letter recognition as an aspect of children's early literacy. The ability to identify letters quickly of the alphabet, letter name or sound is one of the best predictors of future reading success (Wren & Watts, 2002). Sound-letter knowledge is important because it is foundation in reading and literacy. With the lack of letter knowledge, it will be difficult for the children to attain other aspects of literacy in the early age.

6. Vocabulary

Vocabulary knowledge is very important because all learning based on language depends upon vocabulary knowledge. According to Richards and Schmidt (2013) vocabulary is "a set of lexemes, including single words, compound words and idioms". So vocabulary is the words used in a language and it is important in word recognition.

Vocabulary is comprised of two types of words, function words and content words. Noun, verb, adjective, and adverb come under content words. Words like man, drink, good, and slowly are some examples for content words. Further, content words can be concrete (car, bag) and abstract (love, pain). The words we use in day to day life belong to general vocabulary and words related to specific area like genetics, medicine are called technical vocabulary. Function words are common words, such as are, that, and to; more connected to grammatical aspect of language.

Learning Point Associates (2004) illustrate four categories of vocabulary and they are listening, speaking, reading, and writing. In this, listening and speaking jointly are called as oral vocabulary. Listening vocabulary comprises the words we comprehend while other people talking. Speaking vocabulary comprise the words used by the speaker. Words we understand from the print are in the reading vocabulary and words using in the time of writing is called writing vocabulary. All these type of vocabulary is useful for a good reader.

Most of the vocabulary is learned in the early ages through listening to language and develops through reading. There is a reciprocal relationship can find between vocabulary and reading development. Children who come to school with a large speaking vocabulary are much more likely to be successful readers than children who come with a diminished speaking vocabulary (Wren & Watts, 2002). It confirms the importance of vocabulary knowledge in reading.

7. Decoding

Decoding is the process of trying to understand the meaning of a word, phrase, or sentence (Richards & Schmidt, 2013). It is recognizing and sounding out the familiar words to arrive at a pronunciation that agree with established readers. Hudson, Pullen, Lane and Torgesen, (2008) states that children who are inefficient in using analytic decoding processes while reading unfamiliar words may end up in failure in reading accuracy. Phonemic Awareness, Letter Knowledge and Larger Letter Patterns are the important elements of decoding because identifying and pronouncing letters are necessary in reading. Decoding skill in the early period is important because it can influence later reading comprehension skill.

In view of McCandliss, Beck, Sandak, and Perfetti, (2003), alphabetic decoding is a vital skill in reading development because it plays a critical role in self-teaching. Decoding skills also have an impact on other reading skills like as phonemic awareness and comprehension. Alphabetic decoding engagement has a major role in the development of efficient word recognition skills, and efficient word decoding skills develop reading comprehension.

8. Dictated spelling

Dictation is a measure of wide-ranging language ability for many years. Usually, dictation is regarded as a test of spelling but it can assess a wide range of language skills including pronunciation, spelling, vocabulary, semantics, memory and attention. Richards and Schmidt (2002) have given definition for dictation. it is "a technique used in both language teaching and language testing in which a passage is read aloud to students or test takers, with pauses during which they must try to write down what they have heard as accurately as possible". Dictation is an activity in which the student has to write down what is orally said. There are word level, sentence level and paragraph level dictation.

Farhadi and Malekpour (1997) clarify dictation as a demanding test which measure phonology, morphology, lexicon, syntax as well as language skills simultaneously. It stimulates the learners' expectancy grammar and concedes substantial information about language proficiency. He assumes dictation as a powerful test for determining worldwide language ability of learners. Morris (1983) specifies the value of dictation as a testing tool. He states that dictation is a testing technique which can reveal the language

proficiency of the learner in an economic way because the dictations need only short duration to administer and score. It precisely shows the types of errors made by the learners which will be helpful in rectification process.

Dictation can be used as a teaching and testing device. Culp and Spann (1985) proved that writing measures have a positive influence on reading comprehension. McBride-Chang, Chung and Tong (2011) revealed that copying skill of children is moderately associated with both dictation and word reading in Chinese. These Studies have proved the utility of dictation in language development.

Reading Difficulty: Types and Factors

Crain and Shankweiler (1990) stated that "normal school children who fail to make expected progress in learning to read to have language related difficulties including problems in phonological awareness and verbal working memory".

Types of reading problems

Bond, Tinker, Wasson and Wasson (1989) mentioned different types of reading problems based on their seriousness. General reading immaturity means the reading problem with children who have low reading ability. They are notably behind in reading than normal readers of their age. The children with specific limitations in reading pattern are having specific reading immaturity. Limiting reading disability is concerned with the children who have serious problems in basic skills that cause hurdles in their reading growth. Complex reading disability can be considered as a part of limiting

reading difficulty. This limitation will act as an obstacle in the growth of reading. The negative attitude caused by this difficulty towards reading will make reading instruction more complicated.

Causes of reading difficulties

Numerous causes are found behind reading difficulties. It is difficult to find the real reason of Reading Difficulty for each child. Sometimes it may be the result of a group of factors working together. Physical factors, cognitive and language factors, environmental, emotional and educational factors affect reading difficulty (Bond, Tinker, Wasson & Wasson, 1989).

Physical factors

Visual, auditory, speech impairments, neurological and general health issues are considered as the physical reasons of reading difficulty. Intellectual limitation happens to be a reason for reading difficulty. In children with visual inefficiency, it will be the reason for his reading problems. Poor eye sight never allows an easy reading. Auditory impairment will limit children in the accurate pronunciation and the ability to understand the correct meaning of the printed words and sentences. Articulation deficiencies will lead to false pronunciation of sounds and is a reason for lack of fluency. Brain controls all the cognitive activities, including reading. Any damage to brain at any time of life will result in reading problems along with many other problems. Unhealthy children with frequent illness and malnutrition and general fatigue may end up in reading problems.

Anomalies in brain system can cause phonological processing problems. According to cognitive studies on reading, phonological processing

is vital to skillful reading. Thus it is logical to suspect poor readers may have phonological processing deficits. DNA studies has found a link between reading disability and inheritance of genes. It exposes the role of genetic factors in reading problems (Griffin, Burns & Snow, 1998).

All these physiological problems have to be identified in the early period by teachers and parents. This needs very close observation of the child. The observer should have attained the knowledge about these deficiencies. Early remediation may help the child to get back better capacities.

Cognitive and language factors

Intellectual limitations, cognitive factors and language factors also affect reading. Intellectually weak child will be weak in learning. Children with below average intelligence is found to be reading difficult. Cognition is the process of attaining knowledge (Cunningham & Stanovich, 2001). It plays a role in reading achievement. Deficiency in semantic abilities, syntactic abilities, and phonological abilities also cause reading difficulty.

Wolf and Katzir-Cohen (2001) summarized multiple sources of dysfluency as deficits in phonological processing and orthographic processing systems which affect the timing and coordination of these systems. Deficits may cause by phonological, visio-spatial, and working memory processes.

Emotional, environmental and educational factors

Emotional, environmental and educational factors have a role in reading ability. Personal and social maladjustment and lack of success make the child emotionally frustrated and lose confidence (Mutekwe & Mutekwe,

2013) and leads to reading difficulties. Environmental condition, such as unstable homes without care and love, lack of opportunity, insecurity, conflict homes, and attitude of parents towards home may lead to reading problems. Educational factors such as school administration, policies of curriculum, readiness for reading, teaching methods and teacher behaviour, role of library or media centre may have a role in reading difficulty. Limitation of resources for out of school learning, poor family background with low motivation and poor educational aspirations, limited social and economic opportunities are the demographic factors connected to reading difficulties.

Inadequate instruction is found to be the reason for reading problems. Consistent occurrence of inappropriate class-room curriculum, delivery of the curriculum, instructional activities and mistakes in the accuracy and clarity of teaching content may become the cause of low achievement of students in the classroom. Crain and Shankweiler (1990) declare that poor instruction in first grade may have long-term effects and can lead to reading deficiency. Low expectations for success among faculty and administration of the school. Undemanding curriculum, poorly trained teachers, ineffective teaching methods, the unavailability of books and noisy and crowded classrooms are some of the instructional factors influencing reading.

Instructional factors

Instructional variables which are found to be affecting reading are Teacher-Pupil interaction, Teacher behavior in the classroom, Clarity of verbal communication, Blackboard work, Course Completion, Reinforcement, Academic time use and availability of books and periodicals.

Vygotsky (1978) argued that cognitive functions are associated to the social world. In his vision child is an apprentice lead by adults and more skilled peers into the social situation. Vygotsky asserted that logical and systematic learning is a result of dialogue and interaction with a skilled assistant within a zone of proximal development (ZPD). The lower level of the ZPD is activities the learner can do himself/ herself without the assistance of a teacher or mentor, whereas the upper level of the ZPD is the learning outcomes that the learner could not achieve at this time even with the assistance of a competent teacher or mentor. According to his concepts for guiding learning is scaffolding, which means the process of constantly changing the level of assistance given to the learner by the teacher with the change in learning needs. In the initial stage of instruction teacher gets involved in every step and he/she retreats gradually when the child appropriately demonstrating partial mastery of the skill and finally child attains independent mastery of the skill. These constructs clearly describes process of becoming socially competent child.

Social development theory of Vygotsky calls attention to the timely and essential intervention by teacher in the classroom. A report of Australian Government (2014) states that students' previous negative experiences, poor teacher–student relationship and having no sense of belonging in a classroom are some of the factors which adversely affect class engagement. The report concludes by promoting a positive learning environment. Schools can contribute to close the gap on the educational disadvantage. Furrer and Skinner (2003) proved that relatedness to teachers contributed to student engagement, academic motivation and in academic performance. De Teso (2011) found that classroom engagement elements such as behaviour

management, teacher sensitivity, productivity, instructional hearing formats, quality feedback, concept development and language modeling had positive direct association on reading comprehension. These studies draw attention to the need of nurturing classroom environment.

Familial factors

Familial factors influencing reading ability are Socio-Economic Status (APL/BPL), Education level of father, Education level of mother, Highest education level of the family, Occupation level of father, Occupation level of mother, Highest occupation level of the family and Home Language Environment.

In the psychosocial theory of personality development, Erikson (1950) emphasized the interaction between the social and emotional domains. Erikson highlighted the importance of interpersonal relationships to resolve conflicts. In the stage infancy, the conflict is Trust versus Mistrust. Erikson assumed that an infant develops trust through interaction with a warm, responsive and available caregiver; otherwise the infant develops mistrust through interaction with a negative or unresponsive and unavailable caregiver. Development of trust in infancy allows the child to succeed to the stage of toddlerhood which is called Autonomy versus Shame and Doubt. In this stage, the toddler is possibly developing a sense of his independence and control over his own behavior and environment if he has the foundation of trust in a caregiver developed in the first stage.

Development of Initiative versus Guilt and Industry versus Inferiority are the next two stages which are particularly crucial for educators because in

early childhood children begin their formal education. Self-start, accepting challenges, assuming leadership roles, setting goals and follow, easy movement are the features of the stage Initiative versus Guilt, if the child does not receive support, he will develop depression, low energy level, poor eye contact and a slumped posture. In the stage Industry versus Inferiority in a supportive environment the child develops curiosity, interest in projects, enjoyment in learning, interest in experimentation and he completes what he started. In a negative environment the child will become timid, overly obedient, non productive and he becomes unsure about his ability and develops a character of procrastination.

Erikson's theory underscores the importance of an encouraging, positive environment to develop an independent productive child. Integrating one's personal interests and needs with those of others is complex for elementary-aged children. So they have to learn how to follow rules and find what is correct to take the viewpoint of others and work with others. If the child fails in these stages, he will fall into inferiority, incompetence and unproductiveness which is inappropriate in their educational and social development.

Well-functioning families which understand support and security play an important role in creating safe and supportive environments that respond to children's needs. Parents may vary in the extent to which they use encouraging parenting behaviours. Some of them take great effort to supply nurturing environments. These can make significant developmental changes in the children (Mullan & Higgins, 2014).

Home environment influences different facets of child development including reading. Early year's cognitive and social development depends on individuals' family environment and parental behaviour. In the view of Manjula, Saraswathi, Prakash, and Ashalatha (2009) Parental involvement is a strong factor influencing children's acquisition of reading and writing and they provide assistance, act as volunteers, perform home-school communications, give home tutoring and thus home educational environment can improve children's learning skills. Quality of home learning environment, resources in the home, parental education, parental occupation, socio economic status, parental encouragement and parental aspirations are some of the factors found to be important for the development of children.

Researches also revealed the importance of home environment in reading. Shah (2000) found that home reading activities, parental teaching, and educational resources and reading related activities had an influence in letter knowledge, phonological awareness and reading. Parent-child interactions motivate the child to read challenging materials, which leads to reading achievement (Baker, Mackler, Sonnenschein & Serpell, 2001).

Melhuish, Phan, Sylva, Sammons, Siraj-Blatchford and Taggart (2008) showed that unsupportive home environment was related with increased underachievement in reading. Socio-Economic Status also showed positive relationship with reading ability (Rashid, Morris & Sevcik, 2005;Kanyongo, Certo & Launcelot, 2006). Father's education, is a significant predictor of reading ability (Ngorosho, 2010., Ngorosho & Lahtinen, 2010). Home Learning Environment and Socio Economic Status havea significant effect on teacher rated reading capacity of the student (Hartas, 2012).

Studies on Cognitive, Instructional and Familial Variables Influencing Reading

Studies reviewed revolved around nonverbal Intelligence, memory, phonological awareness, morphological awareness, letter reading, vocabulary, decoding ability, dictated spelling, instructional and familial factors which influence reading ability. Only those studies which relates to reading related outcomes of preschool and elementary school children are included here. Many a studies on samples other this were excluded for economy in time, space and effort.

Studies on Intelligence and Reading/Language Abilities

Tiu, Thompson and Lewis (2003) studied the role of IQ in reading among two groups with reading disability and without reading disability. Wechsler Intelligence Scale for Children- Third edition Woodcock Reading Mastery Test-Revised (WRMT-R) and Wechsler Individual Achievement Test (WIAT) are used as measures in this study. WIAT includes listening comprehension and reading comprehension and WRMT-R, include word attack and word identification subtests. The results showed that IQ has an influence on reading and it underscores the role of IQ in the prediction of reading comprehension.

Berniger, Abbott, Vermeulen and Falton (2006) examined the relationship of verbal IQ with reading comprehension among second graders with reading disability (N=96). Additional subtest of Wechsler's intelligence scale for children i.e., similarities, information and comprehension were administered to get verbal IQ of the students. Reading comprehension was measured by multiple measuring aspects such as, sentence level

comprehension, prediction of missing word in a text, answering from memory, answering questions without memory component and criterion referenced comprehension. Hierarchical multiple regression analysis reveals that verbal IQ is a unique predictor of reading comprehension.

Alloway (2009) studied the influence of intelligence in reading of 37 children with learning difficulties (Mean age 9 years). Wechsler Intelligence Scale for children (WISC-III) and Wechsler Objective Reading Dimensions (WORD) are the measures used in the study. Reading measures was administered after two year of administration of WISC III. Regression analysis showed that IQ was not a significant predictor of reading abilities.

Alloway and Alloway (2010) examined the role of IQ in literary outcomes of ninety eight children of United Kingdom. They were tested for IQ and literacy measure when they were at kindergarten and after six years they were retested with same measures. IQ measures in the study were block design and object assembly. Literacy measure were reading and spelling. Regression analysis showed that IQ wasa significant predictor of literary outcomes.

Sarani and Lotfi (2010) studied the influence of general intelligence on reading comprehension among 48 high school students from Iran. Reading Section of KEY English Test at level 2 of Common European Framework of Reference for Languages was used as Reading Comprehension measures. Wechsler Intelligence Scale for Children-Revised and Raven's Progressive Matrices were used to measure general intelligence. Regression analysis revealed that verbal IQ and non-verbal IQ measured by Raven Progressive Matrices had an impact on Reading Comprehension. WISC-R did not show remarkable relation with reading comprehension.

Hartas (2012) examined the relationship between nonverbal reasoning and teacher rated student reading among seven year old children in UK. The pattern construction subscale of British ability scales-II was used to measure nonverbal reasoning which included recognition of visual patterns and shapes. Results showed that there was a significant relationship between non verbal reasoning and teacher ratings of reading.

Gafoor and Remia (2013) studied the role of Non-verbal ability on Reading Comprehension in Malayalam among lower primary students from eleven lower primary schools. 159 students were followed from grade 2 to 4. Ravens progressive matrices (coloured) was used as the measure of Non-verbal ability. Passage comprehension was used as reading measure. Multiple regression analysis revealed Non-verbal ability is a successful predictor of Reading Comprehension.

Gafoor and Remia (2013) studied the role of Non-verbal ability on dictated spelling in Malayalam among lower primary students from eleven lower primary schools. 159 students were followed from grade 2 to 3. Ravens progressive matrices (coloured) was used as the measure of Non-verbal ability. Dictated spelling of forty-three age appropriate words were used as spelling measure. Multiple regression analysis revealed that Non-verbal ability is not a predictor of dictated spelling.

Elwer (2014) examined factors which predict reading comprehension. Swedish and Norwegian twins from preschool through grade '9' were followed in this study. In preschool non-verbal IQ was assessed. Speeded decoding task

which assess/words and non-words, woodcock passage comprehension test and Gates and MacGinite Reading Comprehension Tests are used as reading measures. It is found Grade 2 non-verbal IQ predicted Reading Comprehension.

Among the studies reviewed on Intelligence and Reading/Language Abilities, five studies concentrate on reading comprehension and one on reading ability. One study is based on literary outcomes and another is on teacher ratings on reading of the students. One study concentrated on the relationship between non verbal ability and dictated spelling. Among nine studies, six confirm that intelligence is a predictor of reading and language abilities. Three studies showed no significant relationship between intelligence and reading.

Studies on Memory and Reading/Language Abilities

Da Fortoura and Siegel (1995) examined the relationship between memory and reading problems of 37 bilingual students in English and Portuguese. These students were 9-12 years old and natives of Toronto, Canada. Reading subtest from Wide Range Achievement Test, word attack subtest from Woodcock Reading Mastery Test, English Oral Cloze Task were the reading tasks used for English reading. Portuguese Word Reading, Portuguese Pseudo word reading, Portuguese Oral Cloze task were used for assessing reading in Portuguese. Memory tasks used were English Working Memory Task and Portuguese Working Memory Task. Results showed that Portuguese working memory was significantly correlated with Portuguese words reading, Portuguese Oral Cloze and English Oral Cloze. English working memory is significantly correlated with English Oral Cloze only. The study reveals the influence of working memory in reading.

Masoura and Gatherole (1999) studied the connection between short term memory and ability to learn vocabulary of English language among 45 Greek children. They were selected from a public primary school in Greece (mean age 10.3 years). Two phonological memory measures were used. Repetition of English non-words in English was measured by children's Test of Non-word Repetition and Greek version of the Non-word Repetition was used to measure the same in Greek. Non-verbal ability was measured by using Coloured Progressive Matrices (Raven, 1986). As a language measure productive and receptive vocabulary in English and Greek were assessed. Relationship between phonological memory skills and knowledge of vocabulary in English and Greek were found highly significant.

Brill (2001) conducted a study among university students on the relation between procedural memory and grammar. Twenty six students were received three procedural memory tasks and they also got training in artificial language Brocanto 2. It is found that procedural memory joined with language learning in training conditions generated optimal performance in grammar assessments.

Alloway and Gatherole (2005) conducted a study on the relation between memory and language skills on 72 children with learning difficulties with mean age 9 years. Three types of memory tasks were used. The first one wasverbal complex memory which included backwards digit recall, counting recall and listening recall. The second task was phonological short term memory which contained three measures from WMTB-C, and the third task was sentence recall, which was the modified version of the test for Reception

of Grammar. Results showed that sentence recall, verbal complex memory were significant in predicting reading skills.

Gatherole, Alloway, Willis and Adams (2006) observed the association between working memory and reading abilities. The participants were 46 children in age range of 6-11 years from Durham, North East England. Memory measures used in the study were verbal complex memory, i.e., backwards digit recall, counting recall- and listening recall. Phonological short term memory and visuo-spatial memory were also used. Wechsler Objective Reading Dimension (WORD) test which included reading letters and single words, spelling and reading comprehension subtests was used as reading measure. Hierarchical regression analysis reveals that working memory is an independent predictor of reading.

O'Brien, Segalowitz, Freed and Collentine (2007) examined the relationship between phonological memory and second language fluency in Spanish oral fluency among native English speaking students. Forty three students (Mean Age = 22.84 years) from university of Colorado, Untied States and Universidad de Alicante in Spain participated in the study. Serial non-word recognition was the phonological memory measure. Spanish oral fluency was measured with two measures, general overall oral ability and fluidity. Both measures were assessed twice. Hierarchical regression analysis showed that phonological memory was significantly associated with oral reading fluency in Spanish.

Kurvers and Vande Craats (2007) examined the relationship of memory with second language reading and lexicon. The sample of the study

consisted of 166 elementary children (Preschool= 33, Grade 1-5 = 83) and 57 adults. Digit span subtest of WISC-R and non-word repetition task were used as the measures of memory. Subtest of Language Test for all children were used to assess receptive vocabulary. Monosyllabic words were used for word reading task. The study concluded that the adult learners above average in literacy significantly differ from average literacy learners on all working memory tasks. Only one significant, correlation was shown between Non-word repetition test and word reading among adults.

Babayigit and Stainthoop (2007) studied the relationship between memory and reading among 56 children from two Turkish preschools. These children were followed up from preschool through grade 2 and individual testing was conducted at the end of each academic year. Vocabulary test, digit span forwards subtest of Turkish version of Weschler Intelligence Scale for children-revised, Ravens Coloured Progressive Matrices were the measures used. The result showed that the short-term memory strongly correlated with reading speed.

Alloway (2009) examined the influence of working memory in the literacy attainment of children with learning difficulties. Thirty-seven 7-11 aged children were recruited for this study. Verbal short term memory measures (digit recall and word recall), verbal working memory measures (listening recall, backward digit recall and counting recall) and visuo-spatial short term memory measures (block recall and visual patterns) were used for memory assessment. These are the tests taken from working Memory Test Battery for Children (WMTB-C). The Wechsler objective Reading Dimensions which included basic reading test and reading comprehension and spelling

were used to assess literacy outcomes. Memory and intelligence measures administered for one time only and literacy measures administered for Time 1 and Time 2 (After two year). Hierarchical regression analysis shows that working memory is a significant predictor of reading abilities.

Alloway and Alloway (2010) studied the role of working memory on literacy outcomes of ninety eight children of United Kingdom. They were tested at two points of time. While the children are in the kindergarten (mean age 5 years) Memory test and literacy tests were administered. After 6 years measures of memory and literacy were again administered when they were at mean age of 10 years. Digit recall, word recall, backward digit recall and listening recall were the measures of memory used in the study. Reading and spelling were the literacy measures used. Regression analysis revealed that working memory at Kindergarten was a significant predictor of literacy.

Hye and Sevcik (2011) investigated the influence of verbal working memory on bilingual student's reading fluency and comprehension in first language and second language. Two groups of elementary school children participated in the study. First group was Korean immigrant children in the U.S. (N=29) with a mean age of 91.82 months and they learn Korean as their second language. Second group was Korean children living in Busan, South Korea (N=21; Mean age = 87.66 months). The forward digit span test subset of WISC-III was used to measure phonological working memory. The backward digit spam subtest of WISC III was used for measuring verbal digit working memory. Sentence repetition subtests of Neuropsychological Assessment were the measure of verbal sentence short-term memory. Reading Fluency and Comprehension were measured by the fluency subtest

comprehension subtest of Gray Oral Reading Test 4. Hierarchical regression analysis revealed that phonological working memory is a significant predictor for the English speaking children. The memory did not show significant variance in reading fluency and comprehension in Korean within language reading, but in English within language reading phonological working memory was found to be a significant predictor of English reading fluency.

Helena (2012) studied the relationship between phonological working memory and second language knowledge. 15 Finnish school children who started studying English as their second language from third grade was the sample for the study and the data was collected at6thgrade. Non word repletion tests in English and Finnish were carried out as language measures. Finnish test was conducted in 6th grade and English test was conducted in 5th and 6th grades. Findings reveal that phonological working memory is significantly related to English non word repetition.

Lopez-Escribano, DeJuan, Gomez-Veiga and Garcia-Madruga (2013) conducted a study to examine the influence of cognitive factors on reading comprehension. The sample used for this study was 33 grade three students from public schools in Madrid. To assess working memory Reading Span Test was used. To assess reading comprehension diagnostic assessment of Reading Comprehension Test and Evaluation of Reading Processes for Children-Revised (PROLEC-R) were used. Verbal working memory has been found as the best predictor of reading comprehension.

Elwer (2014) examined factors which predicted reading comprehension. Swedish and Norwegian twins from preschool through grade ‘9’ were

followed in this study. In preschool verbal memory was assessed. Speeded decoding task which assess words and non-words, woodcock passage comprehension test and Gates and MacGinite Reade Comprehension Tests were used as reading measures. Verbal memory significantly predicted reading comprehension in all occasions.

All the reviewed studies revealed that memory has an important role in reading ability. Three studies focused the influence of memory on reading comprehension and five studies on reading skills. Two studies were concentrated on reading fluency and one on reading speed. One study each focused on literacy, grammar and vocabulary. All the studies used working memory as the independent variable. It is notable that against the trend, Hye and Sevcik (2011) failed to see a significant variance in Korean reading fluency and comprehension by phonological and verbal working memory levels among elementary school children.

Studies on Phonological Awareness and Reading

Phonological Awareness and its relationship with reading ability were studied in different languages. Researches were conducted in Japanese (Mann, 1986), Spanish (Gonzalez and Gonzalez, 1993), Hebrew (Kozminsky and Kozminsky, 1995), English, (Burgess and Lonigan, 1998.,Chiappe and Siegel,1999., Wei, 2005., Matter, Hulme, Snowling and Stevenson, 2004), Chinese (Chow, Chang and Burgess, 2005., Shu, McBride-Chang, Wu, and Liu 2006., Luk and Bialystok, 2008., Chung and Ho, 2010), Turkish (Babayigit and Stainthorp, 2007), French (Casalis and Cole, 2009., Haigh, Savage Erdos and Genesee, 2011), Bosnian (Duranovic, Huseinbasic and

Tinjak, 2012), Malayalam (Gafoor and Remia, 2013) and in Arabic (Dallasheh-Khatib Ibrahim and Karani, 2014).

Mann (1986) studied the development of phoneme and syllable awareness among 40 Japanese first grade children of primary school attached to Ochanomizic University. Children were age grouped into two, and one group received Mora Counting Test (Japanese Syllabary) and the other received phoneme counting test. Hirangana (Japanese Syllabary) reading was administered in the end for all the students. The results showed that Mora Counting Test was positively related to Hirangana Reading Speed and negatively related to reading errors. Phoneme counting is also positively related to Reading Speed and negatively related to reading errors.

Gonzalez and Gonzalez (1993) studied the relationship of Phonological Awareness with alphabetic code and acquisition of literacy in Spanish. Eighty grade 2 children are grouped into three; good readers, disabled readers and non readers based on pseudo words reading test. Three levels of Phonological Awareness tasks, i.e., Phonemic Awareness, Syllabic Awareness and Intra-syllabic Awareness (onset and rhyme) are administered individually to all groups. Study reveals that good readers have higher rhyme awareness and phonemic awareness than disabled and non-readers. The study suggests that reading level is associated with phonemes and intrasyllabic units.

Kozminsky and Kozminsky (1995) studied the effect of Phonological Awareness Training Programme on Reading Achievement. This longitudinal study started on 72 kindergarten children from the public schools and were followed till Grade 3. One kindergarten was assigned to experimental group

and the other as control group. Eight month Phonological Awareness training was given to the experimental group and the activities in the training were, listening speech and non speech sounds, identifying and creating rhymes, dividing sentences into components, identifying words that repeated, segmentation of words into syllables, blending syllables, counting syllables, phoneme segmenting, blending phonemes into word and sounding remaining part of words followed by a phoneme deletion. Two Phonological Awareness tests, Lindamood Auditory Conceptualization Test (LAC) and Phonological Awareness test (PAT) in Hebrew and Hebrew-language Reading Comprehension Test are used in the study. PAT was administered at the end of kindergarten following the training. LAC was administered as pre-training and post-training measure. Reading Comprehension Test was administered at the end of first grade and third grade. At the end of kindergarten there was significant difference in Phonological Awareness skills between experimental and control groups. It is found that there is significant positive correlation between post training Phonological Awareness and Grade I reading success for the experimental group and first grade Phonological Awareness has a positive correlation with first grade Reading Comprehension for the control group. After controlling pre-training Phonological Awareness, Reading Comprehension Scores showed significant difference between experimental and control group for both Grades I and III. Initial phoneme isolation and sound deletion are found to be strong predictors of reading acquisition in grade 1.

Burgess and Lonigan (1998) investigated the reciprocal relationship of phonological sensitivity and letter knowledge, a pre reading skill. Ninety seven four and five year old children from seven preschools of North Florida

were participated in this study. To measure phonological sensitivity, a rhyme oddity detection task, alliteration oddity detection task, a blending task and an elision were used. Letter knowledge measures in the study were letter name knowledge and letter-sound knowledge task. Results showed that phonological sensitivity predicted the pre reading skill letter knowledge. At the same time letter knowledge also predicted growth in phonological sensitivity.

Torgesen, Wagner, Rashotte, Rose, Lindamood, Conway and Garvan (1999) conducted an intervention study among 180 kindergarten children who have got the lowest scores in letter naming and phoneme elision task and have a verbal intelligence score above 75, identified from a bigger sample. Embedded phonics condition, Phonological Awareness plus synthetic phonics, regular classroom support and a non-treatment were the four conditions assigned for almost equal number groups of kindergarten children. The groups who received Phonological Awareness plus synthetic phonics and embedded phonics condition showed strongest growth in word level reading.

Chiappe and Siegel (1999) examined whether same component process connected with reading acquisition for native speakers and non native speakers of English in Grade 1. Fifty native English speaking children and 38 children from Punjabi speaking homes were participated in the study. Eleven native speakers and six Punjabi speaking children (Total -17) were found to be poor readers. Thirty nine native speakers and 32 Punjabi speaking children (Total-71) were found to be average readers. This classification was based on WRAT 3 (Wide Range Achievement Test 3) scores. Word reading measures used by WRAT-3 and by a set of 40 experimental words presented to the

children. A set of words from Bridge reading programme was also presented to children. Results showed that native speakers and Punjabi speaking children showed same frequency in Reading difficulties and they did not differ significantly in phonological processing and word recognition. Both groups used similar strategies in word recognition and also showed similar error pattern. Average readers of both language groups showed greater phonological sensitivity than poor readers. It shows that reading difficulties are strongly related with deficits in phonological processing.

Lonigan, Burgess and Anthony (2000) studied the predictive efficiency of emergent literacy skills in reading development among preschool children. Phonological sensitivity measures were rhyme oddity, blending and elision. Oral language measures and picture completion subtest and object assembly subtest of Wechsler's preschool and primary scales of intelligence were also used. Word decoding from Woodcock Reading Mastery Test was administered. Phonological Awareness is recognized as significant predictor of word decoding.

Shah (2000) studied the relationship of phonological awareness in Reading Ability among 45 kindergarteners from two elementary schools. Phonological Awareness test included phonological judgment and phoneme deletion tasks. Two phonological sensitivity tasks, rhyme recognition and phonological representation were used. Woodcock letter identification task and letter sound task were used to measure letter knowledge. Woodcock word identification task and word attack task were used to measure reading ability. Letter knowledge is found to be related with Phonological Awareness and reading.

Hammill, Mather, Allen and Roberts (2002) investigated the importance of phonological ability in word identification of 200 children in the United States from grade 1through 6. Sight decoding and sound decoding were the tasks used to measure word identification. Sound deletion, sound blending and rhyming sentences are the tasks used to measure phonological ability. Multiple regression analysis reveals that in younger children phonological ability is the strongest predictor of word identification.

Catts, Gillispie, Leonard, Kail and Miler (2002) studied the role of Phonological Awareness in reading achievement of 279 children from grade 3 through grade 4. They were grouped into two: good readers and poor readers. In grade 3, Phonological Awareness measures were administered and reading achievement was measured from gender 4. Three tests of Reading Comprehension and two tests of word recognition were used as measures of reading achievement, and Phonological Awareness was measured by a phoneme deletion task. Hierarchical regression analysis showed that Phonological Awareness in grade 3 explained a unique variance in reading achievement of grade 4.

Kennedy and Flynn (2003) investigated the relation of Phonological Awareness with reading skills among children with Down syndrome. Nine children participated in the study. Phonological Awareness, speech perception, hearing ability and auditory-visual memory were measured by four individual sessions. The results showed that high achievers of phonemic awareness have high score in literacy. The study suggests that reading acquisition difficulties in children with Down syndrome is due to weak Phonological Awareness skills.

Kirby, Parrila and Pfeiffer (2003) investigated the relation of Phoneme Awareness and naming speed on reading development. The sample for this study consisted of 79 children who were followed from senior kindergarten to 5th grade. Every year the children received linguistic, cognitive, reading and spelling measures. Phonological Awareness measures used were blending onset and rime, phoneme elision, blending phonemes and sound isolation. Naming speed was measured by picture naming and colour naming. To measure mental ability, test from Das-Naglieri Cognitive Assessment System was used. Figure memory test, spatial-verbal relations test, letter knowledge test were administered as memory measures. Word attack, word identification, and passage comprehension subtests from Woodcock reading test was also used. Reading Mastery Tests-Revised are administered to grade-5. Gates-MgGinite Reading Comprehension Test was given in Grade-5. Results revealed that naming speed and Phonological Awareness in kindergarten predicted reading.

Matter, Hulme, Snowling and Stevenson (2004) investigated the association among letter knowledge, early phonological skills, vocabulary knowledge and grammatical skills as predictors of reading comprehension and word recognition. It was a longitudinal study conducted for two years among ninety elementary school students from North London. Data collection was done in three time periods and in the first time, six subtests of Phonological Awareness i.e., rhyme detection, rhyme production, phoneme completion, phoneme deletion, rhyme oddity and letter knowledge test were administered. Hatcher Early Word Recognition Test was also administered in the first time. In time 2, all the tests from time 1 were repeated. British

Abilities Scales II and Word Reading Test were also administered in time 2. In time 3, Hatcher Early Reading Test BA II word Reading Test and Test of Prose Reading Ability were administered additionally. Neale Analysis of Reading Ability II Test which includes prose reading, accuracy and comprehension was also administered. Results showed that phoneme sensitivity and letter reading predicted word reading skills and word recognition skills predicted reading comprehension.

Chow, Chang and Burgess (2005) studied the relationship between Chinese language phonological process skills and early English and Chinese reading abilities among kindergarten students in Hong Kong. At the beginning of the study there were 227 students, after dropout there were 203 students. Three phonological processing tasks i.e., Phonological Awareness, Rapid Automatized Naming, short term verbal memory and Chinese/English word reading were administered to them. Linear regression was used to examine the relationship between phonological processing skills and reading abilities. Result showed that all the three phonological processing skills were moderately associated with reading abilities in Chinese and English.

Wei (2005) investigated the relationship between Phonological Awareness and reading ability of Thai students in English. 424 Thai 3rd grade students from nine provinces of Thailand were chosen for the study. Measures of Phonological Awareness used were initial sound detection, rhyme task, phoneme deletion and final sound detection. Real word reading and pseudo word reading were used as the reading measures. All these measures were administered both in Thai and English. All Phonological Awareness Tests of

English predicted English real word reading. Three of the Phonological Awareness tests, i.e., English phoneme deletion, English rhyme task and English final sound detection predicted English pseudo word reading. Three Thai subtests i.e., final sound detection, phoneme deletion, initial sound detection predicted Thai real word reading and three Thai subtests, i.e., phoneme deletion final sound detection, initial sound detection predicted pseudo word reading.

Grey and McCutchen (2006) investigated the relationship of Phonological Awareness with word reading and comprehension of kindergartners (N=82) and grade 1 and 2 students (N=70). Kindergarten version of the Test of Phonological Awareness (TOPA) and Early Elementary version of TOPA were used as PA measures. Word reading was measured at the end of each grade using Gates-Mac Ginite Reading Test, third version appropriate to each grade. A sentence Comprehension Task was also administered to them. Analysis revealed that kindergarteners' Phonological Awareness strongly correlated with word reading and comprehension and Grade 1 and 2 students' phonological awareness significantly correlated with word reading, but phonological awareness not correlated with reading comprehension in Grade 1 and 2.

Shu, McBride-Chang, Wu, and Liu (2006) analyzed cognitive factors related to reading development of Chinese children of Grades 5 and 6 from Beijing. In them 75 students were with reading difficulty and 77 were without reading difficulty. Reading measures used in the study were Chinese character reading, Chinese character dictation and reading comprehension. Path analysis

reveals that phoneme deletion is significantly associated with Chinese character dictation, character reading and reading comprehension.

Babayigit and Stainthorp (2007) investigated the relationship between Phonological Awareness and early reading skills of 56 Turkish pre-school children. Syllable deletion, syllable tapping, onset and rime awareness, final phoneme deletion, initial phoneme deletion are the Phonological Awareness measures used in the study. Three reading measures, preschool reading and spelling, one-minute word reading were administered at first time. In second and third time one-minute word reading, one-minute non-word reading, spelling and text reading were implemented. The results showed that Phonological Awareness was not associated with reading skills. The study says that the extreme transparency of Turkish orthography makes role of Phonological Awareness insignificant on reading.

Puloakanaho, Ahonen, Aro, Ekulund, Leppanen, Poikkens, Tolvanen, Torppa and Lyytinen (2008) examined the relationship between phonological predictors and reading accuracy and reading fluency. It was a follow up study of project JLD and this project identified phonological skills of the children at the age of 3.5 years, 4.5 years and 5.5 years. The phonological measures assessed were word level segment identification, syllable level segment identification, synthesis of phonological units, continuation of phonological units, initial phoneme identification and production of first phoneme. Reading measures, administered at 8.9 years (grade 2) were meant to assess accuracy, spelling and fluency. The study reveals that phonological skills can predict reading accuracy but not fluency.

Luk and Bialystok (2008) examined the relationship between phonological awareness and early reading skills among fifty seven 6 year old Cantonese-English bilingual children of two public elementary schools. English and Chinese syllable deletion, English and Chinese phoneme on set deletion, English phoneme counting, and Tone Awareness in Cantonese were the phonological measures used. Reading measures were English word identification and Chinese character identification. Working memory, Ravens matrices and vocabulary were the control measures on the study. Hierarchical regression analysis showed that each phonological factor had a different role in predicting reading performance in each language.

Chen, Hao, Geva, Zhu and Shu (2009) conducted a study among grade 1 (N=29) and Grade 2 (N=30) Chinese children. The results revealed that syllable awareness, a component of Phonological Awareness predicted Chinese character reading.

Roman, Kirby, Parilla, Wadewoolly and Deacon (2009) examined the importance of Phonological Awareness and Naming speed in reading accuracy. The study was conducted among Grade 4, 6 and 8 children (N=92) from seven schools in Nova Scotia, Canada. The Phonological Awareness task given to them was Elision task and there are two reading measures, i.e., word reading ability (word identification) and pseudo word reading (word attack). The result revealed that Phonological Awareness had influenced real word as well as pseudo word reading.

Tong, McBride-Chang, Shu and Wong (2009) conducted a one-year longitudinal study to examine the influence of Phonological Awareness and

Speeded naming on word recognition and reading comprehension among 196 Hong Kong grade 3 children. Finally there were 171 children after drop out. Children were tested two times in a year. Naming speed was associated with word reading, but Phonological Awareness was not related to word reading and reading comprehension.

Casalis and Cole (2009) investigated the influence of phonological awareness and morphological awareness training programmes in reading French. In kindergarten, there are 3 groups, 30 students in each, one received phonological awareness training, 2nd group received morphological awareness training and third group was control. The kindergarteners who received Phonological Awareness training showed a positive effect on reading.

A longitudinal study on the relationship between phonological awareness and reading comprehension was conducted by Lam (2009) among kindergarten to Grade 1 students (N=98). Phonological Awareness was measured by syllable and phoneme deletion tasks. Reading comprehension was measured by using sentences and small paragraphs. The study revealed that phonological awareness in kindergarten strongly correlated with reading comprehension in Grade 1.

Sadasivan (2009) examined effectiveness of Phonological Awareness intervention with neuropsychological intervention among children of New Zealand with reading difficulty of age range 7-15 years. After assessing, neuropsychological functions of attention, executive functions, verbal and visual learning and memory, phonological processing interventions were given by speech language therapists for ten weeks. After the neuropsychological tests, Phonological Awareness tests and reading tests were administered. Pre

intervention assessments were compared between the children with and without reading disorders (8-10 years) and it showed that reading disorders group had deficits in verbal fluency and inhibiting control and without reading disorder group had no difficulties in them. Reading disorders group also differed from non reading disorders group in reading accuracy and comprehension. After the intervention reading disorders group showed improvement in reading accuracy and phonological processing and neurological tests. The study also found out that Phonological Awareness intervention is effective for children in Banglore, India. It is proved that even in different educational and cultural settings the Phonological Awareness intervention was effective in treating reading disorders.

Caglar-Ryeng (2010) investigated the relationship of Phonological Awareness with Reading comprehension in English among dyslexic students and normal readers. For this purpose 26 elementary students from five public schools of Tromso were selected and there were two groups, with thirteen dyslexic and thirteen non dyslexic students in each. Phonological Awareness and Reading comprehension tasks were administered to all students. Rosner's Auditory analysis and a phoneme segmentation task were used as Phonological Awareness measures. Relationship between Phonological Awareness and Reading Comprehension was statistically not significant and the study presumed that it was because of the small sample size since it exhibited low to moderate relationship.

Chung and Ho (2010) investigated the relationship between word reading developing and reading related skills of dyslexic Chinese children in Chinese and in English. The sample was eighty four Cantonese speaking

children from primary schools of Hong Kong. They were grouped into three, dyslexic group (N=28) chronological age group (N=28) and reading level control group. Phonological Awareness tasks and word reading tasks in English and Chinese were administered to all children. It is found that phonological difficulties in English are associated with dyslexia in English, but phonological difficulties in Chinese are not associated with dyslexia in Chinese. The study claims that phonemic awareness is important in alphabetic language like English, but not in non alphabetic language like Chinese.

Haigh, Savage Erdos and Genesee (2011) examined the connection between phoneme awareness, on set rime awareness and reading. The sample included 98 kindergarten children who were English dominant at the beginning stage of French Immersion study programme. Typically developing children and reading difficult children were included in the sample. Nonverbal cognitive ability, knowledge of letter names and single reading are the control measures of this study. They were assessed from kindergarten. Phonological Awareness was measured in kindergarten using experimental blending task in English and French. There were on-set rime manipulation and phoneme manipulation items in this test. Reading measures are collected when the children reached grade 2. Word and pseudo word identification, word reading fluency, text reading fluency, passage reading comprehension were the measures used for the assessment of reading. Regression analysis proved that English phoneme manipulation is significantly related to both French and English reading. French on-set rime knowledge predicted French reading.

Duranovic, Huseinbasic and Tinjak (2012) studied the development of phonological awareness and letter knowledge among 505 preschool

children of Bosnia. Phonological Awareness Tests used were phonological discrimination, rhyme detection, initial phone and identification. Letter naming task was used to measured letter knowledge. Results showed that Phonological Awareness as strong predictors of letter knowledge.

Gafoor and Remia (2013) studied the role of Phonological Awareness on Reading Comprehension in Malayalam among lower primary students from eleven lower primary schools. 159 students were followed from grade 2 to 4. Picture-sound recognition, rhyme recognition and rhyme production are used as Phonological Awareness measures. Passage comprehension was used as reading measure. Multiple regression analysis revealed that Phonological Awareness successfully predicted Reading Comprehension.

Gafoor and Remia (2013) studied the role of Phonological Awareness, on dictated spelling in Malayalam among lower primary students from eleven lower primary schools. 159 students were followed from grade 2 to 3. Picture-sound recognition, rhyme recognition and rhyme production are used as Phonological Awareness measures. Dictated spelling of forty-three age appropriate words were used as spelling measure. Multiple regression analysis revealed that Phonological Awareness successfully predicted dictated spelling.

Wei, Bi, Chen, Liu, Weng and Wyndell (2014) studied the influence of Phonological Awareness of preschool (N=101), Grade 1 (N=94), Grade 2 (N=98) and Grade 3 (N=98) on reading success in Chinese. Oddity detection task and deletion task which are used to measure tone awareness, on set rime awareness task and phonemic awareness task are the measures of Phonological

Awareness. Character Recognition Test used to measure reading ability. Hierarchical multiple regression revealed that Phonological Awareness was significant in predicting reading success.

Dallasheh-Khatib Ibrahim and Karani (2014) studied the development of phonological awareness and morphological awareness and its influence on reading skills in Arabic. Eighty nine kindergarteners from a private school in Haifer, Israel, were recruited for the study. 31 children participated in phonological intervention programme, thirty one children participated in morphological intervention programme. Phonological training included use of sound recognition syllable, rhyme and phoneme segmenting, blending. Morphological training included training in morphological knowledge and morphological awareness-morpheme used to derive singular nouns or verbs to express two and conversion of masculine words to feminine words. Pre and Post measures of Phonological Awareness and morphological awareness were administered in time. Reading measures used are word recognition, syllable reading, pseudo word reading, word reading and spelling. Results showed that phonological intervention group improved in phonological task after training and morphological intervention group improved in morphological task after training. But in grade 1 no significant differences were found in reading and spelling between intervention and control groups. The study says it may be related to additional visual complexity of Arabic orthography.

In thirty three studies, character level reading, word level reading and sentence or passage level reading were considered in relation with Phonological Awareness. Six studies focused on character level reading, twelve studies focused on word level reading and eight studies focused on

passage level reading or reading comprehension. Among thirty three studies, seven showed that Phonological Awareness has no relationship with reading; the rest twenty studies confirmed that Phonological Awareness had strong influence on reading. Four studies studied the relationship between reading difficulty, reading errors and Phonological Awareness. Two studies showed the positive relationship of Phonological Awareness intervention programme and reading but one study revealed phonological awareness training has no influence on reading. Reading speed, reading ability, reading, fluency, accuracy and dictated spelling are also considered in studies. Studies reveal that nature of language is a factor which affects the relationship between Phonological Awareness and reading.

Studies on Morphological Awareness and Reading

Morphological Awareness and its relationship with reading ability were studied in different languages. Researches were conducted in Chinese (Shu, McBride-Chang Wu and Liu, 2006., Chen, Hao, Geva, J.Zhu and H. Shu, 2008., Lam, 2009., Tong, McBride Chang, Shu and Wong, 2009., Chung and Ho, 2010), English (Naggy, Berninger and Abbott, 2006., Kieffer and Lesaux, 2008., Caglar-Ryeng, 2010.,), Korean (Wang, Ko and Choi, 2009), French (St-Pierre and Dube, 2012), Malayalam (Gafoor and K.R, 2013), Arabic (Dallasheh-Khatib Ibrahim and Karani, 2014), and Swedish and Norwegian (Elwer, 2014).

Naggy, Berninger and Abbott (2006) examined the contribution of Morphological Awareness in reading vocabulary among three groups, 4th and 5thgraders, 6th and 7th graders, and 8thand 9th graders from north western

United States. Measures of Morphological Awareness used were Suffix Choice Test and Morphological Relatedness Test. It is found that Morphological Awareness has high correlation with reading vocabulary and reading comprehension in all grade levels. In reading vocabulary, the highest correlation was for $4^{th}/5^{th}$ grade levels, the next was $6^{th}/7^{th}$ grade levels and finally $8^{th}/9^{th}$ grade levels.

Shu, McBride-Chang Wu and Liu (2006) examined the relationship of Morphological Awareness with reading development of 5^{th} and 6th grade Chinese children from Beijing. Among these children seventy five were with reading difficulty (RD) and seventy seven without reading difficulty. Logistic regression analysis is used to predict the students with reading difficulty and it showed that Morphological Awareness is a significant predictor of RD. Path analysis revealed that morpheme production was significantly related to Chinese character reading and Reading Comprehension and Chinese character dictation which are the reading measures in the study.

Kieffer and Lesaux (2008) studied the relationship between derivational Morphological Awareness and Reading Comprehension among English language learners from three schools in southwestern United States. Eighty seven students were followed up from fourth to fifth grade. Woodcock Language Proficiency Battery Revised was used as Reading Comprehension measure. Phonological Awareness, word reading accuracy, non-word reading accuracy, sight word efficiency and vocabulary knowledge were used as, control measures. Multiple regression analysis revealed Morphological Awareness as a significant predictor of Reading Comprehension. The study

suggests the inclusion of derivational morphology in reading comprehension model.

Chen, Hao, Geva, J.Zhu and H. Shu (2008) administered two aspects of compound awareness, a measure of Morphological Awareness to Grade 1 (V=29) and Grade 2 (N=30) Chinese children. MANOVA was used to find out the influence of compound awareness on character reading. After controlling age, Phonological Awareness and Rapid Automatized Naming, it is found that Compound Awareness has an influence in character reading.

Lam (2009) conducted a study to examine the function of Morphological Awareness in reading of Chinese and English among eighty four kindergarten and Grade 1 Chinese speaking English language learners in Canada and ninety eight kindergarten and Grade 1 students in China. In the first part of the study, measurements were taken two times. First time Phonological Awareness, Morphological Awareness and Word Reading and Reading Comprehension were administered, and after one year, Reading Comprehension task was administered. Morphological Production of derivatives and Morphological Analogy Test of compound morphological awareness were used as the measures of Morphological Awareness. Morphological Awareness measures in the first time were strongly correlated with Reading Comprehension measures in the second time. In the second part of the study Morphological Awareness and character reading were administered in Kindergarten and Reading Comprehension tasks after one year. Both studies revealed that Morphological Awareness contributed to reading Chinese in China and Canada.

Gomez (2009) examined role of Morphological Awareness in word reading and in Reading Comprehension among Spanish speaking English language learners. Ninety primary schools students were selected for this study. Derivational morphological measures were used to evaluate Morphological Awareness in both Spanish and English. The study revealed that Spanish Morphological Awareness influenced Spanish word reading and Reading Comprehension. Similarly Morphological Awareness in English has a role in explaining English word reading and Reading comprehension.

Wang, Ko and Choi (2009) investigated the significance of Morphological Awareness in Korean-English biliteracy acquisition. Sixty five Korean Grades 2 and 4 children of three Korean language schools in the Washington DC area were the sample of this study. Compound and derivational morphology tasks were given to them. From the analysis it is clear that Morphological Awareness has significantly predicted word reading and Reading Comprehension. Morphological Awareness in one language also predicted significant variance in real word reading in another language.

Casalis and Cole (2009) investigated the relationship between Phonological Awareness and Morphological Awareness by giving a training programme to Kindergarteners and studied the influence of both Phonological Awareness and Morphological Awareness training in Grade I by following up the Kindergarteners. In Kindergarten there were three groups, 1st group received Phonological Awareness Training, second group received Morphological Awareness training and no training was received by third group. The results showed that Phonological Awareness is improved by

Morphological Awareness training. Those who received Phonological Awareness is improved by Morphological Awareness training. Those who received Phonological Awareness training showed positive effect on reading. But children who received Morphological Awareness training didn't show positive effect on reading. By improving Phonological Awareness, indirectly Morphological Awareness training can help reading.

Roman, Kirby, Parilla, Wadewoolly and Deacon (2009) examined the importance of Morphological Awareness in Reading accuracy. The study was conducted among Grades 4, 6 and 8 children from seven schools in Nova Scotia, Canada (N=92). Morphological measures used in the study are production and word analogy. Word reading ability was measured by word identification, pseudo word reading and word attack. Results show that Morphological Awareness has influenced real word reading and pseudo word reading.

Tong, McBride Chang, Shu and Wong (2009) conducted a one year longitudinal study among 171 Cantonese speaking children from Hong Kong who were attending third year of kindergarten. They examined the relationship between Morphological Awareness and word recognition and Reading Comprehension and tested all the variables at the beginning of the study and one year later, Reading Comprehension and Character Recognition were again tested. Morphological awareness was measured by morphological construction and homophone knowledge. Hierarchical regression was used for prediction of reading outcomes by Morphological Awareness and correlation was used to find the relation among variables. Results showed that

Morphological Awareness longitudinally predicted Reading Comprehension and Character Recognition.

Caglar-Ryeng (2010) investigated the relationship of Morphological Awareness and with Reading Comprehension in English among dyslexic students and normal second language readers. Knowledge about derivational suffixes is the measure for Morphological Awareness and it is administered to two groups of eleventh graders; dyslexic (N=13) and non dyslexic (N=13) from five public schools of Tromso. Experimental language tasks tapping, Morphological Awareness and Reading Comprehension skill tests were administered to all students. Nine texts with different length, difficulty and nature were included in Reading Comprehension test and it was followed by multiple choice questions. Relationship between Morphological Awareness and Reading Comprehension are not statistically significant and the study assumes that it is because of small sample sizes, since they show low to moderate relationship.

Chung and Ho (2010) investigated the morphological processing deficits in dyslexic children English and in Chinese. The sample selected for the study includes 84 Cantonese speaking children from primary schools of Hong Kong. They were divided into dyslexic groups, chronological age control group and reading-level control group and each group consisted of 28 children. Morphological Awareness measures of this study were, English morphological construction, and Chinese morphological construction. Chinese and English word reading are used as reading measures. Findings reveal that dyslexic children are weak in Morphological Awareness in both Chinese, and

in English Morphological Awareness is found to be a significant predictor of word reading after controlling IQ and age of the students.

Geier (2010) investigated how Morphological Awareness and word reading ability influence speed and accuracy of reading multi morphemic words. These measures were given to 134 grade 5 students of Canada. Analysis of variance revealed that reading ability is positively related with multi morphemic word reading speed and accuracy. Morphological Awareness also showed significant correlation with reading ability.

Lee (2011) carried out a meta analysis on how the selected aspects of Morphological Awareness influence word reading and reading comprehension. For this he identified 44 studies which deal with Morphological Awareness and Reading measures in which the sample is lower and upper elementary students of different grades. The content analysis concluded that there is a strong relationship between Morphological Awareness and word reading and Reading Comprehension. The study recommended the need of researches that focused on Morphological Awareness for the improvement of reading skill in elementary students.

Kirby, Deacon, Bowers, Izenberg, Wade-Woolley and Parilla (2012) inspected the influence of Morphological Awareness on word reading accuracy and speed, pseudo word reading accuracy, text reading speed and Reading Comprehension. The study was conducted on 103 children from kindergarten to Grade 3. Hierarchical regression was used for prediction. Result showed that Morphological Awareness was a significant predictor of these five reading measures. The study focused on the inclusion of Morphological Awareness during instruction.

St-Pierre and Dube (2012) offered a morphological training programme to thirty-seven7-8 aged children who have reading and spelling difficulties. These children were selected from French speaking families of Quebec City area. Results showed that the difficulties in word recognition reduced significantly immediately after the training programme and even after 6 months.

Gafoor and Remia (2013) studied the role of Morphological Awareness on Reading Comprehension in Malayalam among lower primary students from eleven lower primary schools. 159 students were followed from grade 2 to 4. Morphological Awareness was tested on the knowledge of eight categories of morphological constructs namely, gender, number, case, compound word, derived word, derived adjective, tense and volitional & external prompt. Passage comprehension was used as the reading measure. Multiple regression analysis revealed that Morphological Awareness predicted Reading Comprehension.

Apel, Diehm and Apel (2013) measured Morphological Awareness by multiple methods and try to find its relationship with reading. Sample selected for this study was Kindergarteners (N=58), Grade 1 students (44) and Grade 2 students (N=54) from public elementary schools. The tasks used to assess Morphological Awareness were spelling multi morphemic words task, Affix ID task, Relatier task and Rehit task. Reading measures used in the study are the two subtests from TOWRE i.e., Sight Word Efficiency and the Test of Silent Reading Efficiency and Comprehension. One way ANOVA helped to reveal that different Morphological Awareness tasks predicted real word and pseudo word reading predicted real word and pseudo word reading and

Reading Comprehension at different grade levels. But the task which focused on meaning relations predicted the students' reading skills well across all three grades.

Tong, Deacon and Cain (2014) studied the relationship of Morphological Awareness with Poor Reading Comprehension. For this study they identified two groups from Grade 4, i.e., poor comprehenders (N=5) and average comprehenders and the groups are matched by word reading accuracy and speed, nonverbal ability, vocabulary and age. Word analogy task and a sentence completion task were the measures of Morphological Awareness. The sample was selected from seven local elementary schools in NOVA Scotia Community rural schools, which were situated in middle to low SES status neighborhoods. Regression analysis was used and found that average comprehenders performed better than poor comprehenders in Morphological Awareness in English.

Dallasheh-Khatib Ibrahim and Karani (2014) studied the development of phonological awareness and morphological awareness and its influence on reading skills in Arabic. Eighty nine kindergarteners from a private school in Haifer, Israel, were recruited for the study. Thirty one children participated in phonological intervention programme, thirty one children participated in morphological intervention programme. Phonological training included use of sound recognition syllable, rhyme and phoneme segmenting, blending. Morphological training included training in morphological knowledge and morphological awareness-morpheme used to derive singular nouns or verbs to express two and conversion of masculine words to feminine words. Pre and Post measures of phonological awareness and morphological awareness were

administered in time. Reading measures used were word recognition, syllable reading, pseudo word reading, word reading and spelling. Results showed that phonological intervention group improved in phonological task after training and morphological intervention group improved in morphological task after training. But in grade 1 there was no significant difference found in reading and spelling between intervention groups and control groups. The study says it may be related to additional visual complexity of Arabic orthography.

Elwer (2014) examined factors which predicted reading comprehension. Swedish and Norwegian twins from preschool through grade '9' were followed in this study. In preschool grammar/morphology was assessed. Speeded decoding task which assess/words and non-words, woodcock passage comprehension test and Gates and MacGinite Reade Comprehension Tests are used as reading measures. It was revealed that Grade 4 grammar/ morphology predicted Reading Comprehension.

Wei, Bi, Chen, Liu, Weng and Wyndell (2014) investigated the influence of Morphological Awareness preschool (N=101), Grade 1 (N=94), Grade 2 (N=98) and Grade 3 children (N=98) on reading success in Chinese. Morphological Awareness tasks used in the study were morphological construction test and morpheme judgment test. Character recognition test was used to measure reading ability. Hierarchical multiple regression revealed that Morphological Awareness was a significant predictor of character reading in Chinese.

Relationship of morphological awareness on reading studied at character level, word level reading and with reading comprehension. Four

studies each focused on character reading and word level reading and thirteen studies focused on reading comprehension. Three studies showed negative relationship between Morphological Awareness and Reading and two of them were intervention programmes. At the same time morphological awareness training programme reduced reading difficulties. Reading vocabulary (accuracy, speed) was also considered in relation with Morphological Awareness.

Studies Relating Letter Reading to Reading Outcomes

Shah (2000) studied the relationship of Letter knowledge with Reading Ability among 45 kindergarteners from two elementary schools. Woodcock letter identification task and letter sound task were used to measure letter knowledge. Woodcock word identification task and word attack task were used to measure reading ability. Letter knowledge is found to be related with phonological awareness and reading.

Lonigan, Burgess and Anthony (2000) studied the predictive efficiency of emergent literacy skills in reading development among preschool children schools. Letter knowledge measures, Environmental print measures, print concept measure and word decoding from Woodcock Reading Mastery Test were administered. Letter Knowledge is recognized as the significant predictor of word decoding.

Denton and West (2002) examined the relationship between letter knowledge and reading. Kindergarten children were followed to grade 1 for this study. The study revealed that the children who recognized letters successfully in kindergarten were found to be better in understanding letter-sound relationship in words, sight word reading and understanding words according to the context in first grade.

Lerkkanen (2003) investigated the influence of letter knowledge in learning to read. Sixty one children from four primary schools participated in the study; students were tested seven times in grade 1 and 2 with letter knowledge and reading measures. Word reading, literal text comprehension and inferential test comprehension are used as reading performance measures. Results showed that letter knowledge predicted reading performance in Grade 1. Letter knowledge also predicted word reading and literal text comprehension.

Caroll (2004) studied the influence of letter knowledge on phoneme awareness among fifty six preliterate children of mean age 4.3 years selected from nursery schools in New York. Letter knowledge was measured by asking letter names displayed on the cards. Eighteen letters are given for first time test and twenty six were given for the second time test. Initial phoneme matching tested for first time and phoneme completion and initial phoneme deletion were tested for the second time. Results showed that letter knowledge has a significant correlation with phoneme awareness tasks followed.

Caroll (2004) also conducted a training programme to improve letter knowledge of pre-literate students. Ten students of mean age 4.3 years from nursery schools were selected for this study. Children received eighteen sessions in the training programme. Results showed that after training, letter knowledge was improved and the letter knowledge is found to be related with the development of phoneme segmentation.

Molfese, Modglin, Beswick, Neamon, Berg, Berg and Molnar (2006) studied the impact of letter reading in the development of reading skills among 57 four year old children. Letter identification subtest of the wide range achievement test and Get Reading to Read (GRTR) test which include

print knowledge about books, letter and words, emergent writing and phonological awareness are administered to the children. Results showed that letter identification was positively correlated with the readiness to read.

Duranovic, Huseinbasic and Tinjak (2012) studied about the development of letter knowledge among 505 preschool children of Bosnia. Phonological Awareness Tests used were phonological discrimination, rhyme detection, initial phone and identification. Letter naming tasks was used to measured letter knowledge. Results showed that letter knowledge made differences in phonological awareness among preschool children. It is found that letter knowledge is related to phonological awareness measures.

Lopez-Escribano, DeJuan, Gomez-Veiga and Garcia-Madruga (2013) conducted a study to examine the influence of letter naming on reading comprehension. The sample used for this study was 33 grade three students from public schools in Madrid. In rapid automatized naming of letters, students have to read the name of five letters which are repeated ten times. Evaluation of Reading Processes for Children-Revised (PROLEC-R) was administered to the children. Results showed that rapid automatized naming of letters had a high correlation with word reading precision and word reading time. The study suggests that RAN-L is useful in the prediction of reading accuracy and speed.

Elwer (2014) examined factors which predicted reading comprehension. Swedish and Norwegian twins from preschool through grade ‘9’ were followed in this study. In preschool, print knowledge in letter was assessed. Speeded decoding task which assess/words and non-words, Woodcock

passage comprehension test and Gates and MacGinite Reading Comprehension Tests are used as reading measures. Print knowledge in Grade 2 and Grade 4 predicted Reading Comprehension.

Relation of letter reading and reading ability has been studied by many researches; all of them agreed that letter reading is a factor which positively influenced reading ability. Studies focused on word reading, word reading time, reading precision, reading comprehension and readiness to read. Training in letter reading also showed positive effect on reading. Two studies also found significant relationship between letter reading and phonological awareness which is found to be predictor of reading achievement.

Studies on Dictated Spelling and Reading Outcomes

Culp and Spann (1985) studied the influence of writing on reading comprehension among forty students in first quarter of freshman year at University of South Alabama. Dictation of passages in short paragraphs was used as a writing measure. Results proved that writing measures has a positive influence on reading comprehension.

Bjursater and Lacerada (2003) studied the impact of phonological training on writing difficulties among 133 preschool children from public schools of Stockholm metropolitan area. Analysis of variance revealed that there was significant interaction between phonological training and performance in word dictation.

McBride-Chang, Chung and Tong (2011) investigated the influence of copying skills on word reading and dictation among grade 3 and 4 Chinese children with (N=14) and without (N=22) dyslexia. Three copying tasks

which include Korean words, Hebrew words and Vietnamese diacritics were given to the children to measure copying of unfamiliar script. In Chinese word reading task, sixty Chinese two character words were used. Chinese word writing task was used to assess dictation skills of the children. Results revealed that copying skill of children are moderately associated with both dictation and word reading in Chinese.

Gafoor and Remia (2013) studied the role of Phonological Awareness, Morphological Awareness and Non-verbal ability on dictated spelling in Malayalam among lower primary students from eleven lower primary schools. 159 students were followed from grade 2 to 3. Picture-sound recognition, rhyme recognition and rhyme production are used as Phonological Awareness measures. Morphological Awareness was tested on the knowledge of eight categories of morphological constructs namely, gender, number, case, compound word, derived word, derived adjective, tense and volitional & external prompt. Dictated spelling of forty-three age appropriate words were used as spelling measure. Multiple regression analysis revealed that Phonological Awareness and Morphological Awareness successfully predicted dictated spelling.

Azimi and Mousavipour (2014) studied the effect of multimedia in dictation and its use in improving dysgraphia in children with difficulty in dictation of Grade 2 from primary schools of Arak (Iran). The sample size was 39 and 20 students selected into experimental group and 19 students to control group. To identify children with dictation difficulty a clinical interview, Wechsler Intelligence Scale for children revised and dictation test

with 116 words are used. Educational multimedia dictation was used as the educational methodology which includes three phases, planning, application and evaluation. After dictation pre-test, academic multimedia software application was given individually for four academic months. Results revealed that educational multimedia in dictation improved learning skills and it was positively significant on dictation difficulty of students with learning disability and dysgraphia.

Five studies are found which examines the relationship between dictated spelling and reading. It is found that dictated spelling is related with reading comprehension, phonological awareness, word reading, morphological awareness and learning disability and dysgraphia. All studies showed positive effect of dictation with reading skills.

Studies on Instructional Variables and Reading Outcomes

Celano and Neumann (2001) examined the effect of preschool and summer reading programmes conducted by libraries on children's reading skills. For this purpose 25 libraries in suburban libraries in the Philadelphia and Pittsburgh areas, Lancaster County, and urban locations in the Philadelphia and Scranton areas were visited. Researchers observed preschool and summer reading programme and interviewed librarians and parents. These interviews were about their children's response to preschool and summer reading programs, number of books the children read and their feeling on the effect of programmes on children's reading skills. Results showed that library programs can create interest in reading and provide opportunities to develop literacy skills among children.

McCutchen, Abbott, Green, Beretvas, Cox, Potter, Quiroga and Gray (2002) observed classroom practices of teachers and learning of their students. Fourty four teachers, 492 kindergarteners and 287 first graders from Western United States were participated in the study. From among 43 classrooms 23 were experimental and 20 were control. Teacher knowledge about English phonology, orthography and their role in language instruction were collected. Teacher practice was observed and recorded on the aspects knowledge afforded, literacy activity, textual context and group context. As part of student learning, Phonological Awareness, listening comprehension, orthographic fluency, vocabulary, spelling and word reading were measured. Results show that teacher knowledge can change classroom practices and that change can improve student learning.

Furrer and Skinner (2003) studied the impact of sense of relatedness of children to teachers on their academic motivation and performance. The study was focused on 641 children from 3rd to 6 grades. Student sense relatedness with teachers was assessed through a student self report. Teachers also reported about student behavioural and emotional engagement in the classroom, their effort, attention, persistence, and execution of learning activities. Students reported on their behavioural and emotional engagement. Students' beliefs about strategies for failure and success and their capacities to execute strategies was measured by student perceptions of Control Questionnaire and students' generalized expectancies in achieving success and failure were measured by the control beliefs subscale. Students' academic verbal performance was assessed by reading, language and spelling. Regression and cumulative risk analysis proved that relatedness to teachers

contributed to students' engagement, academic motivation and in academic performance.

Muijs and Reynolds (2003) studied the effect of teacher behaviours on mathematics attainment of primary students from 36 primary schools in England and Wales. Data of 3000 students and observation data of 138 teachers were collected for two years- Mathematics Enhancing Classroom Observation Recording system instrument which contain 57 teacher behaviours on a 5 point scale was used for classroom observation. The result proves that teacher behaviour is a significant predictor of achievement.

Sinclair-Tarr and Tarr (2004) studied the relationship between library programmes and reading and to see which of the factors of the programmes affected the relationship. The results showed that there wasa significant relationship between the presence of a school library and student achievement on the reading and language at the elementary and middle school levels. Size of the collection of books, hours of function, availability of a video collection, types of technology accessible, program offered on curriculum-integrated skills instruction are the factors significantly related with student achievement in the elementary level, but specific factor was found to have a statistically significant relationship with student achievement in the middle school.

In the development of Questionnaire on Teacher Interaction (QTI) Scott and Fisher (2004) examined whether their perceptions of their science teachers had any relation with students' enjoyment of science lessons and their cognitive achievement. The QTI Elementary and Enjoyment of Science Lessons (ENJ) were administered to grades 4, 5 and 6 students from 12 schools in Brunei Darussalam. The result showed that students' perception of

their teachers connected to enjoyment of science lessons and their cognitive achievement. The study reveals the connection between teacher's interpersonal behaviour and learning.

Milanowski (2004) studied the relationship between teacher evaluation scores and student achievement in reading. Teacher performance scores were obtained for the teachers who experienced comprehensive evaluation in the year 2000-01 and their students' test scores in 2001-02 was the performance criterion. After the exclusion criteria 212 teachers were selected for final analysis. Teachers received scores in four dimensions, planning and preparation, classroom management, professionalism and teaching for learning. Number of years of teaching experience was also found for the teacher. Student achievement scores in reading were obtained from Grade 3 through grade 8. Results showed that teacher evaluation scores positively correlated with reading achievement.

Podhajski, Mather, Nathan and Sammons (2009) investigated the effect of scientifically based reading instruction given to teachers on reading outcomes of students. In experimental group there were two first grade teachers and one second grade teacher. Control group consists of one first grade teacher and one second grade teacher. Student participants include 33 grade 1 and 20 grade 2 students. Experimental teacher participated in a 35 hour course on instruction of phonics, phonemic awareness, and fluency coached by professional mentors. This training improved knowledge of experimental group teachers compared to control group which was lower than control group before training. End of academic year experimental first graders got higher score than control group in phonemic segmentation and

experimental second graders got higher score in letter name fluency and oral reading. The study concludes that improvement in teacher knowledge can contribute to reading skill of the students.

Akbari and Allvar (2010) investigated about the teacher characteristics which predicted achievement in English. The teacher characteristics in the study were teaching style, teacher reflectivity and teachers' sense of efficacy. Thirty teachers who taught English as a foreign language selected from Iranian Junior and Senior high schools were selected for the study. Teachers are asked to fill three questionnaires based on the three teacher variables. Their student's final exam score was used as dependent variable of the study (630 eleventh graders). Multiple regression analysis revealed that the teacher variables predicted the Achievement in English. The variables also showed individual correlations together. The study underscore the role of teacher in language teaching.

Grossman, Loeb, Cohen, Hammerness, Wyckoff, Boyd and Lankford (2010) investigated the classroom practices of teachers which differentiated the high and low impact on student achievement. The sample selected for the study was New York City teachers who were teaching in 6^{th}, 7^{th} or 8^{th} grade classes and they are divided into quartiles on the basis of value added to student achievement. PLATO, protocol for classroom observation, and 6 measures from CLASS, and Classroom Assessment for Scoring System were used for classroom observation. PLATO has ten elements, clarity of purpose of the lesson, level of intellectual challenge in both teacher questions and tasks assigned to the students, representations of content, connections to both

personal and prior knowledge, use of models and modeling of both high quality work and strategies for reading and writing, presence of explicit strategy instruction in reading and writing, use of guided practice in the classroom quality of feedback offered to students by both teachers and peers, qualities of classroom discourse including teachers' response and elaboration of student ideas and accommodations for English learners. Six measures from class are, positive climate, negative climate, regard for adolescent perspectives, behaviour management, productivity and student engagement. The teachers who had the high value added students, scored higher on all PLATO measures and 5 CLASS measures among 6.

Haycock (2011) examined the association of school library support and programme components with reading comprehension scores. In this study questionnaires were sent to 100 elementary schools and 50 high schools in British Columbia. Library measures incorporated in the study were library hours of access, Staffing, Paid staff activities, Usage, Information and communication technology access, Library resources, and Annual budget and expenditures. Results show that all the measures of library are significantly correlated with reading comprehension scores.

DeTeso (2011) examined the association between the quality of the student teacher relationship and reading comprehension of second grade students. Fourteen grade 2 teachers and their 225 grade 2 students were selected for this study. Reading comprehension was measured by Degree of Reading Power Test. To measure student teacher relationship with each student, subscales of the student-teacher relationship scale were administered

to the teachers which included peer related skills and classroom engagement. The 'CLASS' was used to observe classroom activities of teacher which include, positive climate, negative climate, regard for student perspectives, teacher sensitivity, productivity, behaviour management, instructional hearing formats, quality feedback, concept development and language modeling. Results revealed that classroom engagement had positive direct association on reading comprehension.

Hughes (2013) studied the contribution of school libraries and teacher-librarians on students' literacy development. Twenty seven principals from government and non government institutions of Gold Coast participated in the study and 17 closed and open questions asked to them. An inquiry about school demographics, library staffing, school NAPLAN average scores for reading and writing, employment and qualifications of librarian, the principal's vision for the school library and the principal's perceptions about the school library and its contribution to student literacy also were performed. It is revealed that there is a link between student literacy outcomes and the occurrence of a qualified librarian. Principals' views of school libraries and teacher-librarians also related to literacy development of the students.

Chisenga (2013) investigated the influence of reading rooms on the literacy development of basic school pupils of Chongwe District, Lusaka Province (Zambia). For this study, 4 librarians, 12 Head teachers, 40 teachers, 150 pupils and 4 Ministry of Education officials were recruited. Open-ended questionnaires and interview guides were used to collect information about the reading rooms and test of literary skills were administered to both

experimental and control groups. Results showed that reading rooms created a positive attitude towards reading and they were positively related to literacy skill.

Fourteen studies which reflect the influence of instructional practices' effect on student learning are reviewed here. All the studies support that instructional activities have a greater role in student learning. Instructional aspects in these studies comprised of teacher knowledge, student relatedness with teachers, teacher behaviour, teacher perception of students, teacher evaluation scores, teacher training in reading instruction, teaching style, reflectivity, self efficacy, classroom practices, teacher sensitivity and productivity, classroom engagement, behaviour management, instructional learning format, quality feedback, concept development, library reading programmes, library hours of access and library, staffing and activities. These instructional factors affect student learning in mathematics, science and development of literacy skills. These practices have a positive effect on reading comprehension and word reading.

Studies on Familial Variables and Reading

Reese, Garnier and Gallimore and Goldenberg (2000) examined the home related factor behind Spanish literacy and English reading achievement among 91 middle school Spanish speaking students. Interviews, school records, and child assessments were used to collect data. Parents were interviewed and collected data about family characteristics, demographics, parents' view about academic progress of children, aspirations about child's education and occupation, attitude towards instrumental value of schooling,

grandparents' education and learning activities at home. Student achievement measures were administered in each year. In Grade 1 national percentile scores of six tests were collected. Path analysis revealed that grandparents' education level predicted SES, SES predicted family literacy practices, which turn predicted emergent Spanish literacy and oral English proficiency, and it predicted English Reading Achievement in grade 7.

Shah (2000) studied the relationship of home literacy on Reading Ability among 45 kindergarteners from two elementary schools. Home literacy questionnaire comprised of items in the area of home reading activities, parental teaching educational resources and reading related activities of child at home. Woodcock letter identification task and letter sound task were used to measure letter knowledge. Woodcock word identification task and word attack task were used to measure reading ability. Home literacy environment has influence in letter knowledge, phonological awareness and reading.

De Jong and Leseman (2001) studied the effect of home literacy on word decoding and reading comprehension among 69 Dutch primary school children who belong to heterogeneous socio-economic conditions. These children were observed from Grade 1 through Grade 3. Home literacy measures were taken three times before grade 1. At the end of grade 1 linguistic comprehension and reading achievement were assessed and finally, at the end of grade 3 reading achievement was assessed once more. Opportunity for educational interactions, instructional quality and social-emotional quality during activities with children were the facets of home education in the study. Reading achievement was measured by word decoding and separate reading

comprehension tests for Grade 1 and 3. Results showed that instructional and social-emotional quality of parents had no effect on word decoding but it had an effect in the development of reading comprehension.

Baker, Mackler, Sonnenschein and Serpell (2001) investigated the relationship between parents' interactions and children's reading achievement. 61 children from public primary schools and their mothers were recruited for this study and these children belong to low and middle income families. Research assistants observed shared storybook reading of mother and child from the home. When the children were at grade 1 their literacy related activities were assessed by interviewing parents. Word Attack and word identification test from woodcock, And Johnson Tests of Achievement B Revised were administered in Grade 1 and Grade 3. In grade 3 a passage Comprehension Test and Reading vocabulary test were also administered to measure Reading Achievement. Regression analysis revealed that the interactions during story book reading did not contribute to reading comprehension of children. Affective atmosphere during story book interaction predicted children's reading activity in grade 3. Positive and affective parent children interactions motivated the child to read challenging materials, and it is the pathway to reading achievement.

Sonnenschein and Munsterman (2002) studied the influence of home based reading practices on five year old childrens literacy development. Reading interactions of child and parent were observed before the child centered into kindergarten. Reading frequency of children assessed by interviewing parents and literacy measures are assessed from children during

spring. By an interview with children, their attitude towards reading is assessed and motivation to read assessed during grade 1. Literacy measures used were phonological awareness, orientation towards print and story comprehension. Results showed that only reading frequency significantly correlated with children's early literacy skills; an affective quality of the reading interaction was the strong predictor of children's motivation for reading.

Molfese, Modglin and Molfese (2003) examined the relationship between home environment and reading skills. The sample was the children who participated in a longitudinal study and they are tested from age 3 to 10. Socio-Economic Status (SES) was measured by using parental education, occupation and family income. Home Observation for Measurement of Environment (HOME) inventory was used to collect information from parent when the child at age 3 and 10. Reading Achievement was measured by school administered reading achievement tests, Wide Range Achievement Test-Revised and Woodcock Reading Mastery Test- Revised. Multiple Regression analysis showed that SES and home environment are related to reading ability. Also found that Home Environment scores at age 3 are more effective in predicting skills than the scores at age 8 to 10.

Furrer and Skinner (2003) studied the impact of sense of relatedness of children to parents on their academic motivation and performance. The study was focused on 641 children from 3rd to 6th grades. Student sense relatedness with parents was assessed through a student self report. Teachers reported about student behavioural and emotional engagement in the classroom, their effort, attention persistence, and execution of learning activities. Students

reported on their behavioural and emotional engagement. Students' beliefs about strategies for failure and success and their capacities to execute strategies were measured by student perceptions of Control Questionnaire and students' generalized expectancies in achieving success and failure were measured by the control beliefs subscale. Students' academic verbal performances assessed were reading, language and spelling. Regression and cumulative risk analysis proved that relatedness to parents contributed to student engagement, academic motivation and academic performance.

Rashid, Morris and Sevcik (2005) studied the relationship of home literacy activities and reading achievement of elementary school children with reading disability (N=65). A comprehensive family questionnaire was used to collect information about, child's home environment, family background, home literacy activities, parental beliefs about education, family demographics, social support, medical and school history, family literacy environment, parent's literary activities and child's literacy activities. Three subtests of WRMT-R, i.e. word identification, word attack and passage comprehension were used to measure reading skill of student. Hierarchical multiple regression analysis indicated that parent's home literacy activities wasa significant predictor of passage comprehension.

Kanyongo, Certo and Launcelot (2006) examined the relationship between home environment factors and reading achievement among 2697 grade 6 students in Zimbabwe. SES was determined by four variables; they were possession of TV, refrigerator, pipe water and electricity. Another home environment variable HOME was formed by five variables. They are

someone makes sure you did homework, helps with homework, asking to read, questioning on the read material and looking at school work. Reading at home, STAY (place where the child lives), MEALS (frequency of eating food) and books were also considered as independent variables. Multiple regression analysis showed that, STAY, MEALS, HOME, SES and reading at home were significant predictors of reading achievement.

Duursma, Romero-Contreras, Szuber, Proctor, Snow, August and Calderon (2007) studied the relationship between language environment at home and vocabulary development in English and Spanish of fifth grade children (N=96). Parental interview was conducted to get information about SES, demographic variables, language use and exposure at home, literacy practices and support in the home in Spanish and English. Parental income and education level were also asked. Vocabulary measure was the picture vocabulary subtest of the Woodcock Language Proficiency Battery Revised for Spanish and English. Correlation Analysis showed that Spanish and English Scores of Vocabulary were associated with environmental literary practices and support at home and with SES.

Melhuish, Phan, Sylva, Sammons, Siraj-Blatchford and Taggart (2008) investigated the influence of home environment on literacy. For this study 2857 children with mean age 3.5 years were recruited from one hundred and forty one preschool centres of England. Literacy measures used were letter recognition test and subscales of Phonological Awareness assessment. At the end of 3rd year of school, the children were assessed by standardized, teacher conducted assessment to get their achievement in reading. Interview with

parents included the topics, parental education, occupation, family structure, ethnicity, languages used, child's birth weight, development, health behaviour, preschool provision, child care history and significant life events. This interview also asked the frequency of child engaged activities at home. Multinomial logistic regression analysis showed that unsupportive home environment was related with increased underachievement in reading. Home Literacy Environment for reading differentiated underachievers from average and high achievers.

Geske and Ozola (2008) explored the reasons of deficiency in reading among 4th grade students. The sample was chosen from PIRLS 2001 study in Latvia and the size was 3019. Ten percent of the students were identified as the highest reading literacy group and another 10 percent was identified as the lowest reading literacy group. They completed reading literacy tests; and parents of students were given questionnaires to get SES. SES factors considered in the study were amount of children books, availability of children book at home, number of children, availability of encyclopedias, number of people in one flat, availability of newspapers, fathers education and mother's education. Collaboration of student and family measured by help in read aloud for child, watching TV, with subtitles, participation in word play with child, reading text to the child and going to library with child. It was found that generally children from families with one or two children have improved achievements in reading literacy and have relatively more books and parents with good education who substantially influence children at the pre-school age. Collaboration of parents at age of 10 is important in regular joint visits to a library or a bookstore but not in joint reading. in the 4th grade,

reading of comics was found not a factor facilitating reading literacy but reading different stories, poetry, parts of fiction books or plays at school at least once a week were influential.

Manjula, Saraswathi, Prakash and Ashalatha (2009) studied the impact of parents' participation in educational activities of children with reading and writing difficulties. The study was conducted among 418 sixth standard children, identified by teacher rating about their difficulties. Jaya Bai's reading test- a word reading test was used to measure reading ability and words selected from these test were used for word writing. The intervention programme for parents and children consisted of learning and recognizing stress words vowels and consonants and to improve speed and pronunciation in reading and writing. Results reveal that parental involvement can improve the reading and writing ability of children.

Ngorosho (2010) examined the relationship between home environment and reading and writing ability among three hundred grade 3 students from rural area of Bagamoyo, eastern Tanzania. Reading and writing measures used in the study were letter reading, word reading, sentence reading and word writing. Home living environment (housing environment) was labeled by SES which was based on parental education and occupation, physical home situation and wealth related materials. Home literacy environment was measured by a two point scale through availability of books for school subjects at home, writing items, notebooks for writing school work and parental involvement. Multiple regression analysis revealed that father education, mother's education, housing variables and home literacy variables

were the significant predictors of reading and writing. Father's education, books for school subjects, quality of house wall material were significant predictors of reading ability.

Ngorosho and Lahtinen (2010) examined the role of home environment in reading and writing ability of 75 grade 2 children from Tanzania. Letter reading, word reading picture-word test are used as reading measures. Word writing was the measure of writing. An interview was conducted to assess home living environment (SES, quality of housing material, wealth resources material) and home literacy environment (availability of books for school subjects, writings items, notebooks, parental involvement in homework and progress in school learning). Hierarchical multiple regression revealed that father's education and mother's occupation were the powerful predictors of reading and writing.

Miser (2010) conducted a study to explore the influence of SES and home environment on language of 3-5 year old children. Data for this study was collected from 70 parents of the children from childcare centres. By using an open and closed ended questionnaire SES and family demographies were measured. The PPVT-4 was used to measure language ability. Regression analysis revealed that students from high SES families scored high on PPVT-4. Home Environment also proved to be a significant predictor of language abilities.

Rodriguez and Tamis-LeMonda (2011) examined the relationship between children's participation in literary activities, the quality of mother engagements, availability of learning materials and children's literacy skills.

1852 mothers and their children were in the sample and the data was collected during four periods while the children were 14, 24, 36 and 60 months of age. Shared book reading, singing nursery rhymes and storytelling were the literary activities measured. Quality of maternal engagement was measured by videotaped mother-child sessions and selected observational items from HOME. Mother's supportiveness and stimulation of cognitive development were also measured. Provision of learning materials was assessed from the observation and report by mothers. Letter-word identification subtest of the Woodcock Johnson Revised Tests of Achievement is used as literacy measures. Results showed that the total learning event scores were significantly related to letter-word identification.

Hartas (2012) examined the influence of home learning environment and socio economic status on language achievement. The sample was selected from a previous longitudinal study which provided large amount of basic data of the sample of seven year old children. Teacher rated measures of child reading was collected by a rating scale. Maternal effect, Home learning support, maternal reading habits were the measures used for Home learning environment. Socio economic measures included family income and maternal educational qualifications. Regression analysis showed that Home Learning Environment and Socio Economic Status had a significant effect on teacher rated reading capacity of the student.

Moon (2012) examined the effect of home literacy activities on reading achievement scores of children from kindergarten to 5^{th} grade (N=21,260). For this study data from an early childhood longitudinal study – kindergarten class of 1998-99 by US department of education was used. Identification of upper and lower case letters, association of letters with sounds read words in

context recognition of common sight words, make interferences using cues, critically evaluate texts and demonstrate understanding of author's craft were the measures of reading. Home literacy environment measures included parents' verbal interactions with the child, parent-child interaction in the form of daily living activities and play and child's reading pleasure. The result showed that parental involvement and reading activity at home were connected to children's achievement in reading skills.

Abu-Rabia and Yaari (2012) studied the influence of parents' attitude toward reading, behaviour, and learning environment provided by them. On reading performance of their children for this study fifty grade 1 students and their parents were selected randomly. Attitude questionnaire towards reading, which has six concepts i.e., Teaching efficacy, positive effect, verbal participation, reading instructions, knowledge and resources. Parent behaviour was measured by knowledge of writers, reading habits, parental early literary encouragement and an observation on parental early literacy engagement by observation. Learning environment has four measures and they were parental educational expectations, availability of reading materials, and literary occasions. Reading skill was measured by reading comprehension, word naming and narrative text reading. Multiple regression analysis revealed that only attitude towards reading significantly predicted reading achievement.

Chansa-Kabali (2014) investigated the influence of home environment on reading skill acquisition. The sample for this study was 72 Zambian children from nine schools (mean age 7.15 years) and their parents, (mean age 35.67). Orthographic awareness and decoding competence were the measures used to assess reading skill acquisition. Structured questionnaire of home

literacy environment was administered to the children family possessions, parental reading attitude, reading materials, family literacy activities, home school relation, parental views were the dimensions included in the questionnaire. A semi structured interview was also conducted with parents. Hierarchical regression analysis revealed that home environmental factors had a strong relation with reading skills. Family possessions, reading attitude of parents, reading materials, literacy activities, home-school relation, and affirmative parental views all have an impact on reading activities of students.

Out of twenty one studies only one study showed that parental social emotional quality is not connected with word reading. The rest of the studies proved a very strong connection between home environment and reading achievement. Fourteen studies focused on reading achievement only. Only two studies have studied the influence of home environment on letter reading. Three studies concentrated on word level reading. Two studies were focused on the writing achievement and a single study focused on vocabulary. Influence on Reading Comprehension and Phonological Awareness was also studied by the researchers.

Inferences Drawn From Reviewed Literature

The reviewed literature helped to draw the following inferences regarding the state of understanding familial and cognitive, instructional variables leading to difficulties in reading among Lower Primary Students. Inferences were drawn especially regarding verbal and nonverbal memory measures, phonological and morphological awareness, instructional and teacher-pupil interaction quality indicators and familial variables in relation to reading attainment and reading difficulty among school age children.

1. Skilled Reading requires pronunciation, fluency and reading comprehension

Pronunciation in first language is not trained by formal instruction in the early years of a child. Yet deficiencies in pronunciation have been found in first language. Fluency, a vital component of skillful reading, is based on well-developed word recognition skills, and fluent readers can read with speed, accuracy, and proper expression. Reading comprehension varies in type and extent in relation to the reader's purposes in reading and reading nature. Reading comprehension difficulties are linked with many factors such as short- term and/ or working memory, general ability, phonological awareness, morphological awareness and the economic and social circumstances of the home.

2. There is a broad consensus that Intelligence is a predictor of reading and language abilities

Researches confirm that intelligence is a predictor of reading and language abilities (Tiu, Thompson & Lewis, 2003; Berniger, Abbott, Vermeulen & Falton, 2006; Alloway & Alloway, 2010; Hartas, 2012; Gafoor & Remia, 2013;Elwer, 2014). While many studies concentrate on reading comprehension only a few focus on reading ability, on literary outcomes and teacher ratings on reading ability of the students. A few studies showed no significant relationship between intelligence and language outcomes related to reading (Gafoor & Remia, 2013; Alloway, 2009; Sarani&Lotfi, 2010).

3. Measures of memory play an important role in researching reading outcomes in children

Studies reveal that memory has an important role in reading ability. A few studies focused on the influence of memory on reading comprehension

(Lopez-Escribano, DeJuan, Gomez-Veiga& Garcia-Madruga, 2013; Elwer, 2014). Many studies were conducted on reading skills (Alloway & Gatherole, 2005; Gatherole, Alloway, Willis & Adams, 2006; Alloway, 2009; Da Fortoura & Siegel, 1995; Kurvers & Vande Craats, 2007). A few studies concentrated on reading fluency (O'Brien, Segalowitz, Freed & Collentine, 2007; Pae & Sevcik, 2011) and one on reading speed (Babayigit & Stainthoop, 2007). Others focused on literacy (Alloway & Alloway, 2010), grammar (Brill, 2001) and vocabulary (Masoura & Gatherole, 1999).

4. Research on the effect of phonological awareness on reading is not yet conclusive

A few studies show that Phonological Awareness has no relationship with reading (Babayigit & Stainthorp, 2007; Tong, McBride-Chang, Shu & Wong, 2009; Caglar-Ryeng, 2010), despite majority of studies indicating strong influence of Phonological Awareness on reading performance in early grades. The relationship between reading difficulty, reading errors and phonological awareness is evidenced in literature (Mann, 1986; Chiappe & Siegel, 1999; Chung & Ho, 2010). Generally there is a positive effect of phonological awareness intervention programmes (Casalis & Cole, 2009) on reading though the effect is not conclusive (Dallasheh-Khatib Ibrahim & Karani, 2014). Reading speed (Mann, 1986), fluency (Haigh, Savage Erdos & Genesee, 2011), accuracy (Roman, et al. 2009) and dictated spelling (Puloakanaho, Ahonen, Aro, Ekulund, Leppanen, Poikkens, Tolvanen, Torppa & Lyytinen, 2008) are also considered in studies. Studies also suggested that nature of language is a factor which affects the relationship between phonological awareness and reading.

This studies is warrented since studies in languages like Turkish (Babayigit and Stainthoop, 2007), Chinese (Wei, Bi, Chen, Liu, Weng and Wyndell, 2014; Tong, McBride-Chang, Shu and Wong, 2009; Chung & Ho, 2010) and Arabic (Dallasheh-Khatib Ibrahim & Karani, 2014) failed to establish the relation between phonological awareness and reading outcomes, though majority of studies and in other European languages found otherwise.

5. Variety of indicators are used in assessing Phonological Awareness

From the review of the studies the important measures used for the measurement of phonological awareness were identified. Phoneme level measures of phonological awareness were obtained by previous researchers through following types of tasks. Phonemic awareness, phoneme counting, phoneme segmenting, blending phonemes into word, sound deletion, sound blending, phoneme elision, sound isolation, phoneme completion, initial sound detection and final sound detection, final phoneme deletion and initial phoneme deletion, word level segment identification, synthesis of phonological units, continuation of phonological units, production of first phoneme, phoneme on set deletion, tone Awareness, Rosner's Auditory analysis and a phoneme segmentation task, phonological discrimination and Picture-sound recognition.

Syllable level measures of phonological awareness can be obtained by tests involving tasks like Syllable counting, syllabic awareness and intra-syllabic awareness, segmentation of words into syllables, blending syllables, a rhyme oddity detection task, alliteration oddity detection task, a blending task and an elision, Syllable deletion, syllable tapping, and syllable level segment identification.

Rhyming tests that were incorporated in phonological tests by previous researches include Rhyme awareness, rhyme oddity, blending and elision, rhyming sentences, rhyme recognition and phonological representation, blending onset and rime, rhyme detection, rhyme production, rhyme oddity, rhyme task, rime awareness, onset awareness, rhyme detection, rhyme recognition and rhyme production, and on set rime awareness.

6. Effect of morphological awareness on reading becomes pronounced by the end of middle childhood, yet the nature of relation is not yet settled in literature

Relationship of morphological awareness on reading studied at character level, word level reading and with reading comprehension. Studies focused on character reading (Shu, McBride-Chang Wu and Liu, 2006; Chen, Hao, Geva, J.Zhu and H. Shu, 2008; Tong, McBride Chang, Shu and Wong, 2009;), word level reading (Lam, 2009; Gomez, 2009; Wang, Ko and Choi, 2009; Roman, Kirby, Parilla, Wandewoolly and Deacon, 2009; Chung and Ho, 2010; Lee, 2011; Kirby, Deacon, Bowers, Izenberg, Wade-Woolley and Parilla, 2012; St-Pierre and Dube, 2012; Apel, Diehm & Apel, 2013) and reading comprehension (Naggy, Berninger & Abbott,2006; Shu, McBride-Chang Wu & Liu, 2006; Kieffer & Lesaux, 2008; Lam, 2009; Gomez, 2009, Wang, Ko & Choi, 2009; Tong, McBride Chang, Shu & Wong, 2009; Caglar-Ryeng, 2010; Lee, 2011; Kirby, Deacon, Bowers, Izenberg, Wade-Woolley & Parilla, 2012; Gafoor & Remia, 2013; Apel, Diehm & Apel, 2013; Tong, Deacon & Cain, 2014). Negative relationship between Morphological Awareness and Reading (Dallasheh-Khatib Ibrahim

& Karani, 2014; Casalis & Cole, 2009; Caglar-Ryeng, 2010) is also reported in literature. Failure to enhance reading level after morphological intervention programmes (Casalis & Cole, 2009; Caglar-Ryeng, 2010) is evidenced, though morphological awareness training programme reduced reading difficulties as expected. Reading vocabulary (Naggy, Berninger & Abbott, 2006), accuracy & speed (Geier, 2010; Kirby, Deacon, Bowers, Izenberg, Wade-Woolley & Parilla, 2012) were also considered in relation with Morphological Awareness.

7. Tasks on Gender, number, case, compound word, derived word, derived adjective, and tense help to measure Morphological Awareness

Review of studies identified the measures used for the measurement of morphological awareness. They are, Suffix Choice Test, Morphological Relatedness Test, Morpheme production, Ability to predict derived words, Compound Awareness, Morphological Production of derivatives, Morphological Analogy Test of compound, Compound and derivational morphology tasks, Morphological production and word analogy, morphological construction and homophone knowledge, Knowledge about derivational suffixes, morphological construction, multi morphemic word reading speed and accuracy. Knowledge of eight categories of morphological constructs namely, gender, number, case, compound word, derived word, derived adjective, and tense were identified as a measure of morphological awareness. Volitional and external prompt, spelling multi morphemic words task, Affix ID task, Relatier task and Rehit taskand a sentence completion task. Derivation of singular nouns or verbs to express two and conversion of

masculine words to feminine words were also used. Morphological construction test and morpheme judgment test are yet other forms of morphological ability assessments.

8. Letter and word reading ability positively influences reading ability

Relationship of letter reading and reading ability has been studied by many researches. Letter reading is a factor which positively influences reading ability. Studies in this respect focused on word reading (Lerkkanen, 2003; Denton & West,2002; Shah, 2000; Lonigan, Burgess & Anthony, 2000), reading comprehension (Lerkkanen, 2003; Lopez-Escribano, DeJuan, Gomez-Veiga & Garcia-Madruga, 2013; Elwer, 2014) and readiness to read (Molfese, Modglin, Beswick, Neamon, Berg, Berg & Molnar, 2006). Training in letter reading also showed positive effect on reading (Caroll, 2004). Studies also found significant relationship between letter reading and phonological awareness (Shah, 2000; Duranovic, Huseinbasic &Tinjak, 2012; Caroll, 2004) which is found to be predictor of reading achievement.

9. Performance on dictated spelling relates to reading comprehension

A significant number of studies indicate that dictated spelling is related with reading comprehension (Culp & Spann, 1985), phonological awareness (Bjursater & Lacerada, 2003), word reading (McBride-Chang, Chung & Tong, 2011), MA (Gafoor & Remia, 2013) and learning disability and dysgraphia (Azimi, 2014).

10. Pronounced role of instruction on student learning is true for languages as well

Studies support the observation that instructional activities have a pronounced role in student learning. Instructional aspects in these studies comprised of teacher knowledge, student relatedness with teachers, teacher behavior, teacher perception of students, teacher evaluation scores, teacher training in reading instruction, teaching style, reflectivity, self-efficacy, classroom practices, teacher sensitivity and productivity, classroom engagement, behaviour management, instructional learning format Quality feedback, concept development, library reading programmes, library hours of access and library staffing and activities. These instructional factors affect student learning in mathematics, science and development of literacy skills. These practices have a positive effect on reading comprehension and word reading.

11. Familial factors influencing development of language in children are varied and many

Variety of family related variables are measured in studies which include home- child interaction, family resources, parental views, individual information of child.

Family - child interaction can be in a variety of forms. They are learning activities at home, home reading activities, parental teaching, reading related activities of child at home, educational interactions, instructional quality, social-emotional quality during activities with children,

storybook reading of mother and child, child's literacy related activities at home, reading interactions of child, motivation to read, sense of relatedness of children to parents, home literacy activities, parent's literary activities and child's literacy activities, someone making to do homework, receiving helps with homework, being asked to read, questioning on the read material and looking at school work, language use and exposure at home, literacy practices and support in the home, Maternal affection, Home learning support, Shared book reading, singing nursery rhymes and storytelling, Quality of maternal engagement, family literacy activities, home school relation, parents' verbal interactions with the child, parent-child interaction in the form of daily living activities and play and child's reading pleasure.

Parents' view about academic progress of children, aspirations about child's education and occupation, attitude towards instrumental value of schooling, parental beliefs about education, parental reading attitude are also significant factor in child learning to read.

Family resources that can support student progress in learning to read include family background, family characteristics, demographics, grandparents education, fathers education and mother's education, Parental income level, parental occupation, family structure, ethnicity, languages used in the educational resources, social support, amount of children books, availability of children book at home, number of children, availability of encyclopedias, number of people in one flat, availability of newspapers, physical home situation and wealth related materials, availability of books for school

subjects at home, writing items, notebooks for writing school work, family possessions, reading materials, family literacy environment, Parents' knowledge of writers, reading habits, maternal reading habits and parental early literary encouragement.

12. Factors influencing reading development in children are diverse but belong to specific dimensions

From the review of literature it is clear that the factors influencing language are diverse in nature and each multiplies into different, but definite dimensions. A large proportion of studies followed longitudinal design and most of the studies in reading difficulty were conducted in the primary level, especially lower primary. There are some studies from preschool stage too. Most of the studies are done abroad, in United States, China, Japan, Norway, Bosnia, Israel and Africa and very few studies were conducted in India and in Kerala. Mainly the studies were concentrated on a few causes of reading difficulty at a time. Studies those look into factors that leads to reading difficulty in a wide-ranging manner is rare.

Chapter III

Methodology

- Variables of the study
- Sample for the Study
- Data Collection Procedure
- Tools Used for the Collection of Data
- Data Preparation for Analysis
- Statistical Techniques Used

METHODOLOGY

This chapter describes the design, variables selected for the study and, the statistical techniques used for data analysis. The study is set to identify factors related with reading difficulties in Malayalam of students in Grade 4 in the Lower Primary schools of Kerala. The major objective is to identify the, cognitive, instructional and familial factors associated with Reading Difficulties. Specific objectives set for this study are the following.

1) To identify the cognitive, instructional and familial variables significantly influencing Reading Achievement in Malayalam by the end of lower primary schooling.
2) To identify significant predictors of Reading Difficulty in Malayalam at the end of lower primary schooling from among each set of variables viz.,
    a. Cognitive
    b. Instructional
    c. Familial
3) To estimate efficiency of the significant cognitive, instructional and familial variables in predicting Malayalam Reading Difficulty status of students at the end of lower primary schooling.

This study adopted a longitudinal design. Longitudinal research intends to find out the cause and process of a phenomenon. According to Kelly and McGrath (1988) longitudinal study involves multiple waves of observations over a substantial calendar time involving months or years. Longitudinal research is predicated on the investigation and interpretation of change over time and process in social contexts (Holland, Thomson & Henderson**,** 2006). In this study the data collection started from Grade 1 in the academic year

2009- 2010 and the sample was followed up until Grade 4 in the academic year 2012-2013.

Variables of the Study

Dependent Variable

Dependent variable in this study is Reading Achievement in Malayalam at the end of Grade 4. Reading achievement in Malayalam at the end of Grade 4 is measured as mean of reading fluency, reading comprehension, and pronunciation with equal weightage to all three dimensions. Difficulty in Reading in Malayalam is denoted as falling below the 25th percentile on any two of the three dimensions of reading achievement viz., reading fluency, reading comprehension, and pronunciation, along with teacher identification of the student as reading difficult. Students who pass these criteria are denoted as Normal Readers.

Independent Variables

Independent variables studied are a set of cognitive, instructional and familial variables as follows.

Cognitive variables

Non-verbal intelligence

Raven's Coloured Progressive Matrices were used to measure non verbal intelligence (Raven, 1978). Students were classified into two categories (high and low) on the basis of the test score with mean score as cut point.

Picture recall

Picture-recall is a measure of the visual memory of student in terms of extent of recall of seen pictures after an interval of 1 minute.

Digit span

Digit span is the highest number of digits repeated without error.

Story recall

Story recall is a measure of auditory memory, measured in this study in terms of extent of recall of details from stories listened to, in response to specific questions

Phonological awareness

Phonological awareness is an individual's knowledge about sound structure of spoken words in a language. According to Hund-Reid and Schneider (2013), Phonological Awareness is the awareness of sound including alliteration and rhyme which identifies and manipulates onsets and rime, syllables, words in the spoken language. In this study, Phonological Awareness is a measure of children's Phonological Awareness in Malayalam in Grade 1, with tasks involving picture sound recognition and rhyme production.

Morphological awareness

Morphological Awareness in Malayalam is a measure of ability to be conscious of and manipulate the morphological units of a language involving the ability to identify root words and their inflected or derived forms. In this study it is measured through awareness of morphological units in Malayalam in terms of Gender, Number, Compound Word, Derived Word, and Volitional and External prompt forms.

Letter reading

Letter Reading is the extent of ability to read letters in Malayalam alphabet learned in Grade 1 with correct pronunciation.

Dictated spelling

Dictated spelling is the measure of spelling skill in Malayalam in terms of proper use of letters and symbols in Malayalam in context of words learned in Grades 1 and 2.

Instructional variables

Teacher pupil interaction (in Grade 1, 2, 3 and 4 each)

Teacher Pupil Interaction is the extent of teacher's interaction with individual student reflected through individual attention, emotional bond, enhancing student participation, adequate time, outside classroom assignments, appreciation and whole class communication as perceived by the learner.

Quality of teacher pupil relationship (in Grade 1, 2, 3 and 4 each)

Quality of teacher pupil relationship is a measure of teacher's affectionate demeanor, Resorting/avoiding punishment, Approachability, Individual attention and involving all students in the class, as observed by an external observer during a lesson.

Clarity of verbal communication (in Grade 1, 2, 3 and 4 each)

Clarity of verbal communication is a measure of teacher's verbal communication in class observed through Correct pronunciation, Clarity of

meaning, Proper intonation, Expression, Avoiding colloquial language, Audibility and Eye contact.

Quality of Blackboard work (in Grade 1, 2, 3 and 4 each)

Quality of Blackboard work is a measure of teacher's performance on blackboard work measured in terms of Legibility, Proportion, Speed, Spacing between words and Simplicity.

Course Completion (in Grade 1, 2, 3 and 4 each)

It refers to the extent of successful completion of lessons and activities prescribed for each term.

Reinforcement (in Grade 1, 2, 3 and 4 each)

It is a measure of positive reinforcement given by the teacher observed in Positive verbal reinforcers, Repeating and Rephrasing, Extra verbal cues, Positive non-verbal cues and Writing pupils answers on Black Board during teaching learning process.

Engaged time (in Grade 1, 2, 3 and 4 each)

It is defined as the time that the teacher appears to be paying attention to materials or presentations that have instructional goals. It is measured as frequency of time on task engaged by the teacher in classroom measured in units of 3 minutes.

Books per student in class library (in Grade 1, 2, 3 and 4 each)

Number of books available in the class library per student

Periodical per student in class library (in Grade 1, 2, 3 and 4 each)

Number of periodicals available in the class library per student

Books issued per student (in Grade 1, 2, 3 and 4 each)

Number of books issued per student in an year from the class library.

Familial variables

Socio-Economic Status

Socio-Economic Status in this study has two levels viz., Above Poverty Line (APL) and Below Poverty Line (BPL)

Education level of father

Education level of father is the category of education of father of the child from among the seven categories namely 1.Lower Primary 2. Upper Primary 3. Secondary 4. Higher Secondary 5. Diploma 6. Degree and 7. TTC/ Bed.

Education level of mother

Education level of mother is the category of education of mother of the child from among the six categories namely 1.Lower Primary 2. Upper Primary 3. Secondary 4. Higher Secondary 5. Diploma 6. Degree.

Highest education level in the family

Highest education level of the family is the highest education level of any of the family member presently residing with the student from the seven categories considered in this study.

Occupation level of father

Occupation level of father is the category of occupation of father of the child from among the five categories namely 1.Coolie 2.Semiskilled 3.Skilled 4.Self Employed and 5.Semiprofessional.

Occupation level of mother

Occupation level of mother is the category of occupation of mother of the child from among the five categories namely 1.Coolie 2.Semiskilled 3.Skilled 4.Self Employed and 5.Semiprofessional.

Highest occupation level in the family

Highest Occupation level of the family is the highest occupation level of any of the family member presently residing with the student from the five categories considered in this study.

Home Language Environment

Home Language Environment is a measure of language fostering environment at home as reflected in Parental communication with children, Familiarizing with language forms, Parental support/assistance and Utilization of language resources.

Sample for the Study

Considerations in Choosing the Sample

The major consideration while finalizing the sample was the generalizability of the findings on factors associated with reading difficulties

in Malayalam from the sample to the population of Lower Primary students of Kerala.

Duration and interval for data collection

Practical constraints of time and logistic of measuring each of the required variables within intervals have been taken care of by making sure that time lag in taking measures from different schools would not cause significant difference in the abilities being measured. Each cycle of measurement was decided to be completed within one month for learner variables and within a fortnight for instructional process variables. Hence the number of participants and geographical distance among the participants had to be limited.

Longitudinal design of data collection

At the same time, the longitudinal study design has to consider the attrition of some elements of the original sample by the time the data collection phase of the study is concluded. A balance has to be found between the size of sample which is practical enough to collect data within stipulated time frame, and the size which is adequate enough to permit valid conclusion even after the expectable attrition rate during a period of four years.

Research location

The population meant for this study is Lower Primary students of Kerala. The size of population is huge and it is impossible to study the population as such. The method adopted was longitudinal and the study

needed many close observations and testing throughout four academic years. Because of these reasons it was decided to take a representative sample of the population. The sample is restricted to two coastal villages in Thrissur district, which is situated in the middle part of Kerala. Considering the already mentioned constraints of the study design, two villages which are not geographically apart from each other viz; Kaipamangalam and Perinjanam were chosen. They are adjacent villages sharing similar geographical nature. The student sample was drawn from randomly selected eleven schools (13 divisions) from these villages. Randomness was applied in choosing the district and the villages within the district.

The demographic features of the two villages from which the schools were drawn into the study reveal the educational profile of the area as comparable to the other villages in Kerala. On the basis of census 2001 some demographic details are given in Table 1.

Table 1

Demographic features of the villages from which sample for the study is drawn

Village	Population density	Effective Literacy Rate	No. of LP school	No. of UP school	No. of HS/ HSS/ VHSS
Kaipamangalam	2095/sq.km	91.48	7	3	1
Perinjanam	2024/sq.km	93.79	5	3	1

Table 1 shows that both the villages are similar not only in geographical nature but also in the demographic features. From a total of 18 schools in these two villages, 11 schools were randomly drawn such that there are around 200 Grade 1 students in the initial sample. Details of the selected schools from two villages for the present study are in Table 2.

Table 2

Schools Sampled for the Study

Village	Type of School		Total	Grand Total
	Government	Aided		
Kaipamangalam	GMLP School Govt. Fisheries LP School	VBLP School RCUP School MIC School Kshemodayam LP School	6	11
Perinjanam	Govt. UP School	East UP School Central LP School West LP School SNGLP School	5	

Size of the Sample

197 Lower Primary students from Kaipamangalam (N=120) and Perinjanam (N=77) were selected for the study (boys=104, girls=93) by incorporating all Grade 1 students from the 11 schools sampled for the study. However, after four years of longitudinal observation, final sample in Grade 4 was 156 (Boys= 81, Girl= 75).

Sample attrition

Sample attrition is a characteristic of most of the longitudinal studies. In the beginning of data collection, in the third term of grade 1 there were 197 students altogether (boys=104, girls=93) in the sample. The study followed the same sample from Grade 1 through Grade 4. In Grade 1 the sample size

was 197 and the number of students in Grade 4 was 156. This reduction occurred due to drop out, stagnation and transfer to other schools. Details are given in Table 3 and Table 4.

Table 3

School-Wise Size of Sample in Each Academic Year and Percentage of Sample Dropped Out by the End of Grade 4

Name of the School	G 1 (2009-2010)	G 2 (2010-2011)	G 3 2011-2012)	G 4 (2012-2013)	% Of Attrition
VBLP School Kaipamangalam	11	9	7	7	36.36
GFLP School Kaipamangalam	24	22	21	20	16.67
RCUP School Kaipamangalam	31	27	25	25	19.35
GMLP School Kaipamangalam	7	7	7	7	0.00
MIC School Kaipamangalam	15	12	11	11	26.67
Kshemodayam LP School Kaipamangalam	32	30	25	24	25.00
Govt.UP School Perinjanam	16	16	16	16	0.00
East UP School Perinjanam	24	21	19	18	25.00
Central LP School Perinjanam	9	8	8	8	11.11
West LP School Perinjanam	15	13	11	11	26.67
SNGLP School Perinjanam	13	13	10	9	30.77
Total	197	178	160	156	20.81

Table 3 shows that 20 percent of the original sample was lost by the time final data for analysis were obtained. Of this, 9 percent each was lost in

Grade 2, and Grade 3; and remaining 2 percent was lost in Grade 4. The institution wise attrition ranged from zero percent to 36 percent.

Table 4

Grade Wise Sample Attrition from Stagnation Drop Out, Transfer and Being Mentally Challenged (MC)

Grade	Stagnated	Drop out	Transferred	MC	Total attrition	Remaining/final sample in each Grade
G 1	0	0	17	2	19	197
G 2	12	1	5	0	18	178
G 3	0	0	14	0	4	160
Total in G 4					41	156

Table 4 shows that the major reason of drop out from the sample was transfer of students from sample schools to other schools. However around 6 percent of the sample has stagnated in grade 2. The final sample size of study used for analysis is 156 (Boys= 81, Girl= 75)

Lower Primary Teachers

Lower Primary teachers of these selected schools were also considered as the sample for the study. For assessing pedagogic variables teachers of thirteen divisions from Grade 1 to Grade 4 were selected. So a total of 52 teachers were also considered for obtaining information especially on the instructional variables through questionnaires, interviews and observation.

Data Collection Procedure

Being a longitudinal study, the period of data collection lasted for four academic years. Data collection started in the third term of Grade 1 and it was from 25th February 2010 to 19th March 2010. Test of Letter Reading, Phonological Awareness Test, Scale of Teacher Pupil Interaction, Scale of course completion for teachers, and Class Library information blank for teachers were administered during this period. Classroom observations were also conducted during this time to assess the Quality of Teacher Pupil Relationship in Grade 1.

In the following academic year in Grade 2, three sessions of data collection were conducted. First session of data collection was from 14th June 2010 to 25th June. Coloured Progressive Matrices was administered to assess Non Verbal Intelligence of Grade 2 students. The second session of data collection in Grade 2 started from 9th November 2010 and lasted till 29th November. During this period, Test of Morphological Awareness was administered. Third session of data collection in Grade 2 was from 10th January 2011 to 28th January 2011. In this session Teacher Pupil Interaction Scale, Scale of course completion, Class Library information blank, Battery of observation schedules for classroom practices and Test of Dictated spelling were conducted.

In Grade 3 data collection started on 20th June 2011. Memory tests (Picture Recall, Story Recall and Digit span) were administered for third graders. The session was completed on 8th July 2011. In the second session of data collection Teacher Pupil Interaction Scale, Classroom observation

schedule, Scale of course completion and Class Library information blank were administered. This was between 3rd October and 21st October 2011.

Final stage of data collection was from Grade 4 and the first session began on 9th July 2012 and lasted till 8th August 2012. During this period Teacher Pupil Interaction scale, Home Language Environment Scale, Scale of course completion and Class Library information blank for teachers, General Data Sheet and course completion questionnaire were administered.

Language outputs, i.e., Reading Comprehension, Fluency and Pronunciation were measured in the last session of data collection. It was from 10th September 2012 to 12th October 2012. Period of data collection and tools used in each period are given in Table 5.

Table 5

Period of Data Collection and Variables Studied during Various Phases of Data Collection

Period	Term	Measures Applied
Grade 1(2009-2010)	25-02-2010 to 19-03-2010	Phonological Awareness Letter Reading Quality of teacher pupil relationship, Clarity of verbal communication, Blackboard work, Reinforcement and Time engagement performed by teacher Teacher Pupil Interaction Course completion of teachers Number of books and periodicals available and issued from class library

Period	Term	Measures Applied
Grade 2 (2010-2011)	14-06-2010 to 25-06-2010	Non-verbal intelligence
	09-11-2010 to 29-11-2010	Morphological Awareness
	10-01-2011 to 28-01-2011	Dictated Spelling Quality of teacher pupil relationship, Clarity of verbal communication, Blackboard work, Reinforcement and Time engagement performed by teacher Teacher Pupil Interaction Course completion of teachers Number of books and periodicals available and issued from class library
Grade 3 (2011-2012)	20-06-2011 to 8-07-2011	Picture-recall (memory) Story – recall (memory) Digit span (memory)
	3-10-2011 to 21-10- 2011	Quality of teacher pupil relationship, Clarity of verbal communication, Blackboard work, Reinforcement and Time engagement performed by teacher Teacher Pupil Interaction Course completion of teachers Number of books and periodicals available and issued from class library
Grade 4 (2012-2013)	9-07-2012 to 8-08-2012	Information on education, occupation and income level of family Home Language Environment Teacher Pupil Interaction Quality of teacher pupil relationship, Clarity of verbal communication, Blackboard work, Reinforcement and Time engagement performed by teacher Course completion of teachers Number of books and periodicals available and issued from class library
	10-09-2012 to 12-10-2012	Reading Comprehension Reading Fluency Pronunciation

Tools Used for the Collection of Data

Sixteen tools were used for data collection in the study. Of these, thirteen tools were prepared as part of this study and three tools were adopted. The tools used in this study include Tests, Questionnaire/ Schedule for Teachers, Observation Schedule, Rating Scales and General data Sheet. Coloured Progressive Matrices (1978), Digit Span subtest from Malin's Intelligence Scale for Children (MISIC) (Malin, 1969) and part of the Test of Fundamental Reading Skills in Malayalam (Gafoor & Kaleeludeen, 2008) were adopted. For all measures developed as part of this study draft test, final test and score sheet are given as appendices.

I. Coloured Progressive Matrices

In this study, Raven's Coloured Progressive Matrices was used to measure non verbal intelligence (Raven, 1978). It is a culture fair test (Raven et al., 1990) for children of age 5-11 years. Coloured Progressive Matrices consists of 36 items in three sets of twelve A, Ab, and B. This test has to be administered individually. Martin and Wiechers (1954) investigated of the Raven's CPM with Wechsler Intelligence Scale for children and revealed high correlations with Wechsler Intelligence Scale for children full scale (.91), verbal IQ (.84) and Performance IQ (.83). Test retest reliability was found to be .90 (Raven, Court & Raven., 1990). Right answer is scored as 1. In this study the students were classified into two categories (high and low) on the basis of the test score, with mean score as cut point. Students below the mean score were included in the low group and who were high and equal to mean score were considered as the high group.

II. Test of Phonological Awareness in Malayalam

Test of Phonological Awareness is designed to investigate elementary school children's Phonological Awareness in Malayalam to be used with grade 1 students. The final test consists of two subtests viz; picture sound recognition and rhyme production. There are 9 items in the former and 6 items in the latter. The whole test can be administered individually in 30 minutes. Based on total score, Phonological Awareness was used as a predictor of Reading Difficulty as a categorical variable. The students were categorized as high and low on Phonological Awareness based on the performance on the sample.

Planning of the test

Before the test administration of Phonological Awareness, text books and source books of lower primary schools were analyzed, and phonemes and phoneme categories in the curriculum of lower primary Malayalam text books were identified. Studies on Phonological Awareness (Gillon, 2000; Kozminsky & Kozminsky, 1995; Matter, Hulme, Snowling & Stevenson, 2004; Wei, 2005 & Puloakanaho, Ahonen, Aro, Ekulund, Leppanen, Poikkens, Tolvanen, Torppa & Lyytinen, 2008) were also reviewed. A detailed account of these studies is in chapter 2. These helped the investigator to determine the content and format of Phonological Awareness test. Three subtests were included in the Phonological Awareness test viz.,

1. Picture-Sound Recognition
2. Rhyme Recognition
3. Rhyme Production

However, after item analysis whole items in the rhyme recognition subtest were eliminated as the tasks were too easy for try- out sample.

Picture-sound recognition.

Fort six phonemes were identified from the Malayalam textbook and teacher handbook for Grade 1. Thirty nine pictures of objects familiar to Grade 1 students were selected such that the names of the objects contain the identified phonemes. From among 39 pictures, four pictures were printed on to a sheet of paper such that each picture has size of 4" x 6". A quartet picture formed an item. A quartet was used to test a phoneme. There were forty six quartets to test as many phonemes.

Rhyme recognition.

The subtest consists of two groups of pictures, prompt pictures and target pictures. Each of the prompt pictures rhymes with one of the target pictures. The student has to choose the rhyming target for the prompt picture. The test consists of two practice items followed by five test items.

Rhyme-production.

In this subtest, instead of identifying a picture that rhymes with the prompt picture, the student has to produce a word or pseudo word that rhymes with the prompt word. A group of prompt words are given in this sub-test and rhyming words are to be produced by the child according to the prompt word. The test administrator shows the student how to produce rhyming word from

the target word in the practice items. This sub-test consists of two practice items and five test items.

Administration and scoring

Test of Phonological Awareness was administered individually. Oral instruction was given to the students by the investigator. In the draft test, for the sub-test of picture-sound recognition, 10 minutes were given for each student. For the sub-test of Rhyme recognition students were given 6 minutes. For the sub-test of Rhyme production also, 6 minute time was given to students. Each correct response was scored as 1.

Item analysis

Conventional item analysis was used for item selection for Phonological Awareness Test. Hundred students from Grade 1 were randomly selected for try out. The responses from the try out sample were scored, arranged in ascending order of the total score of students and discriminating power and difficulty index were calculated. Items having discriminating power 0.3 and above, and difficulty index between 0.3 and 0.75 were selected for final test. Selected items of the three subtests are indicated in Table 6.

Table 6

Data and Results of Item Analysis of Test of Phonological Awareness in Malayalam

Subtest	Item No	DP	DI	Subtest	Item No	DP	DI
Picture sound recognition	1	0.18	0.91	*Picture sound recognition*	24	0.22	0.89
	2	0.16	0.92		25	0.32	0.84
	3	0.2	0.9		26	0.26	0.87
	4	0.16	0.92		27	0.3	0.85
	5	0.2	0.88		28	0.38	0.81
	6	0.2	0.9		29	0.36	0.82
	7	0.2	0.9		30	0.32	0.84
	8	0.22	0.89		31	0.22	0.89
	9	0.28	0.86		32	0.22	0.89
	10	0.2	0.9		33	0.36	0.82
	11	0.3	0.85		34	0.24	0.88
	*12	0.94	0.51		35	0.42	0.79
	*13	0.8	0.58		36	0.32	0.84
	14	0.3	0.85		37	0.3	0.85
	*15	0.78	0.57		38	0.4	0.8
	*16	0.74	0.43		*39	0.52	0.74
	17	0.4	0.8		*40	0.62	0.69
	18	0.24	0.88		41	0.42	0.79
	*19	0.9	0.51		42	0.32	0.84
	*20	0.54	0.73		43	0.34	0.83
	21	0.24	0.88		44	0.2	0.9
	22	0.22	0.89		*45	0.56	0.72
	23	0.34	0.83		46	0.44	0.78
Rhyme recognition	1	0.18	0.91	*Rhyme production*	*1	0.84	0.58
	2	0.16	0.92		*2	0.66	0.67
	3	0.16	0.92		*3	0.82	0.59
	4	0.2	0.9		*4	0.94	0.53
	5	0.3	0.85		*5	0.76	0.62
	6	0.18	0.91		*6	0.88	0.56

DP = Discriminating Power, DI = Difficulty Index

* indicates the selected item

From among 46 items, 9 were accepted after item analysis for the Picture sound recognition subtest and all 6 items were accepted for Rhyme production. However all 6 items of the subtest on Rhyme recognition were rejected. Hence, finally there were only two subtests, Picture sound recognition and Rhyme production for testing Phonological Awareness. Details of final test is given in Table 7.

Table 7

Details of Final Test of Phonological Awareness in Malayalam

Subtest	No of items	Time per item (minutes)	Time for subtest	Time for familiarizing pictures (minutes)	Total time for test	Total score
Picture sound recognition	9	1	9	15	30	15
Rhyme production	6	1	6			

The draft and final tool and its scoring key are given as Appendix A1, A2 and A3 respectively.

Reliability

Spearman-Brown coefficient for Picture sound recognition is .58 and for Rhyme production is .76. Cronbach's Alpha is also found out for the subtests. For Picture sound recognition it is .81 (N=156) and for Rhyme production it is .80 (N=156). The values are very high suggesting that the items of the two subtests have high internal consistency.

Validity

The test of Phonological awareness has content validity as it covers all phonemes in the lower primary grades. This was ensured by content analysis of text book and teacher's sourcebook. For empirical validation confirmatory factor analyses were separately executed for the two subtests, followed by secondary factor analysis of the subtest scores. Items in the subtest Picture Sound Recognition were loaded as a single factor with item loading ranging from 0.45 to 0.80. For Items in the subtest Rhyme production, items loaded as a single factor with item loading ranging from 0.57 to 0.80. Test validity is indicated upon loading of the two accepted subtests on a single factor with loading ranging from 0.74 to 0.78

III. Test of Letter Reading in Malayalam

Test of Letter Reading consists of 32 letters/items finalized by following conventional test development procedures. Test of Letter Reading was used to find out to what extent Grade 1 children read letters in Malayalam alphabet with correct pronunciation in the present study. However, this test can be restructured for students of all grades in lower primary schools. On the basis of performance on the test, students can be categorized as high and low on letter reading in Malayalam.

Planning of the test

The textbooks and sourcebooks were analyzed and found that there are 46 letters of the alphabet in Malayalam to be learnt by the students in Grade 1.

Preparation of the test

Forty-six letter cards, each carrying one select letter were prepared. The letters were printed on 4”x 6” cards with different colours to maintain student attention.

Administration

Test of Letter-Reading was administered by showing a card at a time to the student individually. One card was presented at a time for 10 seconds and the child was asked to read it.

Scoring

A right response on each card is scored one, and wrong response is scored zero.

Item analysis

Conventional item analysis was used for item selection for Test of Letter Reading. Hundred students selected for try out. The responses from the try out sample were scored, arranged in ascending order of the total score and discriminating power and difficulty index were calculated. Items having discriminating power 0.3 and above, and difficulty index between 0.3 and 0.75 were selected for final test. Selected items of the test are given in Table 8.

Table 8

Data and results of Item Analysis of Test of Letter Reading in Malayalam

Item No	Letter	DP	DI	Item No	Letter	DP	DI
1	അ	0.2	0.9	24	മ	0.22	0.89
2	ആ	0.4	0.8	25	ര	0.32	0.84
3	ഇ	0.4	0.8	26	ല	0.26	0.87
*4	ഈ	0.68	0.66	27	വ	0.36	0.82
5	ഉ	0.46	0.77	*28	ശ	0.78	0.57
*6	ഊ	0.6	0.7	*29	സ	0.58	0.71
*7	എ	0.58	0.71	*30	ഹ	0.86	0.55
*8	ഏ	0.74	0.63	*31	ള	0.68	0.66
*9	ഒ	0.6	0.7	*32	ഴ	0.56	0.72
*10	ഓ	0.68	0.66	33	റ	0.3	0.83
11	ക	0.38	0.79	*34	ത്ത	0.64	0.66
12	ഖ	0.32	0.2	*35	പ്പ	0.7	0.63
*13	ഗ	0.84	0.48	*36	ള്ള	0.8	0.6
*14	ഞ	0.86	0.55	*37	ക്ക	0.56	0.72
*15	ട	0.3	0.45	*38	ഞ്ഞ	0.96	0.52
*16	ഡ	0.64	0.32	*39	ങ്ക	0.86	0.47
*17	ണ	0.76	0.62	*40	മ്പ	0.84	0.56
18	ത	0.34	0.81	*41	ഞ്ച	0.94	0.51
*19	ദ	0.74	0.41	*42	ണ്ട	0.94	0.51
20	ധ	0.48	0.24	*43	ട്ട	0.82	0.59
*21	ന	0.46	0.75	*44	മ്മ	0.56	0.72
22	പ	0.38	0.81	*45	ന്ന	0.82	0.59
*23	ബ	0.78	0.61	*46	ൾ	0.86	0.57

DP = Discriminating Power, DI = Difficulty Index
* indicates the selected items

As shown in Table 8, after item analysis, from among 46 items of the draft Test of Letter-Reading in Malayalam, 32 items were selected to the Final Test of Letter-Reading. The draft and final tools are given in Appendix B1 and B2 respectively. The final test can be administered in less than 10 minutes, though there is no time limit, other than 10 seconds per letter.

Reliability

Split half reliability in terms of Spearman-Brown coefficient for Test of Letter-Reading is 0.91 ($n=100$, $p<.01$) with odd and even items as two half tests. Cronbach's Alpha was also found out for letter reading, $\alpha=0.95$ ($n=100$, $p<.01$). The reliability coefficients are very high suggesting that the Test of Letter Reading has high internal consistency.

Validity

Test of Letter Reading has content validity as it covers all letters in the syllabus of Grade 1. This was ensured by content analysis of text book and teacher's sourcebook. The test was validated by the procedure of Content Validity Index (CVI) in which 12 experts in the field of lower primary education participated. These teachers belonged to government and aided schools of Thrissur district. Experts judged the items on six dimensions viz., age appropriateness, content appropriateness, letter size appropriateness, quantity appropriateness, colour appropriateness, and mode of presentation. Malayalam and English versions of the scale given to experts for validation of Test of Letter Reading are given as Appendix B3 and B4 respectively.

Content Validity Index (Polit & Beck, 2006) for each of the six dimensions were calculated in terms of the agreement among the experts. CVI of the Test of Letter-Reading was found to be 0.97. Confirmatory factor analysis of the items in the final test resulted in items loading that range from 0.43 to 0.77 except for one item (item no.9 where item loading was 0.3, Dp=0.6) on a single factor.

IV. Test of Morphological Awareness in Malayalam

Test of Morphological Awareness in Malayalam is used to measure ability to be conscious of and manipulate the morphological units of a language among second graders. It involves the ability to identify root words and their inflected or derived forms. This individually administered test has five subtests namely, Gender, Number, Compound Word, Derived Word, and Volitional and External prompt (Kevala/Prayojaka). In total, there are 19 items in the final form. Each subtest was familiarized to the student through practice items. On the basis of total score, the students were divided into high and low groups on Morphological awareness. The whole test was administered in 20 minutes.

Planning of the Test

Morphological Awareness is an important factor in developing language skills. Before preparing the Test of Morphological Awareness a detailed study of morphemes in Malayalam was done. This included a thorough analysis of the lower primary Malayalam textbooks and source books to identify the morphemic structures incorporated in Malayalam for

these grades. Studies on Malayalam morphological structure (Rajeev., Rajendran., Sherly, 2007; Saranya, 2008 and Jayan., Rajeev., & Rajendran, 2009) were also reviewed. Consequently, eight categories of morphemes were identified for the test. They are Gender, Number, Case, Compound Word, Derived Word, Derived Adjective, Tense and Volitional and external prompt.

Gender

It tests the ability to form masculine and feminine forms of the given adjective phrases.

Number

It tests the ability to form plural forms from given singular nouns.

Case

Case is the syntactic and semantic functions of nouns which modifies its meaning. This test covers accusative, dative, sociative, locative and genitive case forms. This test measures the ability to create case forms in Malayalam.

Compound word

It measures the ability to produce one word from the given descriptive phrase.

Derived word

It involves forming a new noun from a given adjective or verb.

Derived adjective

It measures the ability to produce adjective forms in Malayalam.

Tense

This measures the ability to tell three tense forms; present, past and future from the given prompt which include pictures and questions.

Volitional and external prompt

It involves creating external prompt verbs (കളിക്കും) from volitional verb forms (*കളിപ്പിക്കും*).

Preparation of the test

Items were prepared based on each of the eight categories. Each category has two practice items. Eight categories of morphemes and the number of items on respective subtests are indicated in Table 9.

Table 9

Categories of Morphemes Identified for Test of Morphological Awareness in Malayalam

Category	No. of items	Category	No. of items
Gender	8	Derived word	4
Number	6	Derived adjective	4
Case	10	Tense	16
Compound word	4	Volitional and External prompt	6

Administration

Test of Morphological Awareness was orally administered to individual student in two sittings. For each subtest oral instruction was given by the test administrator as to what was expected from the student. A pause of 10-15 seconds were given to respond with the answer for each item which was recorded on the response sheet by the test administrator. Three subtests were given in one sitting and the other five were administered immediately in a second sitting. Ten minutes each were taken for the administration in both sittings.

Scoring key

A right response is scored one, and wrong response is scored zero.

Item analysis

Conventional item analysis was used for item selection for Test of Morphological Awareness. Hundred students were selected for try out. The responses from the try out sample were scored, arranged in ascending order of the total score of students for calculating discriminating power and difficulty index. Items having discriminating power 0.3 and above, and difficulty index between .3 and .75 were selected for final test. Selected items of the test are indicated in Table 10.

Table 10

Data and Results of Item Analysis of Test of Morphological Awareness in Malayalam

Subtest	Item No	DP	DI
1. Gender	*1	0.8	0.6
	*2	0.82	0.57
	*3	0.66	0.61
	*4	0.78	0.51
	5	0.28	0.86
	*6	0.6	0.68
	*7	0.88	0.52
	*8	0.84	0.54
2. Number	*1	0.46	0.53
	*2	0.46	0.37
	3	0.2	0.88
	4	0.22	0.89
	*5	0.5	0.43
	*6	0.56	0.54
3. Case	1	0.04	0.98
	2	0.04	0.98
	3	0.02	0.99
	4	0.06	0.97
	5	0.04	0.98
	6	0.22	0.87
	7	0.02	0.99
	8	0.04	0.98
	9	0.06	0.97
	10	0	1
4. Compound words	1*	0.64	0.64
	2*	0.52	0.74
	3*	0.78	0.53
	4*	0.84	0.5
5. Derived words	1	0.38	0.21
	2*	0.64	0.42
	3	0.3	0.15
	4*	0.34	0.81
6. Derived adjectives	1	0.22	0.89
	2	0.24	0.88
	3	0.22	0.29
	4	0.22	0.89
7. Tense	1	0.04	0.98
	2	0.06	0.97
	3	0.06	0.97
	4	0.06	0.97
	5	0.02	0.99
	6	0.02	0.99
	7	0	1
	8	0.02	0.99
	9	0	1
	10	0.02	0.99
8. volitional and external prompt	1	0.14	0.93
	2*	0.4	0.74
	3	0.22	0.89
	4*	0.4	0.8
	5	0.12	0.92
	6	0.2	0.9

DP = Discriminating Power; DI = Difficulty Index

* Indicates the items selected for the final test

Table 10 shows that after item analysis none of the items in Case, Derived Adjectives and Tense could pass the criteria for DI and DP. As the tasks were too easy for the students and thus could not discriminate between high and low groups. Thus the final version of the tool has five dimensions. They are Gender (7 items), Number (4 items), Compound Word (4 items), Derived Word (2 items) and volitional and external prompt (2 items). The draft test, final test and scoring key are given in Appendix C1, C2 and C3 respectively.

Reliability

Reliability of Test of Morphological Awareness in Malayalam was estimated by split half method. Items in the final test were split into two halves by grouping alternate items. Reliability coefficient estimated by Spearman-Brown method is 0.92 (n=100, p<.01). The value is very high suggesting that the Morphological Awareness Test is highly reliable.

Validity

Items for Test of Morphological Awareness in Malayalam were from the lower primary textbooks and source books. Eight categories of morphemes which were found to be appropriate for Grade 2 students were included in the test. So the test ensures content validity. To find criterion referenced validity Morphological Awareness test was correlated with other language tests viz., reading fluency (r = 0.47, N=100), reading comprehension (r=0.49, N=100), Phonological Awareness (r =0.44, N=100) and nonverbal intelligence (r=0.38, N=100) on expected lines. Dictated spelling has significant and substantial positive relationship to Morphological Awareness (r=0.50) and its components were., Gender (r =0.39), Number (r =0.45) and compound word (r =0.40) [p<.01].The correlation coefficient indicates relationship among morphological awareness and reading fluency, reading comprehension, Phonological Awareness and non verbal intelligence on expected lines.

V. Test of Dictated Spelling in Malayalam

This test is prepared to measure spelling skill in Malayalam in terms of writing words with correct spelling, both letters and symbols, of the second grade students. The final test constitutes 33 words in Malayalam that can be dictated in 25 minute in a group.

Planning of the test

The investigator reviewed the lower primary text books and teachers' source books and identified letters and vowel diacritics which are to be learned in Grades 1 and 2. Based on this information, for each letter and vowel diacritics two-letter and three-letter words were selected for the test. These words are composed of the letters in the Malayalam text book for Grade 2.

Preparation of the test

A group of simple, meaningful two-letter, three-letter words were collected from Malayalam text books for Grades 1 and 2 for the preparation of the test. From these, 43 words were selected for the Dictated Spelling. These words represent the letters and vowel diacritics in Malayalam to be learnt by students in Grades 1 and 2.

Administration

Test of Dictated Spelling (draft) was conducted as a group test and administered in a 30 minute duration.

Item analysis

Conventional item analysis was used for item selection for dictated spelling with 100 students selected for try out. The responses from the try out sample were scored, arranged in ascending order of the total score of students

and discriminating power and difficulty index were calculated. Items having discriminating power 0.3 and above, and difficulty index between .3 and .75 were selected for final test. Selected items of the test are given in Table 11.

Table 11

Data and Results of Item Analysis of Test of Dictated Spelling in Malayalam

Item No	DP	DI	Item No	DP	DI
*1	0.56	0.6	*23	0.48	0.72
*2	0.72	0.4	*24	0.64	0.32
3	0.2	0.9	25	0.32	0.16
*4	0.76	0.58	*26	0.92	0.46
5	0.24	0.76	27	0.24	0.12
*6	0.84	0.46	*28	0.64	0.4
*7	0.52	0.42	*29	0.52	0.3
*8	0.76	0.62	*30	0.92	0.46
*9	0.84	0.58	*31	0.88	0.48
*10	0.52	0.26	*32	0.96	0.48
*11	0.68	0.66	*33	0.96	0.48
*12	0.76	0.46	*34	0.84	0.42
*13	0.56	0.32	*35	0.96	0.48
*14	0.56	0.4	*36	0.8	0.48
*15	0.84	0.46	*37	0.72	0.44
*16	0.8	0.4	38	0.44	0.22
*17	0.76	0.58	*39	0.56	0.28
18	0.24	0.12	*40	0.8	0.4
19	0.12	0.06	*41	0.68	0.38
*20	0.84	0.46	*42	0.64	0.32
21	0.48	0.24	43	0.32	0.16
22	0.08	0.04			

DP = Discriminating Power, DI = Difficulty Index
* indicates the items selected for the final test

Table 11 shows the retained 33 words in the test of dictated spelling in Malayalam after item analysis of 43 words. Draft and final versions of tests of Dictated spelling is given as Appendix D1 and D2 respectively.

Reliability

Reliability of the Test of Dictated Spelling in Malayalam was estimated by split half method and Cronbach alpha. Reliability coefficient estimated by Spearman-Brown method is 0.93 ($n=197$, $p<.01$) and Cronbach's Alpha is 0.96 ($n= 197$, $p<.01$) suggesting that Test of Dictated Spelling has high internal consistency.

Validity

Words selected for the Test of Dictated Spelling represents the letters and vowel diacritics in Grades 1 and 2. So the test ensures content validity for a spelling test in Grade 1 and Grade 2. The test was validated by the procedure of Content Validity Index in which 12 experts in the field of lower primary education participated. These teachers belonged to government and aided schools of Thrissur district. The experts judged the test on the dimensions viz; age appropriateness, content appropriateness, quantity appropriateness, and appropriateness of length of words. Malayalam version of the scale used by which the experts to rate the test and English version of the scale are given as Appendix D3 and D4, respectively. Content Validity Index for each dimension was calculated (Polit & Beck, 2006) and that of the Test of Dictated Spelling was found to be 0.96.

Memory Tests

Three tests namely Digit Span Test, Picture Recall test and Story-Recall test were used to measure the numerical, nonverbal and verbal memory of lower primary students.

VI. Digit Span

Digit Span Test (Alternate forms) was adopted from MISIC-Malins Intelligence Scale for Indian Children (1969). This test consists of two sets of overall number series in the increasing order, one forward and the other backward. There are two trials, I and II, for these number series in each set.

The number series is depicted by the investigator and the student is asked to repeat each series after finishing the series (one per second). If the student repeats trial I of a series then administrator goes on to next number in the same trial. If the student fails on second number, a second chance is given for Trial II. If the student fails again to recall the number on both trials the test is discontinued. After forward set of series is administered, the backward set of series also administered.

Student's score on Digit span is the highest number of digits repeated without error. Thus if the student repeats only 5 digits, his score is 5. Total score is the sum of the forward and backward recall scores.

Digit Span Test (Alternate) adopted from MISIC was correlated with digit span subtest of WISC (Wechsler, 1949) and the correlation coefficient was 0.71(N=85).

VII. Picture-Recall

Planning

A picture-recall test to measure the visual memory of student was constructed with 15 pictures of familiar objects. Colour pictures of objects were collected and after scrutiny, 15 pictures were selected for the test. Those pictures were arranged on a chart. The test is shown as Appendix E. The picture-recall test was administered individually to students. The picture chart was shown to the student for 1 minute. And after 3 minutes,he/she was asked to recall the pictures in 1 minute. Each correct response is scored as 1.

Reliability

A parallel form of Picture recall test was prepared along with the original test. The reliability of the Picture recall test was tested by estimating the correlation between the scores obtained on the two parallel forms. Coefficient of correlation between the two tests (parallel form) is 0.78 (N=41).

Validity

Picture recall test has been correlated with digit span and the correlation coefficient is 0.24 (N=38).

VIII. Story-Recall

Story recall test is prepared to measure the auditory memory. Two stories from the classic book Panchatantra, each not exceeding 2 minutes in the presentation was used in story recall. The two stories were recorded in a voice recorder. Twenty questions (10 from each) were prepared from two stories.

Administration

The stories were played through an MP3 player. The test was administered individually. After completing the hearing session students were to answer the questions asked orally from the stories. The responses are recorded. Each correct response was scored as 1.

Item Analysis

Conventional item analysis was used for item selection for story recall with 100 students selected for try out. The responses from the try out sample were scored, arranged in ascending order of the total score of students, and discriminating power and difficulty index were calculated. Items having discriminating power 0.3 and above, and difficulty index between 0.3 and 0.75 were selected for final test. Selected items of the test are given in Table 12.

Table 12

Data and Results of Item Analysis of Test of Story Recall in Malayalam

Item No	DP	DI	Item No	DP	DI
1	0.4	0.24	11	0.28	0.18
2	0.18	0.09	12	0.24	0.18
3	0.48	0.24	13	0.14	0.09
*4	0.66	0.51	*14	0.62	0.47
*5	0.56	0.44	15	0.38	0.21
*6	0.58	0.33	*16	0.64	0.46
*7	0.64	0.46	*17	0.56	0.48
*8	0.54	0.43	18	0.26	0.25
*9	0.64	0.54	*19	0.34	0.61
10	0.22	0.13	20	0.3	0.21

DP = Discriminating Power, DI = Difficulty Index
* Indicates the selected item

Table 12 shows that final Story recall test has ten questions. Draft and final forms of Story recall test, and scoring key are given as Appendix F1, F2 and F3 respectively.

Reliability

Parallel form of story recall test is used to test reliability and the correlation coefficient obtained between the parallel tests is 0.71 (N=55, $p<.01$).

Validity

Story recall test is correlated with digit span and the correlation coefficient obtained between the parallel form is 0.55 (N=53).

IX. Battery of Observation Schedules for Classroom Practices

An observation schedule was prepared to objectively measure the classroom practices viz; Quality of teacher pupil relationship of teachers, Clarity of verbal communication, Quality of blackboard work, Reinforcement and Engaged time. Review conducted in the area of teacher behaviour and practices (Muijs & Reynolds, 2003; Scott & Fisher, 2004; Grossman., Loeb., Cohen., Hammerness., Akbari & Allvar, 2010; Wyckoff, Boyd & Lankford, 2010; Milanowski, 2004; DeTeso, 2011) directed the content and specifications of this observation schedule. The investigator adopted the frame of micro-teaching to construct the observation schedule for teachers.

Preparation for the Observation Schedule

Items in the observation schedule consist of the scales to measure following aspects of classroom practice each of which is an independent variable in the study design.

1. Quality of teacher pupil relationship

Quality of teacher pupil relationship was measured through five dimensions namely affectionate demeanor, Resorting to punishment, Approachability, Individual attention and Involving students. In order to make the observation precise and correct, each dimension was divided into specific components. Each of the specific components were rated on a five point scale - Always, Frequently, Sometimes, Rarely, and Never. For negative item/ statement (e.g., punishment) scoring was reversed. The number of components on each of the five dimensions are as follows.

Dimension of teacher pupil relationship	Number of components observed
Affectionate demeanor	4
Resorting to punishment	5
Approachability	3
Individual attention	4
Involving students	4

A total of 20 observations are there on those five dimensions. Score of each dimension was calculated by dividing the obtained score with the total score of that dimension. Sum total of five dimensions provides Quality of teacher pupil relationship on a scale with maximum score 5.

2. Clarity of verbal communication

Clarity of teachers' verbal communication was observed using a 5-point scale on seven dimensions namely Correct pronunciation, Clarity of meaning, Proper intonation, Expression, Avoiding colloquial language, Audibility and Eye contact. Each of those seven dimensions were described in terms of observable specifications. The 5-points on the observation scale were Excellent, Very Good, Good, Average and Poor. The aggregate score on the seven dimensions is considered as the measure of teacher's Clarity of verbal communication.

3. Quality of blackboard work

Lower primary teachers should be efficient in using blackboard. In lower primary classrooms teachers frequently use black board, for the students to get concrete idea of what they are learning. Quality of blackboard work of the teacher is measured on five dimensions namely Legibility, Proportion, Speed, Spacing between words and Simplicity. Each of these dimensions were rated on a five point scale namely Excellent (5), Very Good (4), Good (3), Average (2), Poor (1) with a decreasing weight in the rating as indicated in parentheses. The aggregate score on the five dimensions provided the measure of teacher's Quality of blackboard work.

4. Reinforcement

Positive reinforcement is essential for young children to make them more confident and to lead them to learning. This section of the observation schedule measures the frequency of positive reinforcement given in classrooms. This scale has 5 components Positive verbal reinforcers,

Repeating and Rephrasing, Extra verbal cues, Positive non-verbal cues and Writing pupils answers on Black Board. These components are primarily sourced from literature on micro-teaching skill. Unlike other schedules in the battery, reinforcement was observed in three visits to the classroom during as many lessons. Presence or absence of each dimension was tallied, with one tally for presence of each of the five listed reinforcing behaviors during one lesson. Thus each dimension can have maximum of three tallies and together on five dimensions the Maximum score on Reinforcement is 15.

5. Engaged time

Engaged time record form measures the time spent for academic purpose in a class period by the teacher. The observer can put 1 in every three minute interval in a class period of forty five minutes for recording Academic Engagement, Procedural Engagement and Non-engagement performed by the teacher. Non engagement is considered as zero and the Academic Engagement and Procedural Engagement as one. The maximum score is 15.

Administration and scoring

The schedule was filled by the investigator by observing the classes. The investigator made three visits to collect data. Frequency of Reinforcement and Engaged time were measured quantitatively. Five point scales were used to measure Quality of Teacher Pupil Relationship [Always (4), Often (3), Sometimes (2), Rarely (1), Never (0)], Clarity of verbal communication [Excellent (5), Very Good (4), Good (3), Average (2), Poor (1)] and Blackboard work [Excellent (5), Very Good (4), Good (3), Average (2), Poor (1)]. Malayalam and English version of Battery of Observation Schedules for Classroom practices are given in Appendices G1 and G2.

Reliability

Ten observers (teacher educators) rated a video lesson using the observation schedule on the dimensions. Inter-rater consistency of rating obtained for the components of the observation schedule are as follows; Quality of Teacher Pupil Relationship (0.96), Clarity of verbal communication (0.97), Blackboard work (0.37) and Reinforcement (0.98), indicating very high inter-rater reliability of the above measures while using the class observation schedule.

Validity

The observation schedule was validated by the procedure of Content Validity Index in which 12 experts in the field of teacher education participated. There were five dimensions in the scale to validate the Quality of Teacher Pupil Relationship which are sample appropriateness, content appropriateness, scaling appropriateness, appropriateness of subcomponents and situation appropriateness. The Malayalam and English versions of the scale are given as Appendix G3 and G4 respectively. Content Validity Index (Polit & Beck, 2006) for each dimension was calculated and that of the tool was found to be 0.98.

There were four dimensions in the scale to validate the Clarity of verbal communication which are sample appropriateness, content appropriateness, scaling appropriateness and situation appropriateness. Content Validity Index (Polit & Beck, 2006) for each dimension was calculated and found to be 0.96 for the clarity of verbal communication.

There were four dimensions in the scale to validate the Blackboard work which are sample appropriateness, content appropriateness, appropriateness

of scaling and situation appropriateness. Content Validity Index (Polit & Beck, 2006) for each dimension was calculated and found to be 0.97 for the tool.

There were four dimensions in the scale to validate the Reinforcement which are sample appropriateness, content appropriateness, appropriateness of scaling and situation appropriateness. Content Validity Index (Polit & Beck, 2006) for each dimension was calculated and the CVI of the tool was found to be 0.98.

X. Scale of Course Completion for Teachers

The extent of course completion in each term was rated on a three item three point scale. The questions included in the scale are

1. Is it possible to complete the lessons in each term?
2. Do you have to complete the lessons in a hurry at the end of the term?
3. Is it possible to complete all activities in each of the units?

Malayalam and English version of scale are given as Appendix H1 and H2 respectively.

XI. Class Library Information Blank

Information on the content and functioning of class libraries were collected from the respective class teachers for each class. The exact format of blank is given as Appendix I.

XII. Scale of Home Language Environment

Scale of Home Language Environment is used to measure language fostering environment at home.

Planning of the scale

Family is the first learning environment especially for language. Parental communication, support, purposive encouragement, resources and its utilization are the promoting factors of language development. The scale was prepared based on these factors and reviewed literature sourced from Geske and Ozola (2008), Manjula, Saraswathi, Prakash and Ashalatha (2009), Miser, (2010), Rodriguez and Tamis-LeMonda, and Hartas, (2012).

Preparation of the scale

The scale has four dimensions as described hereunder.

1. Parental communication with children

Parental communication means the informal communication between parent and child. There are twelve items in this dimension which include the enquiries about school including curricular and co curricular activities, teachers, and peers, communication about out-of-school things, living beings, events, and attending child's queries and clarifying them.

2. Familiarizing with language forms

This section seeks information about the language related activities performed by parents that are known to be helpful to strengthen language ability in children. Seven statements on activities like narrating and discussing stories and fables, reciting poems, and scriptures and teaching poems, listening to stories told by the child and familiarizing proverbs are included in this section.

3. Parental support/assistance

This section is on the parental-support given to the child in academic activities like writing, reading, corrections, extra reading of library books and news papers, expressive reading and developing good handwriting by being present, listening to, encouraging, demonstrating, correcting and reinforcing such activities. This section has nineteen items.

4. Utilization of resources

There may be language resources at home; it will improve language skills only if the child makes good use of it. This dimension of the scale of home language environment with nine statements measures the extent to which the child willfully makes use of language resources in and outside home like textbooks, dictionaries, story and other books, newspapers and electronic media. Parents have a key role in making children do those activities by themselves.

Administration

The Scale of Home Language Environment was administered individually. The investigator asked questions to students and recorded their responses immediately in the response sheet on a three point scale.

Scoring

Scale of Home Language Environment is a three point scale and each student individually is asked to rate each item on a 0-to-2 response scale. The administrator records their rating and final score for the student is the sum of the ratings for total items in the scale.

Item analysis

Conventional item analysis was used for item selection for Scale of Home Language Environment, t-value was calculated and the items with t-value above 1.96 were selected for the final scale. Selected items of the scale are given in Table 13.

Table 13

Data and Results of Item Analysis of Scale of Home Language Environment

Item No	t-value	Item No	t-value
*1	-5.76	*25	-5.76
*2	-10.86	*26	-10.86
*3	-4.65	*27	-4.65
*4	-5.75	*28	-5.75
*5	-4.68	*29	-4.68
*6	-11.41	*30	-11.41
*7	-15.59	*31	-15.59
*8	-8.54	*32	-8.54
*9	-5.14	*33	-5.14
*10	-8.15	*34	-8.15
*11	-10.96	*35	-10.96
*12	-8.56	*36	-8.56
*13	-6.01	*37	-6.01
*14	-15.23	*38	-15.23
*15	-4.60	*39	-4.6
*16	-6.95	*40	-6.95
*17	-10.11	*41	-10.11
*18	-4.97	*42	-4.97
*19	-7.88	*43	-7.88
*20	-9.40	*44	-9.40
*21	-8.31	*45	-8.31
*22	-11.75	*46	-11.75
*23	-12.26	*47	-12.26
*24	-4.12		

DP = Discriminating Power, DI = Difficulty Index *Indicates the selected items

As shown in Table 13 all the 47 items in Home Language Environment had adequate discriminating power. Scale of Home Language Environment and its English Version are given as Appendix J1 and J2 respectively.

Reliability

Reliability of the Scale of Home Language Environment was estimated by split half method and Cronbach Alpha. From the items, two half scales were formed by grouping alternate items. Reliability coefficient estimated by Spearman-Brown method was 0.94 (n= 156, p<.01). Cronbach's Alpha was found out for Scale of Home Language Environment as 0.94 (n=156, p<.01). The values suggest that the items of the Scale of Home Language Environment have high internal consistency.

Test retest reliability was found for Scale of Home Language Environment. The scale was administered for 50 Grade 4 students and administered again after a week. Correlation coefficient was 0.94 (N=50).

Validity

Correlation of four dimensions of Home Language Environment with total scale score showed high correlation ranging from 0.61 to 0.85 (n=51, P<.01) with the strength of the inter dimensional relationships on the expected lines. Highest inter correlation was with parental assistance and utilization of resources (r=0.75, p<.01) and next higher is with parental assistance and familiarizing language forms (r =0.61, p<.01) and then, familiarizing language forms with utilization of resources (r=.48, p<.01); parental communication with familiarizing language forms (r=.34, p<.05) and the lowest was with parental communication with utilization of resources (r=0.33, p<.05). Parental assistance with parental communication showed positive but weak relationship. Positive inter correlation of the four dimensions and high correlation coefficients of four dimensions with the total scale suggest that the measures can be considered as a single scale.

Reliability

Reliability of Scale of Home Language Environment was estimated by split half method and Cronbach Alpha. From the items two half scales were formed by grouping alternate items. Reliability coefficient estimated by Spearman-Brown method was 0.94 (n= 156, p<.01). Cronbach's Alpha was also found out for Scale of Home Language Environment and was 0.94 (n=156, p<.01). The values suggest that the items of the Scale of Home Language Environment have high internal consistency.

Test retest reliability was also found for Scale of Home Language Environment. The scale was administered for 50 Grade 4 students and administered again after a week and the correlation coefficient was found to be 0.94 (N=50).

XIII. Teacher Pupil Interaction Scale

Teacher Pupil Interaction Scale was used to measure the extent of teacher student interaction in the Lower Primary classrooms.

Planning of the test

Teacher pupil interaction has an important role in language development of a student. Investigator planned to find teacher pupil interaction from the students. On the basis of review (Scott & Fisher, 2004 Solís, 2005; Podhajski., Mather., Nathan & Sammons, 2009; DeTeso, 2011; Brok., Tartwijk., Wubbels., & Veldman, 2010) seven dimensions of teacher student relationship in the class room were identified.

On the seven dimensions, 48 items on teacher pupil interaction in the class room were prepared. The 7 dimensions were individual attention, emotional bond, enhancing student participation, adequate time, outside classroom assignments, appreciation and whole class communication. Student ratings obtained through individual face to face administration of Scale of Teacher-Pupil Interaction were used to measure teacher-student interaction.

Administration

Teacher Pupil Interaction Scale was administered individually. Student responses were recorded using a response sheet.

Scoring

Teacher Pupil Interaction Scale is a three point scale and each student individually is asked to rate each item on a 0-to-2 response scale. The administrator records their rating and final score for the student is the sum of the ratings for total items. Negative items are reversely scored.

Item analysis

Conventional item analysis was used for item selection for Teacher Pupil Interaction Scale. The responses from the try out sample were scored, arranged in ascending order of the total score of students, and the t- value was calculated. The items with t-value above 1.96 were selected for the final scale. Selected items of the test are given in Table 14.

Table 14

Data and Results of Item Analysis of Teacher Pupil Interaction Scale

Item No	t-value	Item No	t-value
*1	-5.88	*25	-5.04
2	-0.27	*26	-4.52
*3	-7.82	*27	-5.36
*4	-3.96	*28	-4.82
*5	-5.85	*29	-5.41
*6	-5.36	*30	-3.94
*7	-4.10	*31	-4.26
*8	-5.44	*32	-4.05
*9	-4.91	*33	2.82
*10	-4.95	34	1.37
*11	-4.32	*35	-4.68
*12	-4.58	*36	-2.88
13	1.41	37	-0.83
14	0.13	*38	-1.99
15	1.77	*39	-7.48
*16	-6.20	*40	-3.02
*17	-7.45	*41	-3.72
*18	-6.16	*42	-4.11
*19	-5.46	*43	-4.78
*20	-4.82	*44	-7.21
*21	-4.77	*45	-4.21
*22	-6.94	*46	-4.50
*23	-2.41	*47	-4.65
*24	-5.37	*48	-2.91

DP = Discriminating Power, DI = Difficulty Index
* Indicates the selected items

From the 48 items, 42 were accepted for the final scale. Malayalam version of draft tool, final tool, and its response sheet, and English version of final tool and its response sheet are given as Appendix K1, K2, K3, K4 and K5, respectively.

Reliability

Spearman-Brown coefficient obtained for split half reliability of Teacher Pupil Interaction scale is 0.87 and Cronbach's Alpha is 0.86 (N=181). The values are very high suggesting that the items of the tests have high internal consistency.

Validity

The scale was prepared with 7 dimensions namely individual attention, emotional bond, enhancing student participation, adequate time, outside classroom assignments, appreciation and whole class communication. Confirmatory factor analysis was executed for the selected 42 items and most of the items were found to be loaded on the consequent seven dimensions. The component matrix table is given as Appendix K6.

Table 15

Components of Teacher Pupil Interaction Scale with Corresponding Item Numbers

Dimension	Item no.
Individual attention	4,28,27,15,14,17,23,16,25,13,5,24,33
Emotional bond	38,40,39,37,6
Outside classroom assignments	19,26
Adequate time	7,2,1,21,20
Appreciation	12,18
Whole class communication	3,8,9,41,31,35,42,36,29,22
Enhancing student Participation	11,30,32,10,34

XIV. General Data Sheet

It is used to collect information about economic status, parental and family education and parental and family occupation. General Data Sheet is given in Appendix L.

Measurement of Reading Achievement

Reading achievement is measured as the aggregate of three components; Reading fluency, Pronunciation and Reading comprehension. A test battery which contains Test of Reading Fluency and Pronunciation and Test of Reading Comprehension was used for measuring Reading achievement.

XV. Test of Reading Fluency and Pronunciation

Purpose

Test of Reading fluency and Pronunciation is used to measure the extent of reading fluency and pronunciation of Grade 4 students.

Planning of the test

Reading fluency and pronunciation are very important in language competence of a student. Investigator planned to test both Reading fluency and pronunciation by using a single test.

Preparation of the test

Textbooks of lower primary classes and source books were analyzed for preparing Test of Reading fluency and Pronunciation. One hundred and

four letters were noted for testing their pronunciation. From the text books the investigator identified the letters to be learned by the Lower primary students. Narrative was prepared by including the select letters and the same text was used to test reading fluency as well. For pronouncing each item (i.e., a letter sound) one or two occasions were given in the test.

Administration

Test of Reading fluency and Pronunciation was administered individually. For each subtest oral instruction was given by the investigator as to what was expected from the student. They were asked to read the narrative and it was recorded by means of a voice recorder.

Scoring

Pronunciation

Oral reading was carefully listened by the investigator in a sound record player. If at least one of the responses in the given number (1 or 2) of occasions to pronounce a letter sound is correct it was scored as 1 and if both chances were incorrect it was scored as 0.

Reading fluency

Reading fluency was scored on seven dimensions namely Expression, Phrasing, Self correction, Word beginnings and endings, Substitution, Omissions and Repetition and Regression with a five point scale. The scoring was done with a rubric that describes the five scale points on the seven dimensions. Each dimension of the reading fluency is treated as an item in the scale. Reading Fluency Scale is given as Appendix M1.

Item analysis

Pronunciation

Conventional item analysis was used for item selection for Test of Reading fluency and Pronunciation and 150 students were selected for try out. The responses from the try out sample were scored, arranged in ascending order of the total score of students and discriminating power and difficulty index were calculated for Pronunciation. Items having discriminating power 0.3 and above, and difficulty index between 0.3 and 0.75 were selected for final test.

Table 16

Data and Results of Item Analysis of Test of Pronunciation in Malayalam

Item No	DP	DI	Item No	DP	DI
1	0.18	0.91	15	0.7	0.61
2	0.34	0.83	16	0.36	0.8
3	0.3	0.85	17	0.4	0.8
4	0.34	0.83	18	*0.74	0.63
5	0.28	0.86	19	0.38	0.81
6	0.34	0.83	20	0.4	0.8
7	0.36	0.82	21	0.48	0.76
8	0.4	0.8	22	0.32	0.84
9	*0.62	0.67	23	*0.64	0.68
10	0.3	0.85	24	*0.72	0.5
11	0.26	0.87	25	*0.6	0.68
12	0.32	0.84	26	*0.6	0.68
13	0.3	0.85	27	0.38	0.81
14	0.34	0.83	28	0.22	0.89

Item No	DP	DI	Item No	DP	DI
29	*0.42	0.27	59	0.42	0.79
30	0.34	0.81	60	0.48	0.76
31	*0.44	0.34	61	*0.5	0.31
32	0.28	0.86	62	0.44	0.78
33	0.4	0.8	63	0.36	0.8
34	0.38	0.81	64	*0.6	0.7
35	0.26	0.87	65	0.26	0.13
36	*0.34	0.27	66	*0.54	0.27
37	0.4	0.76	67	*0.66	0.67
38	0.34	0.83	68	0.34	0.83
39	0.24	0.88	69	0.44	0.78
40	*0.52	0.32	70	0.4	0.8
41	0.4	0.78	71	*0.58	0.71
42	0.32	0.22	72	*0.34	0.35
43	0.24	0.88	73	*0.54	0.43
44	0.16	0.92	74	*0.54	0.69
45	*0.36	0.26	75	*0.6	0.62
46	0.4	0.8	76	0.34	0.83
47	0.42	0.23	77	0.28	0.86
48	0.16	0.92	78	0.36	0.82
49	0.36	0.82	79	0.2	0.9
50	0.38	0.81	80	0.44	0.78
51	0.34	0.83	81	*0.48	0.74
52	*0.62	0.67	82	0.26	0.87
53	0.38	0.81	83	0.36	0.82
54	0.4	0.8	84	0.26	0.87
55	*0.58	0.71	85	0.34	0.83
56	0.48	0.76	86	0.28	0.86
57	*0.52	0.72	87	0.34	0.83
58	0.38	0.81	88	0.38	0.81

Item No	DP	DI	Item No	DP	DI
89	0.44	0.78	97	0.34	0.83
90	0.48	0.76	98	0.4	0.8
91	*0.5	0.75	99	*0.6	0.56
92	*0.58	0.69	100	0.46	0.77
93	*0.48	0.72	101	*0.6	0.68
94	0.4	0.8	102	0.44	0.78
95	0.32	0.82	103	*0.58	0.71
96	0.4	0.8	104	0.18	0.91

DP = Discriminating Power, DI = Difficulty Index
* Indicates the selected items

Out of 104 items, 31 were accepted. The narrative is given as Appendix M2 and List of the letters used for testing pronunciation (Draft and Final) are given as Appendix M3 and Appendix M4, respectively.

Reading Fluency

For Reading Fluency Scale, t-value is calculated and the items with t-value above 1.96 were selected for the final scale. Selected items of the scale are given in Table 17.

Table 17

Data and Results of Item Analysis of Dimensions of Reading Fluency in Malayalam

Dimension	t-value
1. Expression	*-3.76
2. Phrasing	*-4.47
3. Self correction	*-3.72
4. Word beginnings and endings	*-3.42
5. Substitution	*-2.6
6. Omissions	*-3.33
7. Repetition and regression	*-2.98

All seven dimensions of the scale were accepted.

Reliability

Pronunciation

Recorded responses of 30 students were rescored by an expert from language education and the correlation was calculated. Inter-rater reliability obtained for pronunciation test was 0.90.

Reading Fluency Test

Recorded responses of 32 students were re-scored by an expert from language education and the correlation was calculated. Inter-rater reliability found for reading fluency test was 0.93.

Validity

Pronunciation

The test was validated by the procedure of Content Validity Index in which 12 experts in the field of lower primary education participated. These elementary teachers belonged to government and aided schools of Thrissur district. The test was judged on the following dimension viz., age appropriateness, content appropriateness, size appropriateness, length of the narration, idea of narration and suitability for reading with expression. Malayalam and English version of the scale are given as Appendix M5 and M6. Content Validity Index (Polit & Beck, 2006) was calculated and that of the tool was found to be 0.97.

Reading Fluency

The test was validated by the procedure of Content Validity Index in which 12 experts in the field of lower primary education participated. These teachers belonged to government and aided schools of Thrissur district. There were three dimensions in the scale to validate the test which are age appropriateness, content appropriateness and size appropriateness. Malayalam and English version of the scale are given as Appendix M7 and M8. Content Validity Index (Polit & Beck, 2006) was calculated and was found to be 0.99 for the tool.

XVI. Test of Reading Comprehension

Purpose

Test of Reading Comprehension is used to measure reading comprehension ability of Grade 4 students.

Planning of the test

Investigator adopted a part of Test of Fundamental Reading Skills in Malayalam (Abdul Gafoor & Kaleeludeen, 2008) and revalidated the test by further item analysis, and by establishing reliability and Validity.

Test of Reading Comprehension was administered for the whole class. Test items and answer script were given to each student. 20 minutes were given to complete the test.

Item Analysis

Conventional item analysis was used for item selection for Reading Comprehension Test in which 156 students were selected for try out. The

responses from the try out sample were scored, arranged in ascending order of the total score of students and discriminating power and difficulty index were calculated. Items having discriminating power 0.3 and above, and difficulty index between 0.3 and 0.75 were selected for final test. Selected items of the test are given in Table 18.

Table 18

Data and Results of Item Analysis of Test of Reading Comprehension in Malayalam

Item No	DP	DI	Item No	DP	DI
*1	0.52	0.72	*6	0.66	0.43
*2	0.56	0.32	*7	0.82	0.45
*3	0.84	0.48	8	0.18	0.13
*4	0.84	0.46	*9	0.74	0.43
*5	0.68	0.62	10	0.06	0.17

DP = Discriminating Power, DI = Difficulty Index
* Indicates the selected items

Eight items were selected for the final test. The draft test, final test and scoring key are given in Appendix N1, N2 and N3 respectively.

Reliability

From the selected items two halves were formed by grouping alternate items to find Spearman-Brown coefficient for reading comprehension and the value was 0.77. Cronbach's Alpha for reading comprehension is 0.77 (N=156). The values are high suggesting that the items of the test have high internal consistency.

Validity

Scores on test of Reading comprehension was correlated with another Reading comprehension test (Sumangala & Abdul Nazar, 1999). The coefficient of correlation obtained was 0.84 (N=30).

Score of Reading achievement and identifying children with Reading Difficulty (RD)

Reading achievement is measured as the aggregate of three components; Pronunciation, Reading Fluency and Reading Comprehension giving equal weightage to all three components. Obtained score of each component is divided by its total possible score. The average of the three sums was used as the score of Reading achievement. Reading Difficulty in Malayalam is denoted as falling below the 25th percentile on any two of the three dimensions of reading achievement viz., pronunciation reading fluency, and reading comprehension, along with teacher identification of the student as reading difficult.

Data Preparation for Analysis

Duration of data collection of the study was four academic years from Grade 1 to 4. It started from the academic year 2009-2010 and completed in 2012-2013 through eight sessions. After each session the obtained data was prepared for analysis such that previous sessions could guide the subsequent sessions for procedure to be followed, timing, precautions to be taken and the like to make the procedures, observations and measures as accurate, precise and complete as possible. Many of the variables did not follow normality of distribution, partly due to the fact that study sample was only students from thirteen classrooms and their teachers and partly due to the inclusion of

students with extreme scores especially poor performers as the study is in Reading Difficulty. Hence the purpose of analysis, relevant independent variables were classified into two levels, namely High and Low by applying the criteria of Above and Below the middle of distribution as in Table 19.

Table 19

Classification of Students Sample into High and Low Groups on Cognitive, Instructional and Familial Variables

	Variable	Range	Cut point	N	
				Low group	High group
Cognitive	Nonverbal Intelligence	4-33	15.05	74	82
	Picture Recall	1-11	6.34	48	108
	Digit span	3-13	6.72	71	85
	Story Recall	0-10	4.72	81	75
	Phonological Awareness	0-15	10.12	32	124
	Morphological awareness	0-19	11.92	44	112
	Letter reading	0-32	23.12	43	113
	Dictated Spelling	0-33	14.76	48	108
Familial	Home Language Environment	10-94	58.97	49	107
Instructional	Teacher-pupil interaction in Grade 1	0-80	66.12	78	78
	Teacher-pupil interaction in Grade 2	2-75	65.63	75	81
	Teacher-pupil interaction in Grade 3	0-73	64.99	62	94
	Teacher-pupil interaction in Grade 4	33-76	60.08	53	103
	Quality of teacher pupil relationship in Grade 1	2.36-4.06	3.31	65	91
	Quality of teacher pupil relationship in Grade 2	2.55-3.5	3.15	70	86
	Quality of teacher pupil relationship in Grade 3	2.28-3.38	2.93	47	109
	Quality of teacher pupil relationship in Grade 4	2.94-4.09	3.31	62	94
	Clarity of verbal communication in Grade 1	19-26	21.62	103	53

	Variable	Range	Cut point	N	
				Low group	High group
Instructional	Clarity of verbal communication in Grade 2	16-27	20.77	56	100
	Clarity of verbal communication in Grade 3	18-25	21	70	86
	Clarity of verbal communication in Grade 4	19-27	23.38	69	87
	Blackboard work in Grade 1	10-14	12.23	80	76
	Blackboard work in Grade 2	11-16	13.23	79	77
	Blackboard work in Grade 3	10-14	12	38	118
	Blackboard work in Grade 4	9-16	12.38	101	55
	Course Completion in Grade 1	3-6	3.92	74	82
	Course Completion in Grade 2	1-5	3.54	68	88
	Course Completion in Grade 3	3-6	4.15	110	46
	Course Completion in Grade 4	3-5	3.85	47	109
	Reinforcement in Grade 1	10-15	12.62	53	103
	Reinforcement in Grade 2	8-14	11.69	70	86
	Reinforcement in Grade 3	6-15	10.54	68	88
	Reinforcement in Grade 4	9-15	11.92	67	89
	Engaged time in Grade 1	10-15	13.08	43	113
	Engaged time in Grade 2	11-15	13.31	78	78
	Engaged time in Grade 3	7-15	12.62	52	104
	Engaged time in Grade 4	12-15	14.38	52	104
	Books per student in class library in Grade 1	0.71-4	1.75	111	45
	Books per student in class library in Grade 2	0.7-5.56	2.54	119	37
	Books per student in class library in Grade 3	0.71-11.54	4.07	110	46
	Books per student in class library in Grade 4	1.05-15.38	4.97	116	40
	Periodical per student in class library in Grade 1	0-0.56	.20	77	79
	Periodical per student in class library in Grade 2	0-0.86	.29	105	51
	Periodical per student in class library in Grade 3	0.05-1	.37	108	48
	Periodical per student in class library in Grade 4	0-1.83	.47	124	32
	Books issued per student in Grade 1	4-17	8.54	77	79
	Books issued per student in Grade 2	5-30	14.54	76	80
	Books issued per student in Grade 3	6-25	15.31	115	41
	Books issued per student in Grade 4	2-35	19.23	61	95

Statistical Techniques Used

Multiple binary logistic regression analysis is the major analysis used in this study. A sequence of statistical procedures were performed which finally led to the multiple binary logistic regression to predict Malayalam reading Status on the basis independent variables from cognitive, instructional and familial dimensions. All the analyses were performed using Statistical Package for Social Science (SPSS) with assistance from experts. To perform multiple binary logistic regression the following sequence was followed as suggested by Peng and So (2002).

1. Descriptive analysis of each predictor and dependent variable reading achievement was performed

2. A series of tests on relation of independent variables (cognitive, instructional, and familial variables) with the outcome variable, in terms of either mean difference analysis of Reading achievement or chi square test of independence were performed depending on the nature distribution of dependent variable score by the levels of independent variables. Results from the initial analysis helped identify potential predictors of Reading Difficulty in Malayalam among Grade 4 students.

3. Independent variables were properly transformed into categorical predictors by identifying optimal cut points on which the predictor can be dichotomized as high and low categories such that the dichotomized

predictor is able to best distinguish between Malayalam reading status, Reading Difficult or Normal Reader.

4. Three separate preliminary multivariate logistic models were developed respectively using cognitive, instructional and familial variables which were identified as potential predictors based on results from univariate analyses.

5. A final binary logistic regression was performed by incorporating only those significant predictors from the three preliminary multivariate logistic models applied in the previous point.

6. Accepted model of the best fit is justified by multiple indicators, including the model's overall test of all parameters, interpretability and statistical significance of each predictor, goodness of fit statistics, predictive power, accuracy of prediction, and diagnostic results.

Basic Descriptive Statistics

The important statistical indices namely mean, median, mode, standard deviation, skewness and kurtosis of the score distribution in the sample were calculated for dependant variables and for all continuous independent variables.

Shapiro Wilk statistics

Shapiro-Wilk test is used to test the assumption of normality. The null-hypothesis of Shapiro-wilk test is that the population is normally distributed. It is a statistical test of the hypothesis that sample is drawn from a

normally distributed population. From this test, the significance (p) value is compared to the apriori alpha level (level of significance for the statistic). The null hypothesis of no significant deviation from the normality is rejected ($p<\alpha$) or accepted ($p > \alpha$) accordingly. A significant test means the sample distribution is not shaped like a normal curve. In this study when $p>.05$, alternative hypothesis is rejected concluding that the data comes from a normal distribution. S-W is significant ($p<.05$) if the variables' distribution is different from normal. S-W approximately equals the correlation between given data and ideal normal scores. When S-W is significantly smaller than 1, null hypothesis is rejected, and the distribution is non-normal.

Standardized skewness and kurtosis

Other indices of normality used in this study are standardized skewness and standardized kurtosis. Standardized skewness is examined against table value +3.29. Standardized Skewness = Statistic/Std. Error. For medium-sized samples ($50 < n < 300$), the null hypothesis is rejected at absolute z-value over 3.29 ($p<.05$), and the distribution of the sample is considered non-normal (Kim, 2013).

Mean Difference Analysis

Independent samples t-tests were used to assess difference in reading achievement by high and low level performance in cognitive, instructional and familial variables. This was done to find out the variables associated with reading comprehension. The difference in the mean scores was tested for significance by finding out the ‘t’ value

$$t = \frac{M_1 - M_2}{\sqrt{\frac{\sigma_1^{\,2}}{N_1} + \frac{\sigma_2^{\,2}}{N_2}}}$$

Where,

M_1 = Mean of the low group

M_2 = Mean of the high group

σ_1 = standard deviation of the low group

σ_2 = Standard deviation of the high group

N_1 = Size of low group

N_2 = Size of high group

Chi Square Test of Independence

Chi square test of independence is used to assess difference in reading achievement by high and low level performance in instructional and familial variables. This is done to find out the categorical variables associated with reading comprehension.

$$\chi^2 = \sum \frac{(f_0 - f_e)^2}{f_e} \qquad \text{(Ferguson, 1981)}$$

Where

f_0= the observed frequency

f_e= the expected frequency under the assumption of independence of the variable.

Multiple Binary Logistic Regression Analysis

Binary logistic regression is used to predict a single dichotomous dependent variable from independent variables which are either continuous or categorical or both in nature. Binary Logistic regression is employed in this study as it allows overcoming many of the restrictive assumptions of other more powerful regression models. Logistic regression does not need the dependent and independent variables to be normally distributed. Also it does not require that the predictors are at interval level. This is the case in this study, as many of the independent variables were observed to deviate significantly from the normality, and also the study intends to identify significant predictors of Malayalam reading difficulty, as against normal readers. Also, the dependent variable need not be homoscedastic for the levels of each of the independents. Variances of dependent variable need not be the same within categories of independent variables.

Logistic regression is used to predict the categorical dependent variable, Malayalam reading Status on the basis independent variables from cognitive, instructional and familial dimensions. This analysis provides the effect size of the identified independent variables from cognitive, instructional and familial aspects on the Malayalam reading status and helps rank the relative importance of independent variables entered into the design. The effect of predictor variables is explained in terms of odds ratios.

A binary logistic regression calculates the likelihood that an observation falls into one of two categories of a dichotomous dependent

variable based on one or more independent variables. In this study, likelihood of reading difficulty in Malayalam over normal reading is predicted from cognitive, instructional and familial variables using Multiple binary logistic regression. Binary logistic regression predicts the "1" value of the dependent, using the "0" level as the reference value. In this study, Reading Difficulty is coded as 1, referred against Normal Reading which is coded as “0”.

Assumptions in employing binary logistic regression

In order to employ binary logistic regression, the data has to meet a set of assumptions. One assumption is the dichotomous nature of dependent variable which is met in this study as dependent variable in this study is reading status with two levels, Normal reading and Reading Difficult. These two categories of reading status are mutually exclusive and exhaustive too. The third assumption that there need be one or more independent variables which are meaningful in the context of the dependent variable is also met by choosing only those cognitive, instructional and familial variables which were found significantly influencing Malayalam reading achievement in Grade 4. Further assumption that independent variables are independent from each other is also met as the independent variables entered into analysis are measured independent of one another. Binary regression analyses requires quite large sample sizes, at least 10 cases per independent variable. This condition also is met, as the maximum number of independent variables entered in any regression analysis in this study is seven, where as the sample size is 156.

The results of Binary Regression Logistic Regressions are reported in table form with the following statistics (Peng, Lee, & Ingersoll, 2002., Garson, 2010)

- The B parameter, its standard error,
- The wald statistic, degrees of freedom, p significance level, and
- The odds ratio [exp(B)] for the constant and each predictor in the model.
- Overall model fit tests (likelihood ratio, score) with their associated Chi-square, p significance levels, and degrees of freedom

B coefficients

B coefficients are the values for the logistic regression equation for predicting the dependent variable from the independent variable. B is the coefficient for the constant (also called the "intercept") in the null model. In the SPSS output, the "B" column of the "Variables in the Equation" shows b coefficients that vary between plus or minus infinity. Zero indicates that the given explanatory variable does make no difference in the probability of the dependent value equaling the value of the event, usually 1. Positive or negative b coefficients indicate that the explanatory variable increases or decreases the logit of the dependent. They are in log-odds units. S.E. is the standard error around the coefficient for the constant.

Wald statistic

Wald statistic shows the significance of individual logistic regression coefficients for each independent variable. It is the squared ratio of the non-

standardized logistic coefficient to its standard error. Wald chi-square tests the null hypothesis that the constant equals 0. This hypothesis is rejected when the p-value (listed in the column called "Sig.") is smaller than the critical p-value of .05 (or .01) with corresponding degrees of freedom as to the number of predictors for the Wald chi-square test. There is only one degree of freedom if there is only one predictor in the model.

Exp (B) and the odds ratio

Exp(B) is the exponentiation of the B coefficient, which is an odds ratio for the explanatory variable. The impact of predictor variables is usually explained in terms of odds ratios. Odds ratios are effect size measures. Odds ratios are the standard way to report the essential results of logistic regression. An odds ratio of 1 corresponds to no effect. To the extent odds ratio is above 1 the effect strongly increases and the effect strongly decreases as the odds ratio is below 1. Odds ratios are also useful to comment on the relative sizes of effects in comparing independent variable effects.

Overall statistics and omnibus tests of model coefficients

SPSS binary logistic regression reports significance levels by the traditional chi-square method. It tests if the model with the predictors is significantly different from the model with only the intercept. The omnibus test may be interpreted as a test of the capability of all predictors in the model jointly to predict the response (dependent) variable. A finding of significance,

supports the conclusion that at least one of the predictors is significantly related to the response variable.

Binary logistic regression is interpreted in terms of predictive accuracy of correct and incorrect classifications of the dichotomous dependent. Predicted values of the dependent variable based on the full logistic regression model shows the number of cases that are correctly and not correctly predicted along with overall percent of cases that are correctly predicted by the model. Sensitivity is the percent of correct predictions in the reference category of the dependent. Specificity is the percent of correct predictions in the given category of the dependent.

Variance explained by the model and R^2 statistics

In order to understand how much variation in the dependent variable can be explained by the model (the equivalent of R^2 in multiple regression), SPSS output contains Cox & Snell R^2 and Nagelkerke R^2. These values sometimes referred to as pseudo R^2 values (will have lower values than in multiple regression) are both methods of calculating the explained variation and are interpreted in the same manner, but with more caution. Nagelkerke R^2 is a modification of Cox & Snell R^2, the latter of which cannot achieve a value of 1. For this reason, the Nagelkerke R^2 value is preferred.

Cox and Snell's R^2 is an attempt to imitate the interpretation of multiple R-Square based on the log likelihood of the final model vs. log

likelihood for the baseline model, but its maximum can be (and usually is) less than 1.0, making it difficult to interpret. It is part of SPSS output in the "Model Summary" table.

Statistical analysis has been done using SPSS for windows version 20.

Chapter IV

Analysis

- **Statistical Constants for the Score Distribution of Dependent and Independent Variables among Lower Primary Students**
- **Cognitive Variables, Instructional Variables and Familial Variables Influencing Reading Achievement in Malayalam by the End of Lower Primary Schooling**
- **Efficiency of significant cognitive variables, and Home Variables in Predicting Reading Difficulty in Malayalam in Grade 4**

ANALYSIS

This study is to find out familial, cognitive, and instructional variables, during Grades 1 through 4, influencing Reading achievement in Malayalam in Grade 4 and to identify predictors of reading difficulty in Grade 4. For the analysis of data statistical techniques such as Descriptive statistics, Test of Significance of Difference between two means, Chi-square Test of Independence and Binary Logistic Regression were used. The selection of statistical techniques was based on the objectives of the study.

Statistical Constants for the Distribution of Dependent Variable among Lower Primary Students

The distribution of the Dependent Variable Reading achievement was studied for normality. The important statistical indices namely mean, median, mode, standard deviation, skewness and kurtosis of the distribution Reading achievement in the study sample were studied. The results are presented in Table 20.

Table 20

Statistical Constants for the Distribution of Reading achievement among Lower Primary Students

Variable	Mean	Mdn	Mode	SD	Sk	Ku	Sk/SE_{sk}	Ku/SE_{ku}	s-w
Reading achievement	0.59	0.65	0.04	0.23	0.86	0.20	4.53	0.51	0.93

N=156, SE_{sk} = .19, SE_{ku} = .39

Mean (0.59), median (0.65), and mode (0.04) of Reading achievement are not equal. The indices of skewness (0.86, *SE*= 0.19) and kurtosis (0.20, *SE*=0.39) indicate positively skewed, leptokurtic distribution of reading

achievement. The ratio between Skewness and its standard error (4.53) is greater than 3.29, and that between Kurtosis and its standard error (0.51) is less than 3.29 indicating that Reading achievement is not normally distributed ($p<.05$), (Kim 2013). The Shapiro-Wilk statistic of normality (*s-w*=0.93, $df= 156$, $p<.05$) suggest that there is significant variation from normality for the distribution of Reading achievement.

Distribution of Reading achievement is not normal. Hence test of significance of difference between means of total Reading achievement score by levels (high and low) of independent variables is the major analysis, instead of Analysis of Variance.

For regression purpose, to predict the reading difficulty status, Reading achievement score is dichotomized and hence Binary Logistic Regression will be used, since a few predictors are truly dichotomous variables and Binary Logistic Regression permits both dichotomized and dichotomous variables to be used as predictors.

Statistical Constants for the Distribution of Independent Variables among Lower Primary Students

Preliminary analysis of the scores of Independent Variables of the study was done to identify the basic properties of distribution of these variables. The analysis was taken up with a view that the findings will help to make more suitable interpretation of statistical indices of the study.

The distribution of the Independent Variables Letter reading, Phonological awareness, Morphological awareness, Dictated spelling, Non – verbal intelligence, Picture recall, Digit span, Story recall, Teacher Pupil Interaction in Grade 1(TPI), Teacher Pupil Interaction in Grade 2, Teacher

Pupil Interaction in Grade 3, Teacher Pupil Interaction in Grade 4, and Home Language Environment (HLE) were studied for their normality. The important statistical indices namely mean, median, mode, standard deviation, skewness and kurtosis of the distribution of these variables were calculated and presented in Table 21.

Table 21

Statistical Constants for Familial, Cognitive and Instructional Variables among Lower Primary Students Used as Independent Variables

Variables	Mean	Median	Mode	SD	Sk	Ku	Sk/SE_{sk}	Ku/SE_{ku}	s-w
Letter reading	23.12	25.5	30	8.18	-1.20	0.75	6.32	1.92	0.87
Phonological awareness	10.12	11	13	3.61	-0.95	0.65	5.0	1.67	0.92
Morphological awareness	11.92	13	15	4.77	-0.54	-0.50	2.84	1.28	0.95
Dictated spelling	14.76	14.5	0	9.54	0.06	1.23	0.32	3.15	0.95
Non –verbal intelligence	15.05	15	14	4.32	0.62	2.12	3.26	5.43	0.95
Picture recall	6.34	6	6	1.87	-0.10	0.30	0.53	.77	0.97
Digit span	6.72	7	6	1.56	0.1	1.85	0.53	4.74	0.91
Story recall	4.72	4	2	2.81	0.12	-1.16	0.63	2.97	0.94
TPI Grade 1	66.12	69.5	70	13.37	-4.37	18.71	23	47.97	0.39
TPI Grade 2	65.63	69	70	12.31	-4.52	20.97	23.79	53.77	0.42
TPI Grade 3	64.99	67	67	7.40	-4.84	38.13	25.47	97.77	0.65
TPI Grade 4	60.08	61	55	8.59	-0.80	0.73	4.21	1.87	0.95
HLE	58.97	60.5	65	18.82	-0.45	-0.21	2.37	0.54	0.97*

N=156, SE_{sk} = .19, SE_{ku} = .39

*p<.05

Mean (23.12), median (25.5), and mode (30) of Letter reading are not equal. The indices of skewness (-1.20, *SE*=0.19) and kurtosis (0.75, *SE*=0.39) indicate negatively skewed, leptokurtic distribution of Letter reading. The ratio between Skewness and its standard error (6.32) ,and that between Kurtosis and its standard error (1.92) are greater than 3.29 indicating that Letter reading is not normally distributed ($p<.05$), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.87, df= 156, $p<.01$) suggest that there is significant variation from normality for the distribution of Letter reading.

Mean (10.12), median (11), and mode (13) of Phonological awareness are nearly equal. The indices of skewness (-0.95, *SE*=0.19) and kurtosis (0.65, *SE*=0.39) indicate negatively skewed, leptokurtic distribution of Phonological awareness. The ratio between Skewness and its standard error (5) ,and that between Kurtosis and its standard error (1.67) are greater than 3.29 indicating that Phonological awareness is not normally distributed ($p<.05$), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.92, df= 156, $p<.01$) suggest that there is significant variation from normality for the distribution of Phonological awareness.

Mean (11.92), median (13), and mode (15) of Morphological awareness are nearly equal. The indices of skewness (-0.54, *SE*=0.19) and kurtosis (-0.50, *SE*=0.39) indicate negatively skewed, platykurtic distribution of Morphological awareness. The ratio between Skewness and its standard error (2.84) ,and that between Kurtosis and its standard error (1.28) are less than 3.29 indicating that Morphological awareness is normally distributed ($p>.05$), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.95, df = 156, $p<.01$) suggest that there is significant variation from normality for the distribution of Morphological awareness.

Mean (14.76) and median (14.5) of Dictated spelling are nearly equal. The mode however is zero. The indices of skewness (0.06, *SE*=0.19) and kurtosis (1.23, *SE*=0.39) indicate positively skewed, leptokurtic distribution of Dictated Spelling. The ratio between Skewness and its standard error (0.32) ,and that between Kurtosis and its standard error (3.15) are less than 3.29 indicating that Dictated spelling does not significantly deviate from normality (p>.05), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.95, df= 156, p<.01) suggest that there is significant variation from normality for the distribution of Dictated Spelling.

Mean (15.05), median (15), and mode (14) of Non verbal intelligence are nearly equal. The indices of skewness (0.62, *SE*=0.19) and kurtosis (2.12, *SE*=0.39) indicate positively skewed, leptokurtic distribution of Non –verbal intelligence. The ratio between Skewness and its standard error (3.26) is less than 3.29 and that between Kurtosis and its standard error (5.43) is greater than 3.29 indicating that Non –Verbal Intelligence significantly deviate from normality (p<.05), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.95, df= 156, p<.01) suggest that there is significant variation from normality for the distribution of Non –Verbal Intelligence.

Mean (6.34), median (6), and mode (6) of Picture Recall are nearly equal. The indices of skewness (-0.10, *SE*=0.19) and kurtosis (0.30, *SE*=0.39) indicate negatively skewed, leptokurtic distribution of Picture Recall. The ratio between Skewness and its standard error (0.53), and that between Kurtosis and its standard error (0.77) are lesser than 3.29 indicating that distribution of Picture Recall is not deviating from normality (p>.05), (Kim 2013). The Shapiro-Wilk statistic of normality (s-w=0.97, df= 156, p<.01) suggest that the distribution of Picture Recall deviates from normal distribution.

Mean (6.72), median (7), and mode (6) of Digit span are nearly equal. The indices of skewness (0.10, *SE*=0.19) and kurtosis (1.85, *SE*=0.39) indicate positively skewed, leptokurtic distribution of Digit span. The ratio between Skewness and its standard error (0.53) is less than 3.29 and that between Kurtosis and its standard error (4.74) is greater than 3.29 indicating that Digit span is not normally distributed (p<05), (Kim, 2013). The Shapiro-Wilk statistic of normality(s-w=0.91, df= 156, p<.01) suggest that there is significant variation from normality for the distribution of Digit span.

Mean (4.72) and median (4) of Story recall are nearly equal but mode (2) less. The indices of skewness (0.12, *SE*=0.19) and kurtosis (0.63, *SE*=0.39) indicate positively skewed, leptokurtic distribution of Story recall. The ratio between Skewness and its standard error (1.16) ,and that between Kurtosis and its standard error (2.97) are less than 3.29 indicating that Story recall is normally distributed (p>.05), (Kim 2013). The Shapiro-Wilk statistic of normality (s-w=.94, df= 156, p<.05) suggest that there is significant variation from normality for the distribution of Story recall.

Mean (66.12), median (69.5), and mode (70) of TPI in Grade 1 are nearly equal. The indices of skewness (-4.37, *SE*=0.19) and kurtosis (18.71, *SE*=0.39) indicate negatively skewed, leptokurtic distribution of TPI in Grade 1. The ratio between Skewness and its standard error (23), and that between Kurtosis and its standard error (47.97) are greater than 3.29 indicating that TPI Grade 1is not normally distributed (p<.05), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.39, df= 156, p<.01) suggest that there is significant variation from normality for the distribution of TPI in Grade 1.

Mean (65.63), median (69), and mode (70) of TPI in Grade 2 are nearly equal. The indices of skewness (-4.52, *SE*=0.19) and kurtosis (20.97,

SE=.39) indicate negatively skewed, leptokurtic distribution of TPI in Grade 2. The ratio between Skewness and its standard error (23.79), and that between Kurtosis and its standard error (53.77) are greater than 3.29 indicating that TPI in Grade 2 is not normally distributed ($p<.05$), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.42, df=156, $p<.01$) suggest that there is significant variation from normality for the distribution of TPI in Grade 2.

Mean (64.99), median (67), and mode (67) of TPI in Grade 3 are nearly equal. The indices of skewness (-4.84, *SE*=0.19) and kurtosis (38.13, *SE*=0.39) indicate negatively skewed, leptokurtic distribution of TPI in Grade 3. The ratio between Skewness and its standard error (25.47), and that between Kurtosis and its standard error (97.77) are greater than 3.29 indicating that TPI in Grade 3 is not normally distributed ($p<.05$), (Kim 2013). The Shapiro-Wilk statistic of normality (s-w=0.65, df=156, $p<.01$) suggest that there is significant variation from normality for the distribution of TPI Grade 3.

Mean (60.08) and median (61) of TPI in Grade 4 are nearly equal, but and mode (55) is less. The indices of skewness (-0.80, *SE*=0.19) and kurtosis (0.73, *SE*=0.39) indicate negatively skewed, leptokurtic distribution of TPI in Grade 4. The ratio between Skewness and its standard error (4.21) is greater than 3.29 and that between Kurtosis and its standard error (1.87) is greater than 3.29 indicating that TPI Grade 4 is not normally distributed ($p<.05$), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.95, df= 156, $p<.01$) suggest that there is significant variation from normality for the distribution of TPI Grade 4.

Mean (58.97), median (60.5), and mode (65) of HLE are nearly equal. The indices of skewness (-0.45, *SE*=.19) and kurtosis (-0.21, *SE*=0.39) indicate negatively skewed, platy kurtic distribution of HLE. The ratio between Skewness and its standard error (2.37), and that between Kurtosis and its standard error (0.54) are less than 3.29 indicating that HLE is normally distributed (p>.05), (Kim 2013). The Shapiro-Wilk statistic of normality(s-w=0.97, df= 156, p>.01) suggest that there is no significant variation from normality for the distribution of HLE.

Out of 13 independent variables tested for normality proving to be following a near normal distribution, only one independent variable followed the qualities of a normal distribution. Hence, in order to maintain economy in reporting and resorting to multiple techniques of analysis of data, it was decided to follow test of significance of difference between means of total Reading achievement score by levels (high and low) of independent variables as the major analysis**.**

Cognitive, Instructional and Familial Variables Influencing Reading Achievement

The first objective of the study was to identify cognitive, instructional and familial variables which influence Reading achievement of lower primary students at the end of primary schooling. Independent samples t-test was used to assess difference in Reading achievement in Malayalam in Grade 4 where independent variables follows a continuous and interval distribution and Chi square test of independence is used to assess difference in Reading achievement for where independent variables follows a categorical and ordinal or nominal distribution.

Influence of Cognitive Variables on Reading Achievement in Grade 4

Independent samples t-test is used to assess difference in Reading achievement for students who are high and low on cognitive variables, viz., Letter reading, Phonological awareness, Morphological awareness, Dictated spelling, Non verbal Intelligence, Picture recall, Digit span and Story recall. Results are presented in Table 22.

Table 22

Test of Significance of Difference between Mean Scores of Reading Achievement in Malayalam in Grade 4 by Levels of Cognitive Variables in Respective Grades

Grouping Variable		Reading achievement						t
		Low Group on the Grouping Variable			High Group on Grouping Variable			
		N	Mean	SD	N	Mean	SD	
Grade 1	Letter Reading	43	0.37	0.25	113	0.67	0.16	-7.09**
	Phonological Awareness	32	0.35	0.24	124	0.65	0.19	-6.52**
Grade 2	Morphological Awareness	44	0.42	0.25	112	0.65	0.19	-5.39**
	Dictated Spelling	48	0.36	0.21	108	0.69	0.15	-9.67**
	Non –Verbal Intelligence	74	0.54	0.23	82	0.63	0.22	-2.26*
Grade 3	Picture Recall	48	0.54	0.23	108	0.61	0.23	-1.61
	Digit span	71	0.47	0.25	85	0.68	0.16	-6.29**
	Story Recall	81	0.52	0.26	75	0.66	0.17	-3.84**

*p< .05; **p< .01

Table 22 reveals that there is significant difference between Reading achievement in Grade 4 students who were low on letter reading tasks in

Grade 1 (M=0.37, SD= 0.25, N= 43) and those who were high on Letter reading tasks in Grade 1 (M=0.67, SD=0.16, N=113), [t = -7.09, p<.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Letter reading in Grade 1 than those who were low on the Letter reading in Grade 1.

Table 22 shows that there is significant difference between Reading achievement in Grade 4 students who were low on Phonological awareness in Grade 1 (M=0.35, SD= 0.24, N= 32) and those who were high on Phonological awareness in Grade 1 (M=0.65, SD=0.19, N=124), [t=- 6.52, p <.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Phonological awareness in Grade 1 than those who were low on Phonological awareness in Grade 1.

Table 22 shows that there is significant difference between Reading achievement in Grade 4 of students who were low on Morphological awareness in Grade 2 (M=0.42, SD= 0.25, N=44) and those who were high on Morphological awareness in Grade 2 (M=0.65, SD=0.19, N=112), [t = -5.39, p <.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Morphological awareness in Grade 2 than those who were low on Morphological awareness in Grade 2.

Table 22 shows that there is significant difference between Reading achievement in Grade 4 students who were low on Dictated spelling in Grade 2 (M=0.36 , SD= 0.21, N= 48) and those who were high on Dictated spelling in Grade 2 (M=0.69 , SD= 0.15, N= 108), [t = -9.67, p <.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Dictated spelling in Grade 2 than those who were low on Dictated spelling in Grade 2.

Table 22 shows that there is significant difference between Reading achievement in Grade 4 students who were low on Non verbal Intelligence in Grade 2 (M=0.54, SD= 0.23, N=74) and those who were high on Non verbal intelligence in Grade 2 (M=0.63, SD=0.22, N=82), [t =-2.26, p <.05]. Reading achievement in Grade 4 is significantly higher for students who were high on Non verbal Intelligence in Grade 2 than those who were low on Non verbal intelligence in Grade 2.

Table 22 shows that there is no significant difference between Reading achievement in Grade 4 students who were low on Picture recall in Grade 3 (M=0.54, SD= 0.23, N= 48) and those who were high on Picture recall in Grade 3 (M=0.61, SD=0.23, N=108), [t=-1.61, p >.05]. Reading achievements in Grade 4 are not significantly different between students who were high on Picture recall in Grade 3 and those who were low on Picture recall in Grade 3.

Table 22 shows that there is significant difference between Reading achievement in Grade 4 students who were low on Digit span in Grade 3 (M=0.47, SD= 0.25, N= 71) and those who were high on Digit span in Grade 3 (M=0.68, SD= 0.16, N= 85), [t = -6.29, p <.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Digit Span in Grade 3 than those who were low on Digit Span in Grade 3.

Table 22 shows that there is significant difference between Reading achievement in Grade 4 students who were low on Story recall in Grade 3 (M=0.52, SD=0.26, N= 81) and those who were high on Story recall in Grade 3 (M=0.66, SD= 0.17, N= 75), [t= - 3.84, p <.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Story recall in Grade 3 than those who were low on Story recall in Grade 3.

Conclusion on Cognitive variables influencing Reading achievement

Mean difference analysis of cognitive variables revealed that there is significant difference in Reading achievement of Grade 4 students who performed high and low in Letter reading in Grade 1, Phonological awareness in Grade 1, Morphological awareness in Grade 2, Dictated spelling in Grade 2, Non verbal Intelligence and Story recall in Grade 3 and Digit span in Grade 3. But there is no significant difference between Reading achievement of Grade 4 students who performed high and low on Picture Recall in Grade 3.

Influence of Instructional Variables on Reading Achievement in Grade 4

Independent samples t-test is used to assess difference in Reading achievement by level of Teacher Pupil Interaction in Grades 1 through 4. However, influence of Quality of teacher pupil relationship and Instructional Resources on Reading achievement in Malayalam in Grade 4 were studied through a series of chi square test of independence since Quality of teacher pupil relationship was observed for 13 teachers per Grade and hence classes rather than individual students were classified as high and low. Thus, the measures of Quality of teacher pupil relationship and Instructional Resources were taken categorical than continuous in distribution.

Influence of Teacher Pupil Interaction on Reading achievement in Malayalam in Grade 4

Independent samples t-test is used to assess difference in Reading achievement by level of Teacher Pupil Interaction (TPI) in Grades 1 through 4. Results are in Table 23.

Table 23

Test of Significance of Difference between Mean Scores of Reading Achievement in Malayalam in Grade 4 by levels of Teacher Pupil Interaction

Grouping Variable	Reading Achievement						t
	Group Low on the Grouping Variable			Group High on Grouping Variable			
	N	Mean	SD	N	Mean	SD	
TPI Grade 1	78	0.53	0.25	78	0.64	0.20	-2.96**
TPI Grade 2	75	0.53	0.24	81	0.64	0.21	-2.82**
TPI Grade 3	62	0.53	0.27	94	0.62	0.20	-2.32*
TPI Grade 4	53	0.50	0.25	103	0.63	0.21	-3.55**

*p< .05; **p< .01

Table 23 shows that there is significant difference between Reading achievement in Grade 4 students who had low Teacher Pupil Interaction in Grade 1 (M=0.53 , SD= 0.25, N= 78) and those who had high Teacher Pupil Interaction in Grade 1 (M=0.64 , SD= 0.20, N= 78), [t = -2.96, p <.01]. Reading achievement in Grade 4 is significantly higher for students who had high Teacher Pupil Interaction in Grade 1 than those who had low Teacher Pupil Interaction in Grade 1.

Table 23 shows that there is significant difference between Reading achievement in Grade 4 students who had low Teacher Pupil Interaction in Grade 2 (M=0.53, SD= 0.24, N= 75) and those who had high Teacher Pupil Interaction in Grade 2 (M=0.64, SD= 0.21, N= 81), [t = -2.82, p <.01]. Reading achievement in Grade 4 is significantly higher for students who had high on Teacher Pupil Interaction in Grade 2 than those who had low Teacher Pupil Interaction in Grade 2.

Table 23 shows that there is significant difference between Reading achievement in Grade 4 students who had low Teacher Pupil Interaction in Grade 3 (M=0.53 , SD= 0.27, N= 62) and those who had high Teacher Pupil Interaction in Grade 3 (M=0.62, SD= 0.20, N= 94), [t = -2.32, p <.05]. Reading achievement in Grade 4 is significantly higher for students who had high Teacher Pupil Interaction in Grade 3 than those who had low Teacher Pupil Interaction in Grade 3.

Table 23 shows that there is significant difference between Reading achievement in Grade 4 students who had low Teacher Pupil Interaction in Grade 4 (M=0.50, SD= 0.25, N= 53) and those who had high Teacher Pupil Interaction in Grade 4 (M=0.63, SD= 0.21, N= 103), [t = -3.55, p <.01]. Reading achievement in Grade 4 is significantly higher for students who had high Teacher Pupil Interaction in Grade 4 than those who had low Teacher Pupil Interaction in Grade 4.

Conclusion on Teacher pupil interaction influencing Reading achievement

Mean difference analysis of instructional variables revealed that there is significant difference in Reading achievement of Grade 4 students based on their level of (high or low) Teacher Pupil Interaction in Grade 1, 2, 3 and 4. Reading achievement in Grade 4 is significantly high for students who had higher TPI than those who had lower TPI in Grades 1, 2, 3 and 4 each.

Influence of Quality of Teacher Pupil Relationship and Instructional Resources on Malayalam Reading Achievement Status in Grade 4

The classroom variables namely Quality of teacher pupil relationship (in Grades 1 to 4), Clarity of verbal communication (in Grades 1 to 4), Blackboard work (in Grades 1 to 4), Course completion (in Grades 1 to 4),

Reinforcement (in Grades 1 to 4), Engaged Time (in Grades 1 to 4) and the variables related to class library namely Books per student (in Grades 1 to 4), Periodicals per student (in Grades 1 to 4) and Books issued per student (in Grades 1 to 4) are categorical variables. So Chi square test of independence is used to test influence of instructional variables on Reading achievement in Malayalam in Grade 4. The results are given in Table 24.

1a. Influence of Quality of teacher pupil relationship in Grade I on Malayalam Reading Achievement status in Grade 4

Chi square test of independence is used to study the influence of Quality of Teacher Pupil Relationship in Grade I on Malayalam Reading achievement Status in Grade 4. The results are given in Table 24.

Table 24

Descriptive Statistics and Results of Chi-square Test for Quality of Teacher Pupil Relationship in Grade I by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Quality of Teacher Pupil Relationship in Grade I	Low	54	11	65	0.20
	High	78	13	91	
Total		132	24	156	

Table 24 shows chi-square values [χ^2 (1, N=156) = 0.20, p>.05] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Quality of Teacher Pupil Relationship in Grade 1. The obtained value of χ^2 (0.20) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is,

Malayalam Reading achievement Status in Grade 4 is independent of Quality of Teacher Pupil Relationship in Grade 1.

1b. Influence of Quality of teacher pupil relationship in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi square test of independence is used to study the influence of Quality of Teacher Pupil Relationship in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 25.

Table 25

Descriptive Statistics and Results of Chi-square Test for Quality of Teacher Pupil Relationship in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Quality of Teacher Pupil Relationship in Grade 2	Low	57	13	70	0.99
	High	75	11	86	
Total		132	24	156	

Table 25 shows chi-square values [χ^2 (1, N=156) = 0.99, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Quality of Teacher Pupil Relationship in Grade 2. The obtained value of χ^2 (0.99) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Quality of Teacher Pupil Relationship in Grade 2.

1c. Influence of Quality of teacher pupil relationship in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi square test of independence is used to study the influence of Quality of Teacher Pupil Relationship in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 26.

Table 26

Descriptive Statistics and Results of Chi-square Test for Quality of Teacher Pupil Relationship in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Quality of Teacher Pupil Relationship in Grade 3	Low	38	9	47	
	High	94	15	109	0.73
Total		132	24	156	

Table 26 shows chi-square values [χ^2 (1, N=156) = 0.73, $p > .05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Quality of Teacher Pupil Relationship in Grade 3. The obtained value of χ^2 (0.73) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Quality of Teacher Pupil Relationship in Grade 3.

1d. Influence of Quality of teacher pupil relationship in Grade 4 on Malayalam Reading Achievement status in Grade 4

Chi-square test of independence is used to study the influence of Quality of Teacher Pupil Relationship in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 27.

Table 27

Descriptive Statistics and Results of Chi-square Test for Quality of Teacher Pupil Relationship in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Quality of Teacher Pupil Relationship in Grade 4	Low	55	7	62	1.33
	High	77	17	94	
Total		132	24	156	

Table 27 shows chi-square value [χ^2 (1, N=156) = 1.33, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Quality of Teacher Pupil Relationship in Grade 4. The obtained value of χ^2 (1.33) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Quality of Teacher Pupil Relationship in Grade 4.

2a. Influence of Clarity of teachers' verbal communication in Grade I on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Clarity of teachers' verbal communication in Grade 1 on Malayalam Reading achievement Status in Malayalam in Grade 4. The results are given in Table 28.

Table 28

Descriptive Statistics and Results of Chi-square Test for Clarity of teachers' verbal communication in Grade I by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Clarity of teachers' verbal communication in Grade 1	Low	85	18	103	
	High	47	6	53	1.02
Total		132	24	156	

Table 28 shows chi-square values [χ^2 (1, N=156) = 1.02, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Clarity of teachers' verbal communication in Grade 1. The obtained value of χ^2 (1.02) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Clarity of teachers' verbal communication in Grade 1.

2b.Influence of Clarity of teachers' verbal communication in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Clarity of teachers' verbal communication in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 29.

Table 29

Descriptive Statistics and Results of Chi-square Test for Clarity of teachers' verbal communication in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Clarity of teachers' verbal communication in Grade 2	Low	47	9	56	0.03
	High	85	15	100	
Total		132	24	156	

Table 29 shows Chi-square values [χ^2 (1, N=156) = 0.03, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Clarity of teachers' verbal communication in Grade 2. The obtained value of χ^2 (0.03) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Clarity of teachers' verbal communication in Grade 2.

2c. Influence of Clarity of teacher's verbal communication in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Clarity of teachers' verbal communication in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 30.

Table 30

Descriptive Statistics and Results of Chi-square Test for Clarity of teachers' verbal communication in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Clarity of teachers' verbal communication in Grade 3	Low	55	15	70	
	High	77	9	86	3.56
Total		132	24	156	

Table 30 shows Chi-square values [χ^2 (1, N=156) = 3.56, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Clarity of teachers' verbal communication in Grade 3. The obtained value of χ^2 (3.56) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Clarity of teachers' verbal communication in Grade 3.

2d. Influence of Clarity of teacher's verbal communication in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Clarity of teachers' verbal communication in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 31.

Table 31

Descriptive Statistics and Results of Chi-square Test for Clarity of teachers' verbal communication in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Clarity of teachers' verbal communication in Grade 4	Low	59	10	69	
	High	73	14	87	0.08
Total		132	24	156	

Table 31 shows Chi-square values [χ^2 (1, N=156) = 0.08, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Clarity of teachers' verbal communication in Grade 4. The obtained value of χ^2 (0.08) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Clarity of teachers' verbal communication in Grade 4.

3a. Influence of Teacher's blackboard work in Grade 1 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Teachers' Black Board Work in Grade 1 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 32.

Table 32

Descriptive Statistics and Results of Chi-square Test for Teachers' Blackboard Work in Grade 1 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Blackboard work in Grade 1	Low	65	15	80	
	High	67	9	76	1.43
Total		132	24	156	

Table 32 shows Chi-square values [χ^2 (1, N=156) = 1.43, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Black Board Work in Grade 1. The obtained value of χ^2 (1.43) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Blackboard work in Grade 1.

3b. Influence of Teacher's blackboard work in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Teachers' Blackboard work in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 33.

Table 33

Descriptive Statistics and Results of Chi-square Test for Teachers' Blackboard work in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Blackboard work in Grade 2	Low	64	15	79	1.60
	High	68	9	77	
Total		132	24	156	

Table 33 shows Chi-square values [χ^2 (1, N=156)= 1.60, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Blackboard work in Grade 2. The obtained value of χ^2 (1.60) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Blackboard work in Grade 2.

3c. Influence of Teacher's blackboard work in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Teachers' Blackboard work in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 34.

Table 34

Descriptive Statistics and Results of Chi-square Test for Teacher's Blackboard work in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Blackboard work in Grade 3	Low	29	9	38	2.66
	High	103	15	118	
Total		132	24	156	

Table 34 shows Chi-square values [χ^2 (1, N=156) = 2.66, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Blackboard work in Grade 3. The obtained value of χ^2 (2.66) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Blackboard work in Grade 3.

3d. Influence of Teacher's blackboard work in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Teachers' Blackboard work in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 35.

Table 35

Descriptive Statistics and Results of Chi-square Test for Teachers' Blackboard work in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Blackboard work in Grade 4	Low	82	19	101	2.59
	High	50	5	55	
Total		132	24	156	

Table 35 shows Chi-square values [χ^2 (1, N=156) = 2. 59, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Blackboard work in Grade 4. The obtained value of χ^2 (2.59) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Black board work in Grade 4.

4a. Influence of Course completion in Grade 1 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Course completion in Grade 1 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 36.

Table 36

Descriptive Statistics and Results of Chi-square Test for Course Completion in Grade 1 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Course completion in Grade 1	Low	64	10	74	0.38
	High	68	14	82	
Total		132	24	156	

Table 36 shows Chi-square values [χ^2 (1, N=156) =0.38, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Course completion in Grade I. The obtained value of χ^2 (0.38) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Course completion in Grade I.

4b. Influence of Course completion in Grade 2 on Malayalam Reading achievement Status in Grade 4

Chi^2 test of independence is used to study the influence of Course Completion in Grade 2 on Malayalam Reading achievement Status in Malayalam in Grade 4. The results are given in Table 37.

Table 37

Descriptive Statistics and Results of Chi-square Test for Course completion in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Course Completion in Grade 2	Low	56	12	68	0.47
	High	76	12	88	
Total		132	24	156	

Table 37 shows Chi-square values [χ^2 (1, N=156) = 0.47, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Course completion in Grade 2. The obtained value of χ^2 (0.47) is not significant even at 0.05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Course completion in Grade 2.

4c. Influence of Course completion in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Course completion in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 38.

Table 38

Descriptive Statistics and Results of Chi-square Test for Course completion in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Course completion in Grade 3	Low	93	17	110	0.001
	High	39	7	46	
Total		132	24	156	

Table 38 shows Chi-square values [χ^2 (1, N=156) = 0.001, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Course completion in Grade 3. The obtained value of χ^2 (0.001) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Course completion in Grade 3.

4d.Influence of Course completion in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Course completion in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 39.

Table 39

Descriptive Statistics and Results of Chi-square Test for Course completion in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Course completion in Grade 4	Low	38	9	47	0.73
	High	94	15	109	
Total		132	24	156	

Table 39 shows Chi-square values [χ^2 (1, N=156) = 0.73, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Course completion in Grade 4. The obtained value of χ^2 (0.73) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Course completion in Grade 4.

5a. Influence of Positive reinforcement in Grade 1 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Positive Reinforcement in Grade 1 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 40.

Table 40

Descriptive Statistics and Results of Chi-square Test for Positive Reinforcement in Grade 1 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Reinforcement in Grade 1	Low	46	7	53	.29
	High	86	17	103	
Total		132	24	156	

Table 40 shows Chi-square values [χ^2 (1, N=156) = 0.29, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Reinforcement in Grade 1. The obtained value of χ^2 (0.29) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Reinforcement in Grade 1.

5b. Influence of Positive reinforcement in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Positive Reinforcement in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 41.

Table 41

Descriptive Statistics and Results of Chi-square Test for Positive Reinforcement in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Reinforcement in Grade 2	Low	62	8	70	1.53
	High	70	16	86	
Total		132	24	156	

Table 41 shows Chi-square values [χ^2 (1, N=156) = 1.53, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Reinforcement in Grade 2. The obtained value of χ^2 (1.53) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Reinforcement in Grade 2.

5c. Influence of Positive reinforcement in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Positive Reinforcement in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 42.

Table 42

Descriptive Statistics and Results of Chi-square Test for Positive Reinforcement in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Reinforcement in Grade 3	Low	56	12	68	0.47
	High	76	12	88	
Total		132	24	156	

Table 42 shows Chi-square values [χ^2 (1, N=156) = 0.47, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Reinforcement in Grade 3. The obtained value of χ^2 (0.47) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Reinforcement in Grade 3.

5d. Influence of Positive reinforcement in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Positive Reinforcement in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 43.

Table 43

Descriptive Statistics and Results of Chi-square Test for Positive Reinforcement in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Reinforcement in Grade 4	Low	59	8	67	1.07
	High	73	16	89	
Total		132	24	156	

Table 43 shows Chi-square values [χ^2 (1, N=156) = 1.07, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Reinforcement in Grade 4. The obtained value of χ^2 (1.07) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Reinforcement in Grade 4.

6a. Influence of Engaged Time in Grade 1 on Reading achievement in Malayalam in Grade 4

Chi-square test of independence is used to study the influence of Engaged Time in Grade 1 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 44.

Table 44

Descriptive Statistics and Results of Chi-square Test for Engaged Time in Grade 1 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Engaged Time in Grade 1	Low	38	5	43	0.64
	High	94	19	113	
Total		132	24	156	

Table 44 shows Chi-square values [χ^2 (1, N=156)=0.64, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Engaged Time in Grade 1. The obtained value of χ^2 (0.64) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Engaged Time in Grade 1.

6b. Influence of Engaged Time in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi-square Test of independence is used to study the influence of Engaged Time in Grade 2 on Malayalam Reading Achievement Status in Grade 4. The results are given in Table 45.

Table 45

Descriptive Statistics and Results of Chi-square Test for Engaged Time in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Engaged Time in Grade 2	Low	65	13	78	0.20
	High	67	11	78	
Total		132	24	156	

Table 45 shows Chi-square values [χ^2 (1, N=156) = 0.20, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Engaged Time in Grade 2. The obtained value of χ^2 (0.20) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Engaged Time in Grade 2.

6c. Influence of Engaged Time in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Engaged Time in Grade 3 on Malayalam Reading achievement Status in Malayalam in Grade 4. The results are given in Table 46.

Table 46

Descriptive Statistics and Results of Chi-square Test for Engaged Time in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Engaged Time in Grade 3	Low	47	5	52	1.99
	High	85	19	104	
Total		132	24	156	

Table 46 shows Chi-square values [χ^2 (1, N=156) = 1.99, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Engaged Time in Grade 3. The obtained value of χ^2 (1.99) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Engaged Time in Grade 3.

6d. Influence of Engaged time in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Engaged Time in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 47.

Table 47

Descriptive Statistics and Results of Chi-square Test for Engaged Time in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Engaged Time in Grade 4	Low	43	9	52	0.22
	High	89	15	104	
Total		132	24	156	

Table 47 shows Chi-square values [χ^2 (1, N=156)= 0.22, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Engaged Time in Grade 4. The obtained value of χ^2 (0.22) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Engaged Time in Grade 4.

7a. Influence of Books per student in Grade I on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books per student in Grade 1 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 48.

Table 48

Descriptive Statistics and Results of Chi-square Test for Books/student in Grade I by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books/student in Grade 1	Low	93	18	111	0.20
	High	39	6	45	
Total		132	24	156	

Table 48 shows Chi-square values [χ^2 (1, N=156) = 0.20, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books per student in Grade I. The obtained value of χ^2 (0.20) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books per student in Grade I.

7b. Influence of Books per student in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books per student in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 49.

Table 49

Descriptive Statistics and Results of Chi-square Test for Books per student in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books / student in Grade 2	Low	101	18	119	0.03
	High	31	6	37	
Total		132	24	156	

Table 49 shows Chi-square values [χ^2 (1, N=156) = 0.03, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books per student in Grade 2. The obtained value of χ^2 (0.03) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books per student in Grade 2.

7c. Influence of Books per student in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books per student in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 50.

Table 50

Descriptive Statistics and Results of Chi-square Test for Books per Student in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books per student in Grade 3	Low	93	17	110	0.001
	High	39	7	46	
Total		132	24	156	

Table 50 shows Chi-square values [χ^2 (1, N=156) = 0.001, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books per student in Grade 3. The obtained value of χ^2 (0.001) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books per student in Grade 3.

7d. Influence of Books per student in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books per student in G 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 51.

Table 51

Descriptive Statistics and Results of Chi-square Test for Books per Student in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books/student in Grade 4	Low	98	18	116	0.006
	High	34	6	40	
Total		132	24	156	

Table 51 shows Chi-square values [χ^2 (1, N=156) = 0.006, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books per student in Grade 4. The obtained value of χ^2 (0.006) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books per student in Grade 4.

8a. Influence of Periodicals per student in Grade I on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Periodicals per student in Grade 1 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 52.

Table 52

Descriptive Statistics and Results of Chi-square Test for Periodicals per student in Grade I by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Periodicals/student in Grade 1	Low	62	15	77	1.96
	High	70	9	79	
Total		132	24	156	

Table 52 shows Chi-square values [χ^2 (1, N=156) = 1.96, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Periodicals per student in Grade I. The obtained value of χ^2 (1.96) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Periodicals per student in Grade I.

8b. Influence of Periodicals per student in Grade 2 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Periodicals per student in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 53.

Table 53

Descriptive Statistics and Results of Chi-square Test for Periodicals per Student in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Periodicals/student in Grade 2	Low	89	16	105	0.005
	High	43	8	51	
Total		132	24	156	

Table 53 shows Chi-square values [χ^2 (1, N=156) = 0.005, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Periodicals /student in Grade 2. The obtained value of χ^2 (0.005) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Periodicals per student in Grade 2.

8c. Influence of Periodicals per student in Grade 3 on Malayalam Reading achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Periodicals per student in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 54.

Table 54

Descriptive Statistics and Results of Chi-square Test for Periodicals per student in Grade 3 by Malayalam Reading Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Periodicals/student in Grade 3	Low	92	16	108	0.09
	High	40	8	48	
Total		132	24	156	

Table 54 shows Chi-square values [χ^2 (1, N=156) = 0.09, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Periodicals/student in Grade 3. The obtained value of χ^2 (0.09) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Periodicals per student in Grade 3.

8d. Influence of Periodicals per student in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Periodicals per student in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 55.

Table 55

Descriptive Statistics and Results of Chi-square Test for Periodicals per student in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Periodicals/student in Grade 4	Low	104	20	124	0.26
	High	28	4	32	
Total		132	24	156	

Table 55 shows Chi-square values [χ^2 (1, N=156) = 0.26, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Periodicals per student in Grade 4. The obtained value of χ^2 (0.26) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Periodicals per student in Grade 4.

9a. Influence of Books issued per student in Grade 1on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books issued per student in Grade 1on Malayalam Reading achievement Status in Grade 4. The results are given in Table 56.

Table 56

Descriptive Statistics and Results of Chi-square Test for Books issued per student in Grade 1by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books issued/student Grade 1	Low	61	16	77	3.40
	High	71	8	79	
Total		132	24	156	

Table 56 shows Chi-square values [χ^2 (1, N=156) = 3.40, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books issued per student in Grade I. The obtained value of χ^2 (3.40) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books issued per student in Grade 1.

9b. Influence of Books issued per student in Grade 2 on Malayalam Reading achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Books issued per student in Grade 2 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 57.

Table 57

Descriptive Statistics and Results of Chi-square Test for Books issued per Student in Grade 2 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books issued/student Grade 2	Low	61	15	76	2.16
	High	71	9	80	
Total		132	24	156	

Table 57 shows Chi-square values [χ^2 (1, N=156) = 2.16, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books issued per student in Grade. The obtained value of χ^2 (2.16) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books issued per student in Grade 2.

9c. Influence of Books issued per student in Grade 3 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books issued per student in Grade 3 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 58.

Table 58

Descriptive Statistics and Results of Chi-square Test for Books issued per Student in Grade 3 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books issued/student Grade 3	Low	97	18	115	0.02
	High	35	6	41	
Total		132	24	156	

Table 58 shows Chi-square values [χ^2 (1, N=156) = 0.02, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books issued per student in Grade 3. The obtained value of χ^2 (0.02) is not significant even at .05 level as required value for significance at .05 level with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books issued per student in Grade 3.

9d. Influence of Books issued per student in Grade 4 on Malayalam Reading achievement status in Grade 4

Chi-square test of independence is used to study the influence of Books issued per student in Grade 4 on Malayalam Reading achievement Status in Grade 4. The results are given in Table 59.

Table 59

Descriptive Statistics and Results of Chi-square Test for Books issued per Student in Grade 4 by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Books issued / student Grade 4	Low	48	13	61	2.70
	High	84	11	95	
Total		132	24	156	

Table 59 shows Chi-square values [χ^2 (1, N=156) = 2.70, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Books issued per student in Grade 4. The obtained value of χ^2 (2.70) is not significant even at .05 level as required value for significance at .05 level with df = 1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of Books issued per student in Grade 4.

Conclusion on influence of Instructional variables on Malayalam Reading achievement status

Chi-square test of independence indicated that Malayalam Reading achievement Status in Grade 4 is not significantly associated with the instructional variables, viz; Quality of Teacher pupil relationship (in Grades 1 to 4), Clarity of teachers' verbal communication (in Grades 1 to 4), Blackboard work (in Grades 1 to 4), Course completion (in Grades 1 to 4), Reinforcement (in Grades 1 to 4) and Engaged time (in Grades 1 to 4). Malayalam Reading

achievement Status in Grade 4 is not significantly associated with the variables related to class library; Books per student (in Grades 1 to 4), Periodicals per student (in Grades 1 to 4) and Books issued per student (in Grades 1 to 4).

Influence of Familial Variables on Reading Achievement in Grade 4

Independent samples t-test is used to assess difference in Reading achievement by high and low home language environment. Differences between high and low Home Language Environments were investigated for the cognitive variables and Dependent Variable Reading achievement and are presented in Table 60.

Table 60

Test of Significance of Difference between the Mean Scores of Reading Achievement in Malayalam in Grade 4 by Levels of Home Language Environment

Grouping	Variable	N	Mean	SD	t-value
HLE	Low	49	0.43	0.26	-5.66**
	High	107	0.66	0.18	

**p< .01

Table 60 shows there is significant difference between Reading achievement in Grade 4 of students who has Low Home Language Environment (M=0.43, SD= 0.26, N= 49) and those has High Home Language Environment (M=0.66 , SD= 0.18, N= 107), [t = -5.656, p <.01]. Reading achievement in Grade 4 is significantly higher for students who were high on Home Language Environment than those who were low on Home Language Environment.

The familial variables namely Socio Economic Status (SES), Education level of father, Education level of mother, highest education level in the family, Occupation level of father, Occupation level of mother and Highest occupation level in the family and are categorical variables. So Chi-square test of independence is used to identify the influence of above familial variables on Reading achievement. The results are given below.

Influence of SES on Malayalam Reading Achievement Status in Grade 4

Chi-square test of independence is used to study the influence of SES on Malayalam Reading achievement Status in Grade 4. The results are given in Table 61.

Table 61

Descriptive Statistics and Results of Chi-square Test for SES by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
SES	BPL	64	8	72	1.88
	APL	68	16	84	
Total		132	24	156	

Table 61 shows Chi-square values [χ^2 (1, N=156) = 1.88, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and SES. The obtained value of χ^2 (1.88) is not significant even at .05 level as required value for significance at .05 level

with df=1, is 3.84. That is Malayalam Reading achievement Status in Grade 4 is independent of SES.

Influence of Education Level of Father on Malayalam Reading Achievement Status in Grade 4

Chi square test of independence is used to study the influence of Education level of father on Malayalam Reading achievement Status in Grade 4. The results are given in Table 62.

Table 62

Descriptive Statistics and Results of Chi-square Test for Education level of father by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Education level of father	Lower Primary	7	1	8	1.79
	Upper Primary	22	6	28	
	High school	90	16	106	
	Higher secondary	9	1	10	
	Diploma	1	0	1	
	Degree	1	0	1	
	TTC/BEd	2	0	2	
Total		132	24	156	

Table 62 shows Chi-square values [χ^2 (1, N=156) = 1.79, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Education level of father. The obtained

value of χ^2 (1.79) is not significant even at 0.05 level as required value for significance at .05 level with df=6, is 12.59. That is Malayalam Reading achievement Status in Grade 4 is independent of Education level of father.

Influence of Education level of Mother on Malayalam Reading Achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Education level of mother on Malayalam Reading achievement Status in Grade 4. The results are given in Table 63.

Table 63

Descriptive Statistics and Results of Chi-square Test for Education level of Mother by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Education level of mother	Lower Primary	7	0	7	8.92
	Upper Primary	16	7	23	
	High school	82	16	98	
	Higher secondary	18	0	18	
	Diploma	8	1	9	
	Degree	1	0	1	
Total		132	24	156	

Table 63 shows Chi-square values [χ^2 (1, N=156) = 8.92, $p>.05$] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Education level of mother. The obtained

value of χ^2 (8.92) is not significant even at .05 level as required value for significance at .05 level with df=5, is 11.07. That is Malayalam Reading achievement Status in Grade 4 is independent of Education level of mother.

Influence of Highest Education Level in the Family on Malayalam Reading Achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Highest Education level in the family on Malayalam Reading achievement Status in Grade 4. The results are given in Table 64.

Table 64

Descriptive Statistics and Results of Chi-square Test for Highest Education level in the family by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Highest education level in the family	Lower Primary	1	0	1	4.85
	Upper Primary	8	3	11	
	High school	81	18	99	
	Higher secondary	28	2	30	
	Diploma	2	0	2	
	Degree	9	1	10	
	TTC/BEd	3	0	3	
Total		132	24	156	

Table 64 shows Chi-square values [χ^2 (1, N=156) = 4.85, $p>.05$] which indicates that there is no significant association between Malayalam Reading

achievement Status in Grade 4 and Highest education level in the family. The obtained value of χ^2 (4.85) is not significant even at .05 level as required value for significance at .05 level with df=6, is 12.59. That is Malayalam Reading achievement Status in Grade 4 is independent of Highest education level in the family.

Influence of Occupation Level of Father on Malayalam Reading Achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Occupation level of father on Malayalam Reading achievement Status in Grade 4. The results are given in Table 65

Table 65

Descriptive Statistics and Results of Chi-square Test for Occupation level of Father by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Occupation level of father	No occupation	1	0	1	3.13
	Coolie	28	3	31	
	Semiskilled	36	10	46	
	Skilled	28	5	33	
	Self employed	35	6	41	
	Semi professional	4	0	4	
Total		132	24	156	

Table 65 shows Chi-square values [χ^2 (1, N=156) = 3.13, $p>.05$] which indicates that there is no significant association between Malayalam Reading

achievement Status in Grade 4 and Occupation level of father. The obtained value of χ^2 (3.13) is not significant even at .05 level as required value for significance at .05 level with df=5, is 11.07. That is Malayalam Reading achievement Status in Grade 4 is independent of Occupation level of father.

Influence of Occupation Level of Mother on Malayalam Reading Achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Occupation level of mother on Malayalam Reading achievement Status in Grade 4. The results are given in Table 66

Table 66

Descriptive Statistics and Results of Chi-square Test for Occupation Level of Mother by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Occupation Level of Mother	No occupation	67	21	88	11.86*
	Coolie	37	3	40	
	Semiskilled	14	0	14	
	Skilled	2	0	2	
	Self employed	11	0	11	
	Semi professional	1	0	1	
Total		132	24	156	

*P< .05

Table 66 shows Chi-square values [χ^2 (1, N=156) = 11.86, $p<.05$] which indicates that there is significant association between Malayalam Reading

achievement Status in Grade 4 and Occupation level of mother. The obtained value of χ^2 (11.86) is significant at .05 level as required value for significance at .05 level with df = 5, is 11.07. That is Malayalam Reading achievement Status in Grade 4 is significantly associated with Occupation level of mother.

Influence of Highest Occupation Level in the Family on Malayalam Reading Achievement Status in Grade 4

Chi-square test of independence is used to study the influence of Highest Occupation level in the family on Malayalam Reading achievement Status in Grade 4. The results are given in Table 67.

Table 67

Descriptive Statistics and Results of Chi-square Test for Highest Occupation Level in the Family by Malayalam Reading Achievement Status in Grade 4

		Reading Status		Total	χ^2
		Normal Reading	Reading Difficult		
Highest occupation level in the family	Coolie	20	3	23	3.28
	Semiskilled	34	10	44	
	Skilled	29	5	34	
	Self employed	44	6	50	
	Semi professional	5	0	5	
Total		132	24	156	

Table 67 shows Chi-square values [χ^2 (1, N=156) = 3.28, p> 0.05] which indicates that there is no significant association between Malayalam Reading achievement Status in Grade 4 and Highest occupation level in the family. The obtained value of χ^2 (3.28) is not significant even at .05 level as required

value for significance at .05 level with df=4, is 9.49. That is Malayalam Reading achievement Status in Grade 4 is independent of Highest occupation level in the family.

Conclusion on influence of Familial variables on Malayalam Reading achievement status

Chi-square test of independence indicated that Malayalam Reading achievement Status in Grade 4 is significantly associated the Occupation level of mother**.** Ratio of Reading Difficult to Normal Readers among mothers with no occupation is higher than students with mothers belonging to other occupational categories like coolie, semiskilled, skilled, self employed and semi professional. Malayalam Reading achievement Status in Grade 4 is not significantly associated with the other familial variables namely SES, Education level of father, Education level of mother, highest education level in the family, Occupation level of father and Highest occupation level in the family.

Predictors of Malayalam Reading Difficulty at the End of Primary Schooling

From mean difference analysis and chi square test of independence, it is found that thirteen variables have significantly associated with Malayalam Reading achievement Status in Grade 4. These variables are used as predictors in binary logistic regression to predict membership of in Reading Difficult (RD) or Normal Reading (NR) categories with forward method to arrive at the most parsimonious model. Logistic regression calculates the probability of Normal Readers (NR) over the probability of Reading Difficult (RD). Thirteen variables used as predictors, maximum score for

each, the cut point in each and the percentage of students identified by the cut score are summarized in Table 68.

Table 68

Predictors of Reading Difficulty at the End of Primary Schooling

Tests	Maximum Score	Cut Point	Sensitivity
Letter Reading	32	≤ 19	79.2
Phonological awareness	15	≤ 7	66.7
Morphological awareness	19	≤ 9	70.8
Dictated Spelling	33	≤ 8	83.3
Nonverbal Intelligence	36	≤ 14	58.3
Digit span	17	≤ 6	79.2
Story Recall	10	≤ 4	83.3
Teacher-pupil interaction scale (1st standard)	82	≤ 69	75
Teacher-pupil interaction scale (2nd standard)	82	≤ 68	66.7
Teacher-pupil interaction scale (3rd standard)	82	≤ 65	54.2
Teacher-pupil interaction scale (4th standard)	82	≤ 57	70.8
Home Language Environment	94	≤ 52	79.2
Occupation level of mother	4	= 0	87.5

Table 68 shows the variables used for predicting the RD students, maximum score of each variables, the cut score on which the students with RD was tentatively identified and the percentage of students in the total sample who were provisionally identified as RD using each of these cut score as the criterion. Three separate binary logistic regression analyses were conducted to predict RD by cognitive, instructional and familial variables. This was followed with a binary logistic regression analysis using only those predictors identified from cognitive, instructional and familial variables in the previous phase.

Cognitive Variables as Predictors of Reading Difficulty in Malayalam among Grade 4 Students

Result of binary logistic regression to predict the reading difficulty from among the seven cognitive variables namely Letter reading, Phonological awareness, Morphological awareness, Dictated spelling, Non verbal intelligence, Digit span and Story recall in Grade 1 through Grade 4 is given in Table 69.

Table 69

Logistic Regression Analysis for Identifying RD Students by Cognitive Variables

Predictor	B	S.E	Wald	df	Sig.	Exp(B)
Letter Reading	-1.48	0.64	5.30	1	.02	0.23
PA	-1.70	0.62	7.62	1	.006	0.18
MA	-1.63	0.62	6.83	1	.009	0.20
Dictated Spelling	-1.82	0.69	7.04	1	.008	0.16
Constant	1.79	0.59	9.26	1	.002	5.99
Cox & Snell R Square=0.33						
Nagelkerke R Square=0.57						
Model Chi-square (4)= 61.98, p<.01						
Specificity (% of students rightly Identified as NR) 94.7 Sensitivity (% of students rightly Identified as RD) 70.8 Overall (% of students rightly screened as RD or NR) 91.0						

Binary logistic regression was performed to predict the impact of the cognitive variables on Reading Difficulty of Grade 4 students. The model included seven cognitive variables (Letter reading, Phonological awareness, Morphological awareness, Dictated spelling, Non verbal intelligence, Digit span, Story recall) as predictors. A test of the model with four predictors

(Letter reading, Phonological awareness, Morphological awareness, Dictated spelling) from among the seven variables for identifying RD among lower primary students (Table 69) against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between RD and NR [Chi-square (4) = 61.98, p<.01]. The other three predictor tasks were dropped from the model as their effects are not significant by the Wald statistic. The model with Letter Reading, PA, MA, Dictated Spelling as a whole explained between 33% (Cox and Snell R square) and 57% (Nagelkerke R squared) of the variance in reading difficulty, and the prediction success overall was 91.0%, [94.7% for NR (specificity) and 70.8 % for RD (sensitivity)]. Negative B values indicate that an increase in the independent variable score will result in a decreased probability of the case recording a score of 1 in the dependent variable. The odds ratio of 0.23 for Letter Reading is less than 1; indicating that an improvement in letter reading status makes students 0.23 times less likely to become RD.

In other words, if the student cannot read more than 18 Grade appropriate letters out of 33 letters given in Grade 1, the student is 4.35 times more likely to be identified as RD in Grade 4. The student who can't achieve more than 6 scores in Phonological awareness test out of 15 total score in Grade 1, the student is 5.56 times more likely to become RD in Grade 4. The student who can't achieve more than 8 scores in Morphological awareness test out of total 19 score in Grade 2, the student is 5 times more likely to become RD in Grade 4. The student who can't write 7 grade appropriate words with correct spelling in a Dictated spelling test out of 33 words given in Grade 2, the student is 6.25 times more likely to be identified as RD in Grade 4.

Letter reading and Morphological awareness are the most important variables in terms of effect on deciding RD in Malayalam among lower primary students. If the child cannot read more than 19 letters out of 33 in Grade 1, there is a possibility to become RD in Grade 4. Similarly, failing to achieve more than 7 scores out of 15 for Morphological awareness in Grade 2, 9 scores out of 19 for Phonological awareness in Grade1, 8 scores out of 33 for Dictated spelling in Grade 2 will help in significantly predicting the identification of Malayalam Reading difficulty by Grade 4.

Instructional Variables as Predictors of Reading Difficulty in Malayalam among Grade 4 Students

Result of binary logistic regression to predict the reading difficulty from among the four instructional variables namely Teacher-pupil interaction (TPI) in Grade 1, Teacher-pupil interaction scale Grade 2, Teacher-pupil interaction scale Grade 3 and Teacher pupil interaction scale Grade 4 is given in Table 70.

Table 70

Binary Logistic Regression Table for Instructional Variables

Predictor	B	S.E	Wald	df	Sig.	Exp(B)
TPI in Grade 4	-1.02	0.47	4.77	1	.03	0.36
Constant	-.70	0.34	4.18	1	.04	0.50
Cox & Snell R Square=0.08						
Nagelkerke R Square=0.13						
Model Chi-square (1)= 12.19 , p<.01						
Specificity (% of students rightly Identified as NR) 100.0						
Sensitivity (% of students rightly Identified as RD).0						
Overall (% of students rightly screened as RD or NR) 84.6						

Binary logistic regression was performed to predict the impact of four instructional variables on Reading Difficulty of Grade 4 students. These were the Teacher Pupil Interaction in Grade 1through Grade 4. The model included four instructional variables Teacher-pupil interaction in Grade 1 Teacher-pupil interaction in Grade 2, Teacher-pupil interaction in Grade 3 and Teacher pupil interaction in Grade 4. A test of the model with only one predictor (Teacher-pupil interaction scale Grade 4) against a constant only model was statistically significant, indicating that Teacher -pupil interaction in Grade 4 reliably distinguished between RD and NR (Chi-square (1) = 12.19, $p<.01$). Teacher-pupil interaction in Grade 1 through 3 was dropped from the model as their effects are not significant by the Wald statistic. The model as a whole explained between 8% (Cox and Snell R square) and 13% (Nagelkerke R squared) of the variance in reading difficulty, and the prediction success overall was 84.6%, [0 % for RD (sensitivity) and 100 % for NR (specificity)]. Negative B values indicate that an increase in Teacher-pupil interaction will result in a decreased probability of the case being identified as RD. The Exp(B) presents the extent to which raising Teacher-pupil interaction to high level influences the odds ratio which is a measure of effect size. The odds ratio of 0.36 for Teacher-pupil interaction in Grade 4 is less than 1, indicating that an increase in Teacher-pupil interaction in Grade 4 make students 0.36 times less likely to become RD. The student who is low on TPI is 2.78 times more likely to become RD, than those who are high on TPI in Grade 4. Teacher-pupil interaction in Grade 4 is an important variable in terms of deciding RD in Malayalam among lower primary students.

Familial Variables as Predictors of Reading Difficulty in Malayalam among Grade 4 Students

Result of binary logistic regression to predict the reading difficulty in Malayalam of Grade 4 students from mother's occupation and Home Language Environment is given in Table 71. These were identified in earlier statistical analysis as significantly influencing Reading achievement in Malayalam.

Table 71

Binary Logistic Regression Table for Familial Variables

Predictor	B	S.E	Wald	df	Sig.	Exp(B)
Occupation level of mother	-1.64	0.67	6.06	1	.01	0.19
Home Language Environment	-.08	0.02	21.19	1	.000	0.92
Constant	2.86	0.86	11.02	1	.001	17.50
Cox & Snell R Square=0.26						
Nagelkerke R Square=0.45						
Model Chi-square (2)= 47.14, p<.01						
Specificity (% of students rightly Identified as NR) 96.2						
Sensitivity (% of students rightly Identified as RD) 41.7						
Overall (% of students rightly screened as RD or NR) 87.8						

Binary logistic regression was performed to predict the impact of Occupation level of mother, HLE on reading difficulty of Grade 4 students. A test of the model with these two predictors (Occupation level of mother, HLE) for identifying RD among lower primary students (Table 71) against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between RD and NR (Chi-square (2) = 47.14, p<.01).

The model as a whole explained between 26% (Cox and Snell R square) and 45% (Nagelkerke R squared) of the variance in Reading Difficulty, and the prediction success overall was 87.8%, [41.7% for RD (sensitivity) and 96.2 % for NR (specificity)]. Negative B values indicate that an increase in the independent variable score will result in a decreased probability of the case being identified as RD. The odds ratio of 0.92 for HLE is less than 1, indicating that an increase in HLE makes students 0.92 times less likely to become RD. i.e. The student who is low on HLE is 1.09 times more likely to become RD, than those who are high on HLE. The odds ratio of 0.19 for Occupation level of mother was less than 1, indicating that mother with occupation other than no occupation students were 0.19 times less likely to become RD. i.e. The student who has an unemployed mother is 5.26 times more likely to become RD, than with an employed mother.

HLE and Occupation level of mother are important familial variables in terms of effect on deciding RD in Malayalam among lower primary students. If the child doesn't owe a good language environment at home and the mother is unemployed, there will be a possibility for the child to become RD.

Efficiency of Significant Cognitive Variables, Instructional Variables and Familial Variables in Predicting Reading Difficulty in Malayalam in Grade 4

Category wise regression analysis of cognitive, instructional and familial variables helped to identify Letter reading, Phonological awareness, Morphological awareness, Dictated spelling, Teacher Pupil Interaction in Grade 4, Occupation level of mother and Home Language Environment as the

significant predictors of Malayalam Reading Difficulty. These seven variables were together entered as predictors in binary regression test their combined predictive efficiency on RD. Results are in the Table 72.

Table 72

Binary Logistic Regression Table for the Selected Predictors from Cognitive, Instructional and Familial Variables

Predictor	B	S.E	Wald	df	Sig.	Exp(B)
Phonological awareness	-2.92	0.73	15.82	1	.000	0.05
Morphological awareness	-2.36	0.73	10.54	1	.001	0.09
Home Language Environment	-2.48	0.72	11.92	1	.001	0.08
Occupation level of Mother	-2.38	0.89	7.23	1	.007	0.09
Constant	3.23	0.84	14.97	1	.000	25.31
Cox & Snell R Square=0.38						
Nagelkerke R Square=0.65						
Model Chi-square (5)= 73.82, p<.01						
Specificity (% of students rightly Identified as NR) 94.7						
Sensitivity (% of students rightly Identified as RD) 79.2						
Overall (% of students rightly screened as RD or NR)92.3						

Binary logistic regression was performed to predict the impact from the seven select predictors from cognitive, instructional and familial variables on Malayalam Reading Difficulty of Grade 4 students. The model included seven independent variables (Letter Reading, Phonological awareness, Morphological awareness, Dictated spelling, TPI Grade 4, HLE and

Occupation level of mother). A test of the model with 4 predictors (Phonological awareness, Morphological awareness, HLE and Occupation level of mother) from among the 7 variables for identifying RD among lower primary students (Table 72) against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between RD and NR (Chi-square (5)= 73.82, $p<.01$). The other three predictors were dropped from the model as their effects are not significant by the Wald statistic. The model as a whole explained between 38% (Cox and Snell R square) and 65% (Nagelkerke R squared) of the variance in Reading Difficulty, and the prediction success overall was 92.0%, [94.7% for NR (Specificity) and 79.2 % for RD (sensitivity)]. Negative B values indicate that an increase in the independent variable score will result in a decreased probability of the case being an RD.

The odds ratio of .05 for phonological awareness is less than 1, indicating that with an increase in Phonological awareness, students are 0.05 times less likely to become RD. That is if a student who cannot achieve more than 6 scores out of 15 in Phonological awareness test in Grade 1, that the student is 20 times more likely to become RD. The odds ratio of 0.09 for Morphological awareness is less than 1, indicating that with an increase in Morphological awareness, students were 0.09 times less likely to become RD. The student who cannot achieve more than 8 scores out of 19 in Morphological awareness test in Grade 2, the student is 11.11 times more likely to become RD. The odds ratio of 0.08 for HLE is less than 1, indicating that an increase in HLE makes students 0.08 times less likely to become RD. The student who is low on HLE is 12.5 times more likely to become RD, than

those who are high on HLE. The odds ratio of 0.09 for Occupation level of mother was less than 1, indicating that with an increase in Occupation level of mother students were 0.09 times less likely to become RD. i.e. The student who has an unemployed mother is 11.11 times more likely to become RD, than those with an employed mother.

Summary of Findings

Mean difference analysis and Chi-square test of independence were used to assess difference in Reading achievement of lower primary students by cognitive instructional and familial variables. The analysis revealed that the cognitive variables namely, letter reading in Grade 1, Phonological awareness in Grade 1, Morphological awareness, Dictated spelling and Non-verbal intelligence in Grade 2, Story recall and Digit span in Grade 3 are significantly associated with Malayalam Reading Achievement. Likewise, instructional variables Teacher pupil interaction in Grade 1, teacher pupil interaction in Grade 2, teacher pupil interaction in Grade 3, teacher pupil interaction in Grade 4 and Home Language Environment, Occupation level of mother are significantly associated with Reading achievement in Grade 4.

However, the cognitive variable Picture Recall in Grade 3 and instructional variables Quality of Teacher Pupil Relationship in Grade 1 to 4, Clarity of teachers' verbal communication in Grade 1 to 4, Blackboard work in Grade 1 to 4, Course Completion in Grade 1 to 4, Reinforcement in Grade 1 to 4, Engaged time in Grade 1 to 4, and the variables related to class library namely Books per student in Grade 1 to 4, Periodicals per student in Grade 1 to 4, Books issued per student Grade 1 to 4, and SES, Education level of

father, or mother, highest education and occupation level in the family and Occupation level of father are not significantly associated with Reading achievement in Grade 4.

Binary logistic regression was executed separately for the cognitive, instructional and familial variables which have significant relation with Reading achievement to predict Reading Difficulty among Grade 4 students. Letter Reading, Phonological awareness, Morphological awareness, Dictated spelling are identified as predictors of Reading Difficulty from cognitive variables and the prediction success overall was 91.0%, [94.7% for RD (sensitivity) and 70.8 % for NR (specificity)]. Among instructional variables teacher pupil interaction in Grade 4 is found to be the only significant predictor of Reading Difficulty and the prediction success overall was 84.6%, [100% for RD (sensitivity) and 0 % for NR (specificity)]. This model doesn't have specificity to identify normal readers. Occupation level of mother and HLE are identified as predictors of Reading Difficulty from familial variables and prediction success overall was 87.8%, [96.2% for RD (sensitivity) and 41.7 % for NR (specificity)].

Binary logistic regression was executed together for the cognitive, instructional and familial variables which were identified as the predictors of Reading Difficulty to find out how much these three sets of variables together predict Reading Difficulty. Morphological awareness, Phonological awareness, Occupation level mother and HLE are identified as predictors of Reading Difficulty from cognitive, instructional and familial variables and prediction success overall was 92.3%,[94.7% for RD (sensitivity) and 79.2 % for NR (specificity)].

Tenability of Hypotheses

Tenability of hypotheses formulated for the study were verified in view of the findings and are commented below

1. Hypothesis 1 states that Reading Achievement in Malayalam among Lower Primary students differ significantly by the level of cognitive variables viz.,

    a. Letter Reading
    b. Phonological awareness
    c. Morphological awareness
    d. Dictated spelling
    e. Non verbal intelligence
    f. Picture Recall
    g. Digit span
    h. Story Recall

    Analysis of data revealed that there was significant difference between reading achievements of Grade 4 students who performed high and low on letter reading and phonological awareness in Grade 1, morphological awareness and Dictated Spelling in Grade 2, Non –Verbal Intelligence, Story Recall and Digit span in Grade 3($p<.05$). But there was no significant difference between Reading achievements of Grade 4 students who performed high and low on Picture Recall in Grade 3. Hence hypothesis 1is partially accepted.

2. Hypothesis 2 states that Reading Achievement in Malayalam among Lower Primary students differ significantly by the level of Teacher Pupil Interaction.

    Analysis of data revealed that there was significant difference in Reading achievement of Grade 4 students who experienced high and low

Teacher Pupil Interaction in Grades 1, 2, 3 and 4. Hence hypothesis 2 is fully accepted.

3. Hypothesis 3 states that Reading Achievement in Malayalam of lower primary students is significantly dependent on the instructional variables namely,

    a. Quality of Teacher Pupil Relationship
    b. Clarity of Teacher's verbal communication
    c. Quality of Teacher's Blackboard work
    d. Course Completion
    e. Teacher Reinforcement
    f. Engaged Time
    g. Books per student in the Class library
    h. Periodicals per student in the Class library
    i. Books issued per student in the Class library

    Analysis indicated that Reading achievement in Grade 4 was not significantly associated with the instructional variables namely Quality of Teacher Pupil Relationship in Grade 1 to 4, Clarity of verbal communication in Grade 1 to 4, Blackboard work in Grade 1 to 4, Course Completion in Grade 1 to 4, Reinforcement in Grade 1 to 4, Engaged Time in Grade 1 to 4 and the variables related to class library namely Books per student in Grade 1 to 4, Periodicals per student in Grade 1 to 4, Books issued per student Grade 1 to 4. So, hypothesis 3 is rejected.

4. Hypothesis 4 states that Reading achievement in Malayalam among Lower Primary students differ significantly by the level of Home Language Environment.

   Analysis revealed that Reading achievement in Grade 4 is significantly higher for students who were high on Home Language Environment than those who were low on Home Language Environment. So, hypothesis 4 is accepted.

5. Hypothesis 5 states that Reading achievement in Malayalam of lower primary students is significantly depend on their

   a. Socio-Economic Status (APL/BPL)
   b. Education level of father
   c. Education level of mother
   d. Highest education level in the family
   e. Occupation level of father
   f. Occupation level of mother
   g. Highest occupation level in the family

   Analysis revealed that Reading achievement in Grade 4 was significantly dependent on the Occupation level of mother**.** However, Reading achievement in Grade 4 was not significantly dependent on the familial variables namely SES, Education level of father, Education level of mother, highest education level in the family, Occupation level of father, highest occupation level in the family. Hence hypothesis 5 is partially accepted.

6. Hypothesis 6 states that there will be significant combined influence of cognitive variables on reading status in Malayalam of Grade 4 students.

   From among the seven cognitive variables (Letter Reading, PA, MA, Dictated Spelling, Non verbal Intelligence, Digit span, Story Recall)

4 significant predictors (Letter Reading, PA, MA, Dictated Spelling) were identified. Hence hypothesis 6 is accepted.

7. Hypothesis 7 states that there will be significant combined influence of instructional variables on reading status in Malayalam of Grade 4 students.

   From among the four variables (Teacher-pupil interaction in Grade 1 Teacher-pupil interaction in Grade 2, Teacher-pupil interaction in Grade 3, Teacher -pupil interaction in Grade 4) one significant predictor (Teacher -pupil interaction in Grade 4) was identified. So hypothesis 7 is partially accepted.

8. Hypothesis 8 states that there will be significant combined influence of familial variables on reading status in Malayalam of 4 students.

   Two variables namely, Occupation level of mother and HLE are identified as significant predictors of reading status in Malayalam of Grade 4 students. So, hypothesis 8 is accepted.

9. Hypothesis 9 states that the reading status in Malayalam by Grade 4 students can be significantly predicted from a set of cognitive, instructional and familial variables.

   From among the seven variables namely, Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, TPI in Grade 4, HLE and Occupation level of mother four predictors viz; PA, MA, Occupation level of mother and HLE were identified as significant predictors of reading status in Malayalam of Grade 4 students. So, hypothesis 9 is accepted.

Chapter V

Summary, Findings, and Suggestions

- Study in Retrospect
- Variables Selected for the Study
- Research Questions
- Objectives of the Study
- Hypotheses
- Methodology
- Major Findings of the Study
- Tenability of Hypotheses
- Conclusion
- Educational Implications of the Study
- Limitations of the Study
- Suggestions for Further Research

SUMMARY, FINDINGS AND SUGGESTIONS

This chapter provides an overview of the important events in implementation of the study, major findings of the study and its significance in the present educational settings, suggestions for improving practices in the area of reading in the lower primary level and suggestions for further research in concise. The chapter is organized in the following headings.

- Study in Retrospect
- Major Findings of the Study
- Conclusion
- Educational Implications of the Study
- Suggestions for Further Research

Study in Retrospect

The intention of the present study was to find out the familial, cognitive and instructional factors related with reading difficulties in Malayalam of students in Grade 4 in the lower primary schools of Kerala. Hence the present study is restated as An Investigation of Select Familial, Cognitive and Instructional Variables Leading to Reading Difficulty in Malayalam among Lower Primary Students.

Variables Selected for the Study

The Dependent Variables and Independent Variables selected for the study are as follows.

Dependent Variable

Dependent variable in this study is Reading Achievement status in Malayalam at the end of Grade 4. Reading Achievement in Malayalam at the

end of Grade 4 is measured as mean of pronunciation, reading fluency and reading comprehension, with equal weightage to all three dimensions. Reading Difficulty in Malayalam is denoted as falling below the 25th percentile on any two of the three dimensions of reading achievement viz., reading fluency, reading comprehension, and reading fluency, and teacher identification of the student as reading difficult.

Independent Variables

Cognitive variables

- Nonverbal Intelligence
- Picture Recall
- Digit span
- Story Recall
- Phonological awareness
- Morphological awareness
- Letter reading
- Dictated Spelling

Instructional Variables

- Teacher pupil interaction (in Grade 1, 2, 3 and 4)
- Quality of teacher pupil relationship (in Grade 1, 2, 3 and 4)
- Clarity of verbal communication (in Grade 1, 2, 3 and 4)
- Quality of Blackboard work (in Grade 1, 2, 3 and 4)
- Course Completion (in Grade 1, 2, 3 and 4)

- Reinforcement (in Grade 1, 2, 3 and 4)
- Engaged time (in Grade 1, 2, 3 and 4)
- Books per student in class library (in Grade 1, 2, 3 and 4)
- Periodical per student in class library (in Grade 1, 2, 3 and 4)
- Books issued per student (in Grade 1, 2, 3 and 4)

Familial variables

- Socio-Economic Status (APL/BPL)
- Education level of father
- Education level of mother
- Highest education level in the family
- Occupation level of father
- Occupation level of mother
- Highest occupation level in the family
- Home Language Environment

Research Questions

Do cognitive, instructional and familial variables in Grades 1 to 4 lead to reading difficulty in Malayalam in Grade 4? If yes, which among the select cognitive instructional and familial variables in Grades 1 to 4 help predict reading difficulty in Grade 4? Can the set of variables from among the original list of variables are sensitive enough to specifically predict reading status in Grade 4? If so, which combination of variables helps predict reading difficulty in Malayalam of Grade 4 students?

Objectives of the Study

The major objective of this study is to identify the cognitive, instructional and familial factors associated with Reading Difficulty in Malayalam of students in lower primary schools of Kerala. Specific objectives set for this study are the following.

1) To identify the cognitive, instructional and familial variables significantly influencing Reading Achievement in Malayalam by the end of Lower Primary Schooling.
2) To identify significant predictors of Reading Difficulty in Malayalam at the end of Lower Primary Schooling from among each set of variables viz.,
    a. Cognitive
    b. Instructional
    c. Familial
3) To estimate efficiency of the significant cognitive, instructional and familial variables in predicting Malayalam Reading Difficulty status of students at the end of lower primary schooling.

Hypotheses

1. Reading Achievement Malayalam among Lower Primary students differ significantly by the level of cognitive variables viz.,
    a. Letter reading
    b. Phonological awareness
    c. Morphological awareness
    d. Dictated spelling
    e. Non verbal intelligence
    f. Picture recall
    g. Digit span
    h. Story recall

2. Reading Achievement in Malayalam among Lower Primary students differ significantly by the level of Teacher Pupil Interaction.
3. Reading Achievement in Malayalam of Lower Primary students is significantly dependent on the instructional variables namely,
    a. Quality of teacher pupil relationship
    b. Clarity of teacher's verbal communication
    c. Quality of Blackboard work
    d. Course completion
    e. Teacher reinforcement
    f. Engaged time
    g. Books per student in the class library
    h. Periodicals per student in the class library
    i. Books issued per student in the class library
4. Reading achievement in Malayalam among Lower Primary students differ significantly by the level of Home Language Environment.
5. Reading achievement in Malayalam of Lower Primary students is significantly dependent on their
    a. Socio-Economic Status (APL/BPL)
    b. Education level of father
    c. Education level of mother
    d. Highest education level in the family
    e. Occupation level of father
    f. Occupation level of mother
    g. Highest occupation level in the family

6. There will be significant combined influence of cognitive variables on reading status in Malayalam of Grade 4 students.
7. There will be significant combined influence of instructional variables on reading status in Malayalam of Grade 4 students.
8. There will be significant combined influence of familial variables on reading status in Malayalam of Grade 4 students.
9. The reading status in Malayalam by Grade 4 students can be significantly predicted from a set of cognitive, instructional and familial variables.

Methodology in Brief

Design of the Study

This study adopted a longitudinal design and conducted a series of cross sectional observations using appropriate tools and techniques in a select sample for a period of 3 ½ years covering Grade 1 to 4.

Sample for the Study

The study began with 197 Grade 1 students of 11 lower primary schools in specific in two villages, Perinjanam and Kaipamangalam in Thrissur district and they were followed through to Grade 4. The final sample was 156 because of attrition. The sample also include the teachers (N=52) who instruct the mother tongue for these students.

Tools Used for the Study

Sixteen tools were used in the present study and it included Tests, Questionnaire for Teachers, Battery of Observation Schedules for Classroom

practices, Rating Scales and General data Sheet. Coloured Progressive Matrices (Raven, 1978),Digit Span sub test of Malin's Intelligence Scale for Indian Children (MISIC) (1969) and a part of Test of Fundamental Reading Skills in Malayalam (Abdul Gafoor & Kaleeludeen, 2008)were adopted.

1. Raven's Progressive Matrices (Coloured)

Raven's Coloured Progressive Matrices is used to measure non verbal intelligence of the students.

2. Test of Phonological Awareness

Test of Phonological Awareness was designed and developed to be used with students in 1st standard and 2nd standard with two subtests, Picture-Sound Recognition and Rhyme Production. There is 15 items in the phonological Awareness Test. For empirical validation of the test confirmatory factor analysis is used.

3. Test of Letter Reading

This test was developed for students in Grade 1 Thirty two letter-cards were shown to the child individually; one card at a time, for 10 seconds and the child is asked to read it. For empirical validation confirmatory factor analysis is executed.

4. Test of Morphological Awareness

Test of Morphological Awareness with 19 items has five components namely Gender (7 items), Number (4 items), Compound Word(4 items), Derived Word(2 items), and Kevala/Prayojaka (verb forms indicating volitional acts/external prompt, respectively) (2 items).

5. Test of Dictated Spelling in Malayalam

This group test measuring spelling knowledge of the 2nd Grade student consists of 33 simple, meaningful and two-letter, three-letter words representing the letters and vowel diacritics in Grade 1 and 2. Content Validity Index for each dimension was calculated and then the CVI of the tool was found to be 0.96.

6. Memory Test

Digit span, Picture recall and Story recall are used to measure the memory of lower primary students.

Digit Span

Digit Span Test (Alternate) is adopted from MISIC-Malins Intelligence Scale for Indian Children. This test consists of two sets of overall number series in the increasing order, one forwards and other backwards.

Picture-Recall

This Test is to measure the visual memory of student with

15 Colour pictures of objects familiar to the children arranged on a chart administered individually to the children. The picture chart was shown to the child for 1 minute. And after 3 minute the child is asked to recall the picture in 1 minute. Picture -recall test is correlated positively with digit span and but the correlation coefficient is low; r=.24 (N=38).

Story-Recall

This test consists of two stories from the classic book Panchatantra which will not exceed 2 minutes in the presentation (recorded in a voice

recorder) administered individually. After listening to stories 10 questions were asked from the stories. Story -recall test is positively correlated with digit span and the correlation coefficient is moderate; r=.55 (N=53).

7. Battery of Observation Schedules for Classroom Practices

This observation schedule prepared to understand the difference in classroom practices of teachers by adopting the frame of micro-teaching consists of the following dimensions.

1. Teacher behavior in the classroom
2. Clarity of verbal communication
3. Blackboard work
4. Course Completion
5. Reinforcement
6. Academic time use

The schedule was filled by the investigator sitting and observing in the class room while checking the notebooks of students. Three visits were conducted to collect data.

8. Scale of Home Language Environment

Scale of Home Language Environment is used to measure language fostering environment at home. The scale has 47 statements on five dimensions which are, Parental communication with children, Familiarising with language forms, Parental support/assistance and Utilization of resources. The Scale of Home Language Environment was administered individually. The investigator asked questions and recorded the responses immediately in the response sheet.

9. Teacher Pupil Interaction Scale

Teacher Pupil Interaction Scale for Grade 4 students has 42items under seven dimensions of teacher student relationship in the class room. The Scale was administered individually. The 7 dimensions namely individual attention, emotional bond, enhancing student participation, adequate time, outside classroom assignments, appreciation and whole class communication were confirmed through factor analysis evidencing predictable loading on the proposed dimensions.

10. Scale of Course Completion for Teachers

This scale was used to find out extend of course completion in each term of Grades 1 through 4. The investigator enquired the teachers and recorded their responses.

11. Class Library Information Blank

This tool assessed the content and functioning of class libraries. The information collected from the class teachers of each class.

12. General Data Sheet

It was used to collect information about economic status, parental and family education and parental and family occupation.

13. Test of Reading Fluency and Pronunciation

Test of Reading Fluency and Pronunciation of Grade 4 students consists of a story text prepared by incorporating 31 letters selected through item analysis of 104 letters originally identified through text analysis. The child was asked to read the text individually. And then scoring 1for each right pronunciation. Reading fluency is scored by means of scale on Expression,

Phrasing, Self correction, Word beginnings and endings, Substitution, Omissions, Repetition and regression. Content Validity Index of the fluency test was found to be 0.97 and that of test on pronunciation was 0.99.

14. Reading Comprehension Test

Reading comprehension Test was used to measure reading comprehension ability of Grade 4 students. Investigator adopted a part of reading test prepared by Abdul Gafoor and Kaleeludeen. This test contained 8 items and was administered in the whole classroom within 20 minutes duration. Validity indicated in this test correlating strongly with another Reading Comprehension Test (Sumangala & Abdul Nazar, 1999) r =.84 (N=30).

Statistical Techniques Used for the Study

Basic descriptive statistics, Shapiro Wilk statistics, Standardized Skewness and Kurtosis, Independent samples t-test, Chi square Test of Independence and Multiple binary Logistic Regression were used for data analysis.

Basic descriptive statistics

The important statistical indices namely mean, median, mode, standard deviation, skewness and kurtosis of the score distribution in the sample were calculated for dependant variables and for all continuous independent variables.

Shapiro Wilk statistics

Shapiro-Wilk test is used to test the assumption of normality. The null-hypothesis of Shapiro-wilk test is that the population is normally distributed. It is a statistical test of the hypothesis that sample is drawn from a normally distributed population.

Standardized skewness and kurtosis

Other indices of normality used in this study are standardized skewness and standardized kurtosis. Standardized skewness is examined against table value +3.29. Standardized Skewness = Statistic/Std. Error. For medium-sized samples ($50 < n < 300$), the null hypothesis is rejected at absolute z-value over 3.29 ($p<.05$), and the distribution of the sample is considered non-normal (Kim, 2013).

Mean difference analysis

Independent samples t-tests used to assess difference in reading achievement by high and low level performance in cognitive, instructional and familial variable. This is done to find out the variables associated with reading comprehension. The difference in the mean scores was tested for significance by finding out of the ‘t’ value

Chi square test of independence

Chi Square Test of Independence is used to assess difference in reading achievement by high and low level performance in instructional and familial variable. This is done to find which are the categorical variables associated with reading comprehension.

Binary logistic regression

Binary Logistic Regression is used to find out the predictors of reading achievement from cognitive, instructional and familial variable.

Statistical analysis has been done using SPSS for windows version 20.

Major Findings of the Study

The findings of the study can be summarized as follows

Letter reading and phonological awareness in Grade 1, morphological awareness, dictated spelling and non –verbal intelligence in grade 2, and digit span and story recall (but not picture recall) in Grade 3 significantly affect reading achievement in Grade 4.

1. Reading Achievement in Grade 4 is significantly higher for students who were:
   i) High on letter reading in Grade 1 than those who were low on the letter reading in Grade 1($p < .01$).
   ii) High on phonological awareness in Grade 1 than those who were low on the phonological awareness in Grade 1($p < .01$).
   iii) High on morphological awareness in Grade 2 than those who were low on the morphological awareness in Grade 2($p < .01$).
   iv) High on Dictated Spelling in Grade 2 than those who were low on Dictated Spelling in Grade 2($p < .01$).
   v) High on Non –Verbal Intelligence in Grade 2 than those who were low on Non –Verbal Intelligence in Grade 2($p < .05$).
   vi) High on Digit Span in Grade 3 than those who were low on the Digit Span in Grade 3($p < .01$).
   vii) High on Story Recall in Grade 3 than those who were low on Story Recall in Grade 3($p < .01$).

2) However, Reading Achievement in Grade 4 does not significantly differ by Picture Recall in Grade 3 ($p > .05$).

Teacher pupil interaction (TPI), but not other instructional variables in Grades 1 through 4, significantly influences reading achievement in Grade 4.

3) Reading Achievement in Grade 4 is significantly higher for students who were:
   i. High on Teacher Pupil Interaction in Grade 1 than those who had low Teacher Pupil Interaction in Grade 1 ($p<.01$).
   ii. High on Teacher Pupil Interaction in Grade 2 than those who were low on Teacher Pupil Interaction in Grade 2 ($p<.01$).
   iii. High on Teacher Pupil Interaction in Grade 3 than those who were low on Teacher Pupil Interaction in Grade 3 ($p<.01$).
   iv. High on Teacher Pupil Interaction in Grade 4 than those who were low on Teacher Pupil Interaction in Grade 4($p<.01$) .

4. There is no significant association between Reading Achievement in Grade 4 and,
   i. Quality of Teacher Pupil Relationship in Grade 1($p>.05$).
   ii. Quality of Teacher Pupil Relationship in Grade 2 ($p>.05$).
   iii. Quality of Teacher Pupil Relationship in Grade 3 ($p> .05$).
   iv. Quality of Teacher Pupil Relationship in Grade 4 ($p>.05$).
5. There is no significant association between Reading Achievement in Grade 4 and
   i. Clarity of verbal communication in G I ($p>.05$).
   ii. Clarity of verbal communication in G II ($p>.05$).
   iii. Clarity of verbal communication in G III ($p>.05$).
   iv. Clarity of verbal communication in G IV($p>.05$).

6. There is no significant association between Reading Achievement in Grade 4 and
   i. Quality of Blackboard Work in G I *(p>.05)*.
   ii. Quality of Blackboard Work in G II *(p>.05)*.
   iii. Quality of Blackboard Work in G III *(p>.05)*.
   iv. Quality of Blackboard Work in G IV *(p>.05)*.
7. There is no significant association between Reading Achievement in Grade 4 and
   i. Course Completion in G I *(p>.05)*.
   ii. Course Completion in G II *(p>.05)*.
   iii. Course Completion in G III *(p>.05)*.
   iv. Course Completion in G IV *(p>.05)*.
8. There is no significant association between Reading Achievement in Grade 4 and
   i. Teachers' Reinforcement in G I *(p>.05)*.
   ii. Teachers' Reinforcement in G II *(p>.05)*.
   iii. Teachers' Reinforcement in G III *(p>.05)*.
   iv. Teachers' Reinforcement in G IV *(p>.05)*.
9. There is no significant association between Reading Achievement in Grade 4 and
   i. Teacher's Engaged Time in G I *(p>.05)*.
   ii. Teacher's Engaged Time in G II *(p>.05)*.
   iii. Teacher's Engaged Time in G III *(p>.05)*.
   iv. Teacher's Engaged Time in G IV *(p>.05)*.

10. There is no significant association between Reading Achievement in Grade 4 and
    i. Books/student in class library of G I *(p>.05)*.
    ii. Books/student in class library of G II *(p>.05)*.
    iii. Books/student in class library of G III *(p>.05)*.
    iv. Books/student in class library of G IV *(p>.05)*.
11. There is no significant association between Reading Achievement in Grade 4 and
    i. Periodicals /student in class library of in G I *(p>.05)*.
    ii. Periodicals /student in class library of in G II *(p>.05)*.
    iii. Periodicals /student in class library of in G III *(p>.05)*.
    iv. Periodicals /student in class library of in G IV *(p>.05)*.
12. There is no significant association between Reading Achievement in Grade 4 and
    i. Books issued/student in class library of in G I *(p>.05)*.
    ii. Books issued/student in class library of in G II *(p>.05)*.
    iii. Books issued/student in class library of in G III *(p>.05)*.
    iv. Books issued/student in class library of in G IV *(p>.05)*.

Reading achievement in Grade 4 is significantly influenced by home language environment and occupation level of mother, but not by socio-economic indicators of the family.

13. Reading Achievement in Grade 4 is significantly higher for students who were High on Home Language Environment than those who were low on Home Language Environment (p <.01).

14. Reading Achievement in Grade 4 is significantly higher for students with employed mother than those with unemployed mother ($p < .01$).
15. Reading Achievement in Grade 4 did not significantly vary by
    i. SES ($p > .05$)
    ii. Education level of father ($p > .05$)
    iii. Education level of mother ($p > .05$)
    iv. highest education level in the family ($p > .05$)
    v. Occupation level of father ($p > .05$)
    vi. Highest occupation level in the family ($p > 0.05$).

Cognitive variables in Grades 1 through 4 help identify reading achievement status in Grade 4.

16. From among the 7 cognitive variables (Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, Non verbal Intelligence, Digit span, Story Recall) 4 variables (Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling) significantly distinguish between Reading Difficult (RD) and Normal Readers(NR) in Grade 4 [Chi square (4) = 61.98, $p < .01$].
    i. If the child can't read more than 19 letters out of 33 in Grade 1, there will be a possibility to become RD.
    ii. Similarly, failing to achieve more than 7 scores out of 15 for Morphological Awareness in Grade 2, 9 scores out of 19 for Phonological Awareness in Grade1, 8 scores out of 33 for Dictated Spelling in Grade 2 will possibly become RD.

Teacher pupil interaction in Grade 4 helps reliably distinguish between RD and NR in Grade 4.

17. From among Teacher pupil interaction in Grades 1 through 4, Teacher pupil interaction reliably distinguishes between RD and NR in Grade 4 (Chi square (1) = 12.19, p<.01).

Occupation level of mother and home learning environment (HLE) significantly affect reading status in Grade 4.

18. From among two familial variables (Occupation level of mother, HLE) both were found as significant predictors (Occupation level of mother, HLE) in distinguishing between RD and NR (Chi square (2) = 47.14, p<.01).

Phonological awareness, morphological awareness, HLE, and occupation level of mother significantly impact reading status in Grade 4.

19. From among seven select cognitive, instructional and familial variables (Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, TPI GRADE 4, HLE and Occupation level of mother) four significant predictors (Phonological Awareness, Morphological Awareness, HLE and Occupation level of mother) were found which distinguished between RD and NR(Chi square (5)=73.82, p<.01).

Tenability of Hypotheses

Tenability of hypotheses formulated for the study were verified in view of the findings and are commented below

1. Hypothesis 1 states that Reading Achievement among Lower Primary students differ significantly by the level of cognitive variables viz.,
    a) Letter Reading
    b) Phonological awareness

c) Morphological awareness

d) Dictated spelling

e) Non verbal intelligence

f) Picture Recall

g) Digit span

h) Story Recall

Analysis of data revealed that there was significant difference between reading achievements of Grade 4 students who performed high and low on letter reading and phonological awareness in Grade 1, morphological awareness and Dictated Spelling in Grade 2, Non Verbal Intelligence, Story Recall and Digit span in Grade 3($p<.05$). But there was no significant difference between reading achievements of Grade 4 students who performed high and low on Picture Recall in Grade 3. Hence hypothesis 1is partially accepted.

2. Hypothesis 2 states that Reading Achievement among Lower Primary students differ significantly by the level of Teacher Pupil Interaction.

Analysis of data revealed that there was significant difference in Reading achievement of Grade 4 students who experienced high and low Teacher Pupil Interaction in Grades 1, 2, 3 and 4. Hence hypothesis 2 is fully accepted.

3. Hypothesis 3 states that Reading Achievement in Malayalam of lower primary students is significantly dependent on the instructional variables namely,

a) Quality of Teacher Pupil Relationship

b) Clarity of Teacher's verbal communication

c) Quality of Teacher's Blackboard work
d) Course Completion
e) Teacher Reinforcement
f) Engaged Time
g) Books per student in the Class library
h) Periodicals per student in the Class library
i) Books issued per student in the Class library

Analysis indicated that Reading achievement in Grade 4 was not significantly associated with the instructional variables namely Quality of Teacher Pupil Relationship in Grade 1 to 4, Clarity of verbal communication in Grade 1 to 4, Blackboard work in Grade 1 to 4, Course Completion in Grade 1 to 4, Reinforcement in Grade 1 to 4, Engaged Time in Grade 1 to 4 and the variables related to class library namely Books per student in Grade 1 to 4, Periodicals per student in Grade 1 to 4, Books issued per student Grade 1 to 4. So, hypothesis 3 is rejected.

4. Hypothesis 4 states that Reading achievement in Malayalam among Lower Primary students differ significantly by the level of Home Language Environment.

Analysis revealed that Reading achievement in Grade 4 is significantly higher for students who were high on Home Language Environment than those who were low on Home Language Environment. So, hypothesis 4 is accepted.

5. Hypothesis 5 states that Reading achievement in Malayalam of lower primary students is significantly depend on their

a) Socio-Economic Status (APL/BPL)

b) Education level of father
c) Education level of mother
d) Highest education level in the family
e) Occupation level of father
f) Occupation level of mother
g) Highest occupation level in the family

Analysis revealed that Reading achievement in Grade 4 was significantly dependent on the Occupation level of mother**.** However, Reading achievement in Grade 4 was not significantly dependent on the familial variables namely SES, Education level of father, Education level of mother, highest education level in the family, Occupation level of father, highest occupation level in the family. Hence hypothesis 5 is partially accepted.

6. Hypothesis 6 states that there will be significant combined influence of cognitive variables on reading status in Malayalam of Grade 4 students.

   From among the seven cognitive variables (Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, Non verbal Intelligence, Digit span, Story Recall) 4 significant predictors (Letter Reading, Phonological Awareness, Morphological, Dictated Spelling) were identified. Hence hypothesis 6 is accepted.

7. Hypothesis 7 states that there will be significant combined influence of instructional variables on reading status in Malayalam of Grade 4 students.

   From among the four variables (Teacher-pupil interaction in Grade 1 Teacher-pupil interaction in Grade 2, Teacher-pupil interaction in Grade

3, Teacher -pupil interaction in Grade 4) one significant predictor (Teacher -pupil interaction in Grade 4) was identified. So hypothesis 7 is partially accepted.

8. Hypothesis 8 states that there will be significant combined influence of familial variables on reading status in Malayalam of 4 students.

   Two variables namely, Occupation level of mother and HLE are identified as significant predictors of reading status in Malayalam of Grade 4 students. So, hypothesis 8 is accepted.

9. Hypothesis 9 states that the reading status in Malayalam by Grade 4 students can be significantly predicted from a set of cognitive, instructional and familial variables.

From among the seven variables namely, Letter Reading, Phonological Awareness, Morphological Awareness Dictated Spelling, TPI in Grade 4, HLE and Occupation level of mother four predictors viz; Phonological Awareness, Morphological Awareness, Occupation level of mother and HLE were identified as significant predictors of reading status in Malayalam of Grade 4 students. So, hypothesis 9 is accepted.

Conclusion

Academic growth is built on the platform of language abilities especially on reading. The skill which helps to acquire knowledge from the script is reading. Lower primary schooling gives the basic levels of reading which can act as the foundation for later language, and hence academic and intellectual development. There are many factors which affect reading and reading difficulty. This study reveals some of the factors in Lower primary

Grade children that lead to reading difficulty. Findings of the study can be concluded at different levels.

The cognitive variables, Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, Non –Verbal Intelligence, Story Recall and Digit span showed significant longitudinal relationship with the Reading Achievement of Grade 4 students. But Picture Recall in Grade 3 didn't show relation with reading achievement of Grade 4 students. It may be that verbal memory than non-verbal memory is a significant factor in reading development.

Teacher Pupil Interaction in Grades 1 to 4 showed significant relationship with Reading Achievement in Grade 4. Students who had higher TPI, performed better in reading. The other instructional variables, Quality of Teacher Pupil Relationship (in Grades 1 to 4), Clarity of verbal communication (in Grades 1 to 4), Blackboard work (in Grades 1 to 4), Course Completion (in Grades 1 to 4), Reinforcement (in Grades 1 to 4), Engaged Time (in Grades 1 to 4) do not affect Reading Achievement status in Grade 4.Reading Achievement in Grade 4 is not significantly associated with the variables related to class library; Books/student (in Grades 1 to 4), Periodicals /student (in Grades 1 to 4), and Books issued/student (in Grades 1 to 4).

Reading Achievement in Grade 4 was significantly higher for students who were high on Home Language Environment than those who were low on Home Language Environment. Thus, Reading Achievement in Grade 4 is associated with Home Language Environment. Analysis indicated that Reading Achievement in Grade 4 was significantly associated the Occupation level of mother**.** Children who have non-working mothers tend more to have

reading difficulty. But the other familial variables SES, Education level of father, Education level of mother, highest education level in the family, Occupation level of father, and highest occupation level in the family are not significantly associated with Reading Achievement in Grade 4.

This study analyzed the predictive efficiency of the significant variables on reading difficulty. Thirteen variables (Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, Nonverbal Intelligence, Digit span, story recall, Teacher pupil interaction scale (1^{st} standard), Teacher pupil interaction scale (2^{ndt} standard), Teacher pupil interaction scale (3^{rd} standard), Teacher pupil interaction scale (4^{th}standard) are used as predictors.

Separate binary logistic regression for the cognitive, instructional and familial variables which have significant relation with Reading Achievement to predict Reading Difficulty among Grade 4 students indicated the following. Letter Reading, Phonological Awareness, Morphological Awareness, and Dictated Spelling are identified as predictors of Reading Difficulty from among cognitive variables. Among instructional variables teacher pupil interaction in Grade 4 is found to be the only significant predictor of Reading Difficulty. Occupation level of mother and HLE are identified as predictors of Reading Difficulty from familial variables.

Binary logistic regression was executed together for the cognitive, instructional and familial variables which were identified as the predictors of Reading Difficulty and Phonological Awareness, Morphological Awareness, Occupation level of mother and HLE are identified as predictors of Reading Difficulty from cognitive, instructional and familial variables.

Letter Reading and Phonological Awareness in Grade 1, Morphological Awareness, Dictated Spelling and Non –Verbal Intelligence in Grade 2; and Digit Span and Story Recall (but not picture recall) in Grade 3 significantly affect Reading Achievement in Grade 4. This finding further confirms similar results obtained on factors influencing reading difficulty in languages like Spanish (Gonzalez & Gonzalez, 1993), Japanese (Mann, 1986), English (Chiappe & Siegel, 1999) and Bosnian (Duranovic, Huseinbasic & Tinjak, 2012). Likewise from among the factors in school, Teacher Pupil Interaction, but not other instructional variables in Grades 1 through 4, significantly influences Reading Achievement in Grade 4. This findings go against the findings of Babayigit and Stainthorp (2007) in Turkish and Dallasheh-Khatib Ibrahim and Karani (2014) in Arabic. They state that it may be related to extreme transparency of Turkish orthography and additional visual complexity of Arabic orthography. This study indicates that the influence of attributes of language on the efficacy of linguistic elements like phonology and morphology needs further exploration. Measures of Phonological Awareness in Malayalam among early Grades have revealed that tasks in Rhyme recognition do not distinguish among better aware and less aware students. Likewise tasks on Derived adjective, Case and Tense forms on Malayalam do not reliably distinguish levels of Morphological awareness in Malayalam.

Similarly, the findings from this study further strengthens the importance of Home Language Environment and Reading Achievement in lower primary Grades which were reported by earlier studies like Shah (2000), DeJong and Leseman (2001) and Baker, Mackler, Sonnenschein and Serpell (2001). Majority of the studies stands by the favourable impact of socio-economic factors on reading attainment.

The above findings of the study have led to identification of factors that will help predict reading status in Malayalam of Grade 4 students. Cognitive variables in Grades 1 through 4 help identify reading status in Grade 4. If the child can't read more than 19 letters out of 33 in Grade 1, there will be a possibility to become RD. Similarly, failing to achieve more than 7 scores out of 15 for Morphological Awareness in Grade 2, 9 scores out of 19 for Phonological Awareness in Grade1, 8 scores out of 33 for Dictated Spelling in Grade 2 will possibly become RD. likewise, school factors, especially, Teacher pupil interaction in Grade 4 helps reliably distinguish between RD and NR in Grade 4. At home, Occupation level of mother and home learning environment significantly affects reading status in Grade 4.

Another significant effort in this study was the development of locally relevant standardized observational and testing procedures to the development of mother tongue, especially its reading ability. An array of tests specific to Malayalam language namely Test of Phonological Awareness, Test of Morphological Awareness, Test of Letter Reading, Story recall (memory) Test, Dictated Spelling Test, Reading Comprehension Test and Test of Reading Fluency and Pronunciation were developed and standardized as part of this study. Language independent test that can be used by teachers and future researchers with lower primary students like Picture-recall (memory) Test was also developed as part of this study.

Thus, the study has arrived at the conclusion that Phonological Awareness, Morphological Awareness, HLE and Occupation level of mother

significantly impact reading status in Grade 4. From among seven select cognitive, instructional and familial variables (Letter Reading, Phonological Awareness, Morphological Awareness, Dictated Spelling, TPI Grade 4, HLE and Occupation level of mother), four significant predictors (Phonological Awareness, Morphological Awareness, HLE and Occupation level of mother) were found effective in distinguishing between RD and NR (Chi square (5)= 73.82, $p<.01$).

Educational Implications of the Study

Two broad areas of implications for school practice that emerge from the present study are 1) Developing grade appropriate morphological and phonological tests in Malayalam that would help identify reading difficulty early in school, and 2) Supporting homes to improve their learning environment for lower primary students.

Give importance for the development of basic language skills

The findings of this study indicate that children who have better abilities in analyzing and manipulating rhymes, syllables, and phonemes, and having ability to identify root words and their inflected or derived forms are better at learning to read than children who have difficulties in acquiring these skills. Thus, importance should be given for the development of basic language skills and its sub skills during lower primary level when pupils begin to learn the language, which is essential for developing comprehension skills. Psychological and structure based approach can be adopted than a peripheral approach in language education.

Take steps for improving Phonological Awareness among lower primary students

It is necessary to take essential steps for improving Phonological Awareness among lower primary students. Language learning is a factor which seems to keep the students regular in the school. For this, individual attention is mandatory in the case of lower primary students. Training in Phonological Awareness can be given to Grades 1 and 2 students. Alphabetic training on difficult letters should be given. Exposing students to a variety of text types such as poems, diaries, school rules/game rules, posters, cartoons, news reports will acquaint them with different structures of the language. For developing Phonological Awareness, methods like practicing phoneme blending through games, rhyming practice by small rhyming poems, conduct of competition in making rhyming words , playing 'guess the word', constructing word webs around morphemes or topic words, and categorizing words based on number of syllables, initial letter, nouns can be considered.

Improve instructional methods for deepening Morphological Awareness

This study throws light into the direction of improving instructional methods for deepening Morphological Awareness in lower primary students. The development of Morphological Awareness will lead to improve word power, its usage, and manipulation of spoken and written language. In this situation, training programmes to improve quality of teaching should be implemented focusing on pronunciation, clarity of speech, thorough knowledge in curriculum and new teaching strategies. Teachers have to practice immediate feedback, interaction with students, praising and encouraging learning, promptly answering to pupil initiated questions, accepting and using ideas of

pupils. For developing better relationship with students, teachers should be good observers. Teachers have to try to arrange to review key elements of course content after a delay of several weeks to several months to initial presentation. They can introduce new topic by asking pre-requisite questions and can use quizzes to expose students to key content. Teachers can encourage students to 'think aloud' in speaking or writing their explanations as they study. Teachers can stimulate students by presenting real life situations in the classroom and make them use different components of Morphological Awareness. Teachers can use new instructional strategies such as morphological strategies training and morphological training programme as well.

Enhance individual attention in student language learning

For giving individual attention following steps can be applied:

- Reduce teacher-student proportion
- Allowing teachers to know students better by building relationships and enhancing communication
- Provision of individual assistance in academic and behavioral aspects of learning
- Since home learning environment is a factor that enhances reading status, focus on helping students address personal and family issues through counseling and access to social services; and
- Abilities like phonological awareness begins to develop when before students admit to elementary school, and hence, pre-schooling that helps develop abilities like rhyming can be made available to all children.

Help homes develop their language learning environment

For helping homes develop their language learning environment. Try to bring community agencies together to deliver services to students. Such services might include:

- Management of individual student cases;
- Individual and group counseling;
- Volunteers and mentors;
- Classes providing remedial education

For the success in the classroom for both teachers and students, the classroom climate and quality of interaction between students and teachers should be improved. Following steps take to improve teacher pupil interaction:

- Actively involve parents in the functions in the school
- Give positive reinforcement and reward for positive behavior of students
- Engage in frequent conversations with students about their life outside school
- Give awareness to the teachers and students about social and emotional developments
- Give more support to the students who are backward in the class
- Ensure optimum level of teacher pupil interaction in the classroom

Teachers can work on establishing more positive relationships even during academic times of the school day. Effective and supportive communication can develop more comprehensive characteristics in the student. By improving this, student will be naturally successful in reading comprehension. It is undoubted that effective interaction and communication can enhance language skills.

In addition, maintaining an optimum level of teacher student relationship is helpful in developing reading comprehension (Effective and supportive communication can develop better comprehension characteristics in the student. By this, student will naturally be successful in reading comprehension. Certainly, effective interaction and communication can enhance language skills. In the case of instructional variables more researches with close and frequent observation are needed.

Equip teachers better to facilitate elementary language skills

Professional development programmes for teachers can be used to strengthen teachers' skills and strategies in giving quality feedback - positive, encouraging and diagnostic. This may equip teachers in helping the learners in developing an awareness of the letter-sound relationships through explicit teaching, building up students' strategies for listening, discriminating sounds, speaking and decoding (in reading) and, in gaining confidence and competence in reading aloud and, in developing interest in reading books.

Raise awareness among parents on how they can help in language learning

Parents can support reading ability of their young children by communicating with the children, familiarizing them with different forms of language in daily life, by assisting and supporting learning of what is taught at school and, providing language learning resources at home and encouraging to use the same. Specifically, parent communication with child that helps develop language ability in students involve enquiring about teachers, about what is taught at school, co-curricular and other school activities, about their peers, and, and by attending to what the child communicates and answering students queries about home and surrounding,

Likewise, parents can help in familiarizing language forms like stories, poems, proverbs and tales and epics by reciting and reading the children these forms of language expressions, and by encouraging children to read these forms of language themselves, and asking questions on themes of what they have read. Parental support to language learning can involve being present when students read and write and correct the mistakes they make and also appreciate their efforts.

Limitations of the Study

Although an attempt has been made to get generalized result, there are certain limitations in this study. They are given below.

Precision of measurement of variables like Quality of teacher relationship, Clarity of verbal communication, Blackboard work, Course Completion, Reinforcement and Engaged Time has to be tuned to the level of information that could be provided by the students in Grades 1 through 4.

In spite of these limitations the investigator hopes that the study will necessarily supply dependable findings. The findings may help teachers and educators build up a better generation with good language culture.

Suggestions for Further Research

- Develop grade appropriate morphological and phonological tests in Malayalam that would help identify reading difficulty early in school.
- Investigate the instructional factors that lead to reading difficulty with more efficient and sensitive tools.
- Longitudinal studies of longer durations can be taken up to reveal factors that lead to reading and other language difficulties beyond the lower primary grades, say by the end of primary schooling or junior secondary schools.

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Appendices

Appendix A1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Phonological Awareness

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Instructions

This test is proposed to measure the phonological awareness of elementary school students. The test consists of 3 subtests, picture sound recognition, rhyme recognition and rhyme production. Each correct answer is scored as '1' and incorrect as '0'.

Subtest-1 Picture-Sound Recognition

This test is prepared to measure the phoneme recognition level of standard 1 & 2 students. There are 39 picture cards which contain 46 phonemes selected for the test. The cards are arranged in quartets to form the test situation. So there are 46 quartets formed by 39 pictures.

Familiarize the 39 pictures for the whole class; depict the names of the pictures. This should be done in 15 minutes.

After the familiarizing the pictures, administer the test individually. Show the picture quartets for the students in the given order. After showing each group of cards, the administrator should pronounce the target phoneme clearly and ask the student to find out the picture in which the produced phoneme situated. For each picture group maximum one minute is allowed for the student. Record the student response in the scoring sheet.

Subtest-2 Rhyme Recognition

This is an individual test to identify the rhyme recognition ability of lower primary students. Two groups of pictures are arranged here, prompt pictures and

target pictures. Each prompt picture rhymes with one of the target pictures. Familiarize the name of all pictures to the student and show how to find rhyming target using the practice items. There are two practice items with two prompt picutres are '*Ila*' (ഇല) and '*Suryan*' (സൂര്യൻ), and the target pictures are '*Chandran*' (ചന്ദ്രൻ) and '*Mala*' (മല).

Familiarize the name of pictures and says the names clearly to the students individually. Then notifies the student the end phoneme of first picture '*Ila*' is '*la*', and show them the target picure '*Mala*' (മല) also has the phoneme '*la*' in its end. Similar way show the student the end rhyming of *Suryan* and *Chandran* are 'n' (ൻ). The make the student to understand how to identify the rhyming target for the prompt picture.

Then tell them 'in the similar manner you have to find the rhyming word for the prompt picture from target pictures of the test items. Say prompt words one by one and the student is asked to find the rhyming word. Five minutes are allowed for each student for this test.

Subtest 3 Rhyme Production

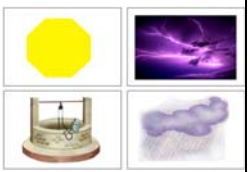
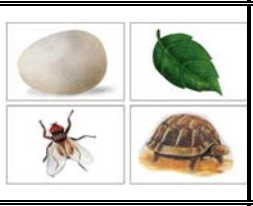
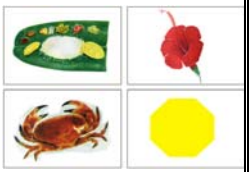
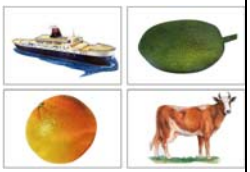
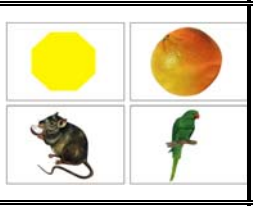
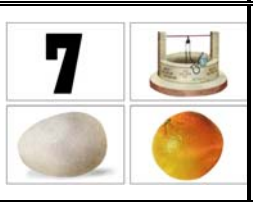
A group of prompt words are given in this test and rhyming words are to be produced by the student according to the prompt word. Show the student how to produce rhyming word using the practice items. There are 3 practice items with 3 prompt words and 3 rhyming words. Target word can be any word end with the sound of the prompt word. Target word can be any word end with the sound of the prompt word. Say prompt words one by one, and ask student to produce rhyming words for each prompt word. 6 minute is allowed for this test. The rhyming word can be with or without meaning.This is also an individual test.

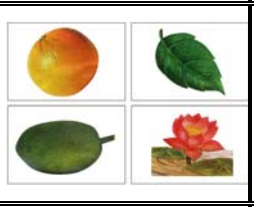
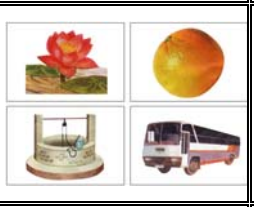
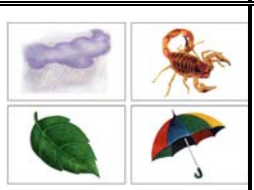
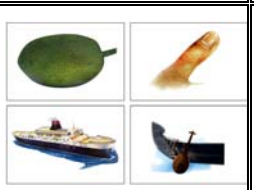
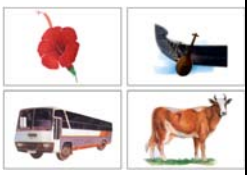
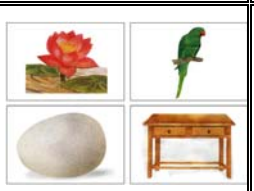
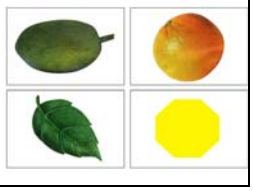
Subtest-1 Picture-Sound Recognition

1.	കിണർ
2.	ഇല
3.	ഹനുമാൻ
4.	വെള്ളച്ചാട്ടം
5.	അമ്മ
6.	കുട
7.	വഞ്ചി
8.	കലം
9.	ഓറഞ്ച്
10.	നിധി
11.	ഉടുപ്പ്
12.	ഗരുഡൻ
13.	തത്ത
14.	എലി
15.	ഏഴ്
16.	മുട്ട
17.	ഊഞ്ഞാൽ
18.	ആമ
19.	ബസ്
20.	മഞ്ഞ

21.	മേശ
22.	നഖം
23.	ഞണ്ട്
24.	ചെണ്ട
25.	തവള
26.	മഴ
27.	താമര
28.	പശു
29.	തേൾ
30.	കപ്പൽ
31.	ഇച്ച
32.	ചക്ക
33.	ആന
34.	ചെമ്പരത്തി
35.	ഒട്ടകം
36.	മിന്നൽ
37.	സദ്യ
38.	ഓന്ത്
39.	പങ്കായം

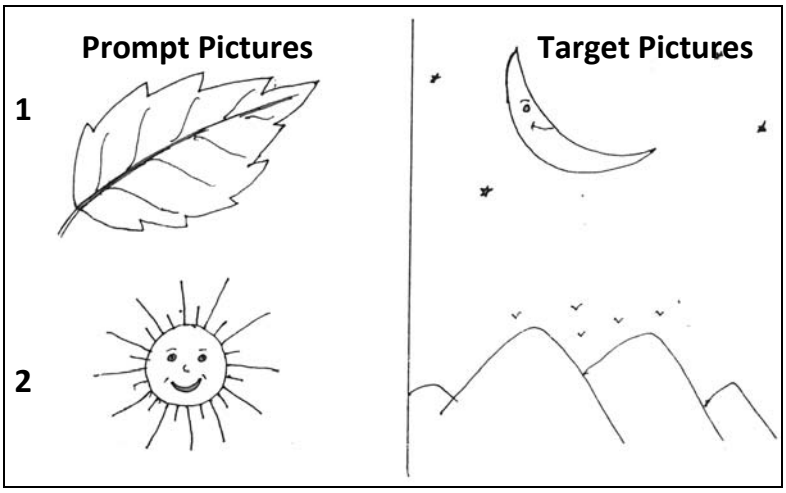
Picture Quartets for the Test

Target Phoneme	Picure Quartet	Target Phoneme	Picure Quartet	Target Phoneme	Picure Quartet
1. അ		9. ഒ		17. ണ	
2. ആ		10. ഓ		18. ത	
3. ഇ		11. ക		19. ദ	
4. ഇ ഈ ഉ		12. ഖ		20. ധ	
5. ഉ		13. ഗ		21. ന	
6. ഊ		14. ഞ		22. പ	
7. എ		15. ട		23. ബ	
8. ഏ		16. ഡ		24. മ	

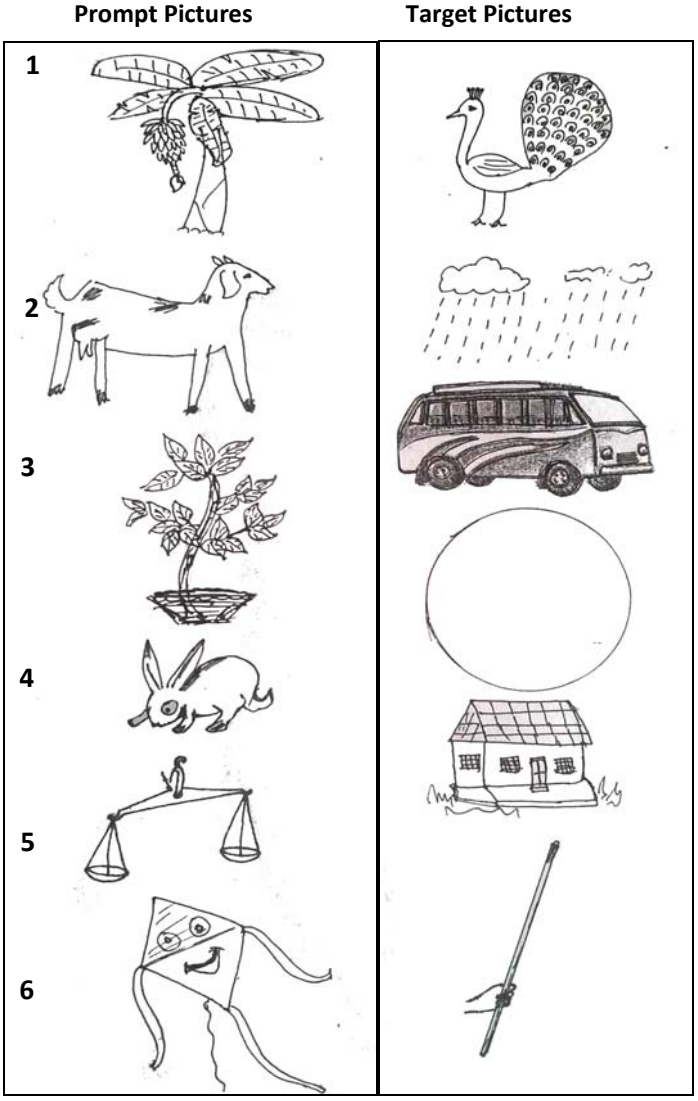
Target Phoneme	Picure Quartet	Target Phoneme	Picure Quartet	Target Phoneme	Picure Quartet
25. ര		33. റ		41. ള്ള	
26. ല		34. ക്ക		42. മ്മ	
27. വ		35. ങ		43. ന്ന	
28. ശ		36. ഞ്ച		44. പ്പ	
29. സ		37. ട്ട		45. മ്പ	
30. ഹ		38. ത്ത		46. ശ്.	
31. ള		39. ണ്ട			
32. ഴ.		40. ഞ്ഞ.			

Subtest-2 Rhyme Recognition

Practice Items



Test Items



Subtest 3 Rhyme-Production

Practice Items

Prompt word	Target Word
1. അറ	പറ, മറ, വറ, ചറ, നിറ
2. മണൽ	വേനൽ, ആൽ, കടൽ, വടൽ
3. ഇല	തല, മല, കല, പല, ചല

Test Items

1. ഒന്ന്	
2. കിളി	
3. കടൽ	
4. കുളം	
5. നടന്നു	
6. പൂച്ച	

Appendix – A2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Phonological Awareness

(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

This test is proposed to measure the phonological awareness of elementary school students. The test consists of 2 subtests, picture sound recognition and rhyme production. Each correct answer is scored as '1' and incorrect as '0'.

Instructions

Subtest-1 Picture Sound Recognition

This test is prepared to measure the phoneme recognition level of standard 1 & 2 students. There are 20 picture cards which contain 9 phonemes selected for the test. The cards are arranged in quartets to form the test situation. So there are 9 quartets formed by 20 pictures.

Familiarize the 20 pictures for the whole class; depict the names of the pictures. This should be done in 15 minutes.

After the familiarizing the pictures, administer the test individually. Show the picture quartets for the students in the given order. After showing each group of cards, the administrator should pronounce the target phoneme clearly and ask the student to find out the picture in which the produced phoneme situated. For each picture group maximum one minute is allowed for the student. Record the student response in the scoring sheet.

Subtest-2 Rhyme-Production

A group of prompt words are given in this test and rhyming words are to be produced by the student according to the prompt word. Show the student how to produce rhyming word using the practice items. There are 3 practice items with 3 prompt words and 3 rhyming words. Target word can be any word end with the sound of the prompt word. Say prompt words one by one, and ask student to produce rhyming words for each prompt word. 6 minute is allowed for this test. The rhyming word can be with or without meaning. This is also an individual test.

Test of Phonological Awareness

ഒന്നാം ക്ലാസ് വിദ്യാർത്ഥികളുടെ സ്വനിമാവബോധം വിലയിരുത്തുന്നതിനാണ് ഈ മാനകം തയ്യാറാക്കിയിരിക്കുന്നത്. ഇതിൽ രണ്ട് ഉപമാനകങ്ങൾ ഉണ്ട്. ചിത്രത്തിൽ നിന്നും ശബ്ദം തിരിച്ചറിയൽ, പ്രാസം നിർമ്മിക്കൽ എന്നിവയാണവ. ഇത് ഒരു വ്യക്തിഗതമാനകമാണ്. ശരിയായ ഉത്തരത്തിന് '1'ഉം തെറ്റായവയ്ക്ക് '0'ഉം ആണ് നൽകേണ്ടത്.

ഉപമാനകം-1: ചിത്രം ശബ്ദം തിരിച്ചറിയൽ

ഒൻപതു സ്വനിമങ്ങൾ ഉൾക്കൊള്ളുന്ന വിധത്തിൽ ഇരുപത് ചിത്രങ്ങളുടെ കാർഡുകൾ തയ്യാറാക്കിയിരിക്കുന്നു. ഈ കാർഡുകൾ നാലെണ്ണം വീതമുള്ള 9 സെറ്റുകളായി ക്രമപ്പെടുത്തിയാണ് സ്വിമാവബോധം പരിശോധിക്കാനുള്ള മാനകമായി രൂപപ്പെടുത്തിയിരിക്കുന്നത്.

നിർദ്ദേശം

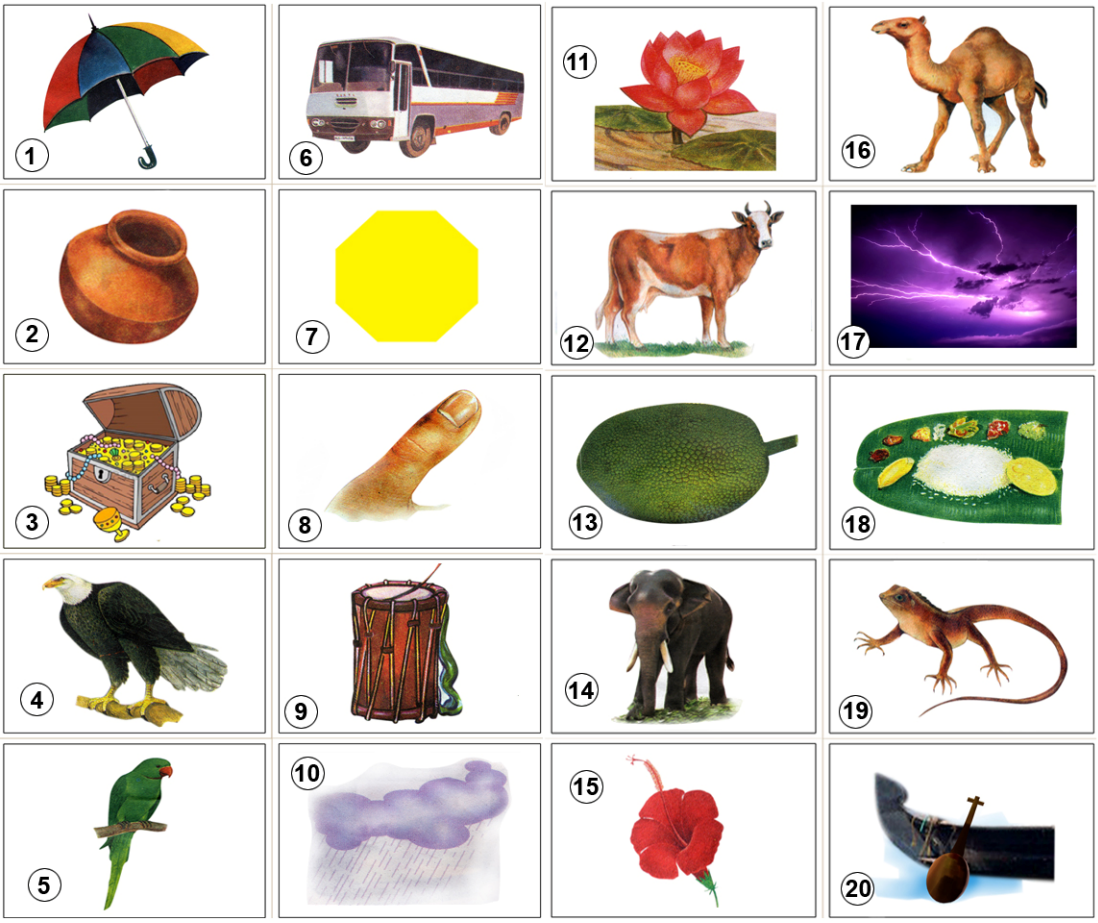
ഇരുപത് ചിത്ര കാർഡുകൾ ക്ലാസിൽ പ്രദർശിപ്പിച്ച് അവയുടെ പേരുകൾ പരിചയപ്പെടുത്തുക. 15 മിനിട്ട് സമയം ഇതിനായി ഉപയോഗിക്കാം. പിന്നീട് ഓരോ വിദ്യാർത്ഥിയെയും വിളിച്ച് മറ്റുള്ളവരിൽ നിന്നും മാറ്റി നിറുത്തി മാനകം ഉപയോഗിക്കാം. നാലു ചിത്രങ്ങളുള്ള സെറ്റുകൾ ഓരോന്നായി പ്രദർശിപ്പിക്കുക. അവയിൽ നിന്നും കണ്ടെത്തേണ്ട സ്വനിമം പരീക്ഷകൻ വ്യക്തമായി ഉച്ചരിച്ച് പ്രസ്തുത സ്വനിമം ഏത് ചിത്രത്തിലാണ് എന്ന് കണ്ടെത്താൻ വിദ്യാർത്ഥിയോട് ആവശ്യപ്പെടുക. ശരിയായ ഉത്തരത്തിന് '1'ഉം തെറ്റായവയ്ക്ക് '0'ഉം രേഖപ്പെടുത്തുക.

ഉപമാനകം-2: പ്രാസം നിർമ്മിക്കൽ

നിർദ്ദേശം

പരിശീലനത്തിനുള്ള രണ്ട് ചോദ്യങ്ങളുപയോഗിച്ച് എപ്രകാരമാണ് പ്രാസം നിർമ്മിക്കേണ്ടതെന്ന് മനസ്സിലാക്കികൊടുത്തശേഷം മാനകത്തിൽ നൽകിയിരിക്കുന്ന ആറു സൂചകവാക്കുകൾ ഓരോന്നായി പറഞ്ഞ് അവയ്ക്കനുസൃതമായ പ്രാസവാക്കുകൾ നിർമ്മിക്കാൻ വിദ്യാർത്ഥിയോടാവശ്യപ്പെടുക. നിർമ്മിക്കുന്ന പ്രാസം അർത്ഥമുള്ളതോ അർത്ഥമില്ലാത്തതോ ആയ വാക്കുകളിലാകാം. ശരിയായ ഉത്തരത്തിന് '1'ഉം തെറ്റായതിന് '0' ഉം നൽകുക ആകെ 6 മിനിട്ട് സമയമാണ് നൽകേണ്ടത്.

Subtest -1 Picture Sound Recognition



1.	കുട
2.	കലം
3.	നിധി
4.	ഗരുഡൻ
5.	തത്ത
6.	ബസ്
7.	മഞ്ഞ
8.	നഖം
9.	ചെണ്ട
10.	മഴ

11.	താമര
12.	പശു
13.	ചക്ക
14.	ആന
15.	ചെമ്പരത്തി
16.	ഒട്ടകം
17.	മിന്നൽ
18.	സദ്യ
19.	ഓന്ത്
20.	പങ്കായം

Picture Quartets for the Test

Target Phoneme		Picure Quartet	Target Phoneme		Picure Quartet
1.	ഖ		6.	ധ	
2.	ഗ		7.	ങ	
3.	ട		8.	ന	
4.	ഡ		9.	മ	
5.	ദ				

Subtest 2. Rhyme-Production

Practice Items

Prompt word	Target Word
4. അറ 5. മണൽ 6. ഇല	പറ, മറ, വറ, ചറ, നിറ വേനൽ, ആൽ, കടൽ, വടൽ തല, മല, കല, പല, ചല

Test Items

7. ഒന്ന് 8. കിളി 9. കടൽ 10. കുളം 11. നടന്നു 12. പൂച്ച	

Appendix – A3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Phonological Awareness

(FINAL)

Subtest 1: Picture Sound-Recognition

Scoring Key

Sl. No	Picture	Sl. No	Picture
1.		6.	
2.		7.	
3.		8.	
4.		9.	
5.			

Subtest 2: Rhyme Production

Scoring Key

1. വന്ന്, നിന്ന്, പന്ന്, കാട് (any word end with the sound ‘ ’)
2. കളി, ചെടി, ഒളി, പടി (any word end with the sound ‘ി’)
3. മടൽ, ചടൽ, ഉടൽ, കൽ (any word end with the sound ‘ൽ’)
4. വന്നു, ഇരുന്നു, കൊന്നു (any word end with the sound ‘ു’)
5. വളം, മണം, പടം (any word end with the sound ‘ം’)
6. പൂച്ച, ഒച്ച, കപ്പ (any word end with the sound ‘ അ’)

Appendix B1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Letter Reading

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

This test is prepared to measure letter reading ability of grade 1 students. There are 46 letter cards in different colours.

Show the letter cards to the child individually one after one and ask the child to read it. Ten second is allowed to show a single card.

Appendix B2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Letter Reading

(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

This test is prepared to measure letter reading ability of grade 1 students. There are 32 letter cards in different colours.

Instruction

Show the letter cards to the child individually one after one and ask the child to read it. Ten second is allowed to show a single card.

അക്ഷരവായന

ഒന്നാം ക്ലാസ് വിദ്യാർത്ഥികളുടെ അക്ഷരം തിരിച്ചറിഞ്ഞ് വായിക്കുന്നതിനുള്ള ശേഷിയാണ് ഇവിടെ പരിശോധിക്കുന്നത്. വിവിധ നിറങ്ങളിലുള്ള അക്ഷരങ്ങൾ ഉള്ള '32' കാർഡുകളാണ് ഇതിനായി ഉപയോഗിക്കുന്നത്.

നിർദ്ദേശം

കാർഡുകൾ ഓരോന്നായി പ്രദർശിപ്പിച്ച് വിദ്യാർത്ഥിയോട് വായിക്കാനാവശ്യ പ്പെടുന്നു. ഒരു കാർഡുവായിക്കുന്നതിന്. 10 സെക്കന്റ് സമയം ആണ് നൽകേണ്ടത്.


ഈ 1
ഊ 2
ഛ 17
ള 18
ഫി 3
ഫു 4
ഴ 19
ത്ത 20
ങ 5
ങാ 6
പ്പ 21
ള്ള 22
ഗ 7
ഞ 8
ക 23
ഞ്ഞ 24
ട 9
ഡ 10
ക്ക 25
ന്വ 26
ണ 11
ദ 12
ഞ്ച 27
ണ്ട 28
ന 13
ബ 14
ട്ട 29
മ്മ 30
ശ 15
സ 16
ന്ന 31
ൾ 32

Appendix B3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale for Letter Reading

(For content validation by experts)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

ക്രമ നമ്പർ	അക്ഷരവായന	അനുയോജ്യമല്ല	അനുയോജ്യം	അനുയോജ്യം പരിഷ്കരിച്ച്
1.	**'അക്ഷരവായന'** ശോധകം ഒന്നാം ക്ലാസിലെ കുട്ടിയുടെ പ്രായത്തിനനുയോജ്യമാണോ?			
2.	ശോധകത്തിൽ ഉപയോഗിച്ച അക്ഷരങ്ങൾ വായനാശേഷി കണ്ടെത്തുന്നതിന് യോജിച്ചവയാണോ?			
3.	അക്ഷരങ്ങളുടെ വലുപ്പം ഒന്നാം ക്ലാസിലെ കുട്ടിക്ക് വായിക്കാൻ അനുയോജ്യമാണോ?			
4.	അക്ഷരങ്ങളുടെ എണ്ണം (അളവ്) ഒന്നാം ക്ലാസിലെ കുട്ടിയുടെ കഴിവിന് അനുയോജ്യമാണോ?			
5.	അക്ഷരങ്ങൾക്ക് നിറങ്ങൾ നൽകിയത് വായിക്കാനുള്ള താത്പര്യത്തെ ഉണർത്താൻ അനുയോജ്യമാണോ?			
6.	അക്ഷരങ്ങൾ ഒരു സമയം ഒന്നു വീതം കാർഡുകളിൽ പ്രദർശിപ്പിച്ച് വായിപ്പിക്കുന്നത് ഉചിതമാണോ?			

Appendix B4

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale for Letter Reading

(For content validation by experts)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

	Letter Reading	Not Appropriate	Appropriate	Highly Appropriate
1.	Whether the test is appropriate to find out the reading ability of 1st standard students?			
2.	Whether the letters selected for the test is appropriate to find out the reading ability of 1st standard students?			
3.	Whether the size of the letters used in the test is suitable for finding the reading ability of 1st standard students?			
4.	Whether the number of letters used in the test is suitable for finding the reading ability of 1st standard students?			
5.	Whether the coloured letters can create to read?			
6.	Whether it is suitable to present one letter at a time to read?			

Appendix C1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Morphological Awareness

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Instructions

The Morphological Awareness Test is to measure the morphological awarneess in Malayalam of 2nd graders. There are eight subtests of morphological awareness. This is an Indiviudal Test. Each correct answer is scored as '1' and incorrect as '0'.

Subtest 1- Gender (ലിംഗം)

In this subtest there are two practice tiems and eight test items by using the practice items explain the students to how to make gender forms. Then read the test items and ask the student to create gender forms.

Practice Items

1. മീൻ കൊണ്ടു വരുന്ന ആൾ	ആൺ - മീൻകാരൻ
	പെൺ - മീൻകാരി
2. നുണ പറയുന്ന ആൾ	ആൺ - നുണയൻ
	പെൺ - നുണച്ചി/യത്തി.

Test Items

തടിയുള്ള ആൾ	1. ആൺ -
	2. പെൺ -
പണമുള്ള ആൾ	3. ആൺ-
	4. പെൺ -
കളവ് ചെയ്യുന്ന ആൾ	5. ആൺ-
	6. പെൺ -
മിടുക്കുള്ള	7. ആൺകുട്ടി-
	8. പെൺകുട്ടി-

Subtest 2- Number (വചനം)

This test gives three practice items and six test items. By using the test items show the student how to develop plural forms. Then read the test-items for the student and ask to produce plural forms for the items.

Practice Items

1. റോഡിൽ പോലീസുകാരൻ നിൽക്കുന്നു,
   - കുറേ പോലീസുകാരുണ്ടെങ്കിൽ എന്തു പറയും?
   - റോഡിൽ കുറേ പോലീസുകാർ നിൽക്കുന്നു.
   * പോലീസുകാർ
2. മുറ്റത്ത് ഒരു തെങ്ങ് ഉണ്ട്? കുറേ തെങ്ങുണ്ടെങ്കിൽ എന്തു പറയും?
   * തെങ്ങുകൾ
3. അപ്പു മിടുക്കനാണ്
   അമ്മു മിടുക്കിയാണ്
   അപ്പുവും അമ്മുവും എങ്ങനെയുള്ളവർ ആണ്
   * മിടുക്കർ/മിടുക്കുള്ളവർ

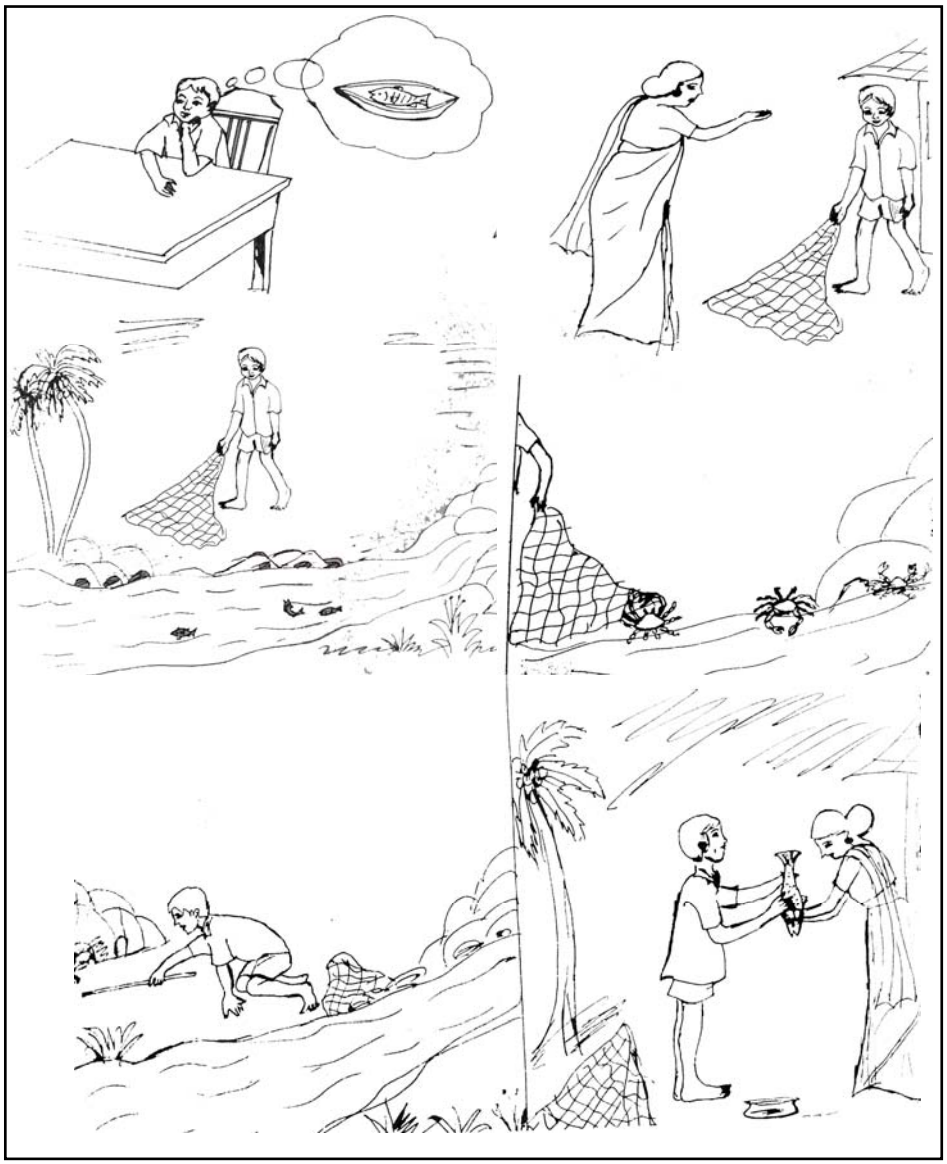
Test Items

1. ദീപു പഠിക്കുന്നവനാണ്
   ദിവ്യ പഠിക്കുന്നവളാണ്
   ദീപുവും ദിവ്യയും എങ്ങനെയുള്ളവർ ആണ്?
   ദീപുവും ദിവ്യയും ------- ആണ്
2. ദീപുവിന്റെ അമ്മ സ്കൂളിൽ വന്നിട്ടുണ്ട്
   ദിവ്യയുടെ അമ്മ സ്കൂളിൽ വന്നിട്ടുണ്ട്
   ആരൊക്കെയാണ് സ്കൂളിൽ വന്നിട്ടുള്ളത്?
   ദീപുവിന്റേയും ദിവ്യയുടേയും –-------
3. മേശപ്പുറത്ത് ഒരു പൂവ് ഉണ്ട്
   പൂപ്പാത്രത്തിൽ മറ്റൊരു പൂവ് ഉണ്ട്
   ആകെ രണ്ടു --------- ഉണ്ട്
4. ഇതാ റോഡിനരികിൽ ഒരു വീട്
   അതിനടുത്ത് മറ്റൊരു വീട്
   റോഡിനരികിൽ ആകെ രണ്ട് --------ഉണ്ട്.
5. അപ്പുവിന്റെ ചേച്ചി മാല കെട്ടുന്നു
   അമ്മുവിന്റെ ചേച്ചി മാല കെട്ടുന്നു.
   ആരൊക്കെയാണ് മാല കെട്ടുന്നത്?
   അപ്പുവിന്റേയും അമ്മുവിന്റേയും --------- മാല കെട്ടുന്നു.

6. ഗോപി വണ്ണമുള്ളവൻ ആണ്
   സീത വണ്ണമുള്ളവൾ ആണ്
   ഗോപിയും സീതയും എങ്ങനെയുള്ളവരാണ്?
   ഗോപിയും സീതയും-------ആണ്.

Subtest 3 വിഭക്തി (Case)

A small narration is given to the student by showing a series of pictures. After the narration ask the student 10 questions based on it. The answers are supposed to use case forms of Malayalam. Five case forms included in the answers and each form has two situations.



അപ്പുവിന് മീൻകറി വലിയ ഇഷ്ടമാണ്. ഒരു ദിവസം അവൻ വീട്ടിലുണ്ടായിരുന്ന വല കയ്യിലെടുത്തു. വലയുമായി നിൽക്കുന്ന അപ്പുവിനെ അമ്മ കണ്ടു. ''എവിടേയ്ക്കാ?'' അമ്മ അപ്പുവിനോടു ചോദിച്ചു. ''ഞാൻ പുഴയിൽ മീൻ പിടിക്കാൻ പോകുന്നു''. അവൻ

അമ്മയോട് വിളിച്ചു പറഞ്ഞു. അപ്പു പുഴയുടെ തീരത്തെത്തി. അവിടെ ധാരാളം ഞണ്ടുകൾ ഉണ്ടായിരുന്നു. അവ അപ്പുവിന്റെ വല പടിച്ചു വലിച്ചു. 'ഞണ്ടുകളെ ഓടിക്കണം' അപ്പു വിചാരിച്ചു. അവൻ വടിയെടുത്ത് ഞണ്ടുകളെ അടിച്ചു. അവ ഓടി മാളത്തിൽ ഒളിച്ചു. അതിനു ശേഷം അപ്പു മീൻപിടിച്ചു. കിട്ടിയ മീൻ അപ്പു അമ്മയ്ക്കു കൊടുത്തു.

ചോദ്യങ്ങൾ

1. ആർക്കാണ് മീൻകറി ഇഷ്ടം?
2. വലയുമായി നിൽക്കുന്ന ആരെയാണ് അമ്മ കണ്ടത്?
3. ''എവിടേയ്ക്കാ?'' എന്ന് അമ്മ ആരോടാണ് ചോദിച്ചത്?
4. അപ്പു എവിടെ നിന്നാണ് മീൻ പിടിച്ചത്?
5. ''പുഴയിൽ മീൻ പിടിക്കാൻ പോകുന്നു'' എന്ന് അപ്പു ആരോടാണ് വിളിച്ചു പറഞ്ഞത്?
6. എന്തിന്റെ തീരത്താണ് അപ്പു എത്തിയത്?
7. ആരുടെ വലയാണ് ഞണ്ടുകൾ പിടിച്ചു വലിച്ചത്?
8. എന്തിനെ ഓടിക്കണം എന്നാണ് അപ്പു വിചാരിച്ചത്?
9. ഞണ്ടുകൾ എവിടെയാണ് ഒളിച്ചത്?
10. ആർക്കാണ് അപ്പു മീൻ കൊടുത്തത്?

Subtest 4- Compound Words (സമാസം)

This subtest contains two practice items and four test teims. Using practice items shows the child how to form compound words. After that read the test items and ask them to form compund words.

Practice Items:

1. കളിക്കാനുള്ള പന്തൽ - ***കളിപ്പന്തൽ***
2. നാലു മണിക്ക് വിരിയുന്ന പൂവ്- ***നാലുമണിപ്പൂവ്***

Test Items

1. മരത്തിന്റെ പൊടി
2. തലയിലെ വേദന
3. പുഴയിലെ വെള്ളം
4. വേനൽക്കാലത്ത് പെയ്യുന്ന മഴ

Subtest 5: തദ്ധിതം-കൃത്ത് (Derived Words)

Derived Words

In this subtest student has to produce the derived word from the question. There are two practice items and two test items. There are two sets of derived words. By using practice items show them how to produce derived word. Read the test item to the student and ask them to produce the appropriate derived word.

A) Practice Items:

1. കൂനുള്ളവൻ → കൂനൻ
2. പുള്ളികൾ ഉള്ള കുട → പുള്ളിക്കുട

Test Items

1. കറുത്ത നിറമുള്ളവൻ → ----------
2. കൊമ്പുള്ള ആന → ----------

B) Practice Items:

1. എലിയും കുരുവിയും വീടുവെച്ചു. അവർ വീട്ടിൽ ---------- (താമസിക്കുക) തുടങ്ങി

   - ***താമസം***.

2. കൊമ്പൻ രാജാവ് കാട്ടിൽ പാചക ---------- (മത്സരിക്കുക) പ്രഖ്യാപിച്ചു

   - ***മത്സരം***.

Test Items

3. കുട്ടികൾ കുളത്തിൽ നീന്തുന്നു, ------ നല്ല വ്യായാമമാണ്
4. ഗീത ക്ലാസിൽ പാടി, ഗീതയുടെ ------ നന്നായിരുന്നു

Subtest 6: വിശേഷണം – Derived Adjectives

Show the pictures to the student and ask questions based on the pictures. The student has to give the correct derived form of adjective. Using practice items show them how to produce derived adjective. Then administer the test items.

Practice Items

1. അപ്പുവിന്റെ ഷർട്ട് കണ്ടോ?

   അത് ഏത് നിറത്തിലുള്ള ഷർട്ട് ആണ്?

   അപ്പുവിന്റേത് ***ചുവന്ന*** ഷർട്ട് ആണ്

2. മാളു വരിയിൽ നിൽക്കുന്നതു കണ്ടോ?

   മാളു മഞ്ഞ ഉടുപ്പാണ് ഇട്ടിരിക്കുന്നത്.

   അവൾ വരിയിൽ എത്രാമതാണ്?

   മാളു വരിയിൽ ***അഞ്ചാമത്*** ആണ്.

Test Items

1. എത്രാമത്തെ താമരയാണ് ചുവപ്പു നിറമുള്ളത്?

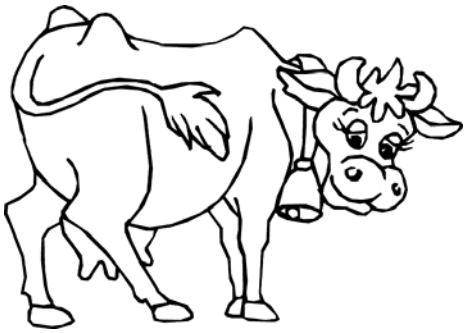
2. ദീപു പച്ച നിറമുള്ള വസ്ത്രം ധരിച്ചാണ് ഓടുന്നത്. മത്സരത്തിൽ ദീപു എത്രാമതായാണ് ഓടുന്നത്?

ദീപു മത്സരത്തിൽ ----- ആയാണ് ഓടുന്നത്

3. അമ്മുവിന്റെ കയ്യിൽ ഒരു കുട ഉണ്ട്? അതു ഏതു നിറത്തിലുള്ള കുടയാണ്?

അമ്മുവിന്റെ കയ്യിൽ ----- നിറത്തിലുള്ള കുടയാണുള്ളത്.

4. പശുവിനേയും ഈച്ചയേയും കണ്ടില്ലേ?



പശു വലിയ ജീവിയാണ്, ഈച്ച ----- ജീവിയാണ്.

Subtest 7: കാലം (Tense)

Knowledge to use three tense forms (present, future and future) can measure using this subtest.

A. വർത്തമാനകാലം (Present Tense)

By showing the pictures ask the student about the activities shown in them.

പ്രവർത്തികൾ ചെയ്യുന്ന ചിത്രം പ്രദർശിപ്പിച്ച് ഓരോ വസ്തുവും വ്യക്തിയും ഇപ്പോൾ എന്തു ചെയ്യുകയാണ് എന്ന് ചോദിക്കുന്നു.

1 

2 

3 

4 

B. ഭൂതകാലം (Past Tense) – Ask the student about the activities done yesterday.

സൂചനകൾ നൽകി,തലേ ദിവസം/മുൻപ് ചെയ്ത പ്രവൃത്തികളുടെ വിവരണം ആവശ്യപ്പെടുക.

1. രാവിലെ എഴുന്നേറ്റോ?
2. പല്ലുതേച്ചോ?
3. ഷർട്ട് ഇട്ടോ?
4. ചോറ് ഉണ്ടോ?
5. ബാഗ് എടുത്തോ?
6. ഇന്നലെ സ്കൂളിലേക്ക് വന്നോ?
7. കണക്ക് ചെയ്തോ?
8. ഇന്നലെ രാത്രി ഉറങ്ങിയോ?

ഭാവി കാലം (Future**)** Using the following questions the student what will he do in the immediate future.

1. നാളെ സ്കൂളിൽ വരുമോ?
2. നാളെ എഴുതുമോ
3. വീട്ടിലെത്തിയാൽ ആദ്യം എന്തു ചെയ്യാൻ പോകും
4. പിന്നീട് എന്തു ചെയ്യാൻ പോകും?

Subtest 8: Volitional & external prompt

There are 3 sets of test items and for each test item, there is a single practice item. Show the students how to create external prompt verb forms from volitional verb forms by practice items and read the test items to student and ask them to produce external prompt verb forms from volitional verb forms.

Practice Item -1 (Future Tense)

കുട്ടി നാളെ കളിക്കും, ചേട്ടൻ നാളെ കുട്ടിയെ - ***കളിപ്പിക്കും***

Test Item

1. മാളു രാവിലെ എഴുന്നേൽക്കും, അമ്മ രാവിലെ മാളുവിനെ -----
2. രാവിലെ കുട്ടൻ പുതിയ വസ്ത്രം ധരിക്കും, അമ്മ രാവിലെ കുട്ടനെ പുതിയ വസ്ത്രം---

Practice Item -1 (Past Tense)

കുട്ടി കളിച്ചു, ചേട്ടൻ കുട്ടിയെ - ***കളിപ്പിച്ചു***

Test Item

3. ഇന്നലെ രഘു ഓടി, ഇന്നലെ രഘുവിനെ പട്ടി ------
4. ഇന്നലെ കുളം വറ്റി, ഇന്നലെ ജോലിക്കാർ കുളം -----

Practice Item (Present Tense)

കുട്ടി കളിക്കുന്നു, ചേട്ടൻ കുട്ടിയെ -***കളിപ്പിക്കുന്നു***

Test Item

5. റാണി പാഠം വായിക്കുന്നു, ടീച്ചർ റാണിയെക്കൊണ്ട് പാഠം ------
6. കുട്ടി പാൽ കുടിക്കുന്നു, അമ്മ കുട്ടിയെക്കൊണ്ട് പാൽ ------

Appendix C2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Morphological Awareness

(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Instructions

The Morphological Awareness Test is to measure the morphological awarneess in Malayalam of 2nd graders. There are five subtests of morphological awareness. This is an Indiviudal Test. Each correct answer is scored as '1' and incorrect as '0'.

നിർദ്ദേശം

രണ്ടാം ക്ലാസ് വിദ്യാർത്ഥികളുടെ രൂപിമാവബോധം പരിശോധിക്കുന്നതിനാണ് ഈ മാനകം തയ്യാറാക്കിയിരിക്കുന്നത്. ഇതിൽ അഞ്ച് ഉപമാനകങ്ങളുണ്ട്. ഇത് ഒരു വ്യക്തിഗതമാനകമാണ്. ശരിയായ ഉത്തരത്തിന് '1'ഉം തെറ്റായവയ്ക്ക് '0'ഉം നൽകുക.

Subtest 1- Gender

In this subtest there are two practice items and seven test items by using the practice items explain the students how to make gender forms. Then read the test items and ask the student to create gender forms.

ഉപമാനകം-3: ലിംഗം

ഈ ഉപമാനകത്തിൽ രണ്ട് പരിശീലന ചോദ്യങ്ങളും ഏഴ് പരിശോധനാ ചോദ്യങ്ങളും ഉണ്ട്. പരിശീലന ചോദ്യങ്ങളിലൂടെ എപ്രകാരമാണ് ലിംഗരൂപങ്ങൾ നിർമ്മിക്കേണ്ടതെന്ന് വിദ്യാർത്ഥിയെ മനസ്സിലാക്കിയശേഷം പരിശോധനാചോദ്യങ്ങൾ ചോദിക്കുക.

Practice Items

1. മീൻ കൊണ്ടു വരുന്ന ആൾ — ആൺ - മീൻകാരൻ
   പെൺ - മീൻകാരി
2. നുണ പറയുന്ന ആൾ — ആൺ - നുണയൻ
   പെൺ - നുണച്ചി/യത്തി.

Test Items

തടിയുള്ള ആൾ	1. ആൺ –
	2. പെൺ –
പണമുള്ള ആൾ	3. ആൺ–
	4. പെൺ –
കളവ് ചെയ്യുന്ന ആൾ	5. പെൺ –
മിടുക്കുള്ള	6. ആൺകുട്ടി–
	7. പെൺകുട്ടി–

Subtest 2- Number

This test gives three practice items and four test items. By using the test items show the student how to develop plural forms. Then read the test-items for the student and ask to produce plural forms for the items.

ഉപമാനകം–5: വചനം

മൂന്ന് പരിശീലന ചോദ്യങ്ങളും നാല് പരിശോധനാ ചോദ്യങ്ങളും ഇതിലുണ്ട്. പരിശീലന ചോദ്യങ്ങളിലൂടെ വചനരൂപങ്ങൾ നിർമ്മിക്കുന്നതെങ്ങനെയെന്ന് വ്യക്തമാക്കിയ ശേഷം വിദ്യാർത്ഥിയോട് പരിശോധനാ ചോദ്യങ്ങൾ ചോദിക്കുക.

Practice Items

1. റോഡിൽ പോലീസുകാരൻ നിൽക്കുന്നു,
   - കുറേ പോലീസുകാരുണ്ടെങ്കിൽ എന്തു പറയും?
   - റോഡിൽ കുറേ പോലീസുകാർ നിൽക്കുന്നു.
   * പോലീസുകാർ
2. മുറ്റത്ത് ഒരു തെങ്ങ് ഉണ്ട്? കുറേ തെങ്ങുണ്ടെങ്കിൽ എന്തു പറയും?
   * തെങ്ങുകൾ
3. അപ്പു മിടുക്കനാണ്
   അമ്മു മിടുക്കിയാണ്
   അപ്പുവും അമ്മുവും എങ്ങനെയുള്ളവർ ആണ്
   * മിടുക്കർ/മിടുക്കുള്ളവർ

Test Items

1. ദീപു പഠിക്കുന്നവനാണ്
   ദിവ്യ പഠിക്കുന്നവളാണ്
   ദീപുവും ദിവ്യയും എങ്ങനെയുള്ളവർ ആണ്?
   ദീപുവും ദിവ്യയും ------- ആണ്

2. ദീപുവിന്റെ അമ്മ സ്കൂളിൽ വന്നിട്ടുണ്ട്
   ദിവ്യയുടെ അമ്മ സ്കൂളിൽ വന്നിട്ടുണ്ട്
   ആരൊക്കെയാണ് സ്കൂളിൽ വന്നിട്ടുള്ളത്?
   ദീപുവിന്റേയും ദിവ്യയുടേയും –-------
3. അപ്പുവിന്റെ ചേച്ചി മാല കെട്ടുന്നു
   അമ്മുവിന്റെ ചേച്ചി മാല കെട്ടുന്നു.
   ആരൊക്കെയാണ് മാല കെട്ടുന്നത്?
   അപ്പുവിന്റേയും അമ്മുവിന്റേയും --------- മാല കെട്ടുന്നു.
4. ഗോപി വണ്ണമുള്ളവൻ ആണ്
   സീത വണ്ണമുള്ളവൾ ആണ്
   ഗോപിയും സീതയും എങ്ങനെയുള്ളവരാണ്?
   ഗോപിയും സീതയും-------ആണ്.

Subtest 3- Compound Words

This subtest contains two practice items and four test teims. Using practice items show the child how to form compound words, then read the test itesms to them and ask to form compund words.

ഉപമാനകം–4: സമാസം

ഈ ഉപമാനകത്തിൽ രണ്ട് പരിശീലനചോദ്യങ്ങളും നാല് പരിശോധനാ ചോദ്യങ്ങളും ഉണ്ട്. പരിശീലന ചോദ്യങ്ങളിലൂടെ സമാസരൂപങ്ങൾ എപ്രകാരം നിർമ്മിക്കണമെന്ന് പറഞ്ഞു കൊടുത്തശേഷം പരിശോധനാ ചോദ്യങ്ങൾ ചോദിക്കുക.

Practice Items:

1. കളിക്കാനുള്ള പന്തൽ - ***കളിപ്പന്തൽ***
2. നാലു മണിക്ക് വിരിയുന്ന പൂവ്- ***നാലുമണിപ്പൂവ്***

Test Items

1. മരത്തിന്റെ പൊടി
2. തലയിലെ വേദന
3. പുഴയിലെ വെള്ളം
4. വേനൽക്കാലത്ത് പെയ്യുന്ന മഴ

Subtest 4: Derived Words

In this subtest student has to produce the derived word from the question. There are two sets of derived words and two practice items for each set. By using practice items show them how to produce derived word. Read the test item to the student and ask them to produce the appropriate derived word.

ഉപമാനകം-1: തദ്ധിതം-കൃത്ത്

ഈ മാനകത്തിൽ സൂചകങ്ങളിൽ നിന്ന് തദ്ധിത രൂപവും കൃത്ത് രൂപവും കണ്ടത്തേണ്ടതുണ്ട്. പരിശീലനത്തിനുള്ള ചോദ്യങ്ങളിലൂടെ പ്രസ്തുത രൂപങ്ങൾ നിർമ്മിക്കേണ്ടതെങ്ങനെയെന്ന് കുട്ടിക്ക് മനസ്സിലാക്കികൊടുത്ത ശേഷമാണ്, വിലയി രുത്തലിനുള്ള ചോദ്യങ്ങൾ നൽകേണ്ടത്.

A) Practice Items:

1. കൂനുള്ളവൻ → കൂനൻ
2. പുള്ളികൾ ഉള്ള കുട → പുള്ളിക്കുട

Test Items

1. കറുത്ത നിറമുള്ളവൻ → ---------

B) Practice Items:

1. എലിയും കുരുവിയും വീടുവെച്ചു. അവർ വീട്ടിൽ ------(താമസിക്കുക) തുടങ്ങി - ***താമസം***.
2. കൊമ്പൻ രാജാവ് കാട്ടിൽ പാചക ---------- (മത്സരിക്കുക) പ്രഖ്യാപിച്ചു - ***മത്സരം***.

Test Items

3. കുട്ടികൾ കുളത്തിൽ നീന്തുന്നു, ------ നല്ല വ്യായാമമാണ്

Subtest 5- Volitional & External Prompt

There are 2 sets of test items and for each test item, there is a single practice item. Show the students how to create external prompt verb forms from volitional verb forms by practice items and read the test items to student and ask them to produce internal prompt verb forms.

ഉപമാനകം-2: കേവല പ്രയോജകം

ഭൂതം, ഭാവി കാലങ്ങളിലെ അടിസ്ഥാനമാക്കി രണ്ട് സെറ്റ് ചോദ്യങ്ങളാണിതി ലുള്ളത്. ഓരോന്നിലും ഒരു പരിശീലന ചോദ്യവും ഒരു പരിശോധനാ ചോദ്യവുമുണ്ട്. പരിശീലന ചോദ്യത്തിലൂടെ കുട്ടികൾക്ക് കേവലക്രിയാരൂപങ്ങളിൽനിന്ന് പ്രയോജക ക്രിയരൂപങ്ങൾ നിർമ്മിക്കുന്നതെങ്ങനെയെന്ന് ബോധ്യപ്പെടുത്തിയശേഷം പരിശോധ നയ്ക്കുള്ള ചോദ്യങ്ങൾ ചോദിക്കുക.

Practice Item -1 (Future Tense)

കുട്ടി നാളെ കളിക്കും, ചേട്ടൻ നാളെ കുട്ടിയെ ***കളിപ്പിക്കും***

Test Item

1. രാവിലെ കുട്ടൻ പുതിയ വസ്ത്രം ധരിക്കും, അമ്മ രാവിലെ കുട്ടനെ പുതിയ വസ്ത്രം---

Practice Item -1 (Past Tense)

കുട്ടി കളിച്ചു, ചേട്ടൻ കുട്ടിയെ ***കളിപ്പിച്ചു***

Test Item

2. ഇന്നലെ കുളം വറ്റി, ഇന്നലെ ജോലിക്കാർ കുളം -----

Appendix C3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Morphological Awareness

(FINAL)

Scoring Key

Subtest 1

1. കറുമ്പൻ
2. നീന്തൽ

Subtest 2

1. ധരിപ്പിക്കും
2. വറ്റിച്ചു

Subtest 3

1. തടിയൻ
2. തടിയത്തി/തടിച്ചി
3. പണക്കാരൻ
4. പണക്കാരി
5. കള്ളി/കള്ളത്തി
6. മിടുക്കൻ
7. മിടുക്കി

Subtest 4

1. മരപ്പൊടി
2. തലവേദന
3. പുഴവെള്ളം
4. വേനൽമഴ

Subtest 5

1. പഠിക്കുന്നവർ
2. അമ്മമാർ
3. ചേച്ചിമാർ
4. വണ്ണമുള്ളവർ

Appendix D1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Dictated Spelling

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Forty three words are selected to test ability in dictated spelling of the child. This is agroup test and the administrater should dictate the words clearly and loudly in the classroom. Students are asked to write down the words in the A4 paper given by the administrater by using pencil. 45 minutes is allowed for the test.

കേട്ടെഴുത്ത് വാക്കുകൾ (words for Dictation**)**

1. അച്ഛൻ
2. ആഘോഷം
3. ഇല
4. ഈച്ച
5. ഉറി
6. ഊഞ്ഞാൽ
7. ഋഷി
8. എത്ര
9. ഏണി
10. ഐക്യം
11. ഒട്ടകം
12. ഓടാം
13. ഔഷധം
14. കൃഷി
15. മുഖം
16. റോഡ്
17. ചക്ക
18. ജാഥ
19. ഝഷം
20. ഞായർ
21. പീഠം
22. ഗാഢം
23. തവള
24. ദോഷം
25. ഫലം
26. ബലൂൺ
27. ഭയങ്കരം
28. വിശപ്പ്
29. സൈന്യം
30. സഹായം
31. പഴുത്ത
32. തള്ളും
33. കൊഞ്ച്
34. തൂമ്പ
35. നമ്മൾ
36. ചെന്നു
37. ചന്ത
38. ക്ഷേമം
39. സ്ഥലം
40. ഉത്സവം
41. ഗ്ലാസ്
42. സ്വരം
43. സൗണ്ട്

Appendix D2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Dictated Spelling

(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Thirty three words are selected to test ability in dictated spelling of the child. This is agroup test and the administrater should dictate the words clearly and loudly in the classroom. Students are asked to write down the words in the A4 paper given by the administrater by using pencil. 30 minutes is allowed for the test.

കേട്ടെഴുത്ത്

പരിശോധകൻ ഉച്ചരിക്കുന്ന വാക്കുകൾ കേട്ട് അവ എഴുതാനുള്ള വിദ്യാർത്ഥിയുടെ കഴിവാണ് ഇവിടെ പരിശോധിക്കുന്നത്. ഇത് ഒരു സമൂഹഗതമാനകമാണ്.

നിർദ്ദേശം

പരിശോധകൻ വാക്കുകൾ വ്യക്തമായും ഉച്ചത്തിലും ക്ലാസിൽ പറയുക. അവ വിദ്യാർത്ഥികളോട് എഴുതാൻ ആവശ്യപ്പെടുക. എഴുതുന്നതിനുള്ള A_4 പേപ്പറും പെൻസിലും പരിശോധകൻ നൽകേണ്ടതാണ്. 30 മിനിറ്റാണ് ഇതിന് നൽകേണ്ടത്.

കേട്ടെഴുത്ത് വാക്കുകൾ (Words for Dictation**)**

1. അച്ഛൻ	12. കൃഷി	23. സഹായം
2. ആഘോഷം	13. മുഖം	24. പഴുത്ത
3. ഈച്ച	14. റോഡ്	25. തള്ളും
4. ഊഞ്ഞാൽ	15. ചക്ക	26. കൊഞ്ച്
5. ഋഷി	16. ഞായർ	27. തൂമ്പ
6. എത്ര	17. തവള	28. നമ്മൾ
7. ഏണി	18. ദോഷം	29. ചെന്നു
8. ഐക്യം	19. ബലൂൺ	30. ചന്ത
9. ഒട്ടകം	20. സ്വരം	31. സ്ഥലം
10. ഓടാം	21. വിശപ്പ്	32. ഉത്സവം
11. ഔഷധം	22. സൈന്യം	33. ഗ്ലാസ്

Appendix D3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Dictated Spelling

(For content validation by experts)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

ക്രമ നമ്പർ	കേട്ടെഴുത്ത്	അനുയോജ്യമല്ല	ഭാഗികമായി അനുയോജ്യം	അനുയോജ്യം
1.	രണ്ടാം ക്ലാസിന്റെ അവസാനഘട്ടത്തിലെ കുട്ടികൾക്ക് അനുയോജ്യമായ വാക്കുകളാണോ?			
2.	വാക്കുകളുടെ ദൈർഘ്യം ഈ പ്രായത്തിലെ കുട്ടിയുടെ നിലവാരത്തിന് ചേർന്നതാണോ?			
3.	വാക്കുകൾ ഉൾക്കൊള്ളുന്ന അക്ഷരങ്ങൾ ഈ ഘട്ടത്തിലെ കുട്ടിക്ക് യോജിച്ചതാണോ?			
4.	വാക്കുകളിലുപയോഗിച്ചിട്ടുള്ള ചിഹ്നങ്ങൾ രണ്ടാം ക്ലാസിന്റെ അവസാനഘട്ടത്തിന് അനുയോജ്യമാണോ?			
5.	വാക്കുകളുടെ എണ്ണം വിദ്യാർത്ഥിയുടെ പ്രായത്തിന് അനുയോജ്യമാണോ?			

Appendix D4

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Dictated Spelling

(For content validation by experts)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Sl. No.	Dictated Spelling	Not Appropriate	Appropriate	Highly Appropriate
1.	Whether the words are appropriate for the third term of second standard students?			
2.	Whether the length of the words are appropriate for the third term of second standard students?			
3.	Whether the letters included in the words are appropriate for the third term of second standard students?			
4.	Whether the vowel diacritics used in the words suitable for the third term of second standard students?			
5.	Whether the number of words used in the test are suitable for the third term of second standard students?			

Appendix E

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Picture Recall

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

Picture-Recall

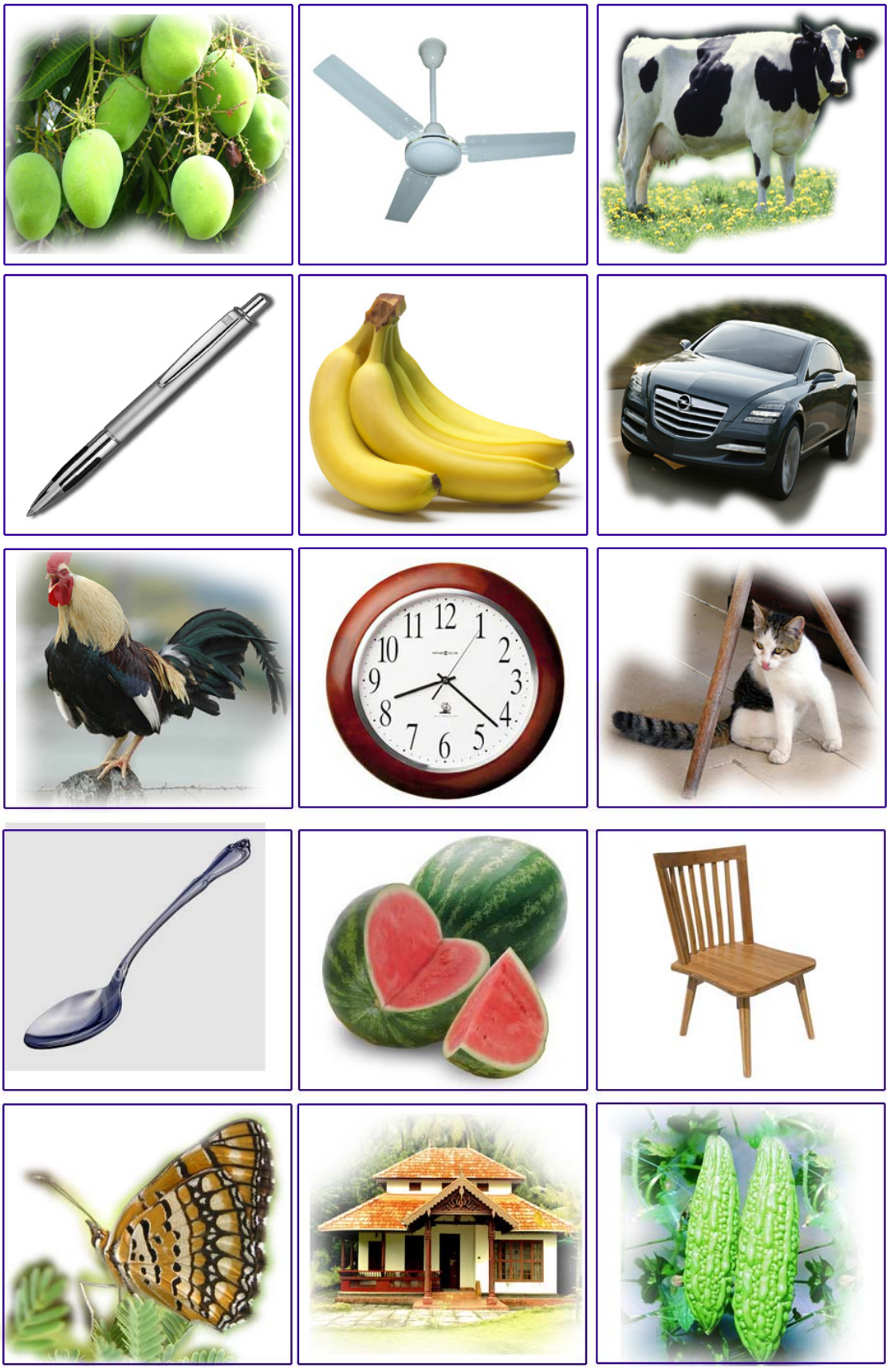
This Test is prepared to understand the visual memory of student. The picture-recall test administered individually to the children. Show the picture chart to the child for 1 minute. After 3 minutes the child is asked to recall the picture in 1 minute and correct response is scored as 1.

ചിത്രം-ഓർത്തെടുക്കൽ

മൂന്നാം ക്ലാസ് വിദ്യാർത്ഥികളുടെ ദൃശ്യപരമായ ഓർമശക്തി പരിശോധിക്കുന്നതിനുള്ള വ്യക്തിഗതമാനകമാണിത്.

നിർദ്ദേശം

ചിത്രങ്ങളുടെ ചാർട്ട് ഒരു മിനിറ്റ് സമയം പ്രദർശിപ്പിച്ച ശേഷം മാറ്റിവയ്ക്കുന്നു. മൂന്ന് മിനിറ്റിനുശേഷം ഏതെല്ലാം ചിത്രങ്ങളാണ് ചാർട്ടിലുള്ളതെന്ന് കുട്ടിയോട് ചോദിക്കുന്നു. ഒരു മിനിറ്റ് സമയമാണ് ഓർത്തെടുത്ത് പറയാൻ അനുവദിക്കേണ്ടത്. ശരിയായ പ്രതികരണങ്ങൾ രേഖപ്പെടുത്തുക.



Appendix F1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Story-Recall

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

This test is prepared to measure the auditory memory of the students. Two stories are recorded in a voice recorder by the investigator herself. The stories are heard by the children with the help of mp3 player individually. Each story has duration of 2-3 minutes. Ten questions are set from each story. After completing the hearing session the investigator can ask to answer the questions. And responses should be recorded. Each correct response is scored as 1.

1. ഇതെന്തു ജീവി

ഒരു ഗ്രാമത്തിൽ ഒരു കൃഷിക്കാരൻ തന്റെ ഭാര്യയോടും മകനോടുംകൂടി താമസിച്ചി രുന്നു-മകന് ദിവസവും പാൽ കൊടുക്കുന്നതിനാലയി ഒരു ആടിനെ വാങ്ങാൻ അയാൾ തീരുമാനിച്ചു. അടുത്ത ദിവസം രാവിലെ കൃഷിക്കാരൻ ചന്തയിലേക്കുപോയി. ചന്ത യിൽനിന്ന് ഒരു തടിച്ചുകൊഴുത്ത ആടിനെ വാങ്ങി. അയാൾ ആടിനെ തോളിൽ എടുത്ത് വീട്ടിലേയ്ക്കു തിരിച്ചു.

കൃഷിക്കാരൻ വരുന്ന വഴിയിൽ തട്ടിപ്പുകാരായ മൂന്നു യുവാക്കൾ നിൽപ്പുണ്ടായിരു ന്നു. പപ്പുവവും, ദൊപ്പുവും, ചന്തുവും. മറ്റുള്ളവരെ പറഞ്ഞുപറ്റിച്ച് അവരുടെ വസ്തുവക കൾ സ്വന്തമാക്കുന്നതിൽ സമർത്ഥരായിരുന്നു മൂന്നുപേരും. കൃഷിക്കാരൻ ആടിനേയും കൊണ്ടുവരുന്നത് അവർ ദൂരെനിന്നും കണ്ടു.

"നമുക്ക് ആ കൃഷിക്കാരനെ പറ്റിച്ച് ആടിനെ തട്ടിയെടുക്കണം" അവർ പരസ്പരം പറഞ്ഞു. അതനുസരിച്ച് മൂന്നുപേരും മൂന്നുവഴിക്കുമാറി ഒളിച്ചിരുന്നു.

കൃഷിക്കാരൻ മുന്നിലെത്തിയപ്പോൾ തട്ടിപ്പുകാരനായ പപ്പു അയാളെ തടഞ്ഞു നിർത്തി. ആടിനെ സൂക്ഷിച്ചുനോക്കിയിട്ട് ആയാൾ പറഞ്ഞു "അങ്ങ് ഈ നായയേയും ചുമന്ന് എങ്ങോട്ടുപോകുന്നു?" ഇതു കേട്ട് കൃഷിക്കാരന് കോപം വന്നു. അയാൾ ചോദിച്ചു: "വിഡ്ഢീ, നിക്ക് കണ്ണു കണ്ടുകൂടെ? ഇതാ ആടാണ്, നായയല്ല, മനസ്സിലായോ?"

"എനിക്കു കണ്ണും കാണാം, ചെവിയും കേൾക്കാം; അങ്ങ് നായയേയും കൊണ്ട് എങ്ങോട്ടെങ്കിലും പൊയ്ക്കോളൂ" ഇതും പറഞ്ഞ് പപ്പു നടന്നുപോയി.

അല്പം കഴിഞ്ഞപ്പോൾ രണ്ടാമനായ ദൊപ്പു കൃഷിക്കാരന്റെ അടുത്തെത്തി. അയാൾ അത്ഭുതം ഭാവിച്ച് പറഞ്ഞു "അയ്യയ്യേ!.. ഈ ചത്ത പശുക്കുട്ടിയെ അങ്ങ് എന്തിനാണ് ചുമക്കുന്നത്?" കൃഷിക്കാരൻ അയാളോടും ദേഷ്യപ്പെട്ടു. "ഇത് ഒന്നാംതരം ആടാണ്, നായും ചത്ത പശുക്കുട്ടിയുമൊന്നുമല്ല"

"താങ്കൾ ചത്ത പശുക്കുട്ടിയെ ചുമന്നാൽ എനിക്കെന്തു നഷ്ടം? ഞാൻ പോകുന്നു" എന്നും പറഞ്ഞ് ദൊപ്പു നടന്നുപോയി.

കൃഷിക്കാരൻ തെല്ലു സംശയിച്ച് മുന്നോട്ടു നടന്നു. ഈ സമയം മൂന്നാമനായ ചന്തു കൃഷിക്കാരന്റെ അടുക്കലെത്തി അയാൾ കൃഷിക്കാരനോടു പറഞ്ഞു: "കഷ്ടം താങ്കൾ കഴുതയെ ചുമക്കുന്നോ? വേഗം ഇതിനെ താഴെയിറക്കൂ." അതും പറഞ്ഞ് ആ വിരുതൻ നടന്നുപോയി.

കൃഷിക്കാരന് സംശയമായി. സത്യത്തിൽ ഇതെന്തു ജീവിയാണ്? നായയോ, പശുകുട്ടിയോ, കഴുതയോ? അതോ, ഇനി വല്ല ചെകുത്താനുമാണോ? അയാൾ ഭയന്നുപോയി. പേടിച്ചുപോയ കൃഷിക്കാരൻ ആടിനെ താഴെയിറക്കി ഓടിച്ചുവിട്ടു. ഇതു കാത്തിരുന്ന തട്ടിപ്പുകാരാകട്ടെ ആടിനെ സ്വന്തമാക്കുകയും ചെയ്തു.

2. നീലത്തിൽ ചാടിയ കുറുക്കൻ

ഒരു കാട്ടിൽ ചെമ്പൻ എന്ന ഒരു കുറുക്കൻ ഉണ്ടായിരുന്നു. പട്ടണത്തിന്റെ അതിർത്തിയിലുള്ള കാട്ടു പ്രദേശത്തായിരുന്നു അവന്റെ മാളം.

ഒരു രാത്രി വിശന്നു വലഞ്ഞ് അവൻ പട്ടണത്തിലെത്തി. ആ പട്ടണത്തിൽ കറുമ്പൻ എന്നും പാണ്ടൻ എന്നു പേരുള്ള. രണ്ടു നായ്ക്കൾ ഉണ്ടായിരുന്നു. കുറുക്കനെ കണ്ടപ്പോൾ കറുമ്പനും പാണ്ടനും അവനെ അക്രമിച്ചു. രക്ഷപ്പെട്ടോടിയ ചെമ്പൻ ചെന്നു കയറിയത് ഒരു അലക്കുകാരന്റെ വീട്ടിലാണ്. ഓട്ടത്തിനിടയിൽ അലക്കുകാരൻ തന്റെ വീടിനുപുറകിൽ നീലം കലക്കിവച്ചിരുന്ന പാത്രത്തിലേക്ക് കുറുക്കൻ തലയും കുട്ടി വീണു- തപ്പിത്തടഞ്ഞെഴുന്നേറ്റ് അവൻ കാട്ടിലേക്കോടി.

കാട്ടുമൃഗങ്ങൾ ആ കാഴ്ച കണ്ട് അമ്പരന്നു. അതാ നീലനിറത്തിൽ ഒരു വിചിത്രജീവി. അവർ ഭയത്തോടെ മാറിനിന്നു.

സൂത്രക്കാരനായ കുറുക്കന് കാര്യം പിടികിട്ടി. അവൻ പറഞ്ഞു: "പേടിക്കേണ്ട, ഞാൻ ദേവലോകത്തു ദേവന്മാരുടെ രാജാവ് അയച്ചതാണെന്നെ".

ഇതു കേട്ട സടയൻ സിംഹവും, വരയൻ കടുവയും, കറുമ്പനായും മല്ലുക്കരടിയും എല്ലാം ഭയഭക്തിബഹുമാനങ്ങളോടെ കുറുക്കനെ വണങ്ങി. കുറുക്കനെ അവർ രാജാവാക്കി വാഴിച്ചു. എല്ലാവരേയും അടക്കി ഭരിച്ച് അന്നുമുതൽ കുറുക്കൻ കാട്ടിൽ സുഖമായി കഴിഞ്ഞു.

അങ്ങനെയിരിക്കെ ഒരു ദിവസം കുറുക്കരാജാവ് പരിവാരങ്ങളോടൊപ്പം ഇരിക്കുമ്പോൾ കുറുക്കൻമാർ ഓരിയിടുന്ന ശബ്ദം കേട്ടു. അതു കേട്ട് സന്തോഷത്താൽ മതിമറന്ന് നീലകുറുക്കൻ ചാടിയെണീറ്റു. എന്നിട്ട് ഉച്ചത്തിൽ ഓരിയിടാൻ തുടങ്ങി. സിംഹവും കടുവയും ആനയും കരടിയുമെല്ലാം കുറുക്കന്റെ കള്ളത്തരം തിരിച്ചറിഞ്ഞു. അവർ കുറുക്കനെ അടിച്ച് അവശനാക്കി കാട്ടിൽ നിന്നും ഓടിച്ചു.

കഥയെ ആസ്പദമാക്കിയുള്ള ചോദ്യാവലി Questions Based on Story

ഇതെന്തുജീവി?

1. ഒന്നാമത്തെ തട്ടിപ്പുകാരന്റെ പേര്
2. രണ്ടാമത്തെ തട്ടിപ്പുകാരന്റെ പേര്
3. മൂന്നാമത്തെ തട്ടിപ്പുകാരന്റെ പേര്
4. ഒന്നാമത്തെ തട്ടിപ്പുകാരൻ ആടിനെപ്പറ്റി പറഞ്ഞതെന്ത്?
5. രണ്ടാമത്തെ തട്ടിപ്പുകാരൻ ആടിനെപ്പറ്റി പറഞ്ഞതെന്ത്?
6. മൂന്നാമത്തെ തട്ടിപ്പുകാരൻ ആടിനെപ്പറ്റി പറഞ്ഞതെന്ത്?
7. കൃഷിക്കാൻ ആടിനെ എവിടെനിന്നാണ് വാങ്ങിയത്?
8. കൃഷിക്കാൻ ആടിനെ എന്തിനുവേണ്ടിയാണ് വാങ്ങിയത്?
9. അവസാനം കൃഷിക്കാരൻ ആടിനെ എന്തുചെയ്തു?
10. നിങ്ങൾ കേട്ട കഥയുടെ പേരെന്ത്?

നീലത്തിൽ ചാടിയ കുറുക്കൻ

1. കഥയിലെ കുറുക്കന്റെ പേര്?
2. ഒന്നാമത്തെ നായയുടെ പേരെന്ത്?
3. രണ്ടാമത്തെ നായയുടെ പേരെന്ത്?
4. നായകൾ ഓടിച്ചപ്പോൾ കുറുക്കൻ ആരുടെ വീട്ടിലാണ് കയറിയത്.
5. കുറുക്കൻ എന്തിലാണ് തലയും കുത്തി വീണത്?
6. നീലപാത്രം എവിടെയാണ് വച്ചിരുന്നത്?
7. കുറുക്കനെ ആദ്യമായി വണങ്ങിയത് എതു മൃഗമാണ്?
8. കുറുക്കനെ രണ്ടാമതായി വണങ്ങിയത് ആരാണ്?
9. കുറുക്കനെ മൂന്നാമതായി വണങ്ങിയത് ആരാണ്?
10. കുറുക്കനെ അവസാനമായി വണങ്ങിയത് ആരാണ്?

Appendix F2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Story- Recall
(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia, K.R.
Research Scholar

This test is prepared to measure the auditory memory of the students. Two stories are recorded in a voice recorder by the investigator herself. The stories are heard by the children with the help of mp3 player individually. Each story has duration of 2-3 minutes. Ten questions are set from the stories. After completing the hearing session the investigator can ask to answer the questions. And responses should be recorded. Each correct response is scored as 1.

കഥ-ഓർത്തെടുക്കൽ

മൂന്നാം ക്ലാസ് വിദ്യാർത്ഥികളുടെ ശ്രവണപരമായ ഓർമശക്തി പരിശോധിക്കുന്നതിനുള്ള വ്യക്തിഗതമാനകമാണിത്. 2-3 മിനിട്ട് മാത്രം ദൈർഘ്യമുള്ള രണ്ട് കഥകൾ റെക്കോഡ് ചെയ്തശേഷം ഒരു MP_3 പ്ലയറിന്റെ സഹായത്തോടെ വിദ്യാർത്ഥിയെ ഇത് കേൾപ്പിക്കുന്നു. ഓരോ കഥയിൽ നിന്നുമുള്ള ചോദ്യങ്ങൾ കഥ കേൾപ്പിച്ച് ഒരു മിനിറ്റിനുശേഷം ചോദിക്കുന്നു. രണ്ടു കഥകളിൽ നിന്നുമായി പത്തു ചോദ്യങ്ങളാണുള്ളത്. ശരിയായ ഉത്തരത്തിന് '1' എന്ന് രേഖപ്പെടുത്തണം.

1. ഇതെന്തു ജീവി

ഒരു ഗ്രാമത്തിൽ ഒരു കൃഷിക്കാരൻ തന്റെ ഭാര്യയോടും മകനോടുംകൂടി താമസിച്ചിരുന്നു-മകന് ദിവസവും പാൽ കൊടുക്കുന്നതിനാലയി ഒരു ആടിനെ വാങ്ങാൻ അയാൾ തീരുമാനിച്ചു. അടുത്ത ദിവസം രാവിലെ കൃഷിക്കാരൻ ചന്തയിലേക്കുപോയി. ചന്തയിൽനിന്ന് ഒരു തടിച്ചുകൊഴുത്ത ആടിനെ വാങ്ങി. അയാൾ ആടിനെ തോളിൽ എടുത്ത് വീട്ടിലേയ്ക്കു തിരിച്ചു.

കൃഷിക്കാരൻ വരുന്ന വഴിയിൽ തട്ടിപ്പുകാരായ മൂന്നു യുവാക്കൾ നിൽപ്പുണ്ടായിരുന്നു. പപ്പുവവും, ദൊപ്പുവും, ചന്തുവും. മറ്റുള്ളവരെ പറഞ്ഞുപറ്റിച്ച് അവരുടെ വസ്തുവകകൾ സ്വന്തമാക്കുന്നതിൽ സമർത്ഥരായിരുന്നു മൂന്നുപേരും. കൃഷിക്കാരൻ ആടിനേയും കൊണ്ടുവരുന്നത് അവർ ദൂരെനിന്നും കണ്ടു.

"നമുക്ക് ആ കൃഷിക്കാരനെ പറ്റിച്ച് ആടിനെ തട്ടിയെടുക്കണം" അവർ പരസ്പരം പറഞ്ഞു. അതനുസരിച്ച് മൂന്നുപേരും മൂന്നുവഴിക്കുമാറി ഒളിച്ചിരുന്നു.

കൃഷിക്കാരൻ മുന്നിലെത്തിയപ്പോൾ തട്ടിപ്പുകാരനായ പപ്പു അയാളെ തടഞ്ഞു നിർത്തി. ആടിനെ സൂക്ഷിച്ചുനോക്കിയിട്ട് ആയാൾ പറഞ്ഞു "അങ്ങ് ഈ നായയേയും ചുമന്ന് എങ്ങോട്ടുപോകുന്നു?" ഇതു കേട്ട് കൃഷിക്കാരന് കോപം വന്നു. അയാൾ ചോദിച്ചു: "വിഡ്ഢീ, നിക്ക് കണ്ണു കണ്ടുകൂടെ? ഇത് ആടാണ്, നായയല്ല, മനസ്സിലായോ?"

"എനിക്കു കണ്ണും കാണാം, ചെവിയും കേൾക്കാം; അങ്ങ് നായയേയും കൊണ്ട് എങ്ങോട്ടെങ്കിലും പൊയ്ക്കോളൂ" ഇതും പറഞ്ഞ് പപ്പു നടന്നുപോയി.

അല്പം കഴിഞ്ഞപ്പോൾ രണ്ടാമനായ ദൊപ്പു കൃഷിക്കാരന്റെ അടുത്തെത്തി. അയാൾ അത്ഭുതം ഭാവിച്ച് പറഞ്ഞു "അയ്യയ്യേ!.. ഈ ചത്ത പശുക്കുട്ടിയെ അങ്ങ് എന്തിനാണ് ചുമക്കുന്നത്?" കൃഷിക്കാരൻ അയാളോടും ദേഷ്യപ്പെട്ടു. "ഇത് ഒന്നാംതരം ആടാണ്, നായും ചത്ത പശുക്കുട്ടിയുമൊന്നുമല്ല"

"താങ്കൾ ചത്ത പശുക്കുട്ടിയെ ചുമന്നാൽ എനിക്കെന്തു നഷ്ടം? ഞാൻ പോകുന്നു" എന്നും പറഞ്ഞ് ദൊപ്പു നടന്നുപോയി.

കൃഷിക്കാരൻ തെല്ലു സംശയിച്ച് മുന്നോട്ടു നടന്നു. ഈ സമയം മൂന്നാമനായ ചന്തു കൃഷിക്കാരന്റെ അടുക്കലെത്തി അയാൾ കൃഷിക്കാരനോടു പറഞ്ഞു:"കഷ്ടം താങ്കൾ കഴുതയെ ചുമക്കുന്നോ? വേഗം ഇതിനെ താഴെയിറക്കൂ." അതും പറഞ്ഞ് ആ വിരുതൻ നടന്നുപോയി.

കൃഷിക്കാരന് സംശയമായി. സത്യത്തിൽ ഇതെന്തു ജീവിയാണ്? നായയോ, പശുകുട്ടിയോ, കഴുതയോ? അതോ, ഇനി വല്ല ചെകുത്താനുമാണോ? അയാൾ ഭയന്നുപോയി. പേടിച്ചുപോയ കൃഷിക്കാരൻ ആടിനെ താഴെയിറക്കി ഓടിച്ചുവിട്ടു. ഇതു കാത്തിരുന്ന തട്ടിപ്പുകാരാകട്ടെ ആടിനെ സ്വന്തമാക്കുകയും ചെയ്തു.

2. നീലത്തിൽ ചാടിയ കുറുക്കൻ

ഒരു കാട്ടിൽ ചെമ്പൻ എന്ന ഒരു കുറുക്കൻ ഉണ്ടായിരുന്നു. പട്ടണത്തിന്റെ അതിർത്തിയിലുള്ള കാട്ടു പ്രദേശത്തായിരുന്നു അവന്റെ മാളം.

ഒരു രാത്രി വിശന്നു വലഞ്ഞ് അവൻ പട്ടണത്തിലെത്തി. ആ പട്ടണത്തിൽ കറുമ്പൻ എന്നും പാണ്ടൻ എന്നു പേരുള്ള. രണ്ടു നായ്ക്കൾ ഉണ്ടായിരുന്നു. കുറുക്കനെ കണ്ടപ്പോൾ കറുമ്പനും പാണ്ടനും അവനെ അക്രമിച്ചു. രക്ഷപ്പെട്ടോടിയ ചെമ്പൻ ചെന്നു കയറിയത് ഒരു അലക്കുകാരന്റെ വീട്ടിലാണ്. ഓട്ടത്തിനിടയിൽ അലക്കുകാരൻ തന്റെ വീടിനുപുറകിൽ നീലം കലക്കിവച്ചിരുന്ന പാത്രത്തിലേക്ക് കുറുക്കൻ തലയും കുട്ടി വീണു- തപ്പിത്തടഞ്ഞെഴുന്നേറ്റ് അവൻ കാട്ടിലേക്കോടി.

കാട്ടുമൃഗങ്ങൾ ആ കാഴ്ച കണ്ട് അമ്പരന്നു. അതാ നീലനിറത്തിൽ ഒരു വിചിത്രജീവി. അവർ ഭയത്തോടെ മാറിനിന്നു.

സൂത്രക്കാരനായ കുറുക്കന് കാര്യം പിടികിട്ടി. അവൻ പറഞ്ഞു: "പേടിക്കേണ്ട, ഞാൻ ദേവലോകത്തു ദേവന്മാരുടെ രാജാവ് അയച്ചതാണെന്നെ".

ഇതു കേട്ട സടയൻ സിംഹവും, വരയൻ കടുവയും, കറുമ്പനായും മല്ലുക്കരടിയും എല്ലാം ഭയഭക്തിബഹുമാനങ്ങളോടെ കുറുക്കനെ വണങ്ങി. കുറുക്കനെ അവർ രാജാവാക്കി വാഴിച്ചു. എല്ലാവരേയും അടക്കി ഭരിച്ച് അന്നുമുതൽ കുറുക്കൻ കാട്ടിൽ സുഖമായി കഴിഞ്ഞു.

അങ്ങനെയിരിക്കെ ഒരു ദിവസം കുറുക്കരാജാവ് പരിവാരങ്ങളോടൊപ്പം ഇരിക്കുമ്പോൾ കുറുക്കൻമാർ ഓരിയിടുന്ന ശബ്ദം കേട്ടു. അതു കേട്ട് സന്തോഷത്താൽ മതിമറന്ന് നീലകുറുക്കൻ ചാടിയെണീറ്റു. എന്നിട്ട് ഉച്ചത്തിൽ ഓരിയിടാൻ തുടങ്ങി. സിംഹവും കടുവയും ആനയും കരടിയുമെല്ലാം കുറുക്കന്റെ കള്ളത്തരം തിരിച്ചറിഞ്ഞു. അവർ കുറുക്കനെ അടിച്ച് അവശനാക്കി കാട്ടിൽ നിന്നും ഓടിച്ചു.

കഥയെ ആസ്പദമാക്കിയുള്ള ചോദ്യാവലി (Questions Based on Story)

ഇതെന്തുജീവി?

1. ഒന്നാമത്തെ തട്ടിപ്പുകാരൻ ആടിനെപ്പറ്റി പറഞ്ഞതെന്ത്?
2. രണ്ടാമത്തെ തട്ടിപ്പുകാരൻ ആടിനെപ്പറ്റി പറഞ്ഞതെന്ത്?
3. മൂന്നാമത്തെ തട്ടിപ്പുകാരൻ ആടിനെപ്പറ്റി പറഞ്ഞതെന്ത്?
4. കൃഷിക്കാൻ ആടിനെ എവിടെനിന്നാണ് വാങ്ങിയത്?
5. കൃഷിക്കാൻ ആടിനെ എന്തിനുവേണ്ടിയാണ് വാങ്ങിയത്?
6. അവസാനം കൃഷിക്കാരൻ ആടിനെ എന്തുചെയ്തു?

നീലത്തിൽ ചാടിയ കുറുക്കൻ

7. നായകൾ ഓടിച്ചപ്പോൾ കുറുക്കൻ ആരുടെ വീട്ടിലാണ് കയറിയത്.
8. നീലപാത്രം എവിടെയാണ് വച്ചിരുന്നത്?
9. കുറുക്കനെ ആദ്യമായി വണങ്ങിയത് ഏതു മൃഗമാണ്?
10. കുറുക്കനെ മൂന്നാമതായി വണങ്ങിയത് ആരാണ്?

Appendix F3

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Story- Recall

(FINAL)

Scoring Key

1. നായ ആണെന്നാണ് പറഞ്ഞത്
2. ചത്ത പശുകുട്ടി ആണെന്നു പറഞ്ഞു.
3. കഴുതയാണെന്നു പറഞ്ഞു
4. ചന്തയിൽ നിന്ന്
5. മകന് പാൽ കൊടുക്കുന്നതിന്
6. താഴെയിറക്കി ഓടിച്ചുവിട്ടു
7. അലക്കുകാരന്റെ വീട്ടിൽ
8. അലക്കുകാരന്റെ വീടിനു പുറകിൽ
9. സടയൻ സിംഹം
10. കുറുമ്പനാന

Appendix G1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Battery of Observation Schedules for Classroom Practices

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

ലോവർ പ്രൈമറി ക്ലാസ്റൂമിലെ അധ്യാപകവിദ്യാർത്ഥി ബന്ധത്തിന്റെ വിവിധ തലങ്ങളെ മനസ്സിലാക്കി വിലയിരുത്തുന്നതിനാണ് ഇവിടെ ശ്രമിക്കുന്നത്. ക്ലാസ്റൂമുമായി ബന്ധപ്പെട്ട അഞ്ച് പ്രധാനകാര്യങ്ങൾ; (1) അധ്യാപക വിദ്യാർത്ഥി ബന്ധത്തിന്റെ ഗുണമേന്മ, (2) അധ്യാപികയുടെ ആശയവിനിമയത്തിലെ വ്യക്തത, (3) അധ്യാപികയുടെ ബ്ലാക്ബോർഡിൽ എഴുതുന്നതിന്റെ ഗുണമേന്മ, (4) പ്രബലനം, (5) സമയവിനിയോഗം എന്നിവയാണ് നിരീക്ഷിക്കുന്നത്.

Quality of Teacher Pupil Relationship

അഞ്ചു തലങ്ങളിലുള്ള ആശയങ്ങൾ ഓരോന്നും ഉപവിഭാഗങ്ങൾ നൽകിയാണ് നിരീക്ഷണത്തിനുള്ള പ്രസ്താവനകൾ തയ്യാറാക്കിയിരിക്കുന്നത്. ഈ ഉപവിഭാഗങ്ങൾ 5- Point Scale ഉപയോഗിച്ച് രേഖപ്പെടുത്തുന്നു (എല്ലായ്പ്പോഴും-4, ഇടയ്ക്കിടെ-3, ചിലപ്പോൾ-2, വല്ലപ്പോഴും-1, ഒരിക്കലുമില്ല-0)

1. സ്നേഹപൂർണ്ണമായ പെരുമാറ്റം.

i പ്രസന്നമായ ഭാവം

ii കുട്ടികളുടെ പേരുവിളിച്ച് സ്ഫുടമായി സംസാരിക്കുന്നു

iii കുട്ടികളുമായി അടുപ്പം ഉണ്ടാക്കുന്നതിന് വ്യക്തമായ ശ്രമം നടത്തുന്നു

iv ക്ഷമാപൂർവ്വം ഇടപെടുന്നു

2. ശിക്ഷാനടപടികൾ സ്വീകരിക്കുന്നു.

i ഭയപ്പെടുത്തുന്ന ഭാവം

ii ഭയപ്പെടുത്തുന്ന സംസാരം

iii അടിക്കുന്നു

iv വഴക്കു പറയുന്നു

v എഴുന്നേൽപ്പിച്ചു നിർത്തുന്നു

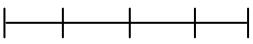
3. കുട്ടി മടികൂടാതെ സമീപിക്കുന്നു

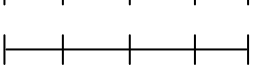
i സംശയദൂരീകരണത്തിന്

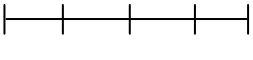
ii അധ്യാപികയുടെ അടുത്തുചെന്നു സംസാരിക്കുന്നത്

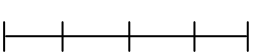
iii മടികൂടാതെ അഭിപ്രായം/മനോഭാവം/ പരാതി/ ഉത്പന്നങ്ങൾ പ്രകടിപ്പിക്കുന്നത്

4. എല്ലാ കുട്ടികളിലുമുള്ള ശ്രദ്ധ

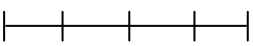
   i കുട്ടികളുടെ അടുത്തു ചെന്നു സംസാരിക്കുന്നു 

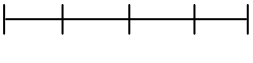
   ii കുട്ടികളുടെ അടുത്തു ചെന്ന് തെറ്റുകൾ തിരുത്തുന്നു 

   iii കുട്ടികളുടെ അടുത്തുചെന്ന് നിർദ്ദേശങ്ങൾ നൽകുന്നു 

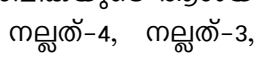
   iv അശ്രദ്ധരായിരിക്കുന്ന കുട്ടികളെ തിരിച്ചറിയുന്നു 

5. വിദ്യാർത്ഥികളുടെ പങ്കാളിത്തം ഉറപ്പുവരുത്തൽ

   i എല്ലാവരോടും ചോദ്യം ചോദിക്കുന്നു 

   ii പ്രവർത്തനങ്ങളിൽ എല്ലാവരേയും പങ്കെടുപ്പിക്കുന്നു 

   iii ഓരോ കുട്ടിയേയും പ്രത്യേകം ശ്രദ്ധിക്കുന്നു 

   iv വിദ്യാർത്ഥികൾ തമ്മിലും അധ്യാപികയും വിദ്യാർത്ഥിയും തമ്മിലുള്ള ആശയ വിനിമയം വർദ്ധിപ്പിക്കുന്നു 

Clarity of Teachers' Verbal Communication

ഏഴു തലങ്ങളിലൂടെ 5- Point Scale ഉപയോഗിച്ചാണ് അധ്യാപികയുടെ ആശയ വിനിമയവ്യക്തത അളക്കുന്നത്. (ഏറ്റവും മികച്ചത്-5, വളരെ നല്ലത്-4, നല്ലത്-3, ശരാശരി-2, ദുർബലം/മോശം-1)

	Dimension	**5**	**4**	**3**	**2**	**1**
		ഏറ്റവും മികച്ചത്	**വളരെ നല്ലത്**	**നല്ലത്**	**ശരാശരി**	**ദുർബലം/ മോശം**
1.	ഉച്ചാരണശുദ്ധി (കൂട്ടക്ഷരം, അതിഖരം, ഘോഷം, ഇരട്ടിപ്പ്, ഊഷ്മാക്കൾ)					
2.	അർത്ഥവ്യക്തത (വാക്കുകൾ വേർ തിരിച്ച് സംസാരിക്കുക, പരിചിതമായ/ ലളിതമായ വാക്കുകൾ, നിറുത്ത്					
3.	ശബ്ദത്തിലെ ഉയർച്ച താഴ്ചകൾ					
4.	ഭാവാത്മകമായ വായന/പറയൽ					
5.	പ്രാദേശിക ഭാഷാ സ്വാധീനം ഒഴിവാക്കൽ					
6.	ശ്രാവ്യത					
7.	കണ്ണിൽ ശ്രദ്ധിച്ച് സംസാരിക്കൽ					

Quality of Black Board Work

നാലു തലങ്ങളിലൂടെയാണ് അധ്യാപികയുടെ ബോർഡിൽ എഴുതുന്നതിന്റെ ഗുണമേന്മ പരിശോധിക്കുന്നത്. ഇവ 5- Point Scale ഉപയോഗിച്ച് രേഖപ്പെടുത്തുന്നു. (ഏറ്റവും മികച്ചത്-5, വളരെ നല്ലത്-4, നല്ലത്-3, ശരാശരി-2, ദുർബലം/മോശം-1).

Dimension	5	4	3	2	1
	ഏറ്റവും മികച്ചത്	വളരെ നല്ലത്	നല്ലത്	ശരാശരി	ദുർബലം/ മോശം
വ്യക്തത					
അനുപാതം					
വേഗത					
വാക്കുകൾക്കിടയിലെ അകലം					
ലാളിത്യം					

Reinforcement for Whole Class

വിദ്യാർത്ഥിയെ പ്രബലനത്തിലൂടെ ഋണാത്മക പ്രവൃത്തികളിലേക്ക് നയിക്കുന്നതിനാവശ്യമായ അഞ്ചു തലങ്ങളിലൂടെയാണ് ക്ലാസ്റൂം പ്രബലനം വിലയിരുത്തിയിരിക്കുന്നത്. ഈ അഞ്ചു തലങ്ങൾ അധ്യാപിക പ്രകടമാക്കുകയാണെങ്കിൽ Tally നിശ്ചിത സ്ഥാനത്ത് രേഖപ്പെടുത്തുക.

തിയ്യതി: സമയം:

Components	Period			Grand total
	1	2	3	
ധനാത്മക വാചിക പ്രബലനം				
ആവർത്തനം				
വാചികേതര പ്രബലനം				
ധനാത്മക ആംഗിക പ്രബലനം				
കുട്ടികളുടെ ഉത്തരങ്ങൾ ബോർഡിൽ എഴുതൽ				
ആകെ				

ENGAGED TIME RECORDING FORM

Name of Teacher ---------- Date of Observation----------

Observation Time ---------- Observer ----------

Duration of observation interval: 3 mts.

45 മിനുട്ടുള്ള ഒരു പിരീഡിൽ അധ്യാപികയുടെ സമയ വിനിയോഗമാണ് ഇതിൽ രേഖപ്പെടുത്തേണ്ടത്. മൂന്ന് മിനിറ്റ് വീതമുള്ള ഇടവേളകളിൽ അധ്യാപനം, പ്രവർത്തനം, പ്രവർത്തനമില്ലായ്മ എന്നീ കാര്യങ്ങളിൽ ഏതാണ് നടക്കുന്നതെന്ന് രേഖപ്പെടുത്തുക. പ്രവർത്തനമില്ലായ്മക്ക് '0'ഉം മറ്റുള്ളവയ്ക്ക് '1'ഉം ആണ് രേഖപ്പെടുത്തേണ്ടത്.

Interval	**പാഠ്യപ്രവർത്തനം**	**പാഠ്യാനുബന്ധ പ്രവർത്തനം**	**പ്രവർത്തനമില്ലായ്ക**
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
Total			

Appendix G2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Battery of Observation Schedules for Classroom Practices

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

This observation schedule is prepared to find out the teacher-student relationship in the primary classroom. There are five dimensions in this schedule namely, Quality of teacher pupil relationship, clarity of teachers' verbal communication, Quality of blackboard work, Reinforcement and engaged time.

Quality of Teacher Pupil Relationship

There are five major components of teacher student relationship in this schedule. There are subcomponents for each major component. These subcomponents are rated on a five-point scale [Always (4), Often (3), Sometimes (2), Rarely (1), Never (0)].

1 Affectionate demeanor

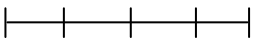
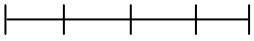
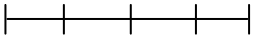
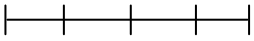
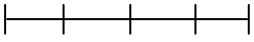
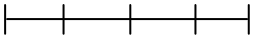
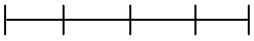
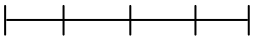
- i Pleasant expression
- ii Pronuncing the names of each student
- iii Try to make rapport
- iv Showing patience

2 Resorting to punishment

- i Threatening Gestures
- ii Threatening Sounds
- iii Corporal punishment
- iv Scolding
- v Make the student stand in the class

6. Approachability

- i For clearing doubts
- ii To talk with teacher
- iii To express opinion, attitude, complaints, and to show the work done

7. Individual Attention
   - i Talking with each children 
   - ii Correcting mistakes of children 
   - iii Giving directions 
   - iv Notice the absent minded students 
8. Involving students
   - i Ask questions to all 
   - ii Make the students participate in activities 
   - iii Eye movement on every student 
   - iv Enhance Student-student/student-teacher interaction 

Clarity of Teachers' Verbal Communication

Clarity of teachers' verbal communication is measured by a 5- point scale through seven dimensions.

		5	**4**	**3**	**2**	**1**
		Excellent	**Very Good**	**Good**	**Average**	**Poor**
1.	Right Pronunciation					
2.	Clarity of Meaning					
3.	Proper intonation					
4.	Reading with expression					
5.	Avoide coloqial language					
6.	Audibility					
7.	Eye contact					

Black Board Work

Rate each dimension of the scale to evaluate Quality of Blackboard work. It is measured by using 5-point scale

Dimension	5	4	3	2	1
	Excellent	Very Good	Good	Average	Poor
Legibility					
Proportion					
Speed					
Spacing between words					
Simplicity					

Reinforcement for Whole Class

(Put tally marks for presence of each component)

Date: Time:

Components	Period			Grand total
	1	2	3	
Positive verbal reinforcers				
Repeating and Rephrasing				
Extra verbal cues				
Positive non-verbal cues				
Writing pupils answers on Black Board				
Total				

ENGAGED TIME RECORDING FORM

Name of Teacher ---------- Date of Observation----------

Observation Time ---------- Observer ----------

Duration of observation interval: 3 mts.

The observer can put 1 in every three minute interval in a class period of forty five minute for reacording Academic Engagement, Procedural Engagement and Non-engagement perfomed by the teacher. Non engagement is considered as zero and the Academic Engagement Procedural Engagement as one.

Interval	**Academic Engagement**	**Procedural Engagement**	**Non-engagement**
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
Total			

Appendix G3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Battery of Observation Schedules for Classroom Practices

(For content validation by experts)

Dr. K. Abdul Gafoor — Associate Professor
Remia. K.R. — Research Scholar

ക്രമ നമ്പർ	Quality of Teacher Pupil Relationship	അനുയോജ്യമല്ല	അനുയോജ്യം	അനുയോജ്യം ഭാഗികം
1.	ലോവർ പ്രൈമറി അധ്യാപകർക്ക് വിദ്യാർത്ഥികളുമായുള്ള ബന്ധത്തിന്റെ ഗുണമേന്മ നിരീക്ഷിക്കുന്നതിന് ഈ നിരീക്ഷണ മാനകം അനുയോജ്യമാണോ?			
2.	ക്ലാസ് അധ്യാപനത്തിനിടയിൽ നിരീക്ഷണം നടത്തുന്നതിന് ഈ നിരീക്ഷണ മാനകം അനുയോജ്യമാണോ?			
3.	ഈ മാനകത്തിലെ അഞ്ചു തലങ്ങൾ നിരീക്ഷണത്തിന് സഹായകമാണോ?			
4.	ഓരോ തലത്തിലുമുള്ള ഉപവിഭാഗങ്ങൾ സൂക്ഷ്മമായ നിരീക്ഷണത്തിന് സഹായകമാണോ?			
5.	5-Point Rating അധ്യാപക-വിദ്യാർത്ഥി ബന്ധത്തെ നിരീക്ഷിക്കുന്നതിനനുയോജ്യമാണോ?			

ക്രമ നമ്പർ	Clarity of Verbal Communication	അനുയോജ്യമല്ല	അനുയോജ്യം	അനുയോജ്യം ഭാഗികം
1.	ലോവർ പ്രൈമറി അധ്യാപകരുടെ ആശയവിനിമയത്തിലെ വ്യക്തത നിരീക്ഷിക്കുന്നതിന് ഈ Observation Schedule അനുയോജ്യമാണോ?			
2.	ക്ലാസ് അധ്യാപനത്തിനിടയിൽ നിരീക്ഷിക്കുന്നതിന് ഈ Observation Schedule അനുയോജ്യമാണോ?			
3.	ഇതിലെ Dimensions അധ്യാപികയുടെ ആശയവിനിമയത്തിലെ വ്യക്തത നിരീക്ഷിക്കുന്നതിനും വിലയിരുത്തുന്നതിനും അനുയോജ്യമാണോ?			
4.	5-point rating അധ്യാപികയുടെ ആശയവിനിമയത്തിലെ വ്യക്തത നിരീക്ഷിക്കുന്നതിനും വിലയിരുത്തുന്നതിനും അനുയോജ്യമാണോ?			

ക്രമ നമ്പർ	**Blackboard Work**	അഭിപ്രായമില്ല	യോജിക്കുന്നു	യോജിക്കുന്നില്ല
1.	ലോവർ പ്രൈമറി അധ്യാപകരുടെ ബ്ലാക്ക് ബോർഡിൽ എഴുതുന്നതിന്റെ ഗുണമേന്മ വിലയിരുത്താൻ ഈ Observation Schedule അനുയോജ്യമാണോ?			
2.	ക്ലാസ് അധ്യാപനത്തിനിടയ്ക്ക് അധ്യാപകന്റെ ബ്ലാക് ബോർഡിലെ എഴുത്ത് വിലയിരുത്താൻ ഈ Observation Schedule അനുയോജ്യമാണോ?			
3.	ഇതിലുപയോഗിച്ചിരിക്കുന്ന Dimensions അധ്യാപികയുടെ എഴുത്ത് നിരീക്ഷിക്കുന്നതിനും വിലയിരുത്തുന്നതിനും ഈ Observation Schedule അനുയോജ്യമാണോ?			
4.	5-point rating അധ്യാപികയുടെ എഴുത്തിലെ വ്യക്തത നിരീക്ഷിക്കുന്നതിനും വിലയിരുത്തുന്നതിനും അനുയോജ്യമാണോ?			

ക്രമ നമ്പർ	**Reinforcement**	അഭിപ്രായമില്ല	യോജിക്കുന്നു	യോജിക്കുന്നില്ല
1.	ലോവർ പ്രൈമറി അധ്യാപകരുടെ ക്ലാസ്റൂം പ്രബലനം വിലയിരുത്തുന്നതിന് ഈ Observation Schedule അനുയോജ്യമാണോ?			
2.	ക്ലാസ് അധ്യാപനത്തിനിടയ്ക്ക് ലോവർ പ്രൈമറി അധ്യാപകരുടെ ക്ലാസ്റും പ്രബലനം വിലയിരുത്തുന്നതിന് ഈ Observation Schedule അനുയോജ്യമാണോ?			
3.	ഈ Observation Schedule ലെ വിവിധതലങ്ങൾ ലോവർ പ്രൈമറി അധ്യാപകരുടെ ക്ലാസ്റൂം പ്രബലനം വിലയിരുത്തുന്നതിന് അനുയോജ്യമാണോ?			
4.	5-point rating ക്ലാസ്റും പ്രബലനം വിലയിരുത്തുന്നതിന് അനുയോജ്യമാണോ?			

Appendix G4

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Battery of Observation Schedules for Classroom Practices

(For content validation by experts)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

	Quality of Teacher Pupil Relationship	**Not Appropriate**	**Appropriate**	**Highly Appropriate**
1.	Whether the observation schedule appropriate for assessing teaching student relationship among lower primary teachers?			
2.	Whether the observation schedule appropriate for assessing teacher student relationship during the teaching learning process?			
3.	Are these five dimensions of the scale appropriate to evaluate teacher student relationship?			
4.	Are the subcomponents of each dimension useful for precise evaluation of teacher student relationship.			
5.	Is the five point rating appropriate for assessing teacher student relationship.			

	Clarity of verbal communication	**Not Appropriate**	**Appropriate**	**Highly Appropriate**
1.	Whether the observation schedule is appropriate to evaluate clarity of verbal communication of lower primary teachers?			
2.	Whether the observation schedule is appropriate for observing during teaching learning process?			
3.	Are these dimensions appropriate for evaluating clarity of verbal communication?			
4.	Whether the 5-point rating is appropriate for evaluating clarity of verbal communication?			

	Blackboard work	**Not Appropriate**	**Appropriate**	**Highly Appropriate**
1.	Whether the observation schedule is appropriate to evaluate quality of blackboard work of lower primary teachers?			
2.	Whether the observation schedule is appropriate to observe blackboard work during teaching learning process?			
3.	Are these dimensions appropriate to measure the blackboard work?			
4.	Is the 5-point rating is appropriate for evaluating blackboard work?			

	Reinforcement	**Not Appropriate**	**Appropriate**	**Highly Appropriate**
1.	Whether the observation schedule is appropriate for measuring the reinforcement pattern of lower primary teachers?			
2.	Whether the observation schedule is appropriate for observing reinforcement pattern of the teacher during teaching learning process?			
3.	Are these components of reinforcement appropriate to measure the reinforcement pattern of lower primary students?			
4.	Is the five point scaling appropriate to measure the frequency of each dimension of reinforcement?			

Appendix H1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Course Completion

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

Name of the School :

Class:

Name of the Teacher :

Division:

	Course Completion	എല്ലായ്പ്പോഴും	ചിലപ്പോഴൊക്കെ	ഒരിക്കലുമില്ല
1.	ഓരോ ടേമിലേയും പാഠഭാഗങ്ങൾ കൃത്യസമയത്ത് എടുത്തു തീർക്കാൻ സാധിക്കാറുണ്ടോ?			
2.	ടേമിന്റെ അവസാനസമയത്ത് പാഠഭാഗങ്ങൾ തിരക്കുപിടിച്ച് തീർക്കേണ്ടിവരാറുണ്ടോ?			
3.	എല്ലാ യൂണിറ്റുകളിലേയും പ്രവർത്തനങ്ങൾ പൂർണ്ണമായും ചെയ്തു തീർക്കാൻ സാധിക്കാറുണ്ടോ?			

Appendix H2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Course Completion

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

Name of the School :

Class:

Name of the Teacher :

Division:

	Course Completion	Always	Sometimes	Never
1.	Is it possible to complete the lessons in each term?			
2.	Whether you have to complete the lessons in a hurry at the end of the term?			
3.	Is it possible to complete all activities the units?			

Appendix I

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Class Library Information Blank

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

Name of the school:

Class:

Division:

1. Number of books in the class library :.....
2. Number of periodicals in the class library :.....
3. Number of books issued to the student in an year :.....

Appendix J1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Home Language Environment

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

Name of the Student:……..……

Name of the School : ……..……..

ലോവർ പ്രൈമറി വിദ്യാർത്ഥികളുടെ ഗാർഹിക ഭാഷാസാഹചര്യം, ഭാഷാപരിപോഷണ പരിതസ്ഥിതികൾ എന്നിവ വിലയിരുത്തുന്നതിനാണ് ഇവിടെ ശ്രമിക്കുന്നത്. ഇത് വ്യക്തിഗതമായാണ് അന്വേഷിക്കേണ്ടത്. 3-Point Scale ഇതിനായി ഉപയോഗിക്കുന്നു (ദിവസവും-2, ചിലപ്പോൾ-1, തീരെ ഇല്ല-0)

Parental Communication/Conversation with Children

ക്രമ നമ്പർ	പ്രസ്താവന	ദിവസവും	ചിലപ്പോൾ	തീരെ ഇല്ല
സ്കൂളിൽ				
1.	എന്തെല്ലാം പഠിപ്പിച്ചു എന്ന് അന്വേഷിക്കാറുണ്ട്			
2.	അധ്യാപികമാരെക്കുറിച്ച് അന്വേഷിക്കാറുണ്ട്			
3.	കളികളെക്കുറിച്ച് അന്വേഷിക്കാറുണ്ട്			
4.	കൂട്ടുകാരെക്കുറിച്ച് അന്വേഷിക്കാറുണ്ട്			
5.	സ്പോർട്സ്,യുവജനോത്സവം, സ്വാതന്ത്ര്യദിനം എന്നിവയെക്കുറിച്ച് ചോദ്ക്കാറുണ്ട്			
6.	യാത്രകൾ പോയതിനെക്കുറിച്ച് ചോദിക്കാറുണ്ട്			
7.	കളിപ്പാട്ടങ്ങളെക്കുറിച്ച് സംസാരിക്കാറുണ്ട്			
8.	ആഘോഷങ്ങളെക്കുറിച്ച് (ഓണം, വിഷു, പെരുന്നാൾ, ക്രിസ്തുമസ്) സംസാരിക്കാറുണ്ട്.			
9.	വീട്ടുപകരണങ്ങളെക്കുറിച്ച് പറഞ്ഞുതരാറുണ്ട്			
10.	വീടിനു പുറത്തുള്ള വസ്തുക്കൾ/ജീവികൾ എന്നിവയെക്കുറിച്ച് പറഞ്ഞു തരാറുണ്ട്.			
11.	സംശയങ്ങൾക്ക്/ചോദ്യങ്ങൾക്ക് മറുപടി തരാറുണ്ട്			
12.	നിങ്ങൾ പറയുന്നത് ശ്രദ്ധിച്ചു കേൾക്കാറുണ്ട്.			

Familiarizing Language Forms

ക്രമ നമ്പർ	പ്രസ്താവന	ചിലപ്പോൾ	പതിവായി	ഒരിക്കലും ഇല്ല
അച്ഛനമ്മമാർ/മുതിർന്നവർ				
13.	കഥ പറഞ്ഞു തരാറുണ്ട്			
14.	കവിത ചൊല്ലിത്തരാറുണ്ട്			
15.	കവിത ചൊല്ലാൻ പഠിപ്പിക്കാറുണ്ട്.			
16.	സംഭാഷണത്തിൽ പഴഞ്ചൊല്ലുകൾ ഉപയോഗിക്കാറുണ്ട്.			
17.	കഥ പറയിക്കാറുണ്ട്.			
18.	കഥയിൽ നിന്ന് ചോദ്യം ചോദിക്കാറുണ്ട്.			
19.	മതഗ്രന്ഥങ്ങൾ വായിപ്പിക്കാറുണ്ട്.			

Parental Assistance/Support

ക്രമ നമ്പർ	പ്രസ്താവന	പതിവായി	ചിലപ്പോൾ	ഒരിക്കലും ഇല്ല
അച്ഛനമ്മമാർ/മുതിർന്നവർ				
20.	വായിക്കുമ്പോൾ കൂടെയിരിക്കാറുണ്ട്			
21.	വായിക്കുമ്പോൾ തെറ്റുതിരുത്താറുണ്ട്			
22.	എഴുതുമ്പോൾ കൂടെയിരിക്കാറുണ്ട്			
23.	എഴുതുമ്പോൾ തെറ്റുതിരുത്താറുണ്ട്.			
24.	നന്നായി എഴുതിയാൽ/വായിച്ചാൽ/സംസാരിച്ചാൽ അഭിനന്ദിക്കാറുണ്ട്			
25.	മുതിർന്നവരുമായി സംസാരിക്കുന്നത് പ്രോത്സാഹിപ്പിക്കാറുണ്ട്.			
26.	പുതിയ വാക്കുകൾ എഴുത്ത്/സംസാരം എന്നിവയിലുപയോഗിച്ചാൽ അഭിനന്ദിക്കാറുണ്ട്.			
27.	വീട്ടിൽ മലയാളം കോപ്പി എഴുതിക്കാറുണ്ട്.			
28.	ലൈബ്രറിയിലേക്ക് കൊണ്ടുപോകാറുണ്ട്.			
29.	പാഠപുസതകം വായിപ്പിക്കാറുണ്ട്.			
30.	വീട്ടിലുള്ള പുസ്തകങ്ങൾ വായിപ്പിക്കാറുണ്ട്.			
31.	കഥ, കവിത ഇവ എഴുതാൻ പ്രോത്സാഹിപ്പിക്കാറുണ്ട്.			

ക്രമ നമ്പർ	പ്രസ്താവന	എപ്പോഴും	ചിലപ്പോൾ	തീരെ ഇല്ല
32.	പാട്ടുകൾ പഠിപ്പിച്ചു തരാറുണ്ട്			
33.	വിരൽ വച്ച് (Pointed Reading) വായിക്കാൻ ശീലിപ്പിക്കാറുണ്ട്.			
34.	വായിച്ച പുസ്തകങ്ങളെക്കുറിച്ച് സംസാരിക്കാറുണ്ട്.			
35.	പത്രം വായിക്കാൻ ശീലിപ്പിക്കാറുണ്ട്.			
36.	അക്ഷരമാലാ ഗാനങ്ങൾ പഠിപ്പിച്ചു തരാറുണ്ട്			
37.	വായിക്കേണ്ട ശൈലി (ഭാവം, ഉയർച്ച താഴ്ചകൾ) പരിശീലിപ്പിക്കാറുണ്ട്.			
38.	ഡയറി എഴുതാൻ ശീലിപ്പിക്കാറുണ്ട്.			

Utilization of Resources

ക്രമ നമ്പർ	പ്രസ്താവന	എപ്പോഴും	ചിലപ്പോൾ	തീരെ ഇല്ല
നിങ്ങൾ				
39.	പാഠപുസ്തകം പതിവായി വായിക്കാറുണ്ട്.			
40.	നിഘണ്ടുകൾ ഉപയോഗിക്കാറുണ്ട്.			
41.	വീട്ടിലുള്ള പുസ്തകങ്ങൾ വായിക്കാറുണ്ട്.			
42.	ലൈബ്രറിയിൽ പോകാറുണ്ട്.			
43.	ലൈബ്രറി പുസ്തകങ്ങൾ വായിക്കാറുണ്ട്.			
44.	പത്രം വായിക്കാറുണ്ട്.			
45.	ചിത്രകഥാ പുസ്തകങ്ങൾ വായിക്കാറുണ്ട്			
46.	ടിവി, റേഡിയോ, പുസ്തകങ്ങൾ എന്നിവയിലെ സംഭാഷണങ്ങൾ, വാക്കുകൾ എന്നിവ എഴുത്തിലും സംസാരത്തിലും ഉപയോഗിക്കാറുണ്ട്.			
47.	ഡയറി പതിവായി എഴുതാറുണ്ട്.			

Appendix J2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Home Language Environment

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

Name of the Student:……

Name of the School : ……..

This scale is prepared to find out the Home Language Environment of Lower Primary Students. The Scale has to be administered individually and the student has to select one of the responses from the rating scale and record their responses.

Parental Communication/Conversation with Children

SI No	Statement	Daily	Sometimes	Never
Parents used to				
1.	Enquire about what were taught at school			
2.	Enquire about teachers			
3.	Enquire about play in school			
4.	Enquire about friends			
5.	Enquire about cocurricular activities like sports day, youth festival and national days.			
6.	Enquire about field trips			
7.	Enquire about toys			
8.	Communicate about holydays			
9.	Instruct about domestic gadgets			
10.	Speak about things and life nearby home			
11.	Clear doubts and responds to question			
12.	Attend to what you communicate			

Familiarizing Language Forms

SI No	Statement	Daily	Sometimes	Never
Parents /elders used to				
13.	Narrate stories			
14.	Recites poems			
15.	Practice/train reciting poems			
16.	Use proverbs in conversation			
17.	Make me narrate stories			
18.	Raise questions on the stories			
19.	Require recites holy scripts			

Parental Assistance/Support

SI No	Statement	Daily	Sometimes	Never
Parents /elders used to				
20.	Sit with me while reading			
21.	Correct my reading errors			
22.	Sit with me while writing			
23.	Correct my writing errors			
24.	Appreciate reading writing and speaking well			
25.	Encourage to talk with elders			
26.	Appreciates incorporating new vocabulary			
27.	Make write Malayalam copy			
28.	Take me to library			
29.	Make me read textbooks			
30.	Make me read otherbooks at home			
31.	Encourage to compose poems/stories			

32.	Teach songs			
33.	Practice pointed reading			
34.	Converse about read books			
35.	Practice reading news papers			
36.	Teach alphabetic songs			
37.	Practice reading expressions			
38.	Train writing diaries			

Utilization of Resources

SI No	**Statement**	**Daily**	**Sometimes**	**Never**
The student				
39.	Reads textbooks regularly			
40.	Uses dictionaries			
41.	Reads books other than textsbooks at home			
42.	Visits libraries			
43.	Reads library books			
44.	Reads news papers			
45.	Reads comics			
46.	Experiments vocabulary from media			
47.	Writes of diary regularly			

Appendix K1

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Teacher Pupil Interaction

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

ലോവർ പ്രൈമറി അധ്യാപകരും വിദ്യാർത്ഥികളും തമ്മിലുള്ള ഇടപെടൽ വിലയിരുത്തുന്നതിനാണ് ഈ Rating Scale തയ്യാറാക്കിയിരിക്കുന്നത്. അന്വേഷകൻ ഇതിലെ ചോദ്യങ്ങൾ ഓരോ കുട്ടിയോടും വ്യക്തിഗതമായി ചോദിച്ച് മറുപടി രേഖപ്പെടുത്തണം. ഇത് 3- Point Scale ൽ രേഖപ്പെടുത്തണം.

1. കുട്ടി ടീച്ചറുടെ അടുത്തേക്ക് പോകാറുണ്ട്.
2. ടീച്ചർ തിരക്കിലാണെങ്കിലും ഏതാവശ്യത്തിനും ടീച്ചറുടെ അടുത്തേക്ക് പോകാറുണ്ട്.
3. ടീച്ചറുടെ കൂടെ സംസാരിക്കാറുണ്ട്.
4. ടീച്ചർ തമാശ പറയാറുണ്ട്.
5. കുട്ടി പറയുന്ന കാര്യങ്ങൾ ടീച്ചർ ശ്രദ്ധിക്കാറുണ്ട്.
6. എന്നെക്കുറിച്ചുള്ള കാര്യങ്ങൾ പറയുമ്പോഴും ടീച്ചർ ശ്രദ്ധിക്കാറുണ്ട്.
7. പ്രശ്നങ്ങൾ (സങ്കടം) വരുമ്പോൾ ടീച്ചർ ആശ്വസിപ്പിക്കാറുണ്ട്.
8. ക്ലാസിൽ കൃത്യ സമയത്ത് എത്തിച്ചേരണമെന്ന് ടീച്ചർ പറയാറുണ്ട്.
9. ടീച്ചർ കഥ പറഞ്ഞു തരാറുണ്ട്.
10. ടീച്ചർ പാട്ടു പാടി തരാറുണ്ട്.
11. കുട്ടിയെക്കൊണ്ട് പാട്ടു പാടിക്കാറുണ്ട്.
12. കുട്ടിയെക്കൊണ്ട് കഥ പറയിക്കാറുണ്ട്.
13. ടീച്ചർ ദേഷ്യപ്പെടാറുണ്ട്.
14. ടീച്ചറെ പേടിയാണ്.
15. ടീച്ചറുടെ ക്ലാസിൽ കുട്ടികൾ ബഹളം വക്കാറുണ്ട്.
16. നന്നായി പഠിച്ചാൽ/ശരിയായി ഉത്തരം പറഞ്ഞാൽ അഭിനന്ദിക്കാറുണ്ട്.
17. ടീച്ചറോട് സംശയങ്ങൾ ചോദിക്കാറുണ്ട്.
18. ക്ലാസിലെ പ്രവർത്തനങ്ങൾ ചെയ്യേണ്ടതെങ്ങനെയെന്ന് അടുത്തുവന്ന് പറഞ്ഞു തരാറുണ്ട്.
19. പ്രവർത്തനങ്ങൾ ശരിയായി ചെയ്തില്ലെങ്കിൽ തിരുത്താറുണ്ട്.
20. പഠിപ്പിച്ച കാര്യങ്ങൾ മനസ്സിലായോ എന്ന് ചോദിക്കാറുണ്ട്.
21. മനസ്സിലാകാത്ത കാര്യങ്ങൾ വീണ്ടും പറഞ്ഞു തരാറുണ്ട്.
22. ക്ലാസ് പ്രവർത്തനങ്ങൾ നടത്തുമ്പോൾ ചുമതലകൾ ഏൽപ്പിക്കാറുണ്ട്.
23. പതിവായി ഹോംവർക്ക് തരാറുണ്ട്.

24. ബോർഡിൽ എഴുതിയത് വായിക്കാൻ വേണ്ടത്ര സമയം ലഭിക്കാറുണ്ട്.
25. ബോർഡിൽ നിന്ന് പകർത്തിയെഴുതാൻ സമയം ലഭിക്കാറുണ്ട്.
26. പറയുന്ന ദിവസം തന്നെ പരീക്ഷകൾ/കേട്ടെഴുത്ത് നടത്താറുണ്ട്.
27. ഞാൻ എഴുതുന്നതിലെ തെറ്റ് തിരുത്താറുണ്ട്.
28. വായിക്കുമ്പോൾ തെറ്റ് തിരുത്താറുണ്ട്.
29. കേട്ടെഴുത്തിലെ തെറ്റുകൾ തിരുത്താറുണ്ട്.
30. ഹോംവർക്ക് ചെയ്തിട്ടുണ്ടോ എന്ന് പരിശോധിക്കാറുണ്ട്.
31. പാഠത്തിലെ ചോദ്യങ്ങൾക്ക് ഉത്തരം കണ്ടെത്താൻ സഹായിക്കാറുണ്ട്.
32. ചോദ്യങ്ങൾക്ക് ഉത്തരം പറയാൻ ആവശ്യമായ സമയം തരാറുണ്ട്.
33. ക്ലാസെടുക്കുന്നതിനിടക്ക് ടീച്ചർ പുറത്തുപോകാറുണ്ട്.
34. മുൻ ക്ലാസിൽ പഠിപ്പിച്ച കാര്യങ്ങൾ ചോദിക്കാറുണ്ട്.
35. പഠിപ്പിച്ച കാര്യങ്ങൾ എഴുതിക്കാറുണ്ട്.
36. പാഠപുസ്തകം മാത്രമാണ് ടീച്ചർ പഠിപ്പിക്കാൻ ഉപയോഗിക്കാറ്.
37. കോപ്പി എഴുതിക്കാറുണ്ട്.
38. കേട്ടെഴുത്ത് നടത്താറുണ്ട്.
39. നോട്ട്ബുക്ക് നോക്കി തെറ്റു തിരുത്താറുണ്ട്.
40. സംഘ പ്രവർത്തനങ്ങൾ നടത്താറുണ്ട്.
41. കമ്പ്യൂട്ടർ ഉപയോഗിച്ച് പഠിപ്പിക്കാറുണ്ട്.
42. ടീച്ചർ ക്ലാസിൽ വരുന്നത് എപ്പോഴാണ്?
43. ടീച്ചർക്ക് കുട്ടിയെ എത്ര ഇഷ്ടമാണ്?
44. കുട്ടിക്ക് ടീച്ചറെ എത്ര ഇഷ്ടമാണ്?
45. ടീച്ചർ പറയുന്ന കാര്യങ്ങളിൽ എത്രത്തോളം വിശ്വാസമാണ്?
46. ടീച്ചറുടെ സംഭാഷണം വ്യക്തമായി മനസ്സിലാകാറുണ്ടോ?
47. ചെയ്ത പ്രവർത്തനങ്ങൾ ടീച്ചർക്ക് കാണിച്ചു കൊടുക്കാൻ മടിയുണ്ടോ?
48. ക്ലാസ്പരീക്ഷ നടത്താറുണ്ടോ?

Appendix K2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Teacher Pupil Interaction

(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

ലോവർ പ്രൈമറി അധ്യാപകരും വിദ്യാർത്ഥികളും തമ്മിലുള്ള ഇടപെടൽ വിലയിരുത്തുന്നതിനാണ് ഈ Rating Scale തയ്യാറാക്കിയിരിക്കുന്നത്. അന്വേഷകൻ ഇതിലെ ചോദ്യങ്ങൾ ഓരോ കുട്ടിയോടും വ്യക്തിഗതമായി ചോദിച്ച് മറുപടി രേഖപ്പെടുത്തണം. ഇത് 3- Point Scale ൽ രേഖപ്പെടുത്തണം.

1. കുട്ടി ടീച്ചറുടെ അടുത്തേക്ക് പോകാറുണ്ട്.
2. ടീച്ചറുടെ കൂടെ സംസാരിക്കാറുണ്ട്.
3. ടീച്ചർ തമാശ പറയാറുണ്ട്.
4. കുട്ടി പറയുന്ന കാര്യങ്ങൾ ടീച്ചർ ശ്രദ്ധിക്കാറുണ്ട്.
5. എന്നെക്കുറിച്ചുള്ള കാര്യങ്ങൾ പറയുമ്പോഴും ടീച്ചർ ശ്രദ്ധിക്കാറുണ്ട്.
6. പ്രശ്നങ്ങൾ (സങ്കടം) വരുമ്പോൾ ടീച്ചർ ആശ്വസിപ്പിക്കാറുണ്ട്.
7. ക്ലാസിൽ കൃത്യ സമയത്ത് എത്തിച്ചേരണമെന്ന് ടീച്ചർ പറയാറുണ്ട്.
8. ടീച്ചർ കഥ പറഞ്ഞു തരാറുണ്ട്.
9. ടീച്ചർ പാട്ടു പാടി തരാറുണ്ട്.
10. കുട്ടിയെക്കൊണ്ട് പാട്ടു പാടിക്കാറുണ്ട്.
11. കുട്ടിയെക്കൊണ്ട് കഥ പറയിക്കാറുണ്ട്.
12. നന്നായി പഠിച്ചാൽ/ശരിയായി ഉത്തരം പറഞ്ഞാൽ അഭിനന്ദിക്കാറുണ്ട്.
13. ടീച്ചറോട് സംശയങ്ങൾ ചോദിക്കാറുണ്ട്.
14. ക്ലാസിലെ പ്രവർത്തനങ്ങൾ ചെയ്യേണ്ടതെങ്ങനെയെന്ന് അടുത്തുവന്ന് പറഞ്ഞു തരാറുണ്ട്.
15. പ്രവർത്തനങ്ങൾ ശരിയായി ചെയ്തില്ലെങ്കിൽ തിരുത്താറുണ്ട്.
16. പഠിപ്പിച്ച കാര്യങ്ങൾ മനസ്സിലായോ എന്ന് ചോദിക്കാറുണ്ട്.
17. മനസ്സിലാകാത്ത കാര്യങ്ങൾ വീണ്ടും പറഞ്ഞു തരാറുണ്ട്.
18. ക്ലാസ് പ്രവർത്തനങ്ങൾ നടത്തുമ്പോൾ ചുമതലകൾ ഏൽപ്പിക്കാറുണ്ട്.
19. പതിവായി ഹോംവർക്ക് തരാറുണ്ട്.
20. ബോർഡിൽ എഴുതിയത് വായിക്കാൻ വേണ്ടത്ര സമയം ലഭിക്കാറുണ്ട്.
21. ബോർഡിൽ നിന്ന് പകർത്തിയെഴുതാൻ സമയം ലഭിക്കാറുണ്ട്.

22. പറയുന്ന ദിവസം തന്നെ പരീക്ഷകൾ/കേട്ടെഴുത്ത് നടത്താറുണ്ട്.

23. ഞാൻ എഴുതുന്നതിലെ തെറ്റ് തിരുത്താറുണ്ട്.

24. വായിക്കുമ്പോൾ തെറ്റ് തിരുത്താറുണ്ട്.

25. കേട്ടെഴുത്തിലെ തെറ്റുകൾ തിരുത്താറുണ്ട്.

26. ഹോംവർക്ക് ചെയ്തിട്ടുണ്ടോ എന്ന് പരിശോധിക്കാറുണ്ട്.

27. പാഠത്തിലെ ചോദ്യങ്ങൾക്ക് ഉത്തരം കണ്ടെത്താൻ സഹായിക്കാറുണ്ട്.

28. ചോദ്യങ്ങൾക്ക് ഉത്തരം പറയാൻ ആവശ്യമായ സമയം തരാറുണ്ട്.

29. ക്ലാസെടുക്കുന്നതിനിടക്ക് ടീച്ചർ പുറത്തുപോകാറുണ്ട്.

30. പഠിപ്പിച്ച കാര്യങ്ങൾ എഴുതിക്കാറുണ്ട്.

31. പാഠപുസ്തകം മാത്രമാണ് ടീച്ചർ പഠിപ്പിക്കാൻ ഉപയോഗിക്കാറ്.

32. കേട്ടെഴുത്ത് നടത്താറുണ്ട്.

33. നോട്ട്ബുക്ക് നോക്കി തെറ്റു തിരുത്താറുണ്ട്.

34. സംഘ പ്രവർത്തനങ്ങൾ നടത്താറുണ്ട്.

35. കമ്പ്യൂട്ടർ ഉപയോഗിച്ച് പഠിപ്പിക്കാറുണ്ട്.

36. ടീച്ചർ ക്ലാസിൽ വരുന്നത് എപ്പോഴാണ്?

37. ടീച്ചർക്ക് കുട്ടിയെ എത്ര ഇഷ്ടമാണ്?

38. കുട്ടിക്ക് ടീച്ചറെ എത്ര ഇഷ്ടമാണ്?

39. ടീച്ചർ പറയുന്ന കാര്യങ്ങളിൽ എത്രത്തോളം വിശ്വാസമാണ്?

40. ടീച്ചറുടെ സംഭാഷണം വ്യക്തമായി മനസ്സിലാകാറുണ്ടോ?

41. ചെയ്ത പ്രവർത്തനങ്ങൾ ടീച്ചർക്ക് കാണിച്ചു കൊടുക്കാൻ മടിയുണ്ടോ?

42. ക്ലാസ്പരീക്ഷ നടത്താറുണ്ടോ?

Appendix K3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Teacher Pupil Interaction

Response Sheet

ക്രമ. നമ്പർ	എല്ലായ്പ്പോഴും	ചിലപ്പോൾ	തീരെയില്ല
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

ക്രമ. നമ്പർ	എല്ലായ്പ്പോഴും	ചിലപ്പോൾ	തീരെയില്ല
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			

ക്രമ. നമ്പർ	എല്ലാ ദിവസവും	ചില ദിവസങ്ങളിൽ	തീരെയില്ല
30.			
31.			
32.			

ക്രമ. നമ്പർ	എല്ലാ ദിവസവും	ചില ദിവസങ്ങളിൽ	തീരെയില്ല
33.			
34.			
35.			

36.	ബെല്ലടിക്കുന്നതിനു മുമ്പ്	ബെല്ലടിച്ച ഉടനെ	ബെല്ലടിച്ച് കുറച്ചു സമയം കഴിഞ്ഞ്
37.	വളരെ	കുറച്ച്	ഇഷ്ടമില്ല
38.	വളരെ	കുറച്ച്	ഇഷ്ടമില്ല
39.	മുഴുവനായും	കുറേയൊക്കെ	വിശ്വാസമില്ല
40.	മുഴുവനായും	കുറച്ച്	മനസ്സിലാകാറില്ല
41.	മടിയില്ല	ചിലപ്പോൾ മടിയാണ്	എപ്പോഴും മടിയാണ്
42.	മാസത്തിലൊരിക്കൽ	ആഴ്ചയിലൊരിക്കൽ	നടത്താറില്ല

Appendix K4

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Teacher Pupil Interaction

(FINAL)

Dr. K. Abdul Gafoor — Associate Professor
Remia. K.R. — Research Scholar

Instructions

This Rating Scale is prepared to find out the relationship between primary school students and their teachers. The scale has to be administered individually. Students has to select one of the ratings from the scale. Responses are to be recorded by the investigator in the response sheet.

1. The student approaches the teacher easily
2. Used to talk with the teacher
3. Teacher says jocks in the classroom
4. Teacher pays attention to the students
5. Teacher pays attention to my situation
6. Teacher consoles whenever I am in grief
7. Teacher asks us to come to the class in the right time
8. Teacher tells stories
9. Teacher sings songs
10. Teacher makes us to sing songs
11. Teacher makes us to tell stories
12. Teacher appreciates us when we study well and give the right answers
13. Asks doubts to the teacher
14. Teacher comes near to us to clarify our doubts
15. Teacher corrects when we are not doing the activities in the right way
16. Teacher asks whether the students understood the lessons
17. Teacher repeats the portions again
18. Teacher assigns duties during class activities
19. Gives home works regularly
20. Provides enough time to read the things written on the board

21. Provides enough time to copy the matter written on the board
22. Conduct exams exactly on the announced time.
23. Corrects the mistakes while writing
24. Corrects the mistakes while reading
25. Corrects the mistakes of dictation
26. Checks our home works
27. Helps to find out answers from the lessons
28. Provides enough time to give answers
29. Teacher goes out in between the class
30. Asks to write about the previous lessons
31. Teacher depends only on the text books to teach
32. Takes dictation
33. Corrects mistakes in the note book
34. Conducts group activities
35. Uses computer to teach
36. When does the teacher come to the class?
37. How much the teacher likes the child?
38. How much the student likes the teacher?
39. How much you trust the words of the teacher?
40. Do you clearly understand the conversation of the teacher?
41. Do you reluctant to show the work done to the teacher?
42. Do the teacher conduct class test?

Appendix K5

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Scale of Teacher Pupil Interaction

Response Sheet

Sl. No.	Always	Sometimes	Never
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Sl. No.	Always	Sometimes	Never
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			

Sl. No.	Daily	Sometimes	Never
30.			
31.			
32.			

Sl. No.	Daily	Sometimes	Never
33.			
34.			
35.			

36.	Before the bell rings	Immediately after the bell	Always comes late
37.	Verymuch	Somewhat	Not at all
38.	Verymuch	Somewhat	Not at all
39.	Verymuch	Somewhat	Not at all
40.	Completely	Somewhat	Not at all
41.	Verymuch	Somewhat	Not at all
42.	Monthly	Weekly	Never

Appendix K6

UNIVERSITY OF CALICUT
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Scale of Teacher Pupil Interaction

(Component Matrix Table)

Exploratory Factor Analysis of Teacher Pupil Interaction Scale

Item No	Factors							Deviation from expected group if any
	1	2	3	4	5	6	7	
28	.702	Individual Attention						
27	.692							
15	.687							
14	.662							
6	.607							In Emotional Bond
17	.604							
23	.585							
16	.579							
25	.574							
13	.504							
26	.491							In Outside Classroom Assignments
5	.457							
24	.439							
33	.421							
22W	.384							
38	Emotional bond	.693						
40		.644						
39		.573						
37		.558						
29		.522						In Whole class communication
36		.513						In Whole class communication
42		.502						In Whole class communication
35	Outside classroom assignments		.704					In Whole class communication
31			.543					In Whole class communication
19			-.431					
2	Adequate time			.530				
1				.495				
18				.492				In Appreciation
21				.479				
41				.395				In Whole class communication
20				.375				
12	Appreciation				.607			In Appreciation
7					.475			In Adequate time
3					.458	.440		
8	Whole class communication					.702		
9						.694		
4						.504		In Individual attention
11						.382		In Enhancing Student participation
30	Enhancing student Participation						.618	
32							.594	
10							.500	
34							.456	

Appendix L

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

General Data Sheet

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

Name of the Student:……

Name of the School : ……..

Details of Family Members

Sl. No.	Name of the Member	Relation	Educational Qualifications	Occupation	age	APL/ BPL

Appendix M1

UNIVERSITY OF CALICUT
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Reading Fluency Scale

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

4	3	2	1	0
1.Expression Expression that emphasizes important words and phrases all the time	Expression that emphasizes important words and phrases most of the time	Some expression that conveys meaning	Ineffective expression-monotone	Reads nothing
2.Phrasing Reads primarily in larger, meaningful groups	Reads in 3-4 word phrase groups with appropriate phrasing	Reads primarily in two word phrases ,word groupings seem awkward	Reads primarily word by word	
3.Self correction Student corrects all the errors or have no error	Student corrects most of the errors	Student corrects some of the errors	Student corrects few/no errors	
4.Word beginnings and endings All word beginnings and endings clearly read	Few errors in reading word beginnings and endings(1-5)	Some errors in reading word beginnings and endings(6-10)	Many errors in reading word beginnings and endings(more than 10)	
5.Substitution No substitution in words/letters	1-5 substitution in words/letters	6-10 substitution in words/letters	Many substitution in words/letters (more than 10)	
6.Omission No omission in words/letters	1-5 omission in words/letters	6-10 omission in words/letters	Many omission in words/letters (more than 10)	
7.Repetition and regression Never occurs	Few times	Sometimes	Most of the time	

Appendix M2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Reading Fluency and Pronunciation

Dr. K. Abdul Gafoor — Associate Professor
Remia. K.R. — Research Scholar

Instruction

This test is proposed to measure the Reading Fluency and pronunciation of 4th standard students. This is an individual test. The story is asked to read by the student in a separate room, and it should be recorded by means of a voice recorder. After this the investigator can listen the recordings and reading fluency can score as per the scale and correct pronunciation can score as one and the incorrect as zero.

നിർദ്ദേശം

നാലാം ക്ലാസ് വിദ്യാർത്ഥികളുടെ ഉച്ചാരണം, ഒഴുക്കോടുകൂടിയ വായന എന്നിവ പരിശോധിക്കുന്നതിനായാണ് ഈ കഥാ വിവരണം നൽകിയിരിക്കുന്നത്. ഇത് ഒരു വ്യക്തിഗതമാനകമാണ്. അന്വേഷകൻ വിദ്യാർത്ഥിയോട് കഥാവിവരണം വായിക്കാനാവശ്യപ്പെടുകയും അത് ഒരു വോയ്സ് റെക്കോർഡറിന്റെ സഹായത്തോടെ രേഖപ്പെടുത്തുകയും വേണം. പിന്നീട് വായനയുടെ ഒഴുക്ക് ചെയ്യാൻ റേറ്റിംഗ് സ്കെയിൽ നൽകിയിട്ടുണ്ട്. കൃത്യമായ ഉച്ചാരണത്തിന് '1'ഉം തെറ്റായതിന് '0'വും നൽകുക.

സന്ധ്യയായി, മുത്തശ്ശിയമ്മ മഞ്ജുവിനെ വിളിച്ചു. ''മഞ്ജൂ, ഉത്സവത്തിനു പോകേണ്ടേ? വേഗംവരൂ''. മഞ്ജു തയ്യാറായി വന്നു. ''കാത്തിരുന്ന് മുഷിഞ്ഞോ?'' അവൾ മുത്തശ്ശിയോടു ചോദിച്ചു. ''ഏയ് ഇല്ല'' മുത്തശ്ശി പറഞ്ഞു. ''അച്ഛൻ വരുന്നില്ലേ?'' മഞ്ജു ചോദിച്ചു. ''ഉവ്വല്ലോ, നീ നടന്നോളൂ, ഞാൻ എത്താം''. അവർ പാടവരമ്പിലൂടെ നടന്നു. തവളകൾ മണ്ണിലിരുന്ന് 'പേക്രോം പേക്രോം' എന്നു കരഞ്ഞു. മഞ്ജു ആകാശത്തേയ്ക്കു നോക്കി. അസ്തമയസൂര്യന്റെ കിരണങ്ങളാൽ മേഘങ്ങൾ ഓറഞ്ചു നിറമായിരിക്കുന്നു. ''ഈ ആകാശത്തിന് എന്തൊരു ഭംഗി'' അവൾ ആശ്ചര്യപ്പെട്ടു. മുത്തശ്ശി മെല്ലെ ചിരിച്ചു.

ഉത്സവപ്പറമ്പിൽ ധാരാളം ജനങ്ങൾ ഉണ്ടായിരുന്നു. ഗജവീരന്മാരെക്കണ്ട് മഞ്ജു അത്ഭുതപ്പെട്ടു. ''ഹോ! എന്തെല്ലാം അലങ്കാരങ്ങളാണ് നെറ്റിപ്പട്ടത്തിൽ!'' അവൾ മനസ്സിൽ വിചാരിച്ചു.

മുത്തശ്ശി മഞ്ജുവിനെ വിളിച്ചു. ''വരൂ നമുക്ക് വളവിൽപ്പനക്കാരന്റെ അടുത്തു പോകാം. വളവിൽപ്പനക്കാരൻ വിവിധതരം വളകൾ പ്രദർശിപ്പിച്ചു. സ്വർണനിറമുള്ളവ, പ്ലാസ്റ്റിക് വളകൾ, ശംഖുവളകൾ, മുതലായവ. മഞ്ജുവിന് കൗതുകം തോന്നി. അച്ഛൻ ബലൂൺ വാങ്ങി വന്നു. അവളുടെ സുന്ദരമായ മുഖം വിടർന്നു. ആ കുസൃതിക്കാരി തുള്ളിച്ചാടി.

തിരിച്ചു വരുമ്പോൾ നേർത്ത മഴക്കാറുണ്ടായിരുന്നു, ഇടിയുടെ ശബ്ദം കേട്ടു. പെട്ടെന്ന് ഭയങ്കര മഴപെയ്തു. കുട ഉണ്ടായിട്ടും ഫലമുണ്ടായില്ല. ഭാഗ്യത്തിന് അവർ ഗ്രന്ഥശാലയുടെ അടുത്തെത്തി. അവിടെ മഞ്ജു കടംകഥാ പുസ്തകം കണ്ടു.

മഴ ശാന്തമായി, വൈദ്യനെക്കണ്ട് ഔഷധശാലയിൽനിന്ന് കഷായം വാങ്ങി അവർ വീട്ടിലേയ്ക്ക് തിരിച്ചു. വീട്ടിലെത്തിയ മഞ്ജു വളകൾ ഡപ്പിയിൽ വച്ചു. ക്ഷീണമുണ്ടായിട്ടും അവൾ പാഠം പഠിച്ചു. വയ്യാതായെങ്കിലും, മുത്തശ്ശി ബുദ്ധിമാനായ കുരങ്ങന്റെയും ഹൃദയം ആഗ്രഹിച്ചു വിഡ്ഢിയായ മുതലയുടേയും കഥ പറഞ്ഞു. അതിനു ശേഷം അവർ പ്രാർത്ഥിച്ച് കിടന്നുറങ്ങി.

Appendix M3

UNIVERSITY OF CALICUT
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List of Letters Selected for Testing Pronunciation

(DRAFT)

Sl. No.	Item	Situation	Paragraph No
1.	അ	അവൾ അസ്തമയ	1
2	ആ	ആകാശം ആശ്ചര്യം	1
3.	ഇ	ഇല്ല	1
4.	ഈ	ഈ	1
5.	ഉ	ഉവ്വല്ലോ ഉത്സവ	1 2
6.	എ	എന്തെല്ലാം	2
7.	ഏ	ഏയ്	1
8.	ഓ	ഓറഞ്ചു	1
9.	ഔ	ഔഷധ	1
10.	ാ	വാങ്ങി കാത്തിരുന്ന്	3 1
11.	ി	മുത്തശ്ശി ഭംഗി	3 1
12.	ീ	വീട്ടിലെത്തിയ ക്ഷീണം	5
13.	ു	വന്നു സുന്ദരമായ	3
14.	ൂ	വരൂ ബലൂൺ	3
15.	ൃ	കുസൃതി	3
16.	െ	മെല്ലെ അടുത്തെത്തി	1 4
17.	േ	വേഗം പോകേണ്ടേ	1
18.	ൈ	വൈദ്യൻ	5
19.	ൊ	എന്തൊരു	1
20.	ോ	ചോദിച്ചു നടന്നോളൂ	1
21.	ൗ	കൗതുകം	3
22.	ം	എത്താം ഭംഗി	1
23.	ൃ	ഭാഗ്യത്തിന് സന്ധ്യ	1

Sl. No.	Item	Situation	Paragraph No
24.	്	പ്രാർത്ഥിച്ച് ആഗ്രഹിച്ചു	5
25.	പ്ല	പ്ലാസ്റ്റിക്	3
26.	ാ	സ്വർണം	3
27.	്	വൈദ്യനെക്കണ്ട് വീട്ടിലേയ്ക്ക്	4 5
28	ക	കരഞ്ഞു ആകാശം	1
29	ഖ	ശംഖു മുഖം	3
30	ഗ	വേഗം ഭാഗ്യം	1 4
31	ഘ	മേഘം	1
32	ച	ചോദിച്ചു	1
33.	ജ	ജനങ്ങൾ ഗജവീരന്മാർ	2
34.	ഞ	ഞാൻ	1
35.	ട	പാടവരമ്പ് കുട	1 4
36.	ഠ	പാഠം പഠിച്ചു	5
37.	ഡ	ഡപ്പി	5
38.	ണ	കിരണങ്ങളാൽ സ്വർണ	1 3
39.	ത	തിരിച്ചു അതിനു	4 5
40.	ഥ	കഥ കടംകഥ	5 4
41.	ദ	വൈദ്യൻ	5
42.	ധ	വിവിധ ഔഷധ	3 5
43.	ന	ആകാശത്തിന് ബുദ്ധിമാനായ്	1 5
44.	പ	പാടവരമ്പ് പുസ്തകം	1 4
45.	ഫ	ഫലമുണ്ടായില്ല	4
46.	ബ	ബലൂൺ	3
47.	ഭ	ഭയങ്കരം	4
48.	മ	മഴക്കാറ് മഞ്ജു	4
49.	മ്മ	മുത്തശ്ശിയമ്മ	1
50.	ക്ക	മഴക്കാറ് ഗജവീരന്മാരെക്കണ്ട്	4 2

Sl. No.	Item	Situation	Paragraph No
51.	യ്ക്ക	ആകാശത്തേയ്ക്ക് വീട്ടിലേയ്ക്ക്	1 5
52.	ങ്ക	ഭയങ്കര	4
53.	ങ്ങ	മേഘങ്ങൾ കിരണങ്ങളാൽ	1
54.	ച്ച	ചോദിച്ചു ചിരിച്ചു	1
55.	ച്ഛ	അച്ഛൻ	1
56.	ഞ്ച	ഓറഞ്ച്	1
57.	ഞ്ജ	മഞ്ജു	1
58.	ഞ്ഞ	മുഷിഞ്ഞോ	1
59.	ട്ട	കേട്ടു ഉണ്ടായിട്ടും	4
60.	ണ്ട	ഉണ്ടായിട്ടും കണ്ടു	4
61.	ഡ്ഢ	വിഡ്ഢിയായ	5
62.	ണ്ണ	മണ്ണിലിരുന്ന്	1
63.	ത്ത	മുത്തശ്ശി കാത്തിരുന്ന്	1
64.	ന്ത	എന്തൊരു ശാന്തമായി	1
65.	ത്ഥ	പ്രാർത്ഥിച്ച്	5
66.	ദ്ധ	ബുദ്ധിമാനായ	5
67.	ന്ധ	സന്ധ്യ	1
68.	ന്ന	കാത്തിരുന്ന് നടന്നു	1
69.	പ്പ	വിൽപ്പനക്കാരൻ ഉത്സവപ്പറമ്പിൽ	3 2
70.	മ്പ	ഉത്സവപ്പറമ്പിൽ വരുമ്പോൾ	2 4
71.	ബ്ദ	ശബ്ദം	4
72.	സ്ഥ	ഗ്രന്ഥശാല	4
73.	ശ്ച	ആശ്ചര്യപ്പെട്ടു	1
74.	ന്ദ	സുന്ദരമായ	3
75.	ത്ഭ	അത്ഭുതപ്പെട്ടു	2
76.	യ	മുത്തശ്ശിയോട് ഇടിയുടെ	1 4
77.	ര	കിരണ ചിരിച്ചു	1
78.	ല	അലങ്കാരം ബലൂൺ	2 3
79.	വ	അവൾ തവള	1 1

Sl. No.	Item	Situation	Paragraph No
80.	ശ	ആകാശം ശംഖു	1 3
81.	ഷ	ഔഷധ കഷായം	5
82.	സ	സന്ധ്യ സുന്ദരമായ	1 3
83.	ഹ	ഹോ ആഗ്രഹിച്ചു	2 5
84.	ള	തവള വളകൾ	1 3
85.	ഴ	മഴ മഴക്കാറ്	4
86.	റ	മഴക്കാറു സ്വർണനിറ	4 3
87.	ശ്ശ	മുത്തശ്ശി	1
88.	സ്സ	മനസ്സിൽ	2
89.	ള്ള	സ്വർണനിറമുള്ളവ തുള്ളിച്ചാടി	3
90.	റ്റ	നെറ്റിപ്പട്ടം	2
91.	ല്ല	ഇല്ല മെല്ലെ	1
92.	യ്യ	വയ്യാതായെങ്കിലും	5
93.	വ്വ	ഉവ്വല്ലോ	1
94.	ർ	സ്വർണ അവർ	3 1
95.	ൾ	അവൾ വളകൾ	1 3
96.	ൺ	ബലൂൺ	3
97.	ൻ	അച്ഛൻ ഞാൻ	1
98.	ൽ	കിരണങ്ങളാൽ വിൽപ്പന	1 3
99.	ക്ഷ	ക്ഷീണം	5
100.	ന്റ	സൂര്യന്റെ കുരങ്ങന്റെ	1 5
101.	സ്ത	അസ്തമയ	1
102.	യ്ത	പെയ്തു	4
103.	ത്സ	ഉത്സവ	1
104.	സ്റ്റ	പ്ലാസ്റ്റിക്	3

Appendix M4

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

List of Letters Selected for Testing Pronunciation

(FINAL)

Sl. No.	Item	Situation	Paragraph No
1.	ഔ	ഔഷധ	1
2.	ൃ	കുസൃതി	3
3.	ൈ	വൈദ്യൻ	5
4.	്യ	ഭാഗ്യത്തിന് സന്ധ്യ	1
5.	്ര	പ്രാർത്ഥിച്ച് ആഗ്രഹിച്ചു	5
6.	പ്ല	പ്ലാസ്റ്റിക്	3
7.	ാ	സ്വർണം	3
8.	ഖ	ശംഖുമുഖം	3
9.	ഘ	മേഘം	1
10.	ം	പാഠം പഠിച്ചു	5
11.	ഥ	കഥ കടംകഥ	5 4
12.	ഫ	ഫലമുണ്ടായില്ല	4
13.	ങ	ഭയങ്കര	4
14.	ഞ	ഓറഞ്ച്	1
15.	ഞ്ജ	മഞ്ജു	1
16.	ഡ്ഢ	വിഡ്ഢിയായ	5

Sl. No.	Item	Situation	Paragraph No
17.	ന്ത	എന്തൊരു ശാന്തമായി	1
18.	ദ്ധ	ബുദ്ധിമാനായ	5
19.	ന്ധ	സന്ധ്യ	1
20.	ബ്ദ	ശബ്ദം	4
21.	ന്ഥ	ഗ്രന്ഥശാല	4
22.	ശ്ച	ആശ്ചര്യപ്പെട്ടു	1
23.	ന്ദ	സുന്ദരമായ	3
24.	ത്ഭ	അത്ഭുതപ്പെട്ടു	2
25.	ഷ	ഔഷധ കഷായം	5
26.	ല്ല	ഇല്ല മെല്ലെ	1
27.	യ്യ	വയ്യാതായെങ്കിലും	5
28.	വ്വ	ഉവ്വല്ലോ	1
29.	ക്ഷ	ക്ഷീണം	5
30.	സ്ത	അസ്തമയ	1
31.	ത്സ	ഉത്സവ	1

Appendix M5

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Pronunciation

(For content validation by experts)

ക്രമ നമ്പർ	ഉച്ചാരണശേഷി	അനുയോജ്യമല്ല	ഒരുപരിധിവരെ അനുയോജ്യം	അനുയോജ്യം
1.	ഉച്ചാരണശേഷി അളക്കുന്നതിനുള്ള ഈ ശോധകം നാലാം ക്ലാസിന്റെ മധ്യകാലയളവിലെത്തിയ വിദ്യാർത്ഥിക്ക് അനുയോജ്യമാണോ?			
2.	അക്ഷരങ്ങളുടെ വലുപ്പം നാലാം ക്ലാസിന്റെ വായനയ്ക്ക് ഉതകുന്നതാണോ?			
3.	ഈ ശോധകത്തിൽ ഉപയോഗിച്ചിട്ടുള്ള വാക്കുകൾ നാലാം ക്ലാസിന്റെ നിലവാരത്തിന് ചേരുന്നതാണോ?			
4.	ഉച്ചാരണശേഷി പരിശോധിക്കുന്നതിന് ഉപയോഗിച്ചിട്ടുള്ള അക്ഷരങ്ങൾ നാലാം ക്ലാസിന്റെ മധ്യകാലയളവിന് യോജിച്ചതാണോ?			
5.	ഉച്ചാരണശേഷി പരിശോധിക്കുന്നതിന് ഉപയോഗിച്ചിട്ടുള്ള സ്വരചിഹ്നങ്ങൾ നാലാം ക്ലാസിന്റെ നിലവാരത്തിനനുയോജ്യമാണോ?			

Appendix M6

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Pronunciation

(For content validation by experts)

	Pronunciation	**Not Appropriate**	**Appropriate**	**Highly Appropriate**
1.	Whether the test is useful to evaluate the pronunciation of the fourth standard students in second term?			
2.	Whether the size of the letters is suitable for the fourth standard students in second term?			
3.	Whether the words used in the test is appropriate for the fourth standard students in second term?			
4.	Whether the letters used in the test is appropriate for the fourth standard students in second term?			
5.	Whether the vowel diacritics used in the test is suitable for the fourth standard students in second term?			

Appendix M7

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Reading Fluency

(For content validation by experts)

ക്രമ നമ്പർ	Reading Fluency	അനുയോജ്യമല്ല	അനുയോജ്യം	പരിഷ്കരിച്ച് അനുയോജ്യം
1.	Reading Fluency പരിശോധിക്കുന്നതിനുള് ഈ ശോധകം നാലാംക്ലാസിന്റെ മധ്യകാലയളവിന് അനുയോജ്യമാണോ?			
2.	ശോധകത്തിൽ കൊടുത്തിട്ടുള്ള ഖണ്ഡികയിലെ അക്ഷരങ്ങളുടെ വലുപ്പം നാലാം ക്ലാസിലെ കുട്ടിയുടെ വായനാശേഷിക്ക് അനുയോജ്യമാണോ?			
3.	തന്നിട്ടുള്ള ഖണ്ഡികയുടെ വലുപ്പം നാലാം ക്ലാസിന്റെ വായനയ്ക്ക് ശരിയായി ചേരുന്നതാണോ?			
4.	ഖണ്ഡികയിലുപയോഗിച്ചിരിക്കുന്ന വാക്കുകൾ നാലാം ക്ലാസ് നിലവാരത്തിന് ചേർന്നതാണോ?			
5.	ഖണ്ഡികയുടെ ആശയം നാലാം ക്ലാസ് വിദ്യാർത്ഥിക്ക് അനുയോജ്യമാണോ?			
6.	ഭാവാത്മകമായ വായനയ്ക്ക് സഹായമായ ഖണ്ഡികയാണോ?			

Appendix M8

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Rating Scale of Reading Fluency

(For content validation by experts)

SI No	Reading Fluency	Not Appropriate	Appropriate	Highly Appropriate
1.	Whether the test is appropriate to find out reading fluency of fourth standard students in second term?			
2.	Whether the size of the letters given in the narratrive suitable for fourth standard students in second term?			
3.	Whether the length of the narrative is appropriate for fourth standard students in second term?			
4.	Whether the the letters used in the narratrive is approrpiate for fourth standard students in second term?			
5.	Whether the content of the narratrive suitable for fourth standard students in second term?			
6.	Whether the narratrive is appropriate for reading with expression?			

Appendix N1

UNIVERSITY OF CALICUT
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Test of Reading Comprehension

(DRAFT)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

1. ഖണ്ഡിക വായിച്ച് താഴെ കൊടുക്കുന്ന ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതുക.

തുള്ളൽ പ്രസ്ഥാനത്തിന്റെ സ്ഥാപകനായ കുഞ്ചൻ നമ്പ്യാർ പാലക്കാട് ജില്ലയിലെ കിള്ളിക്കുറിശി മംഗലത്താണ് ജനിച്ചത്. തുള്ളൽ കലയെ ഓട്ടൻ തുള്ളൽ, പറയൻ തുള്ളൽ, ശീതങ്കൻ തുള്ളൽ, എന്ന് മൂന്നായി വിഭജിച്ചു. കല്ല്യാണസൗഗന്ധികം, കിരാതം, ഘോഷയാത്ര തുടങ്ങിയവ പ്രധാന കൃതികളാണ്. നമ്പ്യാരുടെ ജന്മ ഗൃഹമായ കലക്കത്തുഭവനം ഇന്നും അദ്ദേഹത്തിന്റെ സ്മാരകമായി നിലനിൽക്കുന്നു.

1. പാലക്കാട് ജില്ലയിൽ ഏത് ദേശത്താണ് കുഞ്ചൻ നമ്പ്യാർ ജനിച്ചത്?.....
2. പ്രധാന തുള്ളൽ വിഭാഗങ്ങൾ, ശീതങ്കൻ തുള്ളൽ, പറയൻ തുള്ളൽ.....
3. തുള്ളൽ പ്രസ്ഥാനം ആരംഭിച്ചത് ആരായിരുന്നു?
4. നമ്പ്യാരുടെ ജന്മഗൃഹത്തിന്റെ പേരെന്ത്?

2. താഴെ കാണുന്ന ഖണ്ഡിക വായിച്ച് ചുവടെയുള്ള ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതുക.

ദാമു ദരിദ്രനായ ഒരു കച്ചവടക്കാരനായിരുന്നു. ഒരു ഓല മേഞ്ഞ വീടായിരന്നു അവനും അവന്റെ കുടുംബത്തിനും ആകെ ഉണ്ടായിരുന്ന സമ്പാദ്യം. പ്രഭാതത്തിൽ രാമു കച്ചവട ചരക്കുകൾ തന്റെ കുതിരയുടെ ചുമലിൽ കെട്ടി ചന്തയിലേക്ക് പുറപ്പെടും. പക്ഷേ വൈകുന്നേരം വയറൊട്ടിയ നിലയിലായിരുന്നു അവൻ മടങ്ങിയിരുന്നത്.

1. ദാമു ആരായിരുന്നു

2. ദാമുവിന്റെ കുടുംബത്തിനുണ്ടായിരുന്ന ആകെയുള്ള സമ്പാദ്യം എന്തായിരുന്നു?

3. ദാമു വീട്ടിലേക്ക് മടങ്ങിയത് എപ്രകാരമായിരുന്നു?

3. ചുവടെ കൊടുത്തിരിക്കുന്ന ഖണ്ഡിക വായിച്ച് ഏറ്റവും പ്രധാനപ്പെട്ട ഉള്ളടക്കം തെരെഞ്ഞെടുത്ത് അടയാളപ്പെടുത്തുക.

   വീട്ടിലും തെരുവിലും, വിദ്യാലയത്തിലും, ആരാധനാലയത്തിലുമൊക്കെ എല്ലാ ഭാഗങ്ങളും വൃത്തിയായി സൂക്ഷിക്കാൻ നാം പരീശീലിക്കണം. ചെറുപ്പം മുതൽ തന്നെ ചിട്ടയും വൃത്തിയും ശീലമാക്കണം. വൃത്തി പാലിക്കാൻ നാം പരിശീലിക്കുന്നതോ ടൊപ്പം മറ്റുള്ളവരെ അതിനു വേണ്ടി പ്രോത്സാഹിപ്പിക്കുകയും വേണം.

   1. വിദ്യാലയങ്ങൾ വൃത്തിയായി സൂക്ഷിക്കണം ☐
   2. വ്യക്തിയുടെ എല്ലാ രംഗങ്ങളിലും അടിസ്ഥാനമായി ഉണ്ടാവേണ്ട സ്വഭാവമാണ് വൃത്തി ☐
   3. വൃത്തി പാലിക്കാൻ മറ്റുള്ളവരെ പ്രോത്സാഹിപ്പിക്കണം. ☐
   4. ചെറുപ്പകാലത്താണ് വൃത്തി പാലിക്കേണ്ടത് ☐

4. താഴെ കൊടുക്കുന്ന സന്ദർഭം വായിച്ച് അനുയോജ്യമായ പ്രസ്താവന തെരഞ്ഞെടുത്ത് ✓ അടയാളമിടുക

   മഹാവികൃതിയായിരുന്നു മിന്നുക്കുരങ്ങൻ. അവൻ അന്നും പതിവുപോലെ വഴിയിൽ പല കുസൃതിത്തരങ്ങളും കാട്ടി നടന്നു. അങ്ങനെ അവൻ കിങ്ങിണിപ്പുഴയുടെ കരയിലേക്ക് അടുക്കാറായി. പെട്ടെന്നാണ് അതു സംഭവിച്ചത്. അവൻ പുഴയിലേക്ക് തെന്നിവീണു.

   1. അവൻ പുഴയിലിറങ്ങി സന്തോഷത്തോടെ കുളിച്ചു ☐
   2. അവൻ പുഴയിലിറങ്ങി മതിവരുവോളം വെള്ളം കുടിച്ചു. ☐
   3. അവൻ പുഴയിലിറങ്ങി ധാരാളം മീൻ പിടിച്ചു. ☐
   4. അവൻ പുഴയിലിറങ്ങി വെള്ളത്തിൽ മുങ്ങി. ☐

5. ഖണ്ഡിക വായിച്ച ശേഷം താഴെ കൊടുത്ത ഉത്തരങ്ങളിൽ നിന്ന് ഖണ്ഡികയുടെ ഏറ്റവും നല്ല സംഗ്രഹം കണ്ടെത്തി അടയാളപ്പെടുത്തുക.

   രാമു നാലാം ക്ലാസിലാണ് പഠിക്കുന്നത്. സ്കൂളിൽ അവന്റെ ഏറ്റവും പ്രിയപ്പെട്ട കൂട്ടുകാരൻ അവന്റെ പെൻസിലാണ്. രാമുവിന്റെ കൂടെ എല്ലാ സമയത്തും അവൻ ഉണ്ടാകും. എന്നാൽ പെൻസിൽ ചങ്ങാതിക്ക് രാമുവിനെക്കാൾ പ്രായമുണ്ടായിരുന്നു. അവൻ ജനിച്ചത് 1956ൽ ഇംഗ്ലണ്ടിലാണ്. പെൻസിലിനുള്ളിൽ ഉപയോഗിക്കുന്നത് ഗ്രാഫൈറ്റ് എന്ന് പറയുന്ന ഒരു തരം കരിയാണ്. ഈ കരി ആദ്യമായി ഉപയോഗിച്ചത് ചിത്രകാരന്മാരായാത് കൊണ്ടാണ് ഗ്രാഫൈറ്റ് എന്ന പേരുണ്ടായത്. എന്നാൽ രാമുവിന് തന്റെ ഉറ്റ ചങ്ങാതിയെ പിരിഞ്ഞിരിക്കാൻ വളരെ വിഷമമായിരുന്നു.

   1. രാമുവിന്റെ ഏറ്റവും ഉറ്റ ചങ്ങാതി ജനിച്ചത് 1956ൽ ഇംഗ്ലണ്ടിലാണ്. ☐
   2. ഗ്രാഫൈറ്റ് പെൻസിൽ 1956ൽ ഇംഗ്ലണ്ടിലെ ചിത്രകാരന്മാരാണ് ആദ്യമുപയോഗിച്ചത് ☐
   3. രാമുവിന് പെൻസിൽ എന്ന കൂട്ടുകാരനുണ്ട് ☐
   4. രാമുവിന് പെൻസിൽ ചങ്ങാതിയെ പിരിഞ്ഞിരിക്കാൻ വയ്യ ☐

Appendix N2

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Reading Comprehension

(FINAL)

Dr. K. Abdul Gafoor
Associate Professor

Remia. K.R.
Research Scholar

1. ഖണ്ഡിക വായിച്ച് താഴെ കൊടുക്കുന്ന ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതുക.

തുള്ളൽ പ്രസ്ഥാനത്തിന്റെ സ്ഥാപകനായ കുഞ്ചൻ നമ്പ്യാർ പാലക്കാട് ജില്ലയിലെ കിള്ളിക്കുറിശി മംഗലത്താണ് ജനിച്ചത്. തുള്ളൽ കലയെ ഓട്ടൻ തുള്ളൽ, പറയൻ തുള്ളൽ, ശീതങ്കൻ തുള്ളൽ, എന്ന് മൂന്നായി വിഭജിച്ചു. കല്ല്യാണസൗഗന്ധികം, കിരാതം, ഘോഷയാത്ര തുടങ്ങിയവ പ്രധാന കൃതികളാണ്. നമ്പ്യാരുടെ ജന്മ ഗൃഹമായ കലക്കത്തുഭവനം ഇന്നും അദ്ദേഹത്തിന്റെ സ്മാരകമായി നിലനിൽക്കുന്നു.

1. പാലക്കാട് ജില്ലയിൽ ഏത് ദേശത്താണ് കുഞ്ചൻ നമ്പ്യാർ ജനിച്ചത്?.....
2. പ്രധാന തുള്ളൽ വിഭാഗങ്ങൾ, ശീതങ്കൻ തുള്ളൽ, പറയൻ തുള്ളൽ.....
3. തുള്ളൽ പ്രസ്ഥാനം ആരംഭിച്ചത് ആരായിരുന്നു?
4. നമ്പ്യാരുടെ ജന്മഗൃഹത്തിന്റെ പേരെന്ത്?

2. താഴെ കാണുന്ന ഖണ്ഡിക വായിച്ച് ചുവടെയുള്ള ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതുക.

ദാമു ദരിദ്രനായ ഒരു കച്ചവടക്കാരനായിരുന്നു. ഒരു ഓല മേഞ്ഞ വീടായിരന്നു അവനും അവന്റെ കുടുംബത്തിനും ആകെ ഉണ്ടായിരുന്ന സമ്പാദ്യം. പ്രഭാതത്തിൽ രാമു കച്ചവട ചരക്കുകൾ തന്റെ കുതിരയുടെ ചുമലിൽ കെട്ടി ചന്തയിലേക്ക് പുറപ്പെടും. പക്ഷേ വൈകുന്നേരം വയറൊട്ടിയ നിലയിലായിരുന്നു അവൻ മടങ്ങിയിരുന്നത്.

1. ദാമു ആരായിരുന്നു

2. ദാമുവിന്റെ കുടുംബത്തിനുണ്ടായിരുന്ന ആകെയുള്ള സമ്പാദ്യം എന്തായിരുന്നു?

3. ദാമു വീട്ടിലേക്ക് മടങ്ങിയത് എപ്രകാരമായിരുന്നു?

3. താഴെ കൊടുക്കുന്ന സന്ദർഭം വായിച്ച് അനുയോജ്യമായ പ്രസ്താവന തെരഞ്ഞെടുത്ത് ✓ അടയാളമിടുക

മഹാവികൃതിയായിരുന്നു മിന്നുക്കുരങ്ങൻ. അവൻ അന്നും പതിവുപോലെ വഴിയിൽ പല കുസൃതിത്തരങ്ങളും കാട്ടി നടന്നു. അങ്ങനെ അവൻ കിങ്ങിണിപ്പുഴയുടെ കരയിലേക്ക് അടുക്കാറായി. പെട്ടെന്നാണ് അതു സംഭവിച്ചത്. അവൻ പുഴയിലേക്ക് തെന്നിവീണു.

1. അവൻ പുഴയിലിറങ്ങി സന്തോഷത്തോടെ കുളിച്ചു ☐
2. അവൻ പുഴയിലിറങ്ങി മതിവരുവോളം വെള്ളം കുടിച്ചു. ☐
3. അവൻ പുഴയിലിറങ്ങി ധാരാളം മീൻ പിടിച്ചു. ☐
4. അവൻ പുഴയിലിറങ്ങി വെള്ളത്തിൽ മുങ്ങി. ☐

Appendix N3

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

Test of Reading Comprehension

Scorign Key

1.1 കിള്ളിക്കുറിശ്ശിമംഗലം

1.2 ഓട്ടൻ തുള്ളൽ

1.3 കുഞ്ചൻ നമ്പ്യാർ

1.4 കലക്കത്തു ഭവനം

2.1 കച്ചവടക്കാരൻ

2.2 ഓല മേഞ്ഞ വീട്

2.3 വയറൊട്ടിയ നിലയിൽ

3. അവൻ പുഴയിലിറങ്ങി വെള്ളത്തിൽ മുങ്ങി