

**CERTAIN PSYCHOLOGICAL VARIABLES AS
PREDICTORS OF READING COMPREHENSION
IN ENGLISH OF SECONDARY SCHOOL
PUPILS OF KERALA**

DEEPA, P.

THESIS SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN EDUCATION

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DECLARATION

I, Deepa. P., do hereby declare that this study "CERTAIN PSYCHOLOGICAL VARIABLES AS PREDICTORS OF READING COMPREHENSION IN ENGLISH OF SECONDARY SCHOOL PUPILS OF KERALA" has not been previously formed the basis for the award of a Degree, Diploma or Recognition.

C. U. Campus,
31 .12.2005.


DEEPA, P.

Dr. V. Sumangala
Professor and Head
Department of Education
University of Calicut

Calicut University
31 .12.2005.

CERTIFICATE

Certified that the thesis "CERTAIN PSYCHOLOGICAL VARIABLES AS PREDICTORS OF READING COMPREHENSION IN ENGLISH OF SECONDARY SCHOOL PUPILS OF KERALA" is a record of bonafide study and research carried out by Mrs. Deepa, P. under my supervision and guidance and that it has not been previously formed the basis for the award of a Degree, Diploma or Recognition.



Dr. V. SUMANGALA
(Supervising Teacher)

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INTRODUCTION

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- ❖ *Need and Significance of the study*
 - ❖ *Statement of the Problem*
 - ❖ *Definition of Key Terms*
 - ❖ *Variables*
 - ❖ *Major Hypotheses and Objectives*
 - ❖ *Methodology*
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Today's world is shaped in substantial measure by a high order of scientific knowledge and technical skills and hence is described as a knowledge society. Education has successfully exploited all media that have been evolved as part of our scientific and technological development-from print media to e-learning. Virtual classrooms using e-learning is now a reality even in Kerala. All these, became successful only because of our generation could comprehend the theories and literature evolved by the earlier one's and could use effectively, which again is the net result of effective Reading Comprehension.

The history of technological revolution is the history of the knowledge acquired. For, the first pillar of learning is 'learning to know, the Jnana Yoga'. In this age of information technology and of 'knowledge society', we have to extract knowledge that is meaningful and from that knowledge we have to move on to that of wisdom. For this, our students must have the capacity to ask questions. The confidence comes to this from knowledge and knowledge from Reading.

Now the emphasis of school education is from conventional teaching and learning paradigms to making education more learner centered and participatory. The objectives of school education are

not merely centered around exchange of information between teachers and learners. Development of social, emotional, psychomotor and life skills like communication, problem solving ability, decision taking etc. are of critical importance. The ability to all these come from reading with comprehension, assimilating and then acting upon the ideas.

Among the four basic language skills, listening and reading are receptive skills and speaking and writing, expressive. Reading is the method by which we communicate to ourselves and to others. It involves both decoding and recording.

Reading is essential to the existence of our complex system of social arrangements. But it is more than that, if all the inventions of a hundred years were destroyed and only books were left, humans could still be humans, in the sense intended by the idealists, the poets and the great creators. Hence it is worthwhile to call reading as a humanizing process.

The ability to read with comprehension is one of the most ingredients in language learning. It is a never-ending wide screen film on which life's pageant passes in review. It is still the only known time machine that can recreate the events of the past and open up the vistas of the future.

Reading is a key to the wealth of knowledge. Without reading an individual is deprived of the fundamental right to gain further education. Because reading is the inevitable instrument for learning, it is said that 'leading nations are reading nations'. Only a reading and well informed nation can keep in touch with the everyday happenings of the world. When a pupil reaches the secondary level of education, teachers everyday face the sad fact that many of their pupils cannot do the reading expected of them. This is because reading with comprehension is a difficult skill which is often overlooked and needs to be developed consciously and systematically.

1.1. NEED AND SIGNIFICANCE OF THE STUDY

Conventionally, teachers of English teach the foreign language either by explaining the meaning or by translating the text in English into the regional language, i.e. in L₁. As such, the students have not acquired any skill of the language and are not confident of communicating in English. If skill in expression is to be developed, it is important that the ability of reading comprehension should be developed among the pupils because without comprehending the reading material, pupils do not acquire the language. If our pupils can grasp correctly the meaning conveyed through standard English,

the aim of teaching English is fulfilled. Thus, comprehension should be the main objective of teaching English.

Reading is an audio-visual activity and also a test of intelligence and comprehension. Now, bombarded by radio and television, which have shifted interest and emphasis away from reading, to a considerable extent, we suddenly realize that a large percentage of our children do not read with comprehension, or discrimination, nor are they able to appreciate or evaluate what they read. Reading is no longer viewed as a passive activity in which the reader strives to find all and only what the writer has written. It is a process of mind engagement which demands both knowledge of language: its different systems and also relevant knowledge of the world, in pursuit of meanings.

Comprehension includes understanding the language, grasping the content, reading with correct stress, intonation and pronunciation, reading with fluency, ease and understanding and reading with interest.

In fact, comprehension is an act of understanding the meaning of written language and it requires intelligent interpretation and creative reaction. This suggests the possible effect of some cognitive and affective abilities on Reading Comprehension of pupils. Studies

conducted by Carroll (1977), Shah (1979), Vora (1982), Lionel (1982) and the like in the area of Reading Comprehension have established that some psychological variables like intelligence, socio-personal adjustments, attitude, academic motivation etc. have effect on Reading Comprehension.

The development of language approximates the development of intelligence and is usually regarded as one of the best indices for evaluating intellectual growth and development. Many studies exemplify the intimate relationship between language achievement and intelligence. Language is the index of personality too. When a child begins to acquire language, he acquires each new word in effective context. That is, the word will carry with the emotional overtones of the situations in which it was acquired. From this it is clear that the act of reading and comprehension are associated with the psychological factors. Hence the relevance of testing the psychological factors that influence reading comprehension.

Kerala, a state expanded in education at different levels, has still not progressed as far as the standard of English language is concerned. The defect of faulty examination system in India is a major drawback in the teaching and learning of English. Even a peripheral investigation of the teaching-learning situation reveals

certain factors contributing to the momentum of decline in academic standards. There are factors concerning the learner, the material, the teacher and also the methodology. There is always a gap between what the learner is expected to learn and what he is actually able to learn and this gap widens further and further. Since the learner does not feel the need for learning a foreign language, he is not motivated psychologically also. Moreover, passages that create cultural and psychological conflicts in the reader are also causing problem for the learners.

Among the school factors, the lack of competency of teachers, lack of facilities in the classroom, the overcrowded classes and the lack of an integrated approach towards the teaching of the various skills of language may contribute heavily to the cumulative backwardness in the attainment of proficiency in English. In the light of the above mentioned context, the investigator strongly feels the need and significance of the present study.

1.2. STATEMENT OF THE PROBLEM

The learning that is taking place in the classroom is a deliberate process - a process resulting from the proper co-ordination of various factors such as the learner, the teacher, the material and the methodology. For learning to take place, there has

to be the medium of language and the proper transaction of ideas takes place when language is better comprehended through speech or reading.

But when the medium of communication becomes English, then the situation becomes complex, as it being a foreign language. There are studies and findings that ideas are better comprehended when the medium or message is in the mother tongue than in a foreign language. But often it was found that high achievement in English goes with high Intelligence pupils.

The investigator therefore wished to study whether Reading Comprehension in English is depended on psychological factors like Intelligence, Creativity, Extraversion etc.

The study is therefore entitled as “**CERTAIN PSYCHOLOGICAL VARIABLES AS PREDICTORS OF READING COMPREHENSION IN ENGLISH OF SECONDARY SCHOOL PUPILS OF KERALA**”.

1.3. DEFINITION OF KEY TERMS

The key terms of the title are defined below for their operational meaning and hence for a better perspective of the study.

Psychological Variables

Psychological variables refer to a set of variables belonging to

both cognitive and affective domains as classified in modern behavioural research.

Psychological variables in the study stand for two cognitive variables viz., Intelligence and Creativity and for four affective variables viz., Achievement Motivation, Self-Concept, Extraversion and Attitude towards Academic Work each of which is measured by standardized tests developed for the purpose.

1.3.1. Predictors

The term stands for variables which predict significantly the performance of the criterion variable as understood by the statistical techniques used in the study.

1.3.2. Reading Comprehension in English

Reading Comprehension refers to one's ability to understand or to cognise the ideas implied in written scripts which is revealed through the administration of standardized test of Reading Comprehension involving passages and matters to answer questions based on each.

1.3.3. Secondary School Pupils

Secondary school pupils are those pupils studying in standards VIII, IX and X of the schools of Kerala.

1.4. VARIABLES OF THE STUDY

The study is designed with Reading Comprehension in English as the criterion (dependent) variable and the below listed six psychological variables as predictor (independent) variables.

The predictor (independent) variables of the study are the following.

(i) Intelligence

There is no consensus among psychologists about the definition of intelligence although there are many accepted definitions. Some of the known authorities in this area are Spearman (1927), Stoddard (1943), Wechsler (1953), Guilford (1966). While some psychologists emphasize the process like abstract thinking (Binet and Terman), some others uphold education of relation (Spearman), still others refer to intelligence as social and mechanical adaptability (Thorndike, Piaget)

The definition of Stoddard (1943) seems to be comparatively more comprehensive. According to him, intelligence is the ability to undertake activities that are characterized by difficulty, complexity, abstractness, adaptiveness to goal, social value, the emergence of originals and to maintain such activities under conditions that demand a concentration of energy and resistance to emotional forces.

This definition enumerates several attributes of intelligence.

In the study verbal intelligence stands for the level of intelligence as measured by a standardized test of verbal intelligence

(ii) Creativity

Creativity is the capacity to produce something new and original. According to Lester (1985), Creativity is 'a characteristics of thought and of problem solving, generally considered to include originality, novelty and appropriateness". An original response is one that is not usually given. A novel response is one that is new or that has no precedent. An appropriate response is one that is reasonable in terms of the situation.

Guilford (1966) defined creative thinking as a form of thought that is divergent. According to him creativity involves divergent thinking characterized by fluency, flexibility and originality of thought process.

In the study, Creativity stands for divergent thinking characterized by fluency, flexibility, originality and measured by a standardized test of creativity.

(iii) Achievement Motivation

Achievement Motivation is a determinant of aspiration, effort

and persistence. When an individual expects that his attainment in life will be evaluated in relation to some standard of excellence, his efforts to maintain that status is propelled by Achievement Motivation. It can be regarded as the tendency to maintain and enhance individual proficiency in the ever changing and demanding social environment. In some cases need for affiliation and social approval are thought to be substitute for Achievement needs.

‘Achievement Motivation’ refers to the aspiration, effort and persistence of the subject towards a standard of excellence as measured by a scale of achievement motivation standardized for the secondary school children of Kerala.

(iv) Self-Concept

A person’s self-concept includes not only his perception about what he is really like, but also what he thinks he ought to be and would like to be. This latter component of self is called ‘the ideal self’.

Self-Concept is defined as the congruence between ideal self and real self. The difference between ideal self and real self, if when large, is taken as indicating absence of self-concept. The proximity of the two selves is indicative of high self concept . Self-Concept represents organized, coherent and integrated patterns of self-related

perceptions. It is the totality of the individuals attitudes, judgments and values relating to his abilities, qualities and behaviour.

According to Jersild (1960) "it is a composite of a person's thoughts and feelings, striving and hopes, fears and fantasies, his view of what he is, what he has been, and what he might become, and his attitudes pertaining to his worth". Thus self-concept represents an individual's inner world.

Ghorpade (1978) observed that self-concept originated from a person's social and interpersonal relations with others. This assumes that the impression or image of a person as perceived by others as well as by oneself constitutes his self-concept. The constructs 'self-concept' and 'self-image' are synonymously used.

'Self-concept' is the extent of congruence of the 'real self' and the 'ideal self' ie. the congruence of self perception of the individual about what he really is and what he thinks he ought to become. Measures on these were obtained in response to a self-concept scale meant for secondary school children.

(v) Extraversion

This psychological construct emerged from the writings of Jung in the early 1920s. Jung did not consider everyone to be either an introvert or an extrovert. Instead every one was assumed to

possess some characteristics of both introverts and extraverts.

The Dictionary of Psychology (1947) defines extraversion as general attitude or group of traits characterized by a predominant interest in the external world and social life and a correspondingly diminished concern for fantasies, reflections and introspections.

This psychological construct is a major personality dimension and has been measured using Extraversion inventory.

(vi) Attitude towards Academic Work

Attitudes are roughly defined as feelings, for or against something. That is, attitudes are related to what one thinks or believes about any object. In 1935, Allport defined attitude as a mental or neural state of readiness organized through experience upon the individual's response to all objects and situations with which it is related.

Academic work is defined as the work done in schools or at home that involve abstract, theoretical, bookish, non-practical and speculative learning activities.

In the study, Attitude towards Academic work stands for mental or neural state of readiness organized through experience upon the individual's response that involve abstract, theoretical, bookish, non-practical and speculative learning activities and

measured by a scale of Attitude towards Academic Work standardized for the secondary school pupils of Kerala.

1.5. MAJOR HYPOTHESES AND OBJECTIVES OF THE STUDY

The major hypotheses set for the study is that *each select psychological variable will be a significant predictor of the criterion variable Reading Comprehension in English.*

It was further hypothesized that the nature of predictive efficiency will be indicated in any one or more of the following ways.

- (i) The ability of each of the predictor psychological variable having significant effect on Reading Comprehension in English for the whole sample and for subgroups based on gender and locale.
- (ii) The existence of significant and reasonably high correlations between each predictor variable and the criterion variable Reading Comprehension in English for the whole sample and for subgroups based on gender and locale.
- (iii) The ability of the set of the predictor variables to predict significantly the criterion variable Reading Comprehension in English for the total sample.

The above hypotheses helped the investigator to state *the*

objectives of the study in concrete terms as follows;

- (i) To test the effect of each of the predictor variable on Reading Comprehension in English for the whole sample and for subsamples based on gender and locale.
- (ii) To estimate the extent of relationship of each of the psychological variable with Reading Comprehension in English for the whole sample and for subsamples based on gender and locale.
- (iii) To test for the predictive efficiency of the psychological variables and then to estimate the relative efficiency of the psychological variables in predicting Reading Comprehension in English.

1.6. METHODOLOGY

1.6.1. Sample

The study was conducted on a stratified random Sample of 800 (consisting of 363 boys and 437 girls) standard IX students drawn from both Malayalam and English medium schools of Kozhikode district giving representation to factors like *efficiency* level of schools, *locale* of schools, *management* of the schools and *gender* of the pupils.

1.6.2. Tools

The following are the tools that were used to measure the variables of the study.

- (i) Test of Reading Comprehension in English (constructed and standardized by the investigator).
- (ii) Test of Intelligence for Secondary School Pupils (Sumangala and Sholy, 2000).
- (iii) A Comprehensive Test of Creativity (Sumangala, 1988).
- (iv) Scale of Achievement Motivation (Pillai and Salim, 1994).
- (v) Scale of Self-Concept (Sumangala and Sujatha, 1994).
- (vi) Extraversion Inventory (constructed and standardised by the investigator).
- (vii) Scale of Attitude towards Academic Work (Sumangala and Mumthas, 1998).

1.6.3. Statistical Techniques

Major statistical techniques used in the analysis of data are the following

1. One-way Analysis of Variance.
2. Scheffe Test of Multiple Comparison.
3. Pearson's Product Moment Coefficient of Correlation.
4. Stepwise Regression Analysis.

1.7. SCOPE OF THE STUDY

The present study is with certain psychological variables as predictors of Reading Comprehension in English of secondary school pupils of Kerala. The relationship of Reading Comprehension in English with each of the six psychological variables studied in terms of Pearson's r and its interpretations disclose the extent to which Reading Comprehension in English is determined by the above psychological variables. For the purpose, the technique used is the stepwise regression analysis which is a sophisticated statistical process (ANOVA approach) to determine the predictive efficiency. The co-efficient of determination R^2 was estimated to know the extent of predictive efficiency of the predictor variables. The multiple regression equation evolved by the study will help in the identification of pupils with high Reading Comprehension in English in terms of the measures of the predictors variables. This will help the educators to identify pupils with low Reading Comprehension in English for giving compensatory education so that their difficulties in poor Reading Comprehension in English is ameliorated.

The sample for the study is a representative group of secondary school pupils drawn by the stratified sampling technique.

This technique is subdividing the population into smaller homogenous groups to get more accurate representation. By these, the investigator hopes that the findings of the present study were useful to the teacher educator community and are valid.

1.8. LIMITATIONS OF THE STUDY

Though considerable effort has been made to make the study generalizable and precise as possible, there are certain limitations. The occurred limitations are the following:

- 1) Even though the population of the present study comprise of all the secondary school pupils of Kerala, the sample for the study was not conducted on a state-wide sample, but confined to only one educational district of Kerala-Kozhikode. Kozhikode is a city with representations to all strata of pupils like Rurals, extreme rurals, urbans, extreme urbans, and in all these areas, there are schools of the three categories - High efficient, Average Efficient and Low Efficient, efficiency said on the basis of secondary school examination results. The investigator therefore hopes that the findings of the study will be valid and generalisable to the population of the study.
- 2) Though 'Secondary School Pupils' comprise of standards VIII, IX

and X the study was limited to students of standard IX only assuming that it is the representative of the three standards.

- 3) Only those psychological variables which the investigator found had a considerable influence on Reading Comprehension in English were selected as the predictor variables of Reading Comprehension in English.

In spite of the above limitations, the investigator hopes that the findings of the present study will yield valuable contributions to the theory and practice of education.

1.9. ORGANISATION OF THE REPORT

The report of the study is organized in five chapters.

Chapter I presents the Need and significance of the study, Statement of the problem, Definition of key terms, Variables, Major hypotheses and objectives, Methodology, Scope and limitations of the study.

Chapter II presents a detailed review of studies on the relation of select psychological variables with Reading Comprehension in English.

Chapter III presents the methodology used for the study in detail. This chapter comprises description of Variables, Tools used for the collection of data, Sample used, Data collection procedure

and the Statistical techniques used for the analysis.

Chapter IV deals with the analysis of the data in detail. Apart from the hypotheses and preliminary statistical analysis of the data, this chapter presents the results of One-way analysis of variance, Correlational analysis, Multiple regression analysis. Major findings of the study are summated at the end along with tenability of hypotheses set for the study.

Chapter V deals with the Major findings, Conclusions drawn, Educational implications of the findings and Suggestions for further research in the area.

REVIEW OF RELATED LITERATURE

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- ❖ *Theoretical Overview of Reading Comprehension.*
 - ❖ *Reading Comprehension: Studies and Theories.*
 - ❖ *Conclusion.*
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Review of literature related to the area of investigation is a significant and essential part of any research work as this serves multiple purposes like knowing what others have learned from similar research problems, elimination of the duplication of the research, guidance regarding the definition and significance of research problems, formation of appropriate hypotheses and provision of helpful suggestions for significant investigations.

The present investigation is an attempt to study certain psychological variables as predictors of Reading Comprehension in English of Secondary School Pupils of Kerala. The investigator has therefore made a review of the studies in the area of Reading Comprehension in relation with the select psychological variables. The reviewed studies are presented in this chapter along with a theoretical overview of the language ability.

2.1. THEORETICAL OVERVIEW OF READING COMPREHENSION

A written script can properly be read with varying degrees of understanding. The scale of comprehension ranges from no meaning to complete understanding. The degree of desired comprehension will depend in part upon the purpose of the reader.

Reading a material serves many purposes. We can classify this broadly into three categories.

- i) **Reading for Survival:** The reading we do day by day- instructions on bottles of medicine, instructions on how to handle machinery etc.
- ii) **Reading for Pleasure:** The reading we do at leisure times, or during travel for the sake of entertainment.
- iii) **Reading for Study Purposes:** Reading for knowledge acquisition, to pass an exam, to get a degree and to be more qualified.

Reading involves not only reception but a degree of perception. It involves recognition of sounds and written symbols. Reading is a process of looking at a written or printed symbol and translating it into an appropriate sound. This spoken symbol is further associated with an object for which it stands. Thus reading consists of three elements - the symbol (written or printed), the sound and the sense.

In reading we employ visual symbols to represent auditory symbols. The basic task in reading is therefore to establish in the mind of the reader automatic connections between sights and the sounds they represent. Since the sounds themselves are symbols of meanings, the process of reading involves a hierarchy of skills ranging from auditory and visual discrimination to such higher order mental activities like organizing ideas, making generalizations

and drawing inferences.

Thus, the term “reading” embraces a wide variety of tasks, activities, skills and mental processes.

Reading occurs at different levels. A child may read easy materials fluently and without help. This is the independent reading level. He may read difficult materials, calling for concentration and special effort. This is the ‘level of challenge’. He may read materials which require outside help. This, is the ‘instructional level’.

Characteristics of Reading

- i) **Reading is Purposeful:** We read either for information or pleasure
- ii) **Reading is Selective:** Glance rapidly, through a text to find out its general content, main ideas or gist (skimming); searching for a specific item of information by glossing over irrelevant information (scanning) or we read intensively with the aim of decoding the whole of the writer’s message.
- iii) **Reading Speed Varies:** According to content and purpose.
- iv) **Reading is Silent:** Reading for meaning, is the activity we normally engage in when we read books, newspapers, road signs, posters etc. It involves looking at sentences in a text and

understanding the message they convey, in other words, 'making sense of' a written text.

v) **Reading is Text-Based:** It seldom involves the mere decoding of individual sentences isolated from context.

vi) **Reading Involves Complex Cognitive Skills:** Readers react to what they read, assessing the accuracy of the facts presented, the value of the opinions stated, or the quality and appropriateness of the style.

vii) **Reading is Based on Comprehension:**

That is, understanding meaning is integral to reading rather than the result of it. The more we comprehend, the more we can, and tend to, read.

Certain faults in reading techniques have been noticed among second or foreign language learners.

a) **Sub vocalization:** refers to forming the sounds of the words you are reading and even murmuring them aloud.

b) **Finger-pointing:** Another faulty habit that slows down the reading process is finger pointing which children use to fix their concentration on the word they are deciphering.

- c) **Regressions:** Occurrence of regressive eye movement i.e., the eyes move backwards to check previous words instead of moving steadily forward.

Besides the purpose of the reader, other factors have a bearing upon comprehension. The physical condition of the reader, his interest in the material and the difficulty of the selection- all affect understanding.

The efficient reader will require from the printed page only what he is looking for. He may be distracted and charmed by other sounds and images, but he will not rest until he has discovered the answers to his questions. Efficient reader is one who reads fast and comprehends well (at an appropriate speed and reasonable comprehension). Speed depends on the text read (how easy or difficult).

Having begun to read, good readers operate cognitively at four highly inter-related and overlapping levels of meaning.

- a) **Literal:** Understanding the information stated directly in a text.
- b) **Interpretive:** Understanding the ideas and information not directly stated in a text; reading 'between the lines' and making inferences.

- c) **Critical:** Making judgments with regard to a text about the ideas, implications, organization of information, author's style etc.
- d) **Creative:** Generating new ideas, insights, applications etc from a text; imaginative reading.

Reading is challenge to the reader because it is such a complex process. Reading is not a general ability, but a composite of many specific abilities.

A single reading skill, although a very important one, well illustrates the complexity of reading. Any teacher who undertakes to cultivate, for instance, children's critical discrimination in reading finds that she is dealing with a whole cluster of abilities. Among these are classifying ideas, distinguishing between fact and opinion, establishing cause and effect, making generalizations, interpreting idiomatic and figurative language, making inferences, recognizing emotional reactions and motives, judging relevancy and drawing general conclusions.

Skill in the mechanics of reading includes

- a) development of a large sight vocabulary
- b) development of skill in identifying unfamiliar words
- c) development of good eye-movement habits

- d) development of proper habits of posture, holding books and so on
- e) development of speed and fluency in silent reading
- f) development of oral reading skills, phrasing, expression, pitch, volume, enunciation

Training in these skills will definitely facilitate reading.

The rate of reading and the degree of comprehension are not highly correlated. Although there is a positive correlation between rate of reading and quality of comprehension, it cannot be automatically assumed that because a person reads fast he necessarily comprehends well.

The 'creative reading act' involves four hierarchical phases. They are descriptive, personal interpretative, critical analysis and creative action.

In the descriptive phase, the reader's focus is on the information contained in the text.

In the personal interpretative phase readers relate the information in the text to their own experiences and feelings.

In the critical analysis phase readers relate the text to broader social issues and may draw conclusions from it.

In the creative action phase readers try to translate the results of the first three phases into concrete action.

Thorndike (1971) hypothesized that adequate comprehension in reading occurs as a result of the reader's use of all his reasoning faculties and skills in problem solving. Comprehension was seen as grasping the sense of each word in its context weighting the words in terms of the reader's purpose. The ideas gained were then validated by comparison with the readers own experience and belief.

Reading

Reading is the ability to pronounce and receive ideas and impressions from a printed page. Reading is the receptive process of communication and is not a simple mechanical skill. It is a thoughtful process.

Readability

The term readability means that the ability of the reader to read and understand the printed words. It is used to refer to the assessment of the difficulty, that readers of a certain level of skill may have in reading a piece of connected written discourse or text. The difficulty of a text is generally measured in terms of how well readers are able to understand it.

Reading Readiness

Readiness for reading is closely related with the concept of maturity. In 1931 an experiment in USA suggested that the best time to teach reading to children was when they had attained a mental age of 6 ½ years.

Bruner (1966) says "The idea of readiness is mischievous half truth". It is half truth largely because it turns out that for one teacher readiness provides opportunities for its nurture; another does not simply wait for it. Bruner asserted that "any subject can be taught effectively in some intellectually honest form to any child at any stage of development.

Readiness for reading is an ongoing process and the major problem for the teacher is to know how to start and how to proceed with a child in a particular reading task.

Factors Affecting Reading Skills

The following are the factors affecting reading skills.

(i) Physical or Biological Factors:

Visual, Auditory, Speech deficiencies and General health problem have considerable influence on reading.

(ii) Psychological Factors:

Fear and anxiety, Emotional insecurity, Lack of motivation, Personality of child, Sex of child, Achievement in other subjects, Interference of mother tongue and Level of aspiration have considerable influence on reading.

(iii) Social Factors:

School environment, Role of teacher, Home environment, Peer group, Socio-economic level of family, Education and Attitude of parents have considerable influence on reading.

(iv) Cognitive and Linguistic Factors:

Mental and language ability of the child also influence reading.

It was developed the idea that reading achievement was a function of general maturity or total growth by Olson and his colleagues at the University of Michigan in 1940.

Process of Reading

The process of reading may be viewed as drawing information from the printed matters. Thorndike (1971) concluded his view about reading as "Understanding a paragraph is like solving a problem in Mathematics. It consists of selecting the right elements of the

situation and putting them together in right relations and also with the right amount of weight or influence or force for each". Reading has been reviewed by Vernon (1977). She stressed that "same type of auditory or vocal process is always reported". She attributed it to the fact that "all words are primarily speech units. The view of the reading process stemming from the employment of research emphasizes the role of comprehension in Reading.

The third view of reading process is "Reading as a discipline" that by a silent reading practice is getting meanings from the page; the rate of reading and thinking will grow with the pupil's growth and with his power to assimilate what he read (Huey, 1913). Another view of the reading process has been presented by Carroll (1964) as the perception and comprehension of written message in a manner paralleling that of corresponding spoken messages.

Concept of Comprehension

Comprehension means the intelligent grasp of the situation at hand. Reading comprehension means the act of understanding the meaning of printed or spoken language. Comprehension ability is more likely a multidimensional affair. Whether one is concerned with spoken or written language, the evidences suggest that the

individual may have different levels of ability with respect of vocabulary, grammatical features, sentence structure etc.

Warren (1934) defined comprehension as synonymous to understanding. Bloom (1956) in his taxonomy of educational objectives, pointed out that the term comprehension includes those objectives, behaviours or responses which represent an understanding of the literal message contained in a communication. This is one of the major contributions in framing the concept of comprehension.

In nineteen seventies the concept of comprehension was given a new turn towards input- output processing. The main contributors in the decade are Hartman, Stork and Wolman. In Wolman's (1977) view comprehension is constructive which involves prior knowledge, intentions, contents and task demands.

In comprehension pupil should read and understand not just the sense but also the feelings, tone and attitude of the language they face verbally or in a written message.

2.2.READING COMPREHENSION : STUDIES AND THEORIES

Recognizing the importance of Reading Comprehension numerous studies have conducted on this topic. Hence there are

various theories about Reading Comprehension. Kingston (1961) stated that 'Reading Comprehension can be understood as a product of communication that results from interaction between the reader and writer. Chase and Clark (1972) present comprehension as information processing, where as the theories proposed by Frederikson (1972) illustrates the analysis of connected logical discourse.

Reading Comprehension involves a variety of skills. John Munby (1985) has identified the following as sub-skills of Reading Comprehension.

- Recognize the script of language.
- Reducing the meaning and use of unfamiliar lexical items.
- Understanding information explicitly stated.
- Understanding conceptual meaning.
- Understanding the communicative value of sentences and utterances.
- Understanding relations within the sentence.
- Understanding relations between the parts of a text through lexical cohesion devices.
- Interpreting text by going outside it.

- Recognizing indicators on discourse.
- Identifying the main points or important information in a place of discourse.
- Distinguishing the main idea from the supporting details.
- Extracting salient points to summarize.
- Selective extraction of relevant points from a text.
- Using basic reference skills-understanding and use of graphic presentation, cross referencing.
- Using Skimming (Glancing rapidly through a text to find out its general content, central idea(s), or gist) for main ideas.
- Using Scanning (Darting over a text to search for a specific item of information desired, passing over irrelevant information)to locate specifically required information.

The studies reviewed on the relation of Reading Comprehension in English with psychological variables are presented below:

Bormuth (1963) validated the cloze procedure on 50 children in grades 4, 5 and 6 as a measure of comprehension and found it to be a reliable approach across a wide range of comprehension ability.

Cooper (1964) compared the level of reading achievement of White and Negro students in a sample comprising about one third of

the fourth through twelfth grade population of the country school systems in Georgia. It was found that White students were consistently more proficient in vocabulary and comprehension and exhibited greater variability of achievement at each level.

Davis (1964) described the results of a multiple regression study which demonstrated a significant relation of measures of psychological functioning in the sub-strata factor theory and speed of reading.

Davis (1968) found that strong association of vocabulary and Reading Comprehension is taken into account both in sub skill theories of comprehension.

Dhar (1968) studied the problems of Indian students of the secondary level. One of the findings was 'mean vocabulary scores are higher than mean comprehension scores'.

Koppar (1970) found out that Reading Comprehension was positively related to reading attitude and anxiety.

Schwimmer (1971) in a research paper titled 'The Relationship of Readability to Reading Comprehension' cited that intelligence was found to be the best predictor of Reading Comprehension. The purpose of the study was to examine the effect of stylistic difficulty as measured by readability formula on the Reading Comprehension.

A statistical analysis of the data indicated that the increase in stylistic difficulty had no significant effect upon Reading Comprehension. However, a strong correlation was found to exist between intelligence and the scores achieved by the subjects on the Reading Comprehension test.

Procedures for testing language comprehension were discussed by Carroll and Freedle (1972) in their book "Language Comprehension and the Acquisition of Knowledge". They threw light on some discussion like comprehension vs. non-comprehension, degree of comprehension or comprehensibility. Some aspects of messages were also elaborated.

Hayes (1972) carried out a study to examine the relationship between Reading Comprehension and intellectual development as defined by Piaget. Findings of the study clearly indicated that Reading Comprehension and intellectual development were highly correlated and each Reading Comprehension measure was highly correlated with intellectual development. Thus, he concluded that Reading Comprehension is developmental in nature, since high and low intellectually developed group scored high and low in Reading Comprehension accordingly.

Patel (1974) has concluded that larger the span of apprehension, better is the rate of reading.

Smith (1974) in a study on first grade children tested the inter-relationships between five measures of Reading Comprehension, Intelligence and three measures of cognitive style variables. Findings of the study indicated a high correlation between Intelligence and paragraph comprehension.

Ahuja (1975) found that fast silent readers comprehend better in comparison to slow silent readers. The fast readers are decidedly good readers because they comprehend more in lesser time.

Vora (1976) found that attitude play a dominant role in Reading Comprehension. The study also found that rate of reading and rate of comprehension are interdependent.

Caroll (1977) proposed that Reading Comprehension must be viewed in terms of language cognition and reading skills. He proposed that a child's cognitive ability might provide an upper limit for the comprehension of oral language, which might in turn provide an upper limit for the child's comprehension of text.

Bhatt (1978) in his study has drawn the conclusion that Girls show more significant positive attitude towards reading and hence they could be better readers.

Ellis and Miles (1978) argued that speed of processing from the visual information is one determinant of speed of reading.

Mosley (1979) in a research paper titled 'The Relationship Between Intelligence and Two Major Categories of Reading Comprehension', cited the influence of intelligence on two categories of Reading Comprehension. i.e., Literal-explicit and inferential implicit. The findings of the study showed a curvilinear relationship between intelligence and literal and inferential comprehension. Brighter students tended to infer more but they loose some details in process, whereas less bright students on the other hand do better with detailed questions, but show less success in making inferences.

Patel (1979) conducted a study on high school science students. The students were tested after reading their text books for the same material modified for readability by shortening long sentences. An intelligence test was also administered on the same group of students. The results of the study highlighted that both, the students with high and low I.Q. who had read the rewritten material scored significantly higher on the comprehension test than did high and low I.Q. students who had read the material as it appeared in their text book.

Ryan (1979) conducted a study to analyse the effects of the readability of textual material, motivation and reader intelligence on the Reading Comprehension. Findings of the study revealed that factors of readability, motivation and intelligence all showed significant effect on the subject's level of Reading Comprehension. The students who encountered with the easiest reading material, performed better than the students with more difficult reading material. Like wise, students with higher motivation performed at a higher level than subjects with low motivation and the students with above average intelligence performed at higher level than the below average intelligence on the Reading Comprehension tests.

Shah (1979) found no difference in Reading Comprehension between boys and girls. There were significant differences in frequencies of three different groups of pupils on all the three psychological variables- reading rate, intelligence and vocabulary.

Bhishikar (1980) found that intelligence plays a significant role in the acquisition of reading skills. The low intelligence group showed significantly greater improvement in comprehension, and the high intelligence group showed significantly greater improvement in vocabulary. He also found that there was no sex difference in reading skills.

Kotakgira (1981) found that it is possible to develop the reading proficiency of students through the skills approach in which a learner practiced different skills separately before he engaged in the task of reading.

Parikh (1981) in her study found that there is no correlation between reading speed and comprehension. The hypothesis of Vocabulary does not have significant effect on Reading Comprehension is rejected and the hypothesis of content of reading material does not have significant effect on Reading Comprehension is accepted.

Turner (1981) in his study tried to investigate the relationship between intellectual ability and the comprehension of religious language. The findings of the study showed that the comprehension of language at each age level was superior in the case of high intellectual ability students.

Gaur (1982) conducted a psychological study of reading ability in relation to achievement, intelligence and found that intelligence is significantly related to speed of Reading Comprehension and vocabulary of students.

Lionel (1982) found that the psycholinguistic strategy of teaching Reading Comprehension is superior in effectiveness to the usual method.

Shivapuri (1982) found no difference in comprehension scores of the two sexes. In the case of boys only, the correlation of comprehension scores with intelligence was significant. The relationship with personality factor was significant only for girls. Both for boys and girls the maximum contribution to comprehension scores was that of intelligence. The effect of personality factors varied for the two sexes.

Vora (1982) conducted a study of effective psychological correlates of Reading Comprehension and found that pupils who were highly motivated and pupils with positive attitude towards reading are less anxious.

Mezynski and Karen (1983) conducted a study on issues concerning the acquisition of knowledge of vocabulary training on Reading Comprehension. Eight studies that explored the effects of vocabulary instruction on subsequent Reading Comprehension found an increase in work knowledge but only a few studies reported any Reading Comprehension improvement. Methodological and instructional differences across studies are examined in an attempt to account for the different results.

Bensoussan and Laufer (1984) in an analysis of student answering patterns found that context helped lexical guessing in

only 13 percent of the responses for only 24 percent of the words. Word guessability was shown to be less a function of using the context than of applying preconceived notions. Most frequent errors were with polysemes, morphological trouble makers, idioms and synophones. Although more proficient students knew more words than less proficient students, they were not able to use context more effectively.

Dass (1984) in his study, revealed that high Reading Comprehension scores are in favour of students having high leadership traits.

Joshi (1984) concluded that there existed a significant relationship between intelligence and growth of various English language abilities. The growth of English language ability was found to be influenced by such factors as caste, intelligence, locality, administrative control of an institution, socio-economic status and personality factors.

Moore and Skinner (1985) investigate the effects of illustrations on 11 year olds' comprehension of abstract and concrete passages. Results for the concrete passage revealed no significant effects due to the illustration, although ability effects were found for literal, inferential and total comprehension. Similar ability effects were

found for the abstract passage. In addition, for the abstract passage significant effects attributable to the illustration were revealed for inferential and total comprehension.

Nagy, *et al.* (1985) conducted a study on incidental Vs. instructional approaches to increasing reading vocabulary. The study advocates the use of incidental vocabulary learning to assist students in vocabulary expansion and Reading Comprehension. It also addresses the issues of the number of words students would have to know to make substantial gains and what type of word knowledge is necessary to facilitate Reading Comprehension.

Dholakia (1986) revealed that the guided reading procedure proved to be effective in improving Reading Comprehension.

Koppar (1987) carried out An Enquiry into Factors Affecting Reading Comprehension (in English). The major findings were the following. Reading Comprehension is related positively to reading attitude and to dependence.

Kumari (1987) found that significantly higher reading ability score for boys, students with English as the medium of instruction and for students from urban areas.

Rao and Subrahmanyam (1987) designed a study establishing norms for speed and comprehension in Reading Telugu in standards

3 to 8. The findings of the study revealed no significant difference between the performance of boys and girls.

Silva, *et al.* (1987) The results of the study confirm the importance of early language delay as a predictor of lower intelligence and reading ability and increased behaviour problems.

Eldredge and Quinn (1988) reported that evidence from existing literature suggests that the decoding and Reading Comprehension skills of poor readers can be improved by assisting them to read material that is too difficult for them to read fluently.

Schlapp and Underwood (1988) found that good readers use a predominantly phonological strategy in lexical decision while poor readers do not, and that for the best readers/ spellers as tested here the orthographically and phonologically irregular words have some sort of special status which allows them to gain fast and accurate responses.

Ahuja and Ahuja (1989) reported that closed circuit television programme was liked by the students and was found to be very effective both from the language and comprehension point of view by more than 95 percent of the students.

Detlef (1989) found that Reading Comprehension of early readers appears to be holistic, closely related to general Intelligence

and verbal problem solving.

Rajagopalan (1989) measured the pupils level of Reading Comprehension, importance of vocabulary and their grammatical knowledge in their attainment of Reading Comprehension and suggested remedial measures for the improvement of Reading Comprehension.

Barnes, *et al.* (1990) found that a three-way interaction produced significant main effects in which good comprehension and specified purpose of reading enhanced word learning.

Elredge and Quinn (1990) found out that phonic knowledge has a causal impact on both Reading Comprehension and vocabulary gains and that Reading Comprehension has a causal effect on vocabulary gains.

Golden and Nancy (1990) examined the effectiveness of computer networking system in providing guided practice in teaching Reading Comprehension to middle-school remedial reading students. It was found that guided practice is not useful for learning newer and complex cognitive skills.

Subhash (1990) found that there is significant difference between boys and girls in their mean achievement scores in listening comprehension and Reading Comprehension.

The results of the investigation made by Weisberg and Renee (1990) suggested the need for modeling strategies, consistent feedback, the usefulness of constructing graphic organizers and writing summaries to help disabled readers monitor understanding and improve Reading Comprehension.

The results of Aaron (1991)'s study suggest that reading difficulty is attributed to one of the following three factors: (a) poor decoding, (b) poor comprehension or (c) a combination of poor decoding and poor comprehension. The validity of these diagnostic decisions was assessed by testing independently children's word-decoding skill and reading speed.

Cornwall (1992) examined the relationship of phonological awareness, naming speed and verbal memory to the scores obtained from five tests assessing word attack, word identification, Reading Comprehension, and spelling skills in 54 children with severe reading disabilities (48 boys and 6 girls). Multiple regression analyses indicated that the best predictor of achievement across the five academic tests was the verbal comprehension factor from the Wechsler Intelligence Scale. The result also suggests that several independent processes interact to determine the extent and severity of reading problems.

Cunningham, *et al.* (1993) conducted a study on the contribution of understanding academic vocabulary to answering comprehension questions. Investigates whether the vocabulary of written comprehension questions is an independent factor in determining students Reading Comprehension performance. Found that academic vocabulary enabled in answering comprehension questions. Computed simple, multiple and semi partial correlations between vocabulary measures and comprehension scores and found support for the interpretation that differences in terminology accounts for differences in performance.

Kappil (1993) in her study revealed that there is significant difference between boys and girls in Intelligence and in Achievement in Reading Comprehension in English.

Burt (1996) reported that good spellers achieve accurate learning of words orthographies, and better vocabulary knowledge, in their reading than do poor spellers.

The results of the investigation made by Waters (1996) suggested that sentence span tasks are unreliable unless measurements are made of both their sentence processing and recall components, and that the predictive value of these tasks for Reading Comprehension abilities lies in the overlap of operations rather than

in limitations in verbal working memory that apply to both.

Smith and Carl (1997) conducted a study on vocabulary instruction and Reading Comprehension (ERIC Digest). Based on the idea that word knowledge has particular importance in literature societies, this digest finds that most people feel that there is a commonsense relationship between vocabulary and Reading Comprehension; i.e., messages are composed off ideas, and ideas are expressed in words. The digest considers several viewpoints on teaching vocabulary, offers some strategies for vocabulary teaching, and suggests some sources for further reading about vocabulary instruction and Reading Comprehension.

The results of the investigation made by Aarnoutse and Leeuwe (1998) suggested that the precision of the prediction for Reading Comprehension and vocabulary was found to be better than for reading pleasure and reading frequency.

Rabia (1998) concludes that problematic social contexts negatively affect L2 learning of minority students. In order to facilitate Hebrew L2 learning, L2 curricula should include Hebrew language texts with content culturally familiar and relevant to the life of Arab learners.

Brookbank, *et al.* (1999) conducted a study on improving student achievement through organization of student learning. This action research project investigated various reading strategies to increase Reading Comprehension and vocabulary skills. A review of current literature and analysis of the identified problem in the targeted schools led to the use of graphic organizers to improve comprehension and vocabulary skills post intervention data revealed improvement in Reading Comprehension and Vocabulary Skills.

Hatcher and Hulme (1999) found that for Reading Comprehension, verbal ability (but not non verbal ability) made an additional unique contribution to predicting responsiveness to teaching.

Qian and David (1999) conducted a study on assessing the roles of depth and breadth of vocabulary knowledge in Reading Comprehension and explored the relationships between depth and breadth of vocabulary knowledge and Reading Comprehension in English as a second language. Results support the hypotheses that scores on vocabulary size, depth of vocabulary knowledge, and Reading Comprehension are highly and positively correlated; and scores on depth of vocabulary knowledge can make a unique contribution to the prediction of Reading Comprehension levels.

Aarnoutse and Leeuwe (2000) found that students with initially poor abilities in word recognition and Reading Comprehension showed greater improvement over time on Reading Comprehension, vocabulary and spelling than students with initially better abilities in word recognition and Reading Comprehension.

Gunn, *et al.* (2000) conducted a study on the efficiency of supplemental instruction in decoding skills for Hispanic and Non-Hispanic students in early elementary school. A study evaluated the effects of supplemental reading instruction for 256 students in kindergarten through grade 3 (158 Hispanic). Children who received the supplemental reading instruction performed significantly better on measures of word attack, word identification, oral reading fluency, vocabulary and Reading Comprehension after 15 to 16 months of instruction.

Harris and Qualls (2000) reported that younger adults who used elaborative rehearsal had superior working memory measures, and older adults who used elaborative rehearsal and superior Reading Comprehension measures, suggesting elaborative rehearsal's memory-enhancing function in verbal working memory and Reading Comprehension tasks.

Jongsma and Kathy (2000) conducted a study on vocabulary and comprehension strategy development. Discusses materials that foster engagement in the learning process for students, teachers and parents. Looks at three sets of materials helpful for vocabulary and comprehension strategy development (1) guiding teachers and students through the think-along process for developing Reading Comprehension (2) building vocabulary and comprehension at school and home; and (3) focusing on reading and reasoning skills developed through puzzles.

Joshi and Aaron (2000) propose that Reading Comprehension could be predicted by the product of decoding and linguistic comprehension.

MacLean and Isabel (2000) conducted a study on effects of interactive vocabulary instruction on Reading Comprehension of students with learning disabilities. This 5-month action research project examined effects of a short -term interactive vocabulary instruction on Reading Comprehension with four intermediate grade students identified as having learning disabilities in reading.

Sharma (2000) states that more developed sight vocabulary promotes Reading Comprehension skills. A high positive correlation between Reading Comprehension and sight vocabulary supports this

hypothesis. If the learner has more developed sight vocabulary, then his performance at various levels of Reading Comprehension is better.

Aarnoutse, *et al.* (2001) conducted a study on development of decoding Reading Comprehension, vocabulary and spelling during the elementary school years. Investigated the development of decoding (efficiency), Reading Comprehension, vocabulary and spelling during the elementary school years. Determines the differences between poor, average and good performers with regard to the development of these skills. Finds clear seasonal effects for Reading Comprehension, vocabulary and spelling, but the seasonal effect for decoding efficiency was restricted to the early grades.

Collins, *et al.* (2001) conducted a study on levels on Reading Comprehension and reading vocabulary among graduate students. The purpose of the present investigation was to examine graduate students Reading Comprehension and reading vocabulary, by comparing scores of graduate students on a standardized reading test to scores obtained by a large normative sample of undergraduates. Findings revealed that the graduate students had higher scores on the Reading Comprehension portion of the NDRT than did a normative sample of 5000 undergraduate students from

38 institutions. Similarly, the graduate students had higher scores on the reading vocabulary portion of the NDRT than did the normative sample.

The results of the investigation made by Popplewell and Doty (2001) suggested that students in the classrooms utilizing the Four-Blocks framework scored higher on measures of Reading Comprehension than the students in the classrooms utilizing one basal reader approach.

Savage (2001) explores that listening comprehension was the best predictor of Reading Comprehension, although reading accuracy was an additional predictor. Decoding skills best predicted reading accuracy. Reading self-percepts correlated with decoding but not comprehension skills.

Collins, *et al.* (2002) conducted a study on levels of reading ability among African-American graduate students. Poor reading ability has been identified as a predictor of underachievement among undergraduate students, but little known about the reading ability of graduate students, especially those of minority background. This study examined the Reading Comprehension and reading vocabulary of 105 African-American graduate students at a historically black college. Their scores were compared to those of

two samples of Caucasian graduate students and a large normative sample of undergraduates. The African, American students obtained statistically significantly lower scores in Reading Comprehension and vocabulary than did the comparison groups. A canonical correlation analysis revealed a strong relationship between these reading ability variables and achievement in research methodology courses.

Hedrick and Cunningham (2002) reported that reading a lot may influence listening comprehension, thus adding support to the educational practice of providing time for children to read independently and encouraging more and varied reading outside of school.

Lau and Chan (2003) compared 83 good readers and 76 poor readers on their ability to use reading strategies in Chinese Reading Comprehension and on various reading motivation variables. Poor readers scored lower than good readers in using all reading strategies, and especially in using sophisticated cognitive and metacognitive strategies. Poor readers also had lower intrinsic motivation in reading than had good readers. While the ability to use reading strategies had the strongest relation with Reading Comprehension, intrinsic motivation and strategy attribution might

facilitate reading development through their positive relations with strategy use.

Stevens (2003) reported that the students in Student Team Reading and Writing had significantly higher achievement in reading vocabulary, Reading Comprehension, and language expression.

Yang and Kuo (2003) found that less proficient readers could not finish the task of word recognition within time limits and their accuracy rates were quite low, whereas the proficient readers processed the physical words immediately and translated them into meaning quickly in order to memorize the whole passage.

Lerkkanen (2004) has concluded that the reading-related variables predicting reading performance varied according to the phase of reading development. Word meaning was associated with letter knowledge and listening comprehension, whereas initial word reading skill and listening comprehension were highly associated with the development of Reading Comprehension.

Nation and Snowling (2004) suggest that children's oral language proficiency, as well as their phonological skills, influences the course of reading development.

Sprugetica and Høien (2004) examined the relationships among various phonological skills and Reading Comprehension. Latvian children were followed from grade 1 to grade 2 and were tested with a battery of phonological, word reading, and Reading Comprehension tasks. A principal component analysis of the phonological tasks revealed three salient factors: a phonemic awareness factor, a rapid naming factor and a short-term memory factor. In order to analyze the relationship between various phonological skills and Reading Comprehension, a structural modeling analysis was performed. Phonemic awareness and rapid naming explained approximately the same amount of unique variance in Reading Comprehension, but phonemic awareness had most predictive power indirectly via word decoding only rapid naming had a significant direct impact on Reading Comprehension.

Swering (2004) found that test format should be considered in interpreting Reading Comprehension performance and underscore the need to assess specific component abilities in reading.

Yamashita (2004) examines the relationship between both first language (L₁) and second language (L₂) reading attitudes, and learner's performance in L₂ extensive reading. The study has demonstrated the importance of understanding learner's attitudes to

reading both in L₁ and L₂ for encouraging L₂ learner involvement in extensive reading and suggest that cognitive and affective domains of reading relate differently in L₁ and L₂.

Anna (2005) found that the relationship between listening and Reading Comprehension becomes stronger after decoding mastery, and the difference between listening and reading decreases with increasing grade level.

Samuelstuen and Braten (2005) examined the interaction of topic knowledge with strategic processing on students' text comprehension, and indicated that student's prior knowledge about the topic of the text contributed most to their comprehension.

Yovanoff, *et al.* (2005) investigates the relative importance of vocabulary and oral reading fluency as measurement dimensions of Reading Comprehension as the student passes from elementary to high school. Vocabulary knowledge is a significant and constant predictor of overall.

2.3. CONCLUSION

By the review of works related with the present study, the investigator found the following:

- 1) Adequate comprehension in reading comes about as a result of

the reader's use of all his reasoning faculties and skills in problem solving.

- 2) Reading Comprehension is positively correlated to reading attitude and anxiety.
- 3) All the three variables, viz., reading rate, intelligence and meaning vocabulary showed positive correlation with Reading Comprehension.
- 4) Factors such as caste, intelligence, locality, administrative control of an institution, socio-economic status and personality factors were found to be related to the growth of English language ability.
- 5) Guided reading procedure proved to be effective in improving Reading Comprehension.
- 6) Early language delay is a predictor of lower intelligence, lower reading ability and increased behaviour problems.
- 7) Intelligence is the best predictor of Reading Comprehension.
- 8) There is significant difference between boys and girls in Intelligence and in the Achievement in Reading Comprehension in English.
- 9) Depth of vocabulary knowledge and Reading Comprehension are highly and positively correlated.

10) High Reading Comprehension scores are in favour of students having leadership traits.

11) A number of studies are done in the area of Reading Comprehension. But it was found that studies on the relation of variables like Intelligence, Creativity, Extraversion, Self-Concept, Achievement Motivation and Attitude towards Academic Work with Reading Comprehension in English are very few.

Thus it can be concluded that even though the available studies are on the relation of either cognitive variables with Reading Comprehension or non-cognitive variables with Reading Comprehension; Comprehensive studies on the relation of both cognitive and affective variables with Reading Comprehension especially in English are rare. Also there is a lack of attempt to find the combined influence or predictive ability of a set of psychological variables using statistical techniques like one-way ANOVA, Correlations and Multiple Regression Analysis.

METHODOLOGY

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-
- ❖ *Variables*
 - ❖ *Tools Used*
 - ❖ *Sample*
 - ❖ *Data Collection Procedure*
 - ❖ *Scoring and Consolidation*
 - ❖ *Statistical Techniques Used for Analysis*
-
-

The method followed in the conduct of an investigation is of utmost importance in deciding the validity of its findings and is dictated by the nature of the problem and the type of data required for answering the questions posed by the problem.

Methodology of the study is described under six major headings viz.,

3.1. Variables

3.2. Tools Used

3.3. Sample

3.4. Data Collection Procedure

3.5. Scoring and Consolidation

3.6. Statistical Techniques Used for the Analysis

3.1. VARIABLES

The study being a correlational one, two types of variables are involved viz., (i) Criterion or dependent variables and (ii) predictor or independent variables.

3.1.1. Criterion (dependent) Variable

As the major objective of the study is to identify the psychological variables which are capable of predicting significantly reading

comprehension in English, the criterion or dependent variable of the study is Reading Comprehension in English.

For the present study Reading Comprehension in English refers to one's ability to understand or to cognise the ideas implied in written scripts which is revealed through written tests as measured by a standardized test of Reading Comprehension in English developed by the investigator.

3.1.2. Predictor (independent) Variables

Here again, major objective of the study is the identification of the psychological variables capable of predicting significantly Reading Comprehension in English. The predictor or independent variables of the study are thus the psychological variables which consists of variables belonging to both cognitive and affective domain and are listed below.

- 1) Intelligence
- 2) Creativity
- 3) Achievement Motivation
- 4) Self-concept
- 5) Extraversion
- 6) Attitude Towards Academic Work.

3.2. TOOLS USED

The tools used for the study are,

- 1) Test of Reading Comprehension in English (Sumangala and the Investigator, 2002).
- 2) Test of Intelligence for Secondary School pupils (Sumangala and Sholy, 2000)
- 3) A comprehensive test of creativity (Sumangala, 1988)
- 4) Scale of Achievement Motivation (Pillai and Salim, 1994)
- 5) Scale of Self-concept (Sumangala and Sujatha, 1994)
- 6) Extraversion Inventory (Sumangala and the Investigator, 2002)
- 7) Scale of Attitude Towards Academic Work (Sumangala and Mumthas, 1998)

Each tool is described below for its psychometric details to decide on the appropriateness of the tool in measuring the variables of the study.

3.2.1. Test of Reading Comprehension in English

This is a test prepared by the investigator with the supervising teacher, for measuring the ability of Reading Comprehension in English of secondary school pupils of Kerala.

For developing the test, Reading Comprehension in English is

defined as one's ability to understand or to cognise the ideas implied in written scripts which is revealed through scientifically developed and standardized tests. The development of the test is described under four sections viz., Planning, Preparation, Try out and Finalisation.

Planning

The investigator decided that there be two types of test items (i) Completion type (objective type) and (ii) Answering passages through objective type questions. It was also decided that the duration of the test as 40 minutes.

Thus the test has two parts. In the first part (Part A) fifty incomplete sentences were given to test the ability of the pupils to comprehend the idea contained in the incomplete part and to complete each sentence by words choosing the most appropriate from the four possible answers given along with each test item. By this, knowledge of the vocabulary and the sentence structure can be tested.

In the second part (Part B) of the test, fifteen passages were given. Based on each passage three objective type questions were asked to answer by the students after reading the passages. This pattern of 'answering to passages' was adopted as it is one of the accepted ways of testing reading comprehension.

The passages for the test were selected from story books and from

several teacher made tests. The criteria for the selection of passages was its capability to generate ideas and of reading interest.

Preparation

As per the plan, the investigator prepared fifty completion variety test items under Part A; collected fifteen passages under Part B and framed three objective type questions each under each passage.

Examples under Part-A

- 1) A person who always believes that the worst will happen is called _____
a) an optimist b) a victim c) a pessimist d) a hero
- 2) Two boys wrote the examination. If we say BOTH DID NOT PASS, it means _____
a) both failed b) neither failed c) neither passed
d) one failed
- 3) A sound or voice that can be heard is an _____ sound
a) feeble b) audible c) inaudible d) credible

Examples Under Part-B

Nowadays life in cities has become dangerous for various reasons. First of all, it is dangerous to walk about in cities because always various kinds of vehicles keep moving at terrific speed. The smoke released by them poisons the atmosphere; and consequently it is dangerous to breathe in this polluted air. The food that we get in cities

is also lacking in purity. Now a days, everything is grown with chemical fertilizers which may cause danger to the consumer of fruits, vegetables and other things grown thus. We do not get anything that is absolutely pure. The water also is sometimes contaminated. Hence, it is better to get out of cities at least for some days every month; and to eat food which is not contaminated; and to breathe in fresh air which is conducive to excellent health.

1. What causes air pollution in cities?
 - a) Chemical fertilizers
 - b) Noise of vehicles
 - c) The smoke released by vehicles.
 - d) Contaminated water.

2. What makes the food we get in cities impure?
 - a) The chemical fertilizers used to grow the food
 - b) Air pollution
 - c) The smoke from the vehicles
 - d) Impure water in cities.

3. What according to the passage is the first step city dwellers should take against the dangers they are exposed to?
 - a) They should leave their cities once and for all
 - b) They should avoid vegetables and fruits
 - c) They should not use vehicles
 - d) They should get out of cities at least for some days every month.

Scoring Scheme

As all the test items are objective type, it was decided to give 'one score' each for each correct answer and 'zero score' for every incorrect answer under both the parts of the test.

Pilot Test

The so prepared draft test of Reading Comprehension was administered to a small group of 10, standard IX pupils (5 girls and 5 boys) to (I) fix the time limit of the test and (II) to know the word ambiguity, if any, of the test. Based on this, the time limit of the draft test was fixed as 60 minutes and rectified the ambiguities pointed out.

Try Out of the Test

Having compiled and printed the first draft of the test of Reading comprehension, the next step was to subject this test of Reading comprehension for experimental try-out. The purpose of the try-out is to secure data both for qualitative as well as quantitative analysis. The qualitative analysis consists in checking and finalizing test administration procedure, identification of faulty instructions and questions and finally discovering weaknesses or defects in such items that can be improved. The quantitative analysis is concerned with the determination to select the best items in terms of item difficulty (DI) and item discriminatory power (DP) for inclusion in the final test. To

determine these, the investigator used the Ebel's method. By this method,

$$DP = \frac{U-L}{N} \text{ and}$$

$$DI = \frac{U+L}{2N}$$

Where,

U = The number of correct response in the upper group

L = The number of correct responses in the lower group

N = The number of individuals in each group

The so obtained indices of discrimination and difficulty of the fifty objective questions of Part A and forty-five objective questions of Part-B are given in Table 1 (Part-A) and Table 2 (Part-B).

A test item under Part-A was selected if it had satisfactory indices of difficulty (around 0.50) and discriminating power (greater than 0.40).

A passage under Part-B was selected for the final test if it had either all the three questions or at least two questions with satisfactory indices of difficulty and discriminating power.

In the present study, the investigator administered the try-out to a stratified sample of 100 standard IX students of Kozhikode educational district.

TABLE 1
The Results of Item Analysis of the
Test of Reading Comprehension in English (Part-A)

Qn. No.	U	L	$DI = \frac{U+L}{2N}$	$DP = \frac{U-L}{N}$
*1.	37	6	0.4	0.6
*2.	50	27	0.7	0.4
*3.	37	6	0.4	0.6
*4.	26	8	0.3	0.4
5.	3	10	0.1	0.1
6.	13	6	0.2	0.1
7.	7	8	0.1	0.0
8.	14	6	0.2	0.1
9.	10	4	0.1	0.1
10.	13	6	0.2	0.1
*11.	31	9	0.3	0.4
*12.	26	8	0.3	0.4
*13.	37	14	0.4	0.4
*14.	26	8	0.3	0.4
*15.	37	6	0.4	0.6
16.	30	17	0.4	0.2
17.	24	14	0.3	0.1
18.	25	13	0.3	0.2
*19.	46	9	0.5	0.6
*20.	26	8	0.3	0.4
21.	25	13	0.3	0.2
22.	22	12	0.3	0.1
23.	12	15	0.3	0.0
*24.	26	8	0.3	0.4
25.	3	7	0.0	0.0

Continued...

Qn. No.	U	L	$DI = \frac{U+L}{2N}$	$DP = \frac{U-L}{N}$
26.	13	9	0.2	0.0
*27.	26	8	0.3	0.4
*28.	37	9	0.4	0.5
29.	19	12	0.2	0.1
*30.	31	9	0.3	0.4
*31.	45	16	0.5	0.5
32.	22	9	0.2	0.2
*33.	45	17	0.5	0.5
34.	10	9	0.1	0.0
35.	15	12	0.3	0.0
*36.	50	15	0.6	0.6
37.	20	10	0.2	0.1
*38.	44	16	0.5	0.5
*39.	31	8	0.3	0.4
*40.	44	9	0.4	0.6
*41.	31	9	0.3	0.4
42.	24	11	0.3	0.2
43.	27	9	0.3	0.3
44.	17	13	0.2	0.0
45.	25	11	0.3	0.2
*46.	46	8	0.5	0.7
47.	13	5	0.1	0.1
*48.	31	8	0.3	0.4
49.	11	10	0.1	0.0
*50.	33	11	0.4	0.4

Note: * indicate the items selected.

TABLE 2
The Results of Item Analysis of the
Test of Reading Comprehension in English (Part B)

Passage No	Qn. No.	U	L	$DI = \frac{U+L}{2N}$	$DP = \frac{U-L}{N}$
1*	1	36	20	0.5	0.3*
	2	40	8	0.5	0.6*
	3	24	7	0.3	0.3*
2*	4	42	19	0.6	0.4*
	5	40	20	0.6	0.4*
	6	36	16	0.5	0.4*
3	7	40	11	0.5	0.5
	8	21	15	0.3	0.1
	9	21	15	0.3	0.1
4*	10	45	11	0.5	0.6*
	11	16	7	0.2	0.2
	12	48	14	0.6	0.6*
5*	13	53	11	0.6	0.8*
	14	47	6	0.5	0.8*
	15	48	11	0.5	0.7*
6	16	20	9	0.3	0.2
	17	8	11	0.2	0.1
	18	20	6	0.2	0.3
7*	19	47	12	0.5	0.6*
	20	47	4	0.5	0.8*
	21	35	14	0.5	0.4*
8*	22	45	5	0.5	0.7*
	23	49	11	0.6	0.7*
	24	48	10	0.5	0.7*
9	25	41	31	0.7	0.2
	26	20	6	0.2	0.3
	27	8	11	0.2	0.1

Continued...

Passage No	Qn. No.	U	L	$DI = \frac{U+L}{2N}$	$DP = \frac{U-L}{N}$
10*	28	31	12	0.4	0.4*
	29	37	6	0.4	0.6*
	30	19	4	0.2	0.3
11*	31	37	16	0.5	0.4*
	32	22	21	0.4	0.02
	33	25	18	0.4	0.06*
12	34	27	10	0.3	0.3
	35	23	8	0.3	0.3
	36	29	12	0.4	0.3
13*	37	37	16	0.5	0.4*
	38	20	9	0.3	0.2
	39	31	9	0.4	0.4*
14	40	24	4	0.3	0.4
	41	13	0	0.1	0.2
	42	19	12	0.3	0.1
15*	43	33	10	0.4	0.4*
	44	20	9	0.3	0.2
	45	29	10	0.4	0.4*

Note: *indicate the passages and the questions selected for the final test.

Finalisation of the Test

The final test thus consists of 25 items under Part-A and 10 passages under Part-B.

The selected passages and questions were got printed in the form of a booklet. Separate scoring sheet was also printed.

Time required for answering the final test was fixed as 15 minutes for Part-A and 25 minutes for Part-B, keeping proportionate time 40 used in the try out.

A copy of the final test is given as Appendices II and VI respectively.

Validity

The test was so prepared by giving weightage to two formats of the test viz., completion type questions and passages which are highly used as model forms of testing Reading Comprehension. Besides, both type of test items were so selected as to measure the reading ability. The test has thus content validity. The test was referred to the ten English teachers of schools and they opined that the test is a very good model to measure reading ability. The test thus possesses face validity.

Reliability

Reliability of the test was estimated by test-retest method with an interval of two weeks between the two testings. Test scores of fifty-four students were taken for this purpose.

The scores thus obtained in the two administrations were then correlated by the product-moment co-efficient of correlation method. The reliability of the test thus estimated was found to be 0.76.

3.2.2. Test of Intelligence for Secondary School Pupils

This test was developed and standardized by Sumangala and Sholy (2000).

This test of Intelligence is based on Sternberg's Triarchic Theory of Intelligence. According to this theory, Intelligence comprises of three parts.

- i) Componential part- which relates intelligence to the internal world of the individual. That is on what goes on inside a person's head when that person thinks intelligently.
- ii) Experiential part- which relates intelligence to both the internal and external world of the individual. That is on how does our intelligence affects the kinds of environments that are available to us and that we create for ourselves.
- iii) Contextual part- which relates intelligence to the external world of the individual. That is, how do the experiences mediate between the internal and the external world of the individual.

Sternberg's theory further suggests that the application of intelligence to the internal, external and to the personal experiences are centered around three kinds of mental processes. Viz., metacomponents, performance components and knowledge acquisition

components. Meta components are the executive processes used to plan, monitor and evaluate problem solving. Performance components are the lower order processes used to implement the commands of the meta components. Knowledge acquisition components are the processes used to learn how to solve the problems.

Further, this test is prepared based on the assumptions of Sternberg that

- 1) Intelligence is malleable rather than fixed.
- 2) A task that measures intelligence should be novel but not totally outside an individual's experience.
- 3) When a task is first encountered, it may be non entrenched. Through successive encounters, performance on the task may become automatised.
- 4) A person's intelligence is best shown not in the run-of-the-mill situations of every day life but in those extra ordinary situations, that challenge the individual's ability to cope with one's environment.

I. Test of Meta Components

To Sternberg there are seven executive processes critical to intelligent problem solving. These are,

- i) Recognizing the existence of a problem
- ii) Defining the nature of a problem
- iii) Generating the set of steps needed to solve the problem
- iv) Combining these steps into a workable strategy for problem solution
- v) Deciding how to represent information about the problem.
- vi) Allocating mental and physical resources to solve the problem and
- vii) Monitoring the solution to the problem.

For the test, the above seven processes are conceived into five which are given below with model test items under each.

I) Recognizing and Defining the Problem

Problems arise in virtually every domain of living, both individuals and for organizations. Spotting and stating of these problems are really crucial for successful life.

Example of a Test Item:

Balu started to walk from his home towards the sea to view the sunset. After sometime he turned to his left and walked. Then again he turned to his left and walked. But he couldn't see the sunset. The problem here is,

- A) He was walking in the East direction.
- B) He was walking in the South direction.
- C) He was walking in the North direction.
- D) He was walking in the East-West direction.

II) Generating the Set of Steps Needed to Solve the Problem

A critical metacomponent for achieving solution requires the generation of a set of steps towards solution.

Example of an Item:

I have 14 coins worth Rs.5/- as 25 and 50 paise coins. Which equation of the following will help you to find out how many 25 paise and 50 paise coins I have?

(X- number of 25 paise coin,

Y- number of 50 paise coin)

A. $25X + 50Y = 5$

B. $X + Y = 14$

$25X \cdot 50Y = 5$

C. $X + Y = 14$

$25X + 50Y = 5$

D. $X + Y = 14$

$25X + 50Y = 500$

III) Workable Strategy for Problem Solving

Often intelligence is indicated by the systematic strategy used in arriving at solutions.

Example of an item:

You have got two measuring jars of 3 litres and 8 litres. By using those jars how can you take one litre of oil?

IV) Representing Information About the Problem

An important part of problem solving is the way in which information is represented internally or externally (using mental image or set of propositions created).

Many complicated problems become much simpler when one doesn't rely totally on mental representations and also on literal representation to solve them.

Example of an Item:

Read the problem given below and answer the question by noting the way by which you reached the answer to the problem in the response sheet given.

Bill is taller than Tom

Peter is taller than Sam

Peter is shorter than Tom

Bill is shorter than Mike

Sam is taller than Jack

Who is tallest?

(Ans: (A) Bill (B) Sam (C) Mike (D) Peter)

V) Using Mental and Physical Resource to Solve the Problem

The wisdom with which resources are allocated can have a tremendous impact on both the short term and the long term future. One way of knowing this is to test for the strategy and the time spent to arrive at the solution for reasoning problems.

Example of an item:

Man is to skin as

((a) Dog (b) Tree) is

To (a. Bark b. Cat)

Ans. A. Tree is to Bark

B. Dog is to Bark

C. Dog is to Cat

D. Tree is to Cat

II) Test of Performance Components

All tests of inductive reasoning like analogy, classifications, series completion, matrix problems and practical reasoning problems are tests of performance components.

Example of test items:

I) Analogy

News paper is to Editor as film is to _____

Ans: A. Actor B. Director C. Audience D. Producer

II) Classifications

(Spot the one which is different from others in the given series)

Mercury, Venus, Pluto, Jupiter, Moon

Ans: A. Moon B. Pluto C. Mercury D. Jupiter

III) Series Completion

1, 2, 2, 5, _____, 10, 4,....

Ans: A. 5 B. 3 C. 6 D. 4

IV) Matrix Problems

$$\begin{pmatrix} 6 & 11 & 25 \\ 8 & 6 & 4 \\ 12 & 5 & ? \end{pmatrix}$$

The missing number in the matrix is,

A. 10 B. 12 C. 16 D. 49

V) Practical Reasoning Problem

Suppose you are walking along a road. A jeep comes and runs over a boy of the options listed below, which one you will follow at that moment?

- A. Run after the jeep.
- B. Go and inform the police
- C. Make arrangements for sending the boy to the hospital.
- D. To give first aid.

A copy of the test is given as Appendix IX.

Scoring Procedure of the Test

The scoring procedure of the test is to give 'one score' for every correct answer and 'zero score' for every incorrect answer except in cases of tests like I(III), I (IV).

In test I (III), the strategy used by the respondent for arriving at the solution is critical and hence score depends on the systematic strategy used. An additional score of 'one' will be given to items under this test if the strategy followed is systematic.

In test I (IV), the nature of representation is crucial. Therefore scoring depends on whether the respondent uses an external or literal representation of the information for arriving at the right answer. Here also an additional score of 'one' will be given if there is correct external representation.

Validity and Reliability

As part of standardization validity and reliability were estimated and the details are as follows. The validity of the test was estimated empirically by comparing the scores of the test with 'The Kerala Non Verbal Group Test of Intelligence for Secondary School Pupils' (Nair, 1968). The co-efficient of correlation so obtained is 0.62 (N =40) indicating that the test has concurrent validity.

Reliability of the test was established by the test-retest method. The test-retest reliability coefficient is 0.79 (N = 40).

The above evidences suggest that the test is reliable and valid to measure intelligence of secondary school pupils.

3.2.3. A Comprehensive Test of Creativity

This test for measuring creativity of secondary school pupils of Kerala was developed and standardized by Sumangala (1988). The test was developed on the basis of the working definition viz., creativity is the ability to think divergently, to produce a large number and variety of original responses to stipulated stimulus situations.

Eventhough the test has three parts viz., Semantic, Symbolic and Figural the investigator used only the semantic part of the test as the stimuli under this test are verbal materials.

The semantic test of creativity has six subtests. The six semantic subtests were prepared following the models of creativity tests developed by Guilford and Torrance. A detailed description of the subtests and the respective factor of each measure is also attempted. A summary of this is given in Table 3.

TABLE 3
Factors and Subtests of the Tests of Creativity

Sl. No.	Factors	Name of the Subtest	No. of Items	Time Limit of the Test (mts)
A. Semantic Creativity				
1.	Word fluency	First and last letters	2	5
2.	Associational fluency	Simile insertions	2	5
3.	Ideational fluency	Thing categories	2	5
4.	Semantic spontaneous fluency	Alternatives uses	2	6
5.	Sensitivity problem	Product improvement	2	6
6.	Originality	Remote consequences	2	6

DESCRIPTIONS OF THE SUBTESTS

Part-A: Semantic Creativity

Subtest-1: First and Last Letters:

This is a direct adaptation of Guilford's task, 'word fluency'. In each of the two items, the first and last letters of a word are given. Subjects are to write as many words as possible beginning and ending with the given letter within a specified time limit of 5 minutes.

Example:

Write as many words as possible beginning with 'ka' and ending with 'ka'.

Subtest-2-Simile Insertions

This subtest is intended to measure the associational fluency of ideas. Each item of the test is an incomplete sentence beginning with a simile, the remaining part of the sentence is left blank. Subjects have to write as many sentences as possible completing the sentence with each adjectival simile in the blank space provided. The time limit of the test is 5 minutes.

Example:

Write as many sentences as possible by completing with adjectival similes, associated with the given simile (As depth to Ocean is_____)

Subtest-3: Thing Categories

This test measure the ability of pupils to generate qualitative ideas within a given time. In each item the subject has to name things that belongs to a particular category. This test has 2 items and the time limit is 5 minutes.

Example:

Write as many objects as possible which can be qualified as 'disgusting'.

Subtest-4: Alternative User

Semantic spontaneous flexibility of the subject is measured by this test. Each item of the test is the name of an object. The subject has to write as many usual and unusual uses of the object. The two items of the subtests are to be answered in 6 minutes.

Example:

Write as many usual and unusual uses of tyre.

Subtest 5: Product Improvement

This is a modification of Guilford Apparatus Test, intended to measure a subjective sensitivity to problems. In this test the subject has to suggest unusual and interesting improvements for given common appliances as items of the subtest. The test has 2 items and the time limit of the test is 6 minutes.

Example:

Give original suggestions for improving a 'school bag'.

Subtest-6: Remote Consequences

This test is intended to measure subjects originality in imagining the consequences of certain unusual situations. Each item is an improbable situation. The subject has to imagine the situation in its vivid details and then write down the consequences of the happening of the event, making as many guesses as he can, of the occurrence of that

event. The subtest has two items and the time allotted to complete the test is 6 minutes.

Example:

Man can breathe both in water and land.

A copy of the test is given as Appendix X.

Scoring Procedure

The scoring of the test is mainly for the three factors of creativity viz; fluency, flexibility and originality. Each item of the test therefore receives three scores, and the sum of the three components (with equal weight given for each) for all the item of the test is defined as the total creativity score of a subject. For scoring, fluency has been defined as the number of relevant responses, flexibility, the number of relevant categories and originality as uncommonness of responses.

Fluency Scores

For each items under each subtest, the relevant response (excluding those repeated in an identical form) are counted and each relevant response is assigned a score. The total number of scores obtained for the items in each subtest is the total fluency score of the subtest. By definition, the scoring scheme of fluency is the same for all the subtests.

Flexibility Scores

The responses are classified into categories and the nature of the categories varies from subtest to subtest. One score is assigned for a category if at least one response comes under it. No additional score is assigned for more than one response in a category.

Originality Scores

The schema for scoring originality is based on differing degrees of uncommonness of the response. The scores vary from zero to five as given in the Table 4.

TABLE 4
Scoring Scheme for Originality

Sl. No.	Grouping in terms of uncommonness of response	Score
1.	Responses given by less than 1 percent in the sample	5
2.	Responses given by 1 to 2 percent in the sample	4
3.	Responses given by 2 to 4 percent in the sample	3
4.	Responses given by 4 to 7 percent in the sample	2
5.	Responses given by 7 to 12 percent in the sample	1
6.	Responses given by more than 12 percent in the sample	0

The subtests of the tests were finalized on the basis of subtest validation. Scores of the subtests were correlated with the total score of the tests. Subtests having substantial correlation co-efficients are

retained for the final test. The so obtained correlation coefficients of the subtests in the final test are: 0.675, 0.652, 0.741, 0.907, 0.695 and 0.840 respectively.

The psychometric details of the test are as follows:

Validity

The evidence of the validity of the test is presented below.

a) Construct Validity

The test possesses construct validity to a reasonably high degree since the test is modelled after the well-known Guilford Test of creative thinking and Minnesota Test of creative thinking. The theory used in the development of the test, tasks included, and the mode of selection of items for the test are evidences for the construct validity of the test.

b) Empirical Validity

Validity of the test was established empirically by comparing the scores of this test with those of the Kerala Verbal Test of creativity developed by Nair and Sumangala (1978) for a sample of 30 secondary school pupils, the coefficient of validity established by Pearson Product Moment Coefficient of Correlation method was found to be 0.507.

The coefficient of validity reveals that the test is not only reliable but also a valid tool for measuring creativity of secondary school pupils.

Reliability

The reliability of the test was assessed using Cronbach coefficient method which is applicable for free response type questions. The coefficient of reliability was found to be 0.81, for N=40 which implies that the test is highly reliable.

3.2.4. Scale of Achievement Motivation

This scale was developed and standardized by Pillai and Salim in 1994.

The scale of Achievement motivation in Malayalam is modelled after the Cassidy-Lynn Achievement Motivation Questionnaire (1989) which consists of seven factors namely work ethic, Acquisitiveness, Dominance, Excellence, Competitiveness, status aspiration and mastery. Each factor is described below for its construct.

I) Work Ethic

It incorporates the desire to study hard and is based on the reinforcement in the performance itself. As a motivational attribute it influences attitudes, values and behaviour.

Example

I like to avoid those lessons which I find difficult to study (negative item).

II) Pursuit of Excellence

It is defined as competition with a standard of excellence. It is the reward obtained by making the best performance in studies.

Example:

I found satisfaction in doing a work better than my earlier work even if I don't out perform others.

III) Status Aspiration

It incorporates the desire to be a dominant member or a leader among other students. It is reinforcement in climbing the social status hierarchy.

Example:

I want others to come to me for clearing their doubts.

IV) Competitiveness

It is the satisfaction obtained while competing with others.

Example:

If there is a tough competition, my performance will be better.

V) Acquisitiveness

This is motivation based on the reinforcing properties of position

or possession attained by the individuals.

Examples:

There is continuous effort behind the success of my accomplishments in studies.

VI) Mastery

It is the satisfaction obtained when succeeding in the study of difficult matters.

Example:

I find satisfaction in studying materials which require high intellectual ability and skill.

VII) Dominance

It include the desire to lead or to take initiative or to become a dominant member of the group.

Example:

When we plan an activity I would like to direct it myself rather than someone else taking the lead.

A copy of the scale is given as appendix XI.

Scoring Procedure

Scoring scheme of the scale is to assign scores 2, 1, 0 for responses 'yes', 'undecided' and 'No' respectively, if the statement is positive.

The scoring is in the reverse order for negative statements. That is, assign scores 0, 1, 2, respectively for responses 'yes', 'undecided' and 'No'.

Standardization of the Scale

Statements for the final scale were selected on the basis of item analysis for which draft scale was administered on a sample of 370 students studying in standard IX of the secondary schools of Kerala.

Statements were selected by looking into the homogeneity of the scale. For this correlation co-efficient of individual statements with the total scale were estimated. Statements having substantiating correlation were selected for the final scale.

Validity

Concurrent validity of the scale was estimated against the measures of a popular scale used for many research purposes in Kerala namely Kerala Scale of Achievement Motivation (Nair, 1980). Test scores of the present scale was correlated with the scores of the Kerala Scale of Achievement Motivation for a random sample of 80 students drawn from two secondary schools of Calicut district. The validity co-efficient was found to be 0.68 (N=80). This index is evidence of the satisfactory co-efficient of validity.

Reliability

Reliability of the scale was found out by estimating the coefficient of internal consistency Cronbach's Coefficient Alpha for the factors of the scale.

The Cronbach's reliability co-efficient alpha estimated for the Achievement Motivation factors for a representative sample of 100 secondary school pupils are presented below.

Alpha coefficients worked out were 0.68, 0.64, 0.80, 0.59, 0.62, 0.64, 0.67 etc. for the seven factors work ethic, pursuit of excellence, status aspiration, mastery, competitiveness, Acquisitiveness and Dominance respectively.

These coefficients reveal that the scale is internally consistent as the coefficients range between 0.59 and 0.80.

3.2.5. Scale of Self-Concept

This scale was developed and standardized by Sumangala and Sujatha in 1994. The constructs for developing the scale are personal self, social self, family self, physical self, academic self and moral ethical self. The scale was developed in the pattern of Likert type attitude scale construction and consists of 40 statements of which 23 are positive and 17 negative. The desired responses are in the forms: very much like this,

like this, uncertain, not like this, not at all like this. Each construct is described below for its details.

I) Personal Self: Personal self refers to the person's construct / concept of himself with his own abilities and deficiencies and how he thinks others may look upon him. The experiences with others in the environment may provide a picture of himself as a person.

Example:

I am a good class leader, (Positive item)

I am hated by all (negative item)

II) Social Self: Perception of an individual in relation to others and the role one maintains in the societal relations came under this category. It determines whether the person is social or not. The cumulative consequences of social learning are internalized in the self image and laid down in layers leading to the formulation of a particular personality.

Example:

I have a lot of friends (Positive item)

Others find it difficult to like me (negative item)

III) Family Self: An important factor that contributes to self-image is the personal interactions that take place in the family. The growing

child unknowingly emulates the attitudes and behaviour of those few people who are emotionally essential to him. If their words and behaviours teach him that he is competent and worthy it forms the center of his self image leading to the formation of a healthy self concept. If he grows among criticism and rejection or if he cannot live up to the expectations of his parents he has little opportunity to develop a positive concept of himself.

Example:

I help my parents in the household work (positive item).

My parents punish me even for simple things (negative item)

IV) Physical Self: Physical self is an essential factor in the creation of self image. It refers to one's own body image. The child who has physical handicaps such as impaired vision or hearing or speech impediments under estimate himself and develop feelings of inferiority and unworthiness. At the supersensitive stage of adolescence, a physical defect can become a source of acute anxiety. In a society that gives so much stress on physical attractiveness, any physical blemish even the colour of the skin may lead to negative feelings.

Example:

Other do not like my appearance (negative item)

I have an attractive physical appearances (positive item).

V) Academic Self: The child who can attain academic success in school or who has qualities that make him acceptable to his peers develops a healthy self-concept strengthening his ego. Academic self is the concepts one has about his academic performance. A child who encounters failures and frustrations in school is unhappy and develops complexes leading to a negative self-concept.

Example:

I cannot concentrate on my studies (Negative item)

My answers are read by the teacher as model answers (Positive item)

VI) Moral Ethical Self: Moral Ethical self refers to the values, accomplishments and behaviours of others which the child has incorporated in his self. It differs from person to person. Each child gets his own version of values from the people whom he encounter with- may be other children, teachers, heroes, movies, television personalities, fictional figures and athletes. These values are absorbed into his self system.

Example:

I will do only things accepted by the society (Positive item)

I am not faithful to others (Negative item)

A copy of the scale is given as Appendix XII.

Scoring

For positive statements assign scores 5, 4, 3, 2 and 1 respectively for responses like 'very much like this', 'like this', 'uncertain', 'not like this' and 'Not at all like this'.

The scoring is in the reverse order for negative statements. That is, assign scores 1, 2, 3, 4 and 5 for responses of 'very much like this' to 'Not at all like this'.

Standardization of the Scale

Statements for the final scale were selected on the basis of item analysis for which draft scale was administered on a sample of 185 secondary school children selected by stratified sampling method. Then t-values (discriminating power to distinguish between a student of high self-concept and a student of low self-concept for each statement) were found by two tailed 't' test. Statements with 't' values greater than 1.96 constitute the final scale.

Validity

The concurrent validity of the scale was established by comparing scores of this scale with those of an available standardized tool to measure self-concept (Nair, 80). The index of validity so obtained is 0.54 (N =40) which is significant beyond 0.01 level suggesting that the scale is reasonably valid.

Reliability

Reliability of the scale was established by test-retest method with an interval of 20 days between the two testings. The 'r' got is 0.894 (N=28) which shows the scale is highly reliable.

3.2.6. Extraversion Inventory

The inventory was developed and standardized by the investigator for the present study to measure the trait 'extraversion' among standard IX pupils. The inventory was developed on the basis of the working definition, viz., extraverts are realistic and face the problems of life objectively and are always ready to partake of any social activity around them. Thus extraverted behaviour is measured through the presence of symptoms like interest in overt activity, mental disconcertedness, happy go lucky disposition and impulsive reactions.

Sixty statements with 30 positive and 30 negative were therefore prepared covering the characteristics of extraverts viz., interest in overt activity, mental disconcertedness, happy go lucky disposition and impulsive reactions.

Each statement was so prepared that the respondent is to mark the responses which may reveal the degree of agreement or disagreement towards each statement in a two point scale viz., 'Yes' and 'No'.

Sample of positive and negative statements are cited below.

Examples:

- a) You have strong mind to achieve your ambition, and ready to face any problem that may hinder your ambition (Positive statement).
- b) You prefer reading to meeting people (Negative statement).

Scoring Procedure

The scoring scheme of the inventory is to assign 'one score' for 'Yes' and to 'zero score' for 'No' to each positive statement and 'zero score' for 'Yes' and 'one score' for 'No', for every negative statement.

Standardization of the Inventory

For the standardization, the inventory was given to a stratified sample of 100 standard IX pupils. Statements were then analysed by testing for the ability of each statement to discriminate between extraverts (the group having high scores in the inventory) and Introverts (the group having low scores in the inventory), using two-tailed t-test.

The statement wise critical ratio (t-values) so found out are presented in Table 5.

TABLE 5
Critical Ratio of Items in the Draft Test of Extraversion Inventory

Question Number	Critical Ratio	Question Number	Critical Ratio
1	2.31	31	0.87
2	0.29	32	1.17
3	1.04	*33	4.60*
4	1.39	*34	3.97*
5	4.49	35	0.58
6	0.79	*36	2.40*
7	1.15	37	0.78
8	2.30	*38	5.80*
9	3.00	39	1.50
10	3.31	*40	2.49*
11	3.44	41	0.63
12	1.23	*42	4.39*
13	1.62	*43	6.57*
14	0.16	44	0.39
15	2.09	*45	4.60*
16	1.05	46	0.54
17	3.60	*47	3.25*
18	4.44	48	0.00
19	0.96	*49	3.00*
20	3.52	*50	3.40*
21	2.13	51	0.22
22	0.59	52	0.99
23	4.43	53	0.58
24	5.71	54	0.00
25	0.62	55	1.48
26	0.39	*56	4.00*
27	2.97	*57	3.60*
28	3.84	*58	4.39*
29	0.93	*59	4.54*
30	3.03	*60	2.21*

* indicates statements selected for the final inventory

Thus the final extraversion inventory consists of 32 statements in which 12 are positive and 20 are negative.

A copy of the inventory is given as Appendix XVI.

Validity

NB 4699

The investigator established the concurrent validity of the inventory by comparing scores of this inventory with those of an available standardized tool to measure extraversion (Nair, 1976). The index of validity so obtained is 0.73 (N= 40).



Reliability

Reliability of the inventory was found by test-retest method with an interval of two weeks between the two administrations. The obtained reliability co-efficient is 0.80 (N =40), which shows the inventory is highly reliable.

3.2.7. Scale of Attitude Towards Academic Work

This scale was developed and standardized by Sumangala and Mumthas in 1998.

Attitudes are roughly defined as feelings for or against something that is, attitudes are related to what one thinks or believes about any object. In 1935, Allport defined attitude as a mental or neural state of

readiness organized through experience upon the individuals response to all objects and situations with which it is related.

For the development of the scale, Academic work is defined as the work done in schools or at home that involve abstract, theoretical, bookish, non-practical and speculative learning activities. Therefore, to measure the extent of favourableness or unfavourableness towards academic work, the investigator found the dimensions of academic work as love or hate towards school as an institution, teachers, academic subjects, classmates, home work, examinations, theoretical pursuits, academic pursuits, academic aspirations, time management, parental involvement in learning etc.

The tool is a Likert type five point scale developed using conventional procedures of attitude scale construction. The scale of Attitude Towards Academic work consists of 40 statements in which 19 are positive and 21 are negative.

Examples:

- 1) Opportunities to participate in discussions on academic subjects should not be wasted (positive statement)
- 2) Learning is an activity which is only for examination purpose (Negative statement).

A copy of the scale is given as Appendix XIX.

Scoring Procedure

For a positive statement allot scores 5, 4, 3, 2 and 1 respectively to responses 'Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and strongly disagree (SD). For a negative statement, scoring is in the reverse order. The total score for all the statements of the scale is the score of a student for his/her Attitude Towards Academic Work.

Standardization of the Scale

For the standardization of the scale, item analysis was done by calculating critical ratio (of two tailed 't' test) to each statement which is index of the ability of the statement to discriminate between students of high level attitude towards academic work and of low level attitude towards academic work.

Validity

Validity of the scale is established empirically by correlating the scores obtained for the scale with the sum of the marks obtained by the students in the first terminal school examinations for all subjects. The coefficient of validity (Pearson's r) obtained is 0.79 (N =35). This suggests that the scale is highly valid to measure the Attitude Towards Academic Work of secondary school pupils.

Reliability

Reliability of the scale was found by test-retest method with an interval of two weeks between the two administrations. The obtained reliability co-efficient is 0.83 (N =45), which suggests that the scale is highly reliable to measure Attitude Towards Academic Work of secondary school pupils.

3.3. SAMPLE

The results of any research study is to have universal application for which the whole population has to be studied, which often is impractical and impossible. But the process of relevant sampling and inferential statistics makes it possible to draw valid inferences of the parameters on the basis of careful and apt measurement of the variables involved in the study.

For the present study, the population is secondary school pupils of Kerala. Huge size of this population warranted the necessity of studying the population through an adequate representative sample. Therefore a representative sample of the population was drawn by looking into three major aspects viz., technique of sampling, factors considered in the sampling and size of the sample.

3.3.1. Technique of Sampling

The population consists of large number of pupils belonging to different strata like gender, locale of the school, instructional efficiency of schools etc. because of this stratification in the population, the investigator decided to adopt stratified sampling method for drawing the sample by which a good representative of the population will be obtained. When the population is composed of subgroups or strata of different sizes the suggested technique is stratified sampling (Garrett, 1966).

3.3.2. Factors Considered in the Sampling

The following factors, which are the characteristics of the population were taken into consideration while drawing the sample.

- i) Gender
- ii) Locale of the schools
- iii) Instructional efficiency of schools.

The rationale for considering each of these strata or factors in the sample is discussed below.

3.3.2.1. Gender

Gender difference is often observed and reported in many of the studies of Reading Comprehension (Bhatt, 1978; Subash, 1990; Kappil, 1993). So the investigator decided to give representation to boys and

girls in a 1:2 ratio in the sample.

3.3.2.2. Locale of the Schools

Often students' performance in examination differ between pupils rural and urban area and hence locale of the schools was considered as a factor for sample selection. Since the number of schools in the rural area is greater than that in the urban area, the proportion of 3:2 was taken for the selection of rural and urban schools.

3.3.2.3. Instructional Efficiency of Schools

On the basis of the percentage of success in the last year examination, schools were classified as superior, average and inferior. These three categories of schools were taken for the study in the proportion of 1:3:1.

3.3.3. Size of the Sample

While deciding the size of the sample, the investigator considered the following:

- i) The sample should be large enough to reduce the magnitude of sampling error within admissible limit (Best and Kahn, 1992).

Krech and Crutchfield (1968) have observed that sample size of 500 would yield reasonably good results which would keep the error less than five percent.

- ii) Sample should be small enough to be selected economically (Best and Kahn, 1992).

Considering all these, the investigator decided to have a sample of size 900 belonging to Kozhikode district, drawn by stratified method.

The break-up of this proposed sample of size 900 is given as Table 6.

TABLE 6
Break-Up of the Initial Sample

Sl. No.	Category	Boys (N)	Girls (N)	Total (N)
1.	Rural	262	301	563
2.	Urban	146	191	337
3.	Total	408	492	900

Note: (N)- indicates sample size.

3.4. DATA COLLECTION PROCEDURE

After fixing the sample, adequate copies of the tools and response sheets were got printed. Then a schedule for administering the tools was prepared by visiting the heads of the proposed schools. The investigator at this time sought the cooperation of the concerned class teachers for the successful completion of data collection. As there were seven tools to be administered for measuring the variables, the investigator had to go to each school twice for fully administering the tools.

A uniform procedure was followed in administering the tools in the selected schools. At the time of administration all the students were informed about the nature of each test and the purpose for which these were given. The question booklets and the response sheets were distributed to the pupils as sets one after another. As the tools are of different nature, the method of responding are different and hence the investigator explained the procedure of marking responses of each tool at the time of administration. Time limits were strictly kept wherever necessary and doubts were cleared then and there. All the test materials and response sheets were collected back after the due time.

3.5. SCORING AND CONSOLIDATION

After the data collection, response sheets were checked for personal details and for completeness of the data. During this, incomplete response sheets were rejected primarily and response sheets that are complete in all respects were retained for scoring.

Rejection of the incomplete response sheets resulted in a reduction of the size of the sample from 900 to 800. The break-up of this final sample of 800 pupils is given as Table 7.

TABLE 7
Break-up of the Final Sample

Sl. No.	Category	Boys (N)	Girls (N)	Total (N)
1.	Rural	235	266	501
2.	Urban	128	171	299
3.	Total	363	437	800

School wise distribution of the final sample is given as Appendix XX.

Response sheets of the seven tools were then scored using the scoring scheme of each. All the test scores were then consolidated incorporating student's personal data. The data was so entered and consolidated as to facilitate statistical analyses by means of computer.

3.6. STATISTICAL TECHNIQUES USED FOR ANALYSIS

Computer facilities using the software programme SPSS was made use of for the statistical analyses of the data collected. Inferential statistics employed for analyzing the data are the following.

3.6.1. One-way Analysis of Variance (Best and Kahn, 1992)

Analysis of variance is an effective way to determine whether the means of more than two samples are too different to attribute the sampling error. The procedure of one-way ANOVA is through the following stepwise calculations.

Step 1: Total sum of square,

$$SS_t = \sum X^2 - (\sum X)^2 / N$$

Step 2: Between groups sum of squares

$$SS_b = (\sum X_1)^2 / n_1 + (\sum X_2)^2 / n_2 + \dots (\sum X)^2 / N$$

Step 3: Within groups sum of squares,

$$SS_w = SS_t - SS_b$$

Step 4: Mean square between,

$$MS_b = SS_b / df_b \text{ and}$$

Mean square within,

$$MS_w = SS_w / df_w$$

Step 5: F- ratio, $F = MS_b / MS_w$

If for a required level of significance and for (K-1, N-K) degrees of freedom, the obtained value of F is higher than the tabled value of F, the difference in the group means is said to be significant for that level of significance.

3.6.2. Scheffe Test for Multiple Comparison (Ferguson, 1976)

The procedure of Scheffe's test for multiple comparison which is often used as a follow up of the ANOVA test is as follows:

Step 1: Calculate F-ratio between the pairs of means by using the within group variance estimate.

Step2: Consult a table of F and obtain the value of F required for significance at 0.05 or 0.01 level for $df_1 = K-1$ and $df_2 = N-K$.

Step 3: Calculate F^1 where

$$F^1 = (K-1) F$$

Step 4: Compare the values of F and F^1

For any difference to be significant at the required level, F must be greater than or equal to F^1 .

3.6.3. Pearson's Product Moment Coefficient of Correlation (Garrett, 1966)

Coefficient of correlation between relevant pair of variables is computed by means of the following formula which is in terms of raw scores or measures.

$$r_{xy} = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

Where,

$\sum X$ is sum of the X scores;

$\sum Y$ is sum of the Y scores;

$\sum X^2$ is sum of the squared X scores;

$\sum Y^2$ is sum of the squared Y scores;

$\sum XY$ is sum of the products of paired X and Y scores, and

N is number of paired scores.

3.6.3.1. Test of Significance of the Correlations by Fisher's t-test (Best and Kahn, 1992)

This is done by checking whether the t-value obtained by the formula.

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

exceeds 1.96 or 2.58, for significance at 0.05 level and 0.01 level respectively where 'r' is the obtained correlation coefficient in each case.

3.6.3.2. The 0.99 Confidence Interval of r (Garrett, 1966)

The limits within which the population r may lie with 99 percent confidence (0.99 confidence interval of r) are calculated using the formula.

$$[r \pm 2.58 \text{ SE}_r]$$

Where SE_r , the standard error of r, is computed by the formula

$$\text{SE}_r = \frac{1-r^2}{\sqrt{N-1}}$$

r being the obtained coefficient of correlation.

3.6.3.3. Verbal Descriptions of r (Garrett, 1966)

The magnitude of each r is described for the degree of relationship using the below given explanations.

r from 0.00 to ± 0.20 : indifferent or negligible relationship

r from ± 0.20 to ± 0.40 : low or slight relation

r from ± 0.40 to ± 0.70 : substantial or marked relationship

r from ± 0.70 to ± 1.00 : high to very high relationship

3.6.3.4. Shared Variance (Fox, 1969)

Shared variance, the percentage of the variance of the criterion variable accounted by the predictor variable, is calculated using the formula $r^2 \times 100$, r being the obtained correlation coefficient between the criterion and predictor variables.

3.6.4. Step-wise Regression Analysis (by ANOVA Approach) [Cohen and Manion, 1989]

This is a statistical technique to select the set of variables that best predicts the criterion variable and that eliminates superfluous predictor variables.

In regression analysis, the predictor variables are entered one by one on the basis of the size of the partial correlation to see the extent of contribution of each variable in predicting the criterion variable. Hence, as the first step, predictor variable having the highest correlation with the criterion variable is entered. Then, the variable having the next highest partial correlation is entered second and so on. Proceeding like this, a stage may come that further entering of variables won't make significant change either in the percentage variance or in R. It is an indication that the variable entered last and the remaining variables are not significant

predictors of the criterion variable.

A model table of step-wise regression analysis is given as Table 8.

TABLE 8
Model Table of Step-Wise Regression Analysis

Variables entered -				
Multiple R	=	SER=	B=	SEB =
Percentage variance	=	Beta =		
Source	DF	SS	MSS	F
Total				
Regression				
Residual				

3.6.4.1. The Coefficient of Determination R^2

The coefficient of determination, R^2 in terms of β and r which gives the efficiency of each predictor variable in predicting the criterion variable is calculated using the formula.

$$R^2(2, 3, \dots, n) = \beta_{12.34\dots n} r_{12} + \beta_{13.24\dots n} r_{13} + \beta_{14.23\dots n} r_{14} + \dots + \beta_{1n.23\dots(n-1)} r_{1n}$$

Where 1 stands for the criterion variable and 2, 3,... for the significant predictor variables as found by regression analysis.

The product of β and r is used as the index of the predictive efficiency.

ANALYSIS

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- ❖ *Preliminary Analysis*
 - ❖ *Effect of Each Psychological Variable on Reading Comprehension in English*
 - ❖ *Relation of Psychological Variables with Reading Comprehension in English*
 - ❖ *Identification of the Significant Predictors of Reading Comprehension in English by Regression Analysis and Estimation of their Predictive Efficiency (in terms of β and the partial r 's)*
 - ❖ *Findings of the Study*
 - ❖ *Tenability of Hypotheses*
-
-

Statistical analysis is the mathematical process of organizing, analysing and interpreting numerical data and is one of the basic phases of the research process. The primary interest in studying a sample is to infer the population characteristics by the use of inferential statistics. In this study also, the investigator has made use of inferential statistics for hypothesis testing and hence for arriving at answers to the questions posed or stated.

Details of the statistical analysis done to test the hypotheses and hence to tackle the objectives are discussed in this chapter with the findings of each.

The study is done with the major hypothesis viz., "Reading Comprehension in English of Secondary school pupils can be significantly predicted by means of the select set of psychological variables".

The major hypothesis was tested by means of the following hypotheses, the testing of each of which is analogous to the testing of the major hypothesis of the study.

- 1) Each select psychological variable has significant effect on Reading Comprehension in English.
- 2) Significant relationship exists between each psychological variable and Reading Comprehension in English.

- 3) Reading comprehension in English can be significantly predicted from the select set of psychological variables.

Details of the statistical analyses and discussion of results are presented under four major heads viz.,

- 4.1. Preliminary Analysis.
- 4.2. Effect of each psychological variable on Reading Comprehension in English.
- 4.3. Relation of psychological variables with Reading Comprehension in English.
- 4.4. Identification of the significant predictors of Reading Comprehension in English by regression analysis and estimation of their predictive efficiency.

4.1. PRELIMINARY ANALYSIS

As a preliminary to the inferential statistics, the investigator had worked out certain essential descriptive statistics like mean, median, mode, range, standard deviation, skewness, kurtosis and standard error of means of all the select psychological variables for the whole sample (N=800).

These essential descriptive statistics are presented in Table 9.

TABLE 9
Basic Statistics of All the Variables

Sl. No.	Variables	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis	Standard error of means
CRITERION VARIABLE								
1.	Reading Comprehension in English	28.40	27.00	21.00	11.27	0.18	-1.11	0.40
PREDICTOR VARIABLES								
2.	Intelligence	20.77	20.00	19.00	7.08	0.38	1.43	0.25
3.	Creativity	91.46	90.00	69.00	36.23	0.53	0.75	1.28
4.	Achievement Motivation	67.99	69.00	70.00	10.18	-0.25	1.26	0.36
5.	Self-concept	132.66	131.00	131.00	14.98	0.02	4.91	0.53
6.	Extraversion	20.27	20.00	21.00	3.41	-0.48	0.71	0.12
7.	Attitude Towards Academic Work	149.92	151.00	155.00	17.41	-1.02	5.93	0.62

From the Table 9, it can be seen that there is not much variation between values of the three measures of central tendencies, viz; mean, median and mode of the psychological variables.

Indices of skewness suggest that the distributions of the variables like Reading Comprehension in English, intelligence, creativity, self-concept are slightly positively skewed. For the variables Achievement Motivation, Extraversion, Attitude Towards Academic Work the distribution is slightly negatively skewed.

The index of kurtosis of the variables Reading Comprehension in English is less than zero. This indicates that the distribution is slightly platy kurtic. The distribution is leptokurtic for the variables intelligence, creativity, Achievement Motivation, Self-concept, Extraversion and Attitude Towards Academic Work. The indices obtained suggests that in general, the distribution of the psychological variables do not depart appreciably from normality.

4.2. EFFECT OF EACH PSYCHOLOGICAL VARIABLE ON READING COMPREHENSION IN ENGLISH

The first objective set for the study is to test whether the select psychological variables have significant effect on Reading Comprehension in English. That is, to test whether there exists any significant difference in the mean scores of the variable Reading Comprehension between the three levels (High-, Average- and Low-) of

each of the psychological variables. The technique of one-way analysis of variance was used for this. Scheffe's test of multiple comparison of mean scores was further used to study pair wise group differences in the case of variables having significant effect on Reading Comprehension in English.

The computation of analysis of variance theoretically warrants that some basic assumptions are to be met. The basic assumptions underlying the use and interpretation of analysis of variance according to Wiersma (1986) are:

- 1) Measurement of dependent variable, the variable whose data are being analysed, is on at least an interval scale.
- 2) The scores (criterion or dependent variable) are selected from a population distribution that is normally distributed.
- 3) When two or more populations are studied they have homogeneous variance.
- 4) The observations or scores are independent, which means that the score of one individual is not influenced by the score of any other.

As the test of Reading Comprehension in English (criterion or dependent variable) was constructed in such a way that the scores of the test possess the characteristics equality, magnitude and equal interval, the first assumption for analysis of variance is satisfied.

For the verification of the second assumption, the investigator computed statistics like mean, median, mode, standard deviation, skewness and kurtosis of the criterion (dependent) variable Reading Comprehension in English. Values of these statistics are presented as Table 10.

TABLE 10
Descriptive Statistics of the
Variable Reading Comprehension in English

Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
28.40	27.00	21.00	11.27	0.18	-1.11

The indices obtained for the two measures of central tendency viz; mean and median are approximately equal but not of mode. The coefficients of skewness and kurtosis suggest that the distribution is slightly positively skewed and slightly platykurtic.

The statistical constants reveal that the distribution of the variable Reading Comprehension in English is not badly skewed and follows approximately a normal distribution.

Third assumption for analysis of variance is homogeneity of variances across the different groups or samples of study. Studies with large samples are sufficient reasons for the statistical acceptance of homogeneity of variance.

Fourth assumption for analysis of variance is that samples drawn should be independent. Here three groups each were formed on the basis of the psychological variables and all the groups are independent because of the used procedure of ' σ ' distance from mean ' M ' for classification of samples. This implies that the groups subjected to study are independent.

As all the four assumptions of analysis of variance are nearly satisfied, the investigator decided to go ahead with the computer application of analysis of variance.

4.2.1. Effect of Each Psychological Variable on Reading Comprehension in English for Total Sample

The results obtained by the one-way analysis of variance technique with regard to the select psychological variables for total sample are presented in Table 11.

TABLE 11
Results of Analysis of Variance for the Effect of
Psychological Variables on Reading Comprehension in English (N=800)

Sl. No.	Psychological Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
1.	Intelligence	Between groups	38049.25	2	19024.63	239.01**
		Within groups	63439.34	797	79.59	
2.	Creativity	Between groups	24505.79	2	12252.89	126.85**
		Within groups	76982.79	797	96.59	
3.	Achievement Motivation	Between groups	60.76	2	30.38	0.24
		Within groups	101427.83	797	127.26	
4.	Self concept	Between groups	2098.92	2	1049.46	8.42**
		Within groups	99389.67	797	124.70	
5.	Extraversion	Between groups	8041.59	2	4020.79	34.29**
		Within groups	93446.99	797	117.25	
6.	Attitude Towards Academic Work	Between groups	3028.49	2	1514.25	12.26**
		Within groups	98460.09	797	123.54	

Note N=800
Degrees of freedom for between groups is 2 and for within groups is 797.
** indicates $P < 0.01$.

Discussion of Results

The results of analysis of variance given in Table 11 indicates that the F-ratios obtained for psychological variables except Achievement motivation exceed 4.62, the tabled value of F required for significance at 0.01 level for (2,797) degrees of freedom. This suggests that the mean scores of Reading Comprehension in English is significantly different between High-, Average- and Low groups of the psychological variables Viz; Intelligence, creativity, self-concept, Extraversion and Attitude Towards Academic Work. That is, the mean scores of Reading Comprehension in English is significantly different between the three levels of the five psychological variables. This implies that each of these psychological variables has significant effect on Reading Comprehension in English.

The Table of results further suggests that the F-ratio obtained for the psychological variable Achievement Motivation is 0.24 which is below the tabled value of F required for significance at 0.01 level. This suggests that Achievement Motivation has no significant effect on Reading Comprehension in English.

The psychological variables having significant effect on Reading Comprehension in English, that is, showing significant difference between the three groups of psychological variables for the mean scores

of Reading Comprehension in English are presented below in the order of magnitude of F-ratio.

1) Intelligence	(239.01)
2) Creativity	(126.85)
3) Extraversion	(34.29)
4) Attitude towards Academic Work	(12. 26)
5) Self-concept	(8.42)

This again suggests that among the above five psychological variables, intelligence and creativity are the variables having the most effect on Reading Comprehension in English. As it was found that the psychological variables like Intelligence, Creativity, Extraversion, Attitude Towards Academic Work and Self-concept have significant effect on Reading Comprehension in English, the Investigator tested for pair wise group differences of each variable by means of Scheffe's test of multiple comparison of means for large independent samples.

As there are three groups for comparison, the test of pair wise groups difference in Reading Comprehension was done for group pairs like High-, and Average groups, High- and Low groups and for Average- and Low groups. Necessary statistics of these tests and the obtained F's are given in Table 12.

TABLE 12

Results of the Scheffe Test of Multiple Comparison for the Mean Scores of Reading Comprehension in English Between High-, Average- and Low groups of Psychological Variables for Total Sample (N=800)

Sl. No.	Psychological Variable	Mean scores of Reading Comprehension			Mean squares of within group (MSw)	Scheffe's F-Value Obtained for Group Comparison		
		High group	Average group	Low group		High and Average	High and Low	Average and Low
1.	Intelligence	40.23	27.55	17.55	79.59	247.35**	467.61**	133.33**
2.	Creativity	38.28	28.40	18.40	96.59	103.84**	254.97**	105.26**
3.	Self concept	32.16	28.07	25.98	124.70	12.39**	14.58**	2.59
4.	Extraversion	33.79	28.17	22.37	117.25	30.66**	68.27**	25.67**
5.	Attitude Towards Academic Work	30.31	28.93	23.60	123.54	1.42	19.74**	20.88**

Note: F-value needed for significance at 0.01 level is 4.62 and at 0.05 level is 3.0

**indicates P<0.05

Discussion of Results

The results given in Table 12 are discussed below for significance of pair wise group difference.

High- and Average Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Average groups of psychological variables suggests that the F-values of four variables viz., Intelligence, Creativity, Self-concept and Extraversion are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Average groups in the case of the variables Intelligence, Creativity, Self-concept and Extraversion.

Again, the results suggests that the High- and Average groups do not differ in the mean scores of Reading Comprehension in English for the variable Attitude Towards Academic Work.

This further suggests that,

- 1) High Intelligence and Average Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Average Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;

- 3) High Self-concept and Average Self-concept groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) High Extraversion and Average Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) High Attitude Towards Academic Work and Average Attitude Towards Academic Work groups *do not differ* in the mean scores of Reading Comprehension in English.

High- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Low groups of psychological variables suggests that the F-values of five variables viz; Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Low groups in the case of the variables Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic work.

This further suggests that,

- 1) High Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 3) High Self-concept and low Self-concept groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) High Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 5) High Attitude Towards Academic Work and Low Attitude Towards Academic Work Groups *differ* significantly in the mean scores of Reading Comprehension in English.

Average- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between Average- and Low groups of psychological variables suggests that the F-values of four variables viz; Intelligence, Creativity, extraversion and Attitude towards Academic work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between Average- and Low groups in the case of the variables Intelligence, Creativity, Extraversion and Attitude Towards Academic work.

Again, the results suggest that the Average- and Low groups of the psychological variable self-concept do not differ in the mean scores of Reading Comprehension in English.

This further suggests that,

- 1) Average Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) Average Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 3) Average Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 4) Average Attitude Towards Academic Work and Low Attitude Towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) Average Self-concept and Low Self-concept groups *do not differ* in the mean scores of Reading Comprehension in English.

4.2.2. Effect of Each Psychological Variable on Reading Comprehension in English for Girls

The results obtained by the one-way analysis of variance technique with regard to the select psychological variables for Girls are presented in Table 13.

TABLE 13
Results of Analysis of Variance for the Effect of
Psychological Variables on Reading Comprehension in English for Girls (N = 437)

Sl. No.	Psychological Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
1.	Intelligence	Between groups	25394.33	2	12697.17	165.02**
		Within groups	33392.44	434	76.94	
2.	Creativity	Between groups	18585.51	2	9292.76	100.32**
		Within groups	40201.26	434	92.63	
3.	Achievement Motivation	Between groups	653.89	2	326.95	2.44
		Within groups	58132.88	434	133.95	
4.	Self concept	Between groups	2282.57	2	1141.28	8.77**
		Within groups	56504.19	434	130.19	
5.	Extraversion	Between groups	9875.57	2	4937.79	43.81**
		Within groups	48911.19	434	112.69	
6.	Attitude Towards Academic Work	Between groups	3137.33	2	1568.66	12.23**
		Within groups	55649.44	434	128.22	

N= 437

Degrees of freedom for between groups is 2 and for within groups is 434.

** indicates $P < 0.01$

Discussion of Results

The results of analysis of variance given in Table 13 indicates that the F-ratios obtained for psychological variables, Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work exceed 4.62, the tabled value of F required for significance at 0.01 level for (2,434) degrees of freedom. This suggests that the mean scores of Reading Comprehension in English is significantly different between High-, Average- and Low groups of the psychological variables viz., Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work. That is, the mean scores of Reading Comprehension in English is significantly different between the three levels of the five psychological variables. This implies that each of these psychological variables has significant effect on Reading Comprehension in English.

The table of results further suggests that the F-ratio obtained for the psychological variable Achievement Motivation is 2.44 which is below the tabled value of F required for significance at 0.01 level. This suggests that Achievement Motivation has no significant effect on Reading Comprehension in English.

The psychological variables having significant effect on Reading Comprehension in English, that is, showing significant difference between the three groups of psychological variables for the mean scores

of Reading Comprehension in English are presented below in the order of the magnitude of F-ratio.

1) Intelligence	(165.02)
2) Creativity	(100.32)
3) Extraversion	(43.81)
4) Attitude Towards Academic Work	(12.23)
5) Self-Concept	(8.77)

This again suggests that among the above five psychological variables Intelligence and creativity are the variables having the most effect on Reading Comprehension in English. As it was found that the psychological variables like Intelligence, Creativity, Extraversion, Attitude Towards Academic Work and Self-Concept have significant effect on Reading Comprehension in English the investigator tested for pair wise group differences of each variable by means of Scheffe's test of multiple comparison of means for large independent samples.

As there are three groups for comparison, the test of pair wise group difference in Reading Comprehension was done for group pairs like High- and Average groups; High- and Low groups and for Average- and Low Groups. Necessary statistics of these tests and the obtained F's are given in Table 14.

TABLE 14

Results of the Scheffe Test of Multiple Comparison for the Mean Scores of Reading Comprehension in English Between High-, Average- and Low groups of Psychological Variables for Girls (N=437)

Sl. No.	Psychological Variable	Mean scores of Reading Comprehension			Mean squares of within group (MSw)	Scheffe's F-Value Obtained for Group Comparison		
		High group	Average Group	Low group		High and Average	High and Low	Average and Low
1.	Intelligence	42.22	29.01	17.83	76.94	276.98**	561.19**	171.21**
2.	Creativity	40.00	29.58	17.98	92.63	120.63**	325.42**	147.86**
3.	Self-concept	35.79	29.84	26.27	130.19	25.46**	33.19**	7.22**
4.	Extraversion	39.26	30.08	22.62	112.69	93.63**	180.96**	44.16**
5.	Attitude Towards Academic Work	30.96	30.60	21.30	128.22	0.08	39.53**	62.22**

Note: F-value needed for significance at 0.01 level is 4.62 and at 0.05 level is 3.0

**indicates P<0.05

Discussion of Results

The Results given in Table 14 are discussed below for significance of pair wise group difference.

High- and Average Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Average groups of psychological variables suggests that the F-values of four variables viz., Intelligence, Creativity, Self-concept and Extraversion are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Average groups in the case of the variables Intelligence, Creativity, Self-concept and Extraversion.

Again, the results suggests that the High- and Average groups do not differ in the mean scores of Reading Comprehension in English for the variable Attitude Towards Academic Work.

This further suggests that,

- 1) High Intelligence and Average Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Average Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;

- 3) High Self-concept and Average Self-concept groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) High Extraversion and Average Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) High Attitude Towards Academic work and Average Attitude Towards Academic Work groups *do not differ* in the mean scores of Reading Comprehension in English.

High- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Low groups of psychological variables suggests that the F-values of five variables viz., Intelligence, Creativity, Self-concept, Extraversion, Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Low groups in the case of the variables Intelligence, Creativity, Self-Concept, Extraversion and Attitude Towards Academic Work.

This further suggests that,

- 1) High Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Low Creativity groups differ significantly in the mean scores of Reading Comprehension in English;
- 3) High Self Concept and Low Self Concept groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) High Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 5) High Attitude Towards Academic Work and Low Attitude Towards Academic Work Groups *differ* significantly in the mean scores of Reading Comprehension in English.

Average- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between Average- and Low groups of psychological variables suggests that the F-values of five variables viz., Intelligence, Creativity, Self-Concept, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between Average- and Low groups in the case of the variables Intelligence, Creativity, Self-concept,

Extraversion and Attitude Towards Academic Work.

This further suggests that,

- 1) Average Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 2) Average Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 3) Average Self-concept and Low Self-concept groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 4) Average Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) Average Attitude Towards Academic Work and Low Attitude Towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.

4.2.3 Effect of Each Psychological Variable on Reading Comprehension in English for Boys

The results obtained by the one-way analysis of variance technique with regard to the select psychological variables for Boys are presented in Table 15.

TABLE 15
Results of Analysis of Variance for the Effect of
Psychological Variables on Reading Comprehension in English for Boys (N = 363)

Sl. No.	Psychological Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
1.	Intelligence	Between groups	12090.87	2	6045.43	78.16**
		Within groups	27845.13	360	77.35	
2.	Creativity	Between groups	5045.73	2	2522.87	26.03**
		Within groups	34890.27	360	96.92	
3.	Achievement Motivation	Between groups	397.52	2	198.76	1.81
		Within groups	39538.48	360	109.83	
4.	Self concept	Between groups	631.52	2	315.76	2.89
		Within groups	39304.48	360	109.18	
5.	Extraversion	Between groups	1281.87	2	640.94	5.97**
		Within groups	38654.13	360	107.37	
6.	Attitude Towards Academic Work	Between groups	922.45	2	461.22	4.26*
		Within groups	39013.55	360	108.37	

N= 363

Degrees of freedom for between groups is 2 and for within groups is 360.

** indicates P<0.01

* indicates P <0.05

Discussion of Results

The results of analysis of variance given in Table 15 indicates that the F-ratios obtained for psychological variables Intelligence, Creativity and Extraversion exceed 4.62, the tabled value of F required for significance at 0.01 level for (2,360) degrees of freedom except Achievement Motivation and Self-Concept.

The F-ratio obtained for the psychological variable Attitude Towards Academic Work is 4.26 which exceed (3.0) the tabled value of F required for significance at 0.05 level for (2,360) degrees of freedom.

This suggests that the mean scores of Reading Comprehension in English is significantly different between High-, Average- and Low groups of the psychological variables viz., Intelligence, Creativity, Extraversion and Attitude Towards Academic Work. That is, the mean scores of Reading Comprehension in English is significantly different between the three levels of the four psychological variables. This implies that each of these psychological variables has significant effect on Reading Comprehension in English.

The table of results further suggests that the F-ratio obtained for the psychological variables Achievement Motivation and Self-concept were 1.81 and 2.89 which were below the tabled value of F required for

significance at 0.01 level. This suggests that Achievement Motivation and Self-concept has no significant effect on Reading Comprehension in English.

The psychological variables having significant effect on Reading Comprehension in English, that is, showing significant difference between the three groups of psychological variables for the mean scores of Reading Comprehension in English are presented below in the order of the magnitude of F-ratio

- | | |
|--------------------------------------|---------|
| 1) Intelligence | (78.16) |
| 2) Creativity | (26.03) |
| 3) Extraversion | (5.97) |
| 4) Attitude towards
Academic Work | (4.26) |

This again suggests that among the above four psychological variables, the variable having the most effect on Reading Comprehension in English is intelligence. As it was found that the psychological variables like Intelligence, Creativity, Extraversion and Attitude Towards Academic Work have significant effect on Reading Comprehension in English. The investigator tested for pair wise group differences of each variable by means of Scheffe's test of multiple

comparison of means for large independent samples.

As there are three groups for comparison, the test of pair wise group difference in Reading Comprehension was done for group pairs like High- and Average; High- and Low groups and for Average- and Low groups. Necessary statistics of these tests and the obtained F's are given in Table 16.

TABLE 16

Results of the Scheffe Test of Multiple Comparison for the Mean Scores of Reading Comprehension in English Between High-, Average- and Low groups of Psychological Variables for Boys (N=363)

Sl. No.	Psychological Variable	Mean scores of Reading Comprehension			Mean squares of within group (MSw)	Scheffe's F-Value Obtained for Group Comparison		
		High group	Average group	Low group		High and Average	High and Low	Average and Low
1.	Intelligence	37.08	25.93	17.20	77.35	197.33**	372.83**	104.39**
2.	Creativity	33.28	27.18	18.85	96.92	39.58**	134.33**	70.79**
3.	Extraversion	29.23	25.99	21.63	107.37	11.15**	32.81**	15.83**
4.	Attitude Towards Academic Work	30.02	25.99	24.81	108.37	13.88**	13.57**	1.16

Note: F-value needed for significance at 0.01 level is 4.62 and at 0.05 level is 3.0

**indicates P<0.05

Discussion of Results

The results given in Table 16 are discussed below for significance of pair wise group difference.

High- and Average Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Average groups of psychological variables suggests that the F-values of four variables viz., Intelligence, Creativity, Extraversion and Attitude Towards Academic work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High-and Average groups in the case of the variables Intelligence, Creativity, Extraversion and Attitude Towards Academic Work.

This further suggests that for boys,

- 1) High Intelligence and Average Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High creativity and Average creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 3) High Extraversion and Average Extraversion groups *differ*

significantly in the mean scores of Reading Comprehension in English.

- 4) High Attitude Towards Academic Work and Average Attitude Towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.

High- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Low groups of psychological variables suggests that the F-values of four variables viz., Intelligence, Creativity, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Low groups in the case of the variables Intelligence, Creativity, Extraversion and Attitude Towards Academic Work.

This further suggests that for boys,

- 1) High Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English.

- 3) High Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 4) High Attitude Towards Academic Work and Low Attitude Towards Academic Work groups differ significantly in the mean scores of Reading Comprehension in English.

Average- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between Average- and Low groups of psychological variables suggests that the F-values of three variables viz., Intelligence, Creativity and Extraversion are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between Average- and Low groups in the case of the variables Intelligence, Creativity and Extraversion.

Again, the results suggests that the Average- and Low groups of the psychological variable Attitude Towards Academic Work do not differ in the mean scores of Reading Comprehension in English.

This further suggests that,

- 1) Average Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;

- 2) Average Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 3) Average Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 4) Average Attitude Towards Academic Work and Low Attitude Towards Academic Work groups *do not differ* in the mean scores of Reading Comprehension in English.

4.2.4. Effect of Each Psychological Variable on Reading Comprehension in English for Rural Sample

The results obtained by the one-way analysis of variance technique with regard to the select psychological variables for Rural Sample are presented in Table 17.

TABLE 17
Results of Analysis of Variance for the Effect of Psychological
Variables on Reading Comprehension in English for Rural Sample (N = 501)

Sl. No.	Psychological Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
1.	Intelligence	Between groups	17805.77	2	8902.89	149.26**
		Within groups	29703.51	498	59.65	
2.	Creativity	Between groups	6907.17	2	3453.59	42.36**
		Within groups	40602.11	498	81.53	
3.	Achievement Motivation	Between groups	279.25	2	139.63	1.47
		Within groups	47230.03	498	94.84	
4.	Self concept	Between groups	1580.47	2	790.24	8.57**
		Within groups	45928.81	498	92.23	
5.	Extraversion	Between groups	3422.51	2	1711.26	19.33**
		Within groups	44086.77	498	88.53	
6.	Attitude Towards Academic Work	Between groups	1343.15	2	671.57	7.24**
		Within groups	46166.14	498	92.70	

N= 501

Degrees of freedom for between groups is 2 and for within groups is 498.

** indicates $P < 0.01$

Discussion of Results

The results of analysis of variance given in Table 17, indicates that the F-ratios obtained for psychological variables except Achievement motivation exceed 4.62, the tabled value of F required for significance at 0.01 level for (2,498) degrees of freedom. This suggests that the mean scores of Reading Comprehension in English is significantly different between High-, Average- and Low groups of the psychological variables viz., Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work. That is, the mean scores of Reading Comprehension in English are significantly different between the three levels of the five psychological variables. This implies that each of these psychological variables has significant effect on Reading Comprehension in English.

The table of results further suggests that the F-ratio obtained for the psychological variable Achievement Motivation is 1.47 which is below the tabled value of F required for significance at 0.01 level. This suggests that Achievement Motivation has no significant effect on Reading Comprehension in English.

The psychological variables having significant effect on Reading Comprehension in English, that is, showing significant difference between the three groups of psychological variables for the mean scores

of Reading Comprehension in English are presented below in the order of the magnitude of F-ratio.

1) Intelligence	(149.26)
2) Creativity	(42.36)
3) Extraversion	(19.33)
4) Self-concept	(8.57)
5) Attitude Towards Academic Work	(7.24)

This again suggests that among the above five psychological variables, the variable having the most effect on Reading Comprehension in English is Intelligence.

As it was found that the psychological variables like Intelligence, Creativity, Extraversion, Self-concept and Attitude Towards Academic work have significant effect on Reading Comprehension in English the investigator tested for pair wise group differences of each variable by means of Scheffe's test of multiple comparison of means for large independent samples.

As there are three groups for comparison the test of pair wise group difference in Reading Comprehension was done for group pairs like High- and Average groups, High- and Low groups and for Average- and Low groups. Necessary statistics of, these tests and the obtained F's are given in Table 18.

TABLE 18

Results of the Scheffe Test of Multiple Comparison for the Mean Scores of Reading Comprehension in English Between High-, Average- and Low groups of Psychological Variables for Rural Sample (N=501)

Sl. No.	Psychological Variable	Mean scores of Reading Comprehension			Mean squares of within group (MSw)	Scheffe's F-Value Obtained for Group Comparison		
		High group	Average Group	Low group		High and Average	High and Low	Average and Low
1.	Intelligence	37.18	25.54	17.34	59.65	282.25**	480.02**	120.07**
2.	Creativity	32.98	26.37	18.49	81.53	55.30**	160.27**	77.61**
3.	Self-concept	30.16	25.73	23.33	92.23	19.81**	24.16**	4.64**
4.	Extraversion	30.48	26.19	20.96	88.53	23.89**	62.93**	27.62**
5.	Attitude Towards Academic Work	28.42	26.37	22.42	92.70	4.2**	21.05**	15.44**

Note: F-value needed for significance at 0.01 level is 4.62 and at 0.05 level is 3.0
 **indicates P<0.05

Discussion of Results

The results given in Table 18, are discussed below for significance of pair wise group difference.

High- and Average Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Average groups of psychological variables suggests that the F-values of five variables viz., Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Average groups in the case of the variables Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work.

This further suggest that,

- 1) High Intelligence and Average Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Average Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 3) High Self-concept and Average Self-concept groups *differ* significantly in the mean scores of Reading Comprehension in English.

- 4) High Extraversion and Average Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) High Attitude Towards Academic Work and Average Attitude Towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.

High- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Low groups of psychological variables suggests that the F-values of five variables viz., Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Low groups in the case of the variables Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work.

This further suggests that,

- 1) High Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;

- 2) High Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 3) High Self-concept and Low Self-concept groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 4) High Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) High Attitude Towards Academic Work and Low Attitude towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.

Average- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between Average- and Low groups of psychological variables suggests that the F-values of five variables viz., Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between Average- and Low groups in the case of the variables Intelligence, Creativity, Self-concept, Extraversion and Attitude Towards Academic Work.

This further suggests that,

- 1) Average Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) Average Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 3) Average Self concept and Low Self Concept groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) Average Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 5) Average Attitude Towards Academic Work and Low Attitude Towards Academic Work *differ* significantly in the mean scores of Reading Comprehension in English.

4.2.5. Effect of Each Psychological Variable on Reading Comprehension in English for Urban Sample

The results obtained by the one-way analysis of variance technique with regard to the select psychological variables for Urban sample are presented in Table 19.

TABLE 19
Results of Analysis of Variance for the Effect of
Psychological Variables on Reading Comprehension in English for Urban Sample (N = 299)

Sl. No.	Psychological Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
1.	Intelligence	Between groups	18626.54	2	9313.27	97.29**
		Within groups	28335.59	296	95.73	
2.	Creativity	Between groups	18144.01	2	9072.00	93.18**
		Within groups	28818.13	296	97.36	
3.	Achievement Motivation	Between groups	364.67	2	182.34	1.16
		Within groups	46597.47	296	157.42	
4.	Self concept	Between groups	717.32	2	358.66	2.29
		Within groups	46244.82	296	156.23	
5.	Extraversion	Between groups	3855.19	2	1927.59	13.24**
		Within groups	43106.95	296	145.63	
6.	Attitude Towards Academic Work	Between groups	1858.87	2	929.43	6.09**
		Within groups	45103.27	296	152.38	

N= 299

Degrees of freedom for between groups is 2 and for within groups is 296.

** indicates $P < 0.01$

Discussion of Results

The results of analysis of variance given in Table 19, indicates that the F-ratios obtained for psychological variables except Achievement Motivation and Self-concept exceed 4.62, the tabled value of F required for significance at 0.01 level for (2,296) degrees of freedom. This suggests that the mean scores of Reading Comprehension in English is significantly different between High-, Average- and Low groups of the psychological variables viz., Intelligence, Creativity, Extraversion and Attitude Towards Academic Work. That is, the mean scores of Reading Comprehension in English is significantly different between the three levels of the four psychological variables. This implies that each of these psychological variables has significant effect on Reading Comprehension in English.

The table of results further suggests that F ratio obtained for the psychological variables Achievement Motivation and Self Concept are 1.16 and 2.29 which are below the tabled value of F required for significance at 0.01 level. This suggests that Achievement Motivation and Self Concept has no significant effect on Reading Comprehension in English.

The psychological variables having significant effect on Reading Comprehension in English, that is, showing significant difference between the three groups of psychological variables for the mean scores of Reading Comprehension in English are presented below in the order

of the magnitude of F-ratio.

1) Intelligence	(97.29)
2) Creativity	(93.18)
3) Extraversion	(13.24)
4) Attitude Towards Academic Work	(6.09)

This again suggests that among the above four psychological variables, Intelligence and Creativity are the variables having the most effect on Reading Comprehension in English. As it was found that the psychological variables like Intelligence, Creativity, Extraversion and Attitude Towards Academic Work have significant effect on Reading Comprehension in English. The investigator tested for pair wise group differences of each variable by means of Scheffe's test of multiple comparisons of means for large independent samples.

As there are three groups for comparison, the test of pair wise group difference in Reading Comprehension was done for group pairs like High- and Average groups, High- and Low groups and for Average- and Low groups. Necessary statistics of these tests and the obtained F's are given in Table 20.

TABLE 20

Results of the Scheffe Test of Multiple Comparison for the Mean Scores of Reading Comprehension in English Between High-, Average- and Low groups of Psychological Variables for Urban Sample (N=299)

Sl. No.	Psychological Variable	Mean scores of Reading Comprehension			Mean squares of within group (MSW)	Scheffe's F-Value Obtained for Group Comparison		
		High group	Average Group	Low group		High and Average	High and Low	Average and Low
1.	Intelligence	44.07	31.01	17.98	95.73	218.66**	515.66**	188.64**
2.	Creativity	43.13	32.55	17.92	97.36	119.07**	407.39**	222.94**
3.	Extraversion	37.76	31.61	24.81	145.63	29.77**	70.46**	28.36**
4.	Attitude Towards Academic Work	33.84	33.07	25.74	152.38	0.35	23.34**	31.97**

Note: F-value needed for significance at 0.01 level is 4.62 and at 0.05 level is 3.0

**indicates $P < 0.05$

Discussion of Results

The results given in Table 20 are discussed below for significance of pair wise group difference.

High- and Average Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Average groups of psychological variables suggests that the F-values of three variables viz., Intelligence, Creativity and Extraversion are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Average groups in the case of the variables Intelligence, Creativity and Extraversion.

Again, the results suggest that the High- and Average groups do not differ in the mean scores of Reading Comprehension in English for the variable Attitude Towards Academic Work.

This further suggests that,

- 1) High Intelligence' and Average Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English.
- 2) High Creativity and Average Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;

- 3) High Extraversion and Average Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) High Attitude Towards Academic Work and Average Attitude Towards Academic Work *do not differ* in the mean scores of Reading Comprehension in English.

High- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between High- and Low groups of Psychological variables suggests that the F-values of four variables viz., Intelligence, Creativity, Extraversion and Attitude Towards Academic Work are greater than 3.0, the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between High- and Low groups in the case of the variables Intelligence, Creativity, Extraversion and Attitude Towards Academic Work.

This further suggests that,

- 1) High Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) High Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English;

- 3) High Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) High Attitude Towards Academic Work and Low Attitude Towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.

Average- and Low Groups

Comparison of the mean scores of Reading Comprehension in English between Average- and Low groups of psychological variables suggests that the F-values of four variables viz., Intelligence, Creativity, Extraversion and Attitude Towards Academic Work are greater than 3.0; the value of F required for significance at 0.05 level. This suggests that there exists significant difference in the mean scores of Reading Comprehension in English between Average- and Low groups in the case of the variables Intelligence, Creativity, Extraversion and Attitude Towards Academic Work.

This further suggests that,

- 1) Average Intelligence and Low Intelligence groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 2) Average Creativity and Low Creativity groups *differ* significantly in the mean scores of Reading Comprehension in English,;

- 3) Average Extraversion and Low Extraversion groups *differ* significantly in the mean scores of Reading Comprehension in English;
- 4) Average Attitude Towards Academic Work and Low Attitude Towards Academic Work groups *differ* significantly in the mean scores of Reading Comprehension in English.

Findings

One-way analysis of variance for the effect of psychological variables on Reading Comprehension in English revealed that,

For total sample and for all relevant sub samples variables Intelligence, Creativity, Extraversion and Attitude Towards Academic Work have significant effect on Reading Comprehension in English.

Only for the total sample and for subsamples like Girls and Rurals the variable 'Self-Concept' has significant effect on Reading Comprehension in English.

It was also found that the psychological variable having the most significant effect on Reading Comprehension in English is Intelligence.

By the Scheffe test of Multiple comparison for pair-wise group difference, it was found that

- 1) For total sample and subsamples like Girls, Boys, Rural and for Urban sample significant difference in the mean scores of

Reading Comprehension in English exists between all the three groups viz., High- and Average-; High- and Low-; and Average- and Low -groups of the variables

- i) Intelligence
- ii) Creativity
- iii) Extraversion

2) In the case of the variable 'Self-Concept'.

- a) Significant difference in the mean scores of Reading Comprehension in English exists between the three group pairs viz., High- and Average-; High- and Low-; and Average- and Low groups only for subsamples Girls and Rurals.
- b) But for total sample, significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Average-; and High- and Low-groups.

3) Again, in the case of the variable Attitude Towards Academic Work it was found that,

- a) Significant difference in the mean scores of Reading Comprehension in English exists between all the three group pairs viz., High- and Average-; High- and Low-; and Average- and Low groups for Rural sample only.

- b) For Total sample and for subsamples like Girls and Urbans significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High-, and Low-; and Average- and Low groups.
- c) For Boys significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Average- and High- and Low groups.

4.3. RELATION OF PSYCHOLOGICAL VARIABLES WITH READING COMPREHENSION IN ENGLISH

The analysis of variance revealed that all the five psychological variables except Achievement Motivation have significant effect on Reading Comprehension in English. That is, the five psychological variables except Achievement Motivation are capable of differentiating between the three groups viz., High-, Average- and Low groups on Reading Comprehension in English. This implies the possibility of having significant relationship of Reading Comprehension in English with all the five psychological variables except Achievement Motivation. The investigator therefore estimated the extent and nature of relationship between Reading Comprehension in English and each of the psychological variables by means of Pearson's Product Moment Coefficient of Correlation 'r'.

The investigator could use Pearson's product Moment Coefficient of Correlation ' r ' as all the variables involved in this study are continuous and of the interval type by their measurement. Besides, in using ' r ' the basic assumptions to be met are,

- 1) The distribution of the criterion (dependent) variable should be normal or at least not badly skewed. (This was understood by estimating measures of skewness and kurtosis in the previous section).
- 2) The condition of equal scattering(homoscedasticity). (This was assumed as a large sample was used for the study)

As the two assumptions are satisfied, the investigator proceeded with the computation of Pearson's ' r '. The value of ' r ' obtained in the case of each psychological variable is described below in terms of

- i) Statistical significance of the coefficient (by Fisher's t-test)
- ii) The size of ' r '
- iii) Direction of ' r '
- iv) 99 percent confidence interval of ' r '
- v) shared variance which a variable has in common with the variable associated.

4.3.1. Relation of psychological variables with Reading Comprehension in English for Total sample

Details of these are presented in Table 21. (N=800)

TABLE 21
Co-efficient of correlations and other
details of relation of psychological variables
with Reading Comprehension in English for Total Sample (N=800).

Sl. No.	Psychological variables	Correlation coefficient 'r'	Fisher's t	Standard error of estimate (SE _r)	99% confidence interval	Shared variance
1	Intelligence	0.73**	29.88	0.02	(0.68, 0.78)	53.29
2	Creativity	0.59**	20.58	0.02	(0.54, 0.64)	34.81
3	Achievement Motivation	-0.002	-0.06	0.04	(-0.10, 0.10)	0.00
4	Self-Concept	0.19**	5.48	0.03	(0.11, 0.27)	3.61
5	Extraversion	0.32**	9.52	0.03	(0.24, 0.40)	10.24
6	Attitude towards Academic Work	0.18**	5.19	0.03	(0.1, 0.26)	3.24

Note: ** indicates significance at 0.01 level ($P \leq 0.01$)

Discussion of Results

From Table 21 it can be seen that the coefficient of correlation obtained between the psychological variables and Reading Comprehension in English are significant (at 0.01 level) except of Achievement Motivation, as the t-value exceed 2.58, the limit set up for significance at 0.01 level. The significant 'r' is indicative of a true relationship and hence it can be understood that there exists real relationship between Reading Comprehension in English and the

psychological variables Intelligence, Creativity, Self-concept, Extraversion and Attitude towards Academic Work.

The results also suggest that the variable Achievement Motivation has no significant relation with Reading Comprehension in English.

The psychological variables having significant relation with Reading Comprehension in English are presented below in the order of the extent of relationship.

i)	Intelligence	(0.73)
ii)	Creativity	(0.59)
iii)	Extraversion	(0.32)
iv)	Self-Concept	(0.19)
v)	Attitude towards Academic Work	(0.18)

The magnitude of 'r' reveals that the relationship of the variable Intelligence with reading Comprehension in English is high. The relation of the variable creativity with Reading Comprehension in English is substantial and of the remaining three variables (Extraversion, Self concept and Attitude towards academic work) are low.

It was also found that the relations of the psychological variables Intelligence, Creativity, Extraversion, Self-Concept and Attitude

towards Academic Work with Reading Comprehension in English are positive. This suggests that an increase in these variables will be accompanied by a corresponding increase in Reading Comprehension in English.

Ninety-nine percent confidence interval of 'r' estimated between each of the psychological variables and Reading Comprehension in English are presented in Table 21. These suggest that when 100 samples are studied, in 99 cases the population 'r' of,

- i. Intelligence would lie between 0.68 and 0.78.
- ii. Creativity would lie between 0.54 and 0.64.
- iii. Extraversion would lie between 0.24 and 0.40.
- iv. Self-concept would lie between 0.11 and 0.27
- v. Attitude towards Academic Work would lie between 0.1 and 0.26.

Table 21 also gives the shared variance of each psychological variables indicating the percentage variance of the criterion variable Reading Comprehension in English accounted by variation in each of the predictor psychological variables. The shared variances estimated vary between 3.24 (for Attitude towards Academic Work) and 53.29 (for Intelligence) suggesting that

- 1) 53.29% of the variation in Reading Comprehension in English is attributable to the variation in Intelligence;

- 2) 34.81% of the variation in Reading Comprehension in English is attributable to the variation in Creativity.
- 3) 10.24% of the variation in Reading Comprehension in English is attributable to the variation in Extraversion.
- 4) 3.61% of the variation in Reading Comprehension in English is attributable to the variation in self-concept.
- 5) 3.24% of the variation in Reading Comprehension in English is attributable to the variation in Attitude towards Academic Work.

4.3.2. Relation of psychological variables with Reading Comprehension in English for Girls

Details are presented in Table 22

TABLE 22
Co-efficient of correlations
and other details of relation of Psychological
variables with Reading Comprehension in English for Girls (N=437)

Sl. No.	Psychological variables	Correlation coefficient 'r'	Fisher's t	Standard error of estimate (SE _r)	99% confidence interval	Shared variance
1	Intelligence	0.80**	27.81	0.02	(0.75, 0.85)	64.00
2	Creativity	0.63**	17.06	0.03	(0.55, 0.71)	39.69
3	Achievement Motivation	-0.03	-0.67	0.04	(-0.13, 0.07)	-6.00
4.	Self-Concept	0.24**	5.15	0.04	(0.14, 0.34)	5.76
5.	Extraversion	0.45**	10.55	0.04	(0.35, 0.55)	20.25
6.	Attitude towards Academic Work	0.21**	4.47	0.05	(0.08, 0.34)	4.41

Note: ** indicates significance at 0.01 level ($P \leq 0.01$)

Discussion of Results

From Table 22 it can be seen that the coefficient of correlation obtained between the psychological variables and Reading Comprehension in English are significant (at 0.01 level), except of Achievement Motivation, as the t-value exceed 2.58, the limit set up for significance at 0.01 level. The significance 'r' is indicative of a true relationship and hence it can be understood that there exists real relationship between Reading Comprehension in English and the psychological variables Intelligence, Creativity, Self-Concept, Extraversion and Attitude towards Academic Work.

The results also suggest that the variable Achievement Motivation has no significant relation with Reading Comprehension in English.

The psychological variables having significant relation with Reading Comprehension in English are presented below in the order of the extent of relationship.

- i) Intelligence (0.80)
- ii) Creativity (0.63)
- iii) Extraversion (0.45)
- iv) Self-Concept (0.24)
- v) Attitude towards Academic Work (0.21)

The magnitude of 'r' reveals that the relationship of the variable Intelligence with Reading Comprehension in English is high. The relation of the variable Creativity and Extraversion with Reading Comprehension in English are substantial and the relations of the remaining variables with Reading Comprehension in English are low.

It was also found that the relations of the psychological variables Intelligence, Creativity, Extraversion, Self-Concept and Attitude towards Academic Work with Reading Comprehension in English are positive. This suggests that an increase in these variables will be accompanied by a corresponding increase in Reading Comprehension in English.

Ninety-nine percent confidence interval of 'r' estimated between each of the psychological variables and Reading Comprehension in English are presented in Table 22. These suggest that when 100 samples are studied, in 99 cases the population 'r' of,

- i. Intelligence would lie between 0.75 and 0.85.
- ii. Creativity would lie between 0.55 and 0.71.
- iii. Extraversion would lie between 0.35 and 0.55.
- iv. Self-concept would lie between 0.14 and 0.34
- v. Attitude towards Academic Work would lie between 0.08 and 0.34.

Table 22 also gives the shared variance of each psychological variable indicating the percentage variance of the criterion variable Reading Comprehension in English accounted by variation in each of the predictor psychological variables. The shared variance estimated vary between 4.41 (for Attitude towards Academic Work) and 64.00 (for intelligence) suggesting that

- (i) 64.00% of the variation in Reading Comprehension in English is attributable to the variation in Intelligence.
- (ii) 39.69% of the variation in Reading Comprehension in English is attributable to the variation in creativity
- (iii) 20.25% of the variation in Reading Comprehension in English is attributable to the variation in Extraversion.
- (iv) 5.76% of the variation in Reading Comprehension in English is attributable to the variation in Self-Concept.
- (v) 4.41% of the variation in Reading Comprehension in English is attributable to the variation in Attitude towards Academic Work

4.3.3. Relation of psychological variables with Reading Comprehension in English for Boys

Details are presented in Table 23.

TABLE 23
Co-efficient of correlations and
other details of relation of psychological variables
with Reading Comprehension in English for Boys (N=363)

Sl.No.	Psychological variables	Correlation coefficient 'r'	Fisher's t	Standard error of estimate (SE _r)	99% confidence interval	Shared variance
1	Intelligence	0.65**	16.25	0.03	(0.57,0.73)	42.25
2	Creativity	0.48**	10.36	0.04	(0.38,0.58)	23.04
3	Achievement Motivation	0.04	0.76	0.05	(-0.09, 0.17)	0.16
4	Self-Concept	0.16**	3.10	0.05	(0.03, 0.29)	2.56
5	Extraversion	0.23**	4.51	0.05	(0.1, 0.36)	5.29
6	Attitude towards Academic Work	0.13*	2.49	0.05	(0, 0.26)	1.69

Note: ** indicates significance at 0.01 level ($P < 0.01$)

* indicates significance at 0.05 level ($P \leq 0.05$)

Discussion of Results

From Table 23 it can be seen that the coefficient of correlation obtained between the psychological variables and Reading Comprehension in English are significant (at 0.01 level), except of Achievement Motivation, as the t-value exceed 2.58, the limit set up for significance at 0.01 level. The variable Attitude towards Academic Work is significant at 0.05 level. The significant 'r' is indicative of a true relationship and hence it can be understood that there exists real relationship between Reading Comprehension in English and the psychological variables Intelligence, Creativity, Self-Concept, Extraversion and Attitude towards Academic Work.

The results also suggest that the variable Achievement Motivation has no significant relation with Reading Comprehension in English.

The psychological variables having significant relation with Reading Comprehension in English are presented below in the order of the extent of relationship.

- i. Intelligence (0.65)
- ii. Creativity (0.48)
- iii. Extraversion (0.23)
- iv. Self-Concept (0.16)
- v. Attitude towards Academic Work (0.13)

The magnitude of 'r' reveals that the relation of variables Intelligence and Creativity with Reading Comprehension in English are substantial and the relation of the remaining three variables (Extraversion, Self-Concept and Attitude towards Academic Work) with Reading Comprehension in English are low.

It was also found that the relations of the psychological variables Intelligence, Creativity, Extraversion, Self-Concept and Attitude towards Academic Work with Reading Comprehension in English are positive. This suggests that an increase in these variables will be accompanied by a corresponding increase in Reading Comprehension in English.

Ninety-nine percent confidence interval of 'r' estimated between each of the psychological variables and Reading Comprehension in English are presented in Table 23. These suggest that when 100 samples are studied, in 99 cases the population 'r' of,

- i. Intelligence would lie between 0.57 and 0.73.
- ii. Creativity would lie between 0.38 and 0.58.
- iii. Extraversion would lie between 0.1 and 0.36.
- iv. Self-concept would lie between 0.03 and 0.29
- v. Attitude towards Academic Work would lie between 0 and 0.26.

Table 23 also gives the shared variance of each psychological variable indicating the percentage variance of the criterion variable Reading Comprehension in English accounted by variation in each of the predictor psychological variables. The shared variances estimated vary between 1.69 (for Attitude towards Academic Work) and 42.25 (for intelligence) suggesting that

- i. 42.25% of the variation in Reading Comprehension in English is attributable to the variation in Intelligence.
- ii. 23.04% of the variation in Reading Comprehension in English is attributable to the variation in creativity
- iii. 5.29% of the variation in Reading Comprehension in English is attributable to the variation in Extraversion.

iv. 2.56% of the variation in Reading Comprehension in English is attributable to the variation in Self-Concept.

v. 1.69% of the variation in Reading Comprehension in English is attributable to the variation in Attitude towards Academic Work.

4.3.4. Relation of psychological variables with Reading Comprehension in English for Rural Sample

Details are presented in Table 24.

TABLE 24
Co-efficient of correlations and
other details of relation of psychological variables
with Reading Comprehension in English for Rural sample (N=501)

Sl.No.	Psychological variables	Correlation coefficient 'r'	Fisher's t	Standard error of estimate (SE _r)	99% confidence interval	Shared variance
1	Intelligence	0.70**	22.03	0.02	(0.65, 0.75)	49.00
2	Creativity	0.49**	12.58	0.03	(0.41, 0.57)	24.01
3	Achievement Motivation	0.04	0.91	0.04	(-0.06, 0.14)	0.16
4	Self-Concept	0.23**	5.30	0.04	(0.13, 0.33)	5.29
5	Extraversion	0.16**	3.65	0.04	(0.06, 0.26)	2.56
6	Attitude towards Academic Work	0.17**	3.88	0.04	(0.07, 0.27)	2.89

Note: ** indicates significance at 0.01 level ($P \leq 0.01$)

Discussion of Results

From Table 24 it can be seen that the coefficient of correlation obtained between the psychological variables and Reading

Comprehension in English are significant (at 0.01 level), except of Achievement Motivation, as the t-value exceed 2.58, the limit set up for significance at 0.01 level. The significance 'r' is indicative of a true relationship and hence it can be understood that there exists real relationship between Reading Comprehension in English and the psychological variables Intelligence, Creativity, Self-Concept, Extraversion and Attitude towards Academic Work.

The results also suggest that the variable Achievement Motivation has no significant relation with Reading Comprehension in English.

The psychological variables having significant relation with Reading Comprehension in English are presented below in the order of the extent of relationship.

- | | |
|------------------------------------|--------|
| i. Intelligence | (0.70) |
| ii. Creativity | (0.49) |
| iii. Self-Concept | (0.23) |
| iv. Attitude towards Academic Work | (0.17) |
| v. Extraversion | (0.16) |

The magnitude of 'r' reveals that the relationship of the variable Intelligence with Reading Comprehension in English is high. The relation of the variable Creativity with Reading Comprehension in English is substantial and the relations of the remaining variables (Self-

Concept, Attitude towards Academic Work and Extraversion) with Reading Comprehension in English are low.

It was also found that the relations of the psychological variables Intelligence, Creativity, Self-Concept, Attitude towards Academic Work and Extraversion with Reading Comprehension in English are positive. This suggests that an increase in these variables will be accompanied by a corresponding increase in Reading Comprehension in English.

Ninety-nine percent confidence interval of 'r' estimated between each of the psychological variables and Reading Comprehension in English are presented in Table 24 These suggest that when 100 samples are studied, in 99 cases the population 'r' of,

- i. Intelligence would lie between 0.65 and 0.75.
- ii. Creativity would lie between 0.41 and 0.57.
- iii. Self-concept would lie between 0.13 and 0.33
- iv. Attitude towards Academic Work would lie between 0.07 and 0.27.
- v. Extraversion would lie between 0.06 and 0.26.

Table 24 also gives the shared variance of each psychological variable indicating the percentage variance of the criterion variable Reading Comprehension in English accounted by variation in each of the predictor psychological variables. The shared variances estimated

vary between 2.56 (for Extraversion) and 49.00 (for Intelligence) suggesting that

- i. 49.00% of the variation in Reading Comprehension in English is attributable to the variation in Intelligence.
- ii. 24.01% of the variation in Reading Comprehension in English is attributable to the variation in Creativity
- iii. 5.29% of the variation in Reading Comprehension in English is attributable to the variation in Self Concept.
- iv. 2.89% of the variation in Reading Comprehension in English is attributable to the variation in Attitude Towards Academic Work.
- v. 2.56% of the variation in Reading Comprehension in English is attributable to the variation in Extraversion.

4.35. Relation of psychological variables with Reading Comprehension in English for Urban Sample

Details are presented in Table 25.

TABLE 25
Co-efficient of correlations and
other details of relation of psychological variables
with Reading Comprehension in English for Urban Sample (N=299)

Sl.No.	Psychological variables	Correlation coefficient 'r'	Fisher's t	Standard error of estimate (SE _r)	99% confidence interval	Shared variance
1	Intelligence	0.80**	22.97	0.02	(0.75,0.85)	64.00
2	Creativity	0.65**	14.74	0.03	(0.57, 0.73)	42.25
3	Achievement Motivation	-0.04	-0.72	0.05	(0.17, 0.09)	-8.00
4	Self-Concept	0.17**	2.99	0.06	(0.02, 0.32)	2.89
5	Extraversion	0.35**	6.42	0.05	(0.22, 0.48)	12.25
6	Attitude towards Academic Work	0.23**	4.09	0.05	(0.1, 0.36)	5.29

Note: ** indicates significance at 0.01 level ($P \leq 0.01$)

Discussion of Results

From Table 25 it can be seen that the coefficient of correlation obtained between the psychological variables and Reading Comprehension in English are significant (at 0.01 level), except of Achievement Motivation, as the t-value exceed 2.58, the limit set up for significance at 0.01 level. The significance 'r' is indicative of a true relationship and hence it can be understood that there exists real relationship between Reading Comprehension in English and the psychological variables Intelligence, Creativity, Self-Concept, Extraversion and Attitude towards Academic Work.

The results also suggest that the variable Achievement

Motivation has no significant relation with Reading Comprehension in English.

The psychological variables having significant relation with Reading Comprehension in English are presented below in the order of the extent of relationship.

i. Intelligence	(0.80)
ii. Creativity	(0.65)
iii. Extraversion	(0.35)
iv. Attitude towards Academic Work	(0.23)
v. Self-Concept	(0.17)

The magnitude of 'r' reveals that the relationship of the variable Intelligence with Reading Comprehension in English is high. The relation of the variable Creativity with Reading Comprehension in English is substantial, the relations of variables Extraversion, Attitude towards Academic Work and Self-Concept with Reading Comprehension in English are low.

It was also found that the relations of the psychological variables Intelligence, Creativity, Extraversion, Attitude towards Academic Work and Self-Concept with Reading Comprehension in English are positive. This suggests that an increase in these variables will be accompanied by a corresponding increase in Reading Comprehension in English.

Ninety-nine percent confidence interval of 'r' estimated between each of the psychological variables and Reading Comprehension in English are presented in Table 25. These suggest that when 100 samples are studied, in 99 cases the population 'r' of,

- i. Intelligence would lie between 0.75 and 0.85.
- ii. Creativity would lie between 0.57 and 0.73.
- iii. Extraversion would lie between 0.22 and 0.48.
- iv. Attitude towards Academic Work would lie between 0.1 and 0.36.
- v. Self-concept would lie between 0.02 and 0.32.

Table 25 also gives the shared variance of each psychological variable indicating the percentage variance of the criterion variable Reading Comprehension in English accounted for by variation in each of the predictor psychological variables. The shared variances estimated vary between 2.89 (for Self-Concept) and 64.00 (for Intelligence) suggesting that

- (1) 64.00% of the variation in Reading Comprehension in English is attributable to the variation in Intelligence.
- (2) 42.25% of the variation in Reading Comprehension in English is attributable to the variation in Creativity.
- (3) 12.25% of the variation in Reading Comprehension in English is attributable to the variation in Extraversion.

- (4) 5.29% of the variation in Reading Comprehension in English is attributable to the variation in Attitude towards Academic Work.
- (5) 2.89% of the variation in Reading Comprehension in English is attributable to the variation in Self-Concept.

Findings

All the psychological variables under study except Achievement Motivation have significant relation with Reading Comprehension in English at 0.01 level for Total sample and for sub samples like Girls, Boys, Rural and Urban samples. But in the case of boys (N=363) the variable Attitude towards Academic Work is significant at 0.05 level.

4.4. IDENTIFICATION OF THE SIGNIFICANT PREDICTORS OF READING COMPREHENSION IN ENGLISH BY REGRESSION ANALYSIS AND ESTIMATION OF THEIR PREDICTIVE EFFICIENCY (IN TERMS OF β AND THE PARTIAL r 's)

The third objective of the study is the identification of the significant psychological predictors of Reading Comprehension in English and thereby estimation of the predictive efficiency of each psychological variable in predicting Reading Comprehension in English. As all the psychological variables except Achievement Motivation were found to have significant effect on Reading Comprehension in English and are significantly related to Reading Comprehension in English (r ranges from 0.18 to 0.73), it became apt to

conduct regression analysis and know the psychological variables which are significant predictors of Reading Comprehension in English. The technique followed for this is step-wise regression analysis (ANOVA approach) for which computation was by means of the SPSS programme of computers.

The basic statistics, mean and Standard Deviation of the criterion and predictor variables are given in Table 26 as a preliminary to the regression analysis.

TABLE 26

Basic Statistics of the Criterion and Predictor

Psychological Variables as Input Data for Stepwise Regression Analysis

Sl. No.	Psychological Variables	Mean	Standard Deviation
CRITERION VARIABLE			
1.	Reading Comprehension in English	28.40	11.27
PREDICTOR VARIABLES			
2.	X ₁ Intelligence	20.77	7.08
3.	X ₂ Creativity	91.46	36.23
4.	X ₃ Achievement Motivation	67.99	10.18
5.	X ₄ Self-Concept	132.66	14.98
6.	X ₅ Extraversion	20.27	3.41
7.	X ₆ Attitude towards Academic Work	149.92	17.41

The correlation matrix of the criterion variable Reading Comprehension in English with the predictor psychological variables

which is also an input data of the regression analysis is given as

Table 27

TABLE 27
Correlation Matrix of the Criterion Variable with the Predictor Variables

Sl. No.	Psychological Variables	y	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆
CRITERION VARIABLE								
1	Reading Comprehension in English (Y)	1.00	0.73	0.59	-0.0017	0.19	0.32	0.18
PREDICTOR VARIABLES								
2	Intelligence (X ₁)	-	1.00	0.59**	0.03	0.13**	0.31**	0.15**
3	Creativity (X ₂)	-	-	1.00	0.02	0.23**	0.32**	0.28**
4	Achievement Motivation (X ₃)	-	-	-	1.00	0.35**	0.21**	0.17**
5	Self-Concept (X ₄)	-	-	-	-	1.00	0.34**	0.37**
6	Extraversion (X ₅)	-	-	-	-	-	1.00	0.23**
7	Attitude towards Academic Work (X ₆)	-	-	-	-	-	-	1.00

The coefficient of correlations between the criterion variable and each of the predictor variables are given separately in Table 28.

TABLE 28
Correlation Coefficients
between Criterion and Predictor Variables

Sl. No.	Predictor Variables	r
1	Intelligence	0.73
2	Creativity	0.59
3	Achievement Motivation	-0.00
4	Self-Concept	0.19
5	Extraversion	0.32
6	Attitude towards Academic Work	0.18

The indices of correlation reported in Table 28 indicates that the predictor variable Intelligence (X_1) has the highest correlation ($r=0.73$) with the criterion variable, and hence it was selected to enter first in the analysis.

Step I

The result of the step I analysis is given in Table 29.

TABLE 29
Results of Step I Regression Analysis

Variable entered: X_1 (Intelligence)

Correlation $r = 0.73$

Percentage Variance ($r^2 \times 100$) = 53.29

Beta (β) = 0.729

B = 1.162

$SE_B = 0.039$

Constant = 4.280

Source	DF	SS	MSS	F
Total	799			907.368 ($P < 0.01$)
Regression	1	53998.607	53998.607	
Residual	798	47489.982	59.511	

The result shown in Table 29 suggests that the percentage variance accounted for by the variable Intelligence (X_1) in predicting Reading Comprehension in English is 53.29.

The 'B' weight of this variable in writing the regression equation is 1.162, the standard error of B is 0.039.

Here $F = 907.368$ ($P < 0.01$) for (1, 798) df.

It is therefore to be concluded that the regressor X_1 is significant in predicting the criterion variable as the calculated F value exceeds the table f value for (1, 798) df.

Step II

Step II analysis was taken up to see whether there is any increment in the percentage variation accounted for by the predictor variable.

The predictor variable having second highest partial correlation with criterion variable is creativity.

The results of this analysis are shown in Table 30.

TABLE 30

Results of Step II Regression Analysis

Variables entered: X_1 (Intelligence) and X_2 (Creativity)

Multiple Correlation (R) = 0.75

Percentage Variance ($R^2 \times 100$) = 56.25

Beta₁ (β_1) = 0.588 $B_1 = 0.937$ $SE_{B_1} = 0.046$

Beta₂ (β_2) = 0.240 $B_2 = 0.075$ $SE_{B_2} = 0.009$

Constant = 2.117

Source	DF	SS	MSS	F
Total	799			
Regression	2	57829.486	28914.743	527.841
Residual	797	43659.102	54.779	($P < 0.01$)

The result of the step 2 analysis reveals that the percentage variance accounted for by Intelligence (X_1) and Creativity (X_2) is 56.25.

This further suggests that by adding X_2 to X_1 , R has changed from 0.73 to 0.75 and hence the percentage variation raised from 53.29 to 56.25. The increment in percentage variation thus being only 2.96.

Here $F = 527.841$ ($P < 0.01$) for (2, 797) df.

This suggests that the regressor X_2 is also significant in predicting Reading Comprehension in English, since the calculated f value exceeds the tabled F value at (2, 797) df.

The 'B' weight of this variable X_1 and X_2 are respectively 0.937 and 0.075, the standard errors of B_1 and B_2 are 0.046 and 0.009

respectively.

Step III

A third Step analysis was taken up to see whether there is any increment in the percentage variation accounted for by the third predictor variable.

The predictor variable having third highest partial correlation with criterion variable is X_5 (Extraversion).

The results of this analysis are shown in Table 31.

TABLE 31

Results of Step III Regression Analysis

Variables entered: X_1 (Intelligence), X_2 (Creativity) and X_5 (Extraversion)

Multiple Correlation (R) = 0.76

Percentage Variance ($R^2 \times 100$) = 57.76

Beta₁ (β_1) = 0.574 $B_1 = 0.915$ $SE_{B1} = 0.046$

Beta₂ (β_2) = 0.226 $B_2 = 0.702$ $SE_{B2} = 0.009$

Beta₅ (β_5) = 0.072 $B_5 = 0.236$ $SE_{B5} = 0.082$

Constant = -1.799

Source	DF	SS	MSS	F
Total	799			357.940 (P<0.01)
Regression	3	58283.972	19427.991	
Residual	796	43204.617	54.277	

The results of the step 3 analysis reveal that when a third variable viz., Extraversion was entered R became 0.76 with percentage variance as 57.76. That is the multiple correlation between the three variables is 0.76 and the percentage variance accounted for by the three variables Intelligence, Creativity and Extraversion in predicting Reading Comprehension in English is 57.76.

This further suggests that by adding variables X_5 to X_1 and X_2 , the multiple correlation R has raised from 0.75 to 0.76 only and the percentage variation has raised from 56.25 to 57.76. The increment in R and percentage variation thus being 0.01 and 1.51 respectively. Here $F = 357.940$ ($P < 0.01$) for (3, 796) df.

This suggests that the regressor X_5 is also significant in predicting Reading Comprehension in English as calculated F value at (3, 796) exceeds the tabled value.

The 'B' weight of this variable X_1 , X_2 and X_5 are 0.915, 0.702 and 0.236 and their standard errors of B are 0.046, 0.009 and 0.082 respectively.

After step 3 analysis it was found that further addition of predictor variables has not much to contribute to R or for the percentage variation. When third variable X_5 was entered, R increased only by 0.01 which is negligible and the percentage variation increased only by 1.51.

Thus it was found that among the studied six psychological variables, there are only three significant predictor variables to Reading Comprehension in English. The three predictor variables in the order, as found in the stepwise regression analysis, is as follows:

1. X_1 - Intelligence
2. X_2 - Creativity
3. X_5 - Extraversion

A summary of the successive R 's, percentage variance, increase in R and increase in percentage variation are given in Table 32.

TABLE 32

Details Regarding increase in Percentage Variation

Step	Variables Entered	R	Increase in R	Percentage Variation ($R^2 \times 100$)	Increase in Percentage Variation
1.	X_1 (Intelligence)	0.73	-	53.29	-
2.	X_2 (Creativity)	0.75	0.02	56.25	2.96
3	X_5 (Extraversion)	0.76	0.01	57.76	1.51

The successive equations to the regression lines for predicting Reading Comprehension in English, by means of the variables Intelligence, Creativity and Extraversion are,

1. $Y = 1.162X_1 + 4.280$ (for predicting Reading Comprehension from Intelligence).
2. $Y = 0.937X_1 + 0.075X_2 + 2.117$ (for predicting Reading

Comprehension from Intelligence and Creativity).

3. $Y=0.915X_1+0.702X_2+0.236X_5-1.799$. (for predicting Reading Comprehension from Intelligence, Creativity and Extraversion).

These three equations will help us to predict Reading Comprehension in English (Y) when given a combination of the three predictor psychological variables used in the study or when some among them are given.

Of these the regression equation (i) is the most efficient in the sense that the percentage variance accounted by Intelligence alone is 53.29 where as by adding the other two variables the percentage variance increased only to 57.76.

Predictive Efficiency of the Significant Predictors

The multiple correlation R between the criterion variable Y and of the three significant predictors [Intelligence (X_1), Creativity (X_2) and Extraversion (X_5)] is 0.76 and this index of prediction is highly significant as $SE_R=0.08$. This suggests that Reading Comprehension in English can be significantly predicted by means of the three predictors X_1 , X_2 and X_5 .

In order to find the predictive efficiency of each of these three significant predictor variables, the coefficient of determination R^2 as $\Sigma\beta r$ is computed and presented in Table 33.

TABLE 33
Details Regarding Regression Coefficients (β), Coefficient of Correlation (r) and their products, after Step 3 Regression Analysis

Variable Number	Variables	Regression Coefficients (β)	Coefficient of Correlation (r)	$\beta \times r$
X ₁	Intelligence	0.574	0.73	0.41902
X ₂	Creativity	0.226	0.59	0.13334
X ₅	Extraversion	0.072	0.32	0.02304

$$\Sigma \beta r = R^2 = 0.5754$$

The results shown in Table 33 thus suggests that,

- 1) 41.90 percent is the contribution of the predictor variable, Intelligence.
- 2) 13.33 percent is the contribution of the predictor variable, creativity.
- 3) 2.30 percent is the contribution of the predictor variable, Extraversion

Findings

It was found that among the three predictor variables, Intelligence is the best predictor of Reading Comprehension in English. The predictor variables are listed below according to the extent of predictability of Reading Comprehension in English.

1. Intelligence (X₁)
2. Creativity (X₂)
3. Extraversion (X₅)

4.5. SUMMARY OF FINDINGS

Findings of the study derived by all analysis are summarized below:

- 1) For total sample and for all relevant subsamples variables Intelligence, Creativity, Extraversion and Attitude Towards Academic Work have significant effect (employing one way ANOVA) on Reading Comprehension in English.

Only for the total sample and for subsamples like Girls and Rural sample, the variable 'self-concept' has significant effect on Reading Comprehension in English.

It was also found that the psychological variable having the most significant effect on Reading Comprehension in English is Intelligence.

- 2) By the Scheffe's test of Multiple Comparison for pair-wise group difference, it was found that
 - (i) For total sample and subsamples like Girls, Boys, Rural and for urban sample significant difference in the mean scores of Reading Comprehension in English exists between all the three groups viz., High- and Average-; High- and Low-; and Average- and Low groups of the variables.
 - a) Intelligence

- b) Creativity
- c) Extraversion

(ii) In the case of the variable 'self-concept'.

- a) Significant difference in the mean scores of Reading Comprehension in English exists between the three group pairs viz., High- and Average-; High- and Low-; and Average- and Low groups only for subsamples Girls and Rurals.
- b) But for total sample, significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Average-; and High- and Low groups.

(iii) Again, in the case of the variable Attitude Towards Academic work it was found that,

- a) Significant difference in the mean scores of Reading Comprehension in English exists between all the three group pairs viz., High- and Average-; High- and Low-; and Average- and Low groups for Rural sample only.
- b) For total sample and for subsamples like Girls and Urbans significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Low-; and Average- and Low groups.

- c) For Boys significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Average-; and High- and Low groups.
- 3) Five psychological variables are significantly correlated with Reading Comprehension in English ($P < 0.01$) for total sample and for subsamples like Girls, Boys, Rural and Urban samples. But in the case of Boys ($N = 363$) the only variable having significance at 0.05 level is Attitude Towards Academic Work.
- 4) Three psychological variables viz., Intelligence, Creativity and Extraversion were found to be significant predictors of Reading Comprehension in English. The coefficient of predictive efficiency of these three variables is 0.5754 and the combined effect of these three predictors on Reading Comprehension in English is 0.76.
- 5) The three significant predictor variables in the order of their efficiency for predicting Reading Comprehension in English are Intelligence, Creativity and Extraversion.
- 6) The regression equation to predict Reading Comprehension in English in terms of the three significant predictors is

$$Y = 0.915X_1 + 0.702 X_2 + 0.236 X_5 - 1.799.$$

Where Y is the predicted score of Reading Comprehension in English and X_1 , X_2 and X_5 are individual's raw scores on the variables Intelligence, Creativity and Extraversion respectively.

4.6. TENABILITY OF HYPOTHESES

Acceptance or rejection of the hypotheses stated for the study is checked here in relation to the findings of the study.

- i) The first hypothesis stated that "each select psychological variable has significant effect on Reading Comprehension in English" for the total sample and for subsamples based on gender and locale.

One-way analysis of variance done to study the effect of each of the six psychological variables revealed that five out of them namely; Intelligence, Creativity, Extraversion, Attitude Towards Academic Work and Self-Concept (except Achievement Motivation) have significant effect on Reading Comprehension in English for the total sample. In the case of subsamples like Girls, Boys, Rural and Urban sample, significant effect exists in the case of four variables only (except Self-Concept).

The variable 'Self-Concept' has significant effect on Reading Comprehension in English only for two subsamples viz., Girls and Rurals. This suggests that the first hypothesis is almost validated.

- ii) Second hypothesis stated that "significant relationship exists between each psychological variable and Reading

Comprehension in English" for the total sample and for subsamples based on gender and locale.

The coefficient of correlations (Pearson's r) obtained between Reading Comprehension in English and each of the six psychological variables revealed that five psychological variables viz., Intelligence, Creativity, Self-Concept, Extraversion and Attitude Towards Academic Work have significant relation with Reading Comprehension in English for the total sample and for subsamples based on gender and locale. Thus, the second hypothesis is validated in the case of five out of the six predictor variables.

- iii) Third hypothesis stated that "Reading Comprehension in English can be significantly predicted from the select set of psychological variables".

It was found from the regression analysis that three out of the six psychological variables are significant predictors of Reading Comprehension in English. Thus, the third hypothesis is substantiated to a greater extent.

**SUMMARY, CONCLUSIONS AND
SUGGESTIONS**

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- ❖ *Major Findings*
 - ❖ *Conclusion*
 - ❖ *Educational Implications of the Study*
 - ❖ *Suggestions for Further Research*
-
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The major contents of this chapter are summary of the major findings, conclusion derived from the findings and educational implications of the findings of the study.

Findings derived by this study are to be learned in the light of the objectives of the study, which are the following.

- 1) To test the effect of each of the predictor variable on Reading Comprehension in English for the whole sample and for sub samples based on gender and locale.
- 2) To estimate the extent of relationship of each of the psychological variables with Reading Comprehension in English for the whole sample and for subsamples based on gender and locale.
- 3) To test for the predictive efficiency of the psychological variables and then to estimate the relative efficiency of the psychological variables in predicting Reading Comprehension in English.

5.1. MAJOR FINDINGS OF THE STUDY

Major findings of the study disclosed through the different statistical analyses as mentioned earlier are the following.

- 5.1.1. For total sample and for all relevant subsamples variables Intelligence, Creativity, Extraversion and Attitude Towards Academic work have significant effect (employing one way

ANOVA) on Reading Comprehension in English.

Only for the total sample and for subsamples like Girls and Rural sample the variable 'Self-Concept' has significant effect on Reading Comprehension in English.

It was also found that the psychological variable having the most significant effect on Reading Comprehension in English is Intelligence.

5.1.2. By the Scheffe test of Multiple Comparison for pair-wise group difference, it was found that

1) For total sample and subsamples like Girls, Boys, Rural and for Urban sample significant difference in the mean scores of Reading Comprehension in English exists between all the three groups viz., High- and Average-; High- and Low-; and Average- and Low groups of the variables

- i) Intelligence
- ii) Creativity
- iii) Extraversion

2) In the case of the variable 'Self-Concept'

a) Significant difference in the mean scores of Reading Comprehension in English exists between the three group pairs viz., High- and Average-; High- and Low-; and Average-

and Low groups only for sub-samples Girls and Rurals.

- b) But for total sample, significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Average-; and High- and Low groups.
- 3) Again, in the case of the variable Attitude Towards Academic work it was found that,
 - a) Significant difference in the mean scores of Reading Comprehension in English exists between all the three group pairs viz., High- and Average-; High- and Low-; and Average- and Low groups for Rural sample only.
 - b) For total sample and for subsamples like Girls and Urbans significant difference in the mean scores of Reading Comprehension in English exists only between two group pairs viz., High- and Low-; and Average- and Low groups.
 - c) For Boys significant difference in the mean scores of Reading Comprehension in English exists only between two groups pairs viz., High- and Average-; and High- and Low groups.

5.1.3. Reading Comprehension in English has Significant Correlation (at 0.01 level) with five out of the six psychological variables for total sample and for sub samples like Girls, Boys, Rural

and Urban samples. In the case of Boys the Variable Attitude Towards Academic Work is significant at 0.05 level.

The correlation coefficients of Reading Comprehension in English with all the variables are presented for the total sample and for relevant subsamples like Girls, Boys, Rural and Urban.

TABLE 34
Correlation Coefficient of
Reading Comprehension in English with Psychological Variables

Sl. No.	Variables	Total Sample	Girls	Boys	Rural	Urban
1.	Intelligence	0.73**	0.80**	0.65**	0.70**	0.80**
2.	Creativity	0.59**	0.63**	0.48**	0.49**	0.65**
3.	Achievement Motivation	-0.002	-0.03	0.04	0.04	-0.04
4.	Self-Concept	0.19**	0.24**	0.16**	0.23**	0.17**
5.	Extraversion	0.32**	0.45**	0.23**	0.16**	0.35**
6.	Attitude Towards Academic Work	0.18**	0.21**	0.13*	0.17**	0.23**

Note: ** indicates significance at 0.01 level ($P \leq 0.01$)

* indicates significance at 0.05 level ($P \leq 0.05$)

The result shown in Table 34 suggests that,

- 1) The variable having high relation with Reading Comprehension in English is Intelligence.
- 2) Creativity is the variable having substantial relation with

Reading Comprehension in English.

- 3) The variable having moderate relation with Reading Comprehension in English is Extraversion.
- 4) The variables Self-Concept and Attitude Towards Academic work have low relation with Reading Comprehension in English.
- 5) The variable Achievement Motivation has no relation with Reading Comprehension in English.

5.1.4. Step-wise regression analysis resulted that among the five psychological variables, only three variables are significant predictors. These three variables are Intelligence (X_1), Creativity (X_2) and Extraversion (X_5).

The predictor variables entered successively in the regression analysis, values of multiple correlation R in the successive steps and the multiple regression equations developed in the successive steps are given as Table 35.

TABLE 35
Variables Entered, Multiple Correlation R
and Multiple Regression Equations Developed
in the Successive Steps of Step-Wise Regression Analysis

Variables Entered	Multiple Correlation 'R'	Regression Equations
Intelligence (X ₁)	0.73	Y' = 1.162X ₁ + 4.280
Creativity (X ₂)	0.75	Y' = 0.937X ₁ + 0.075X ₂ + 2.117
Extraversion (X ₅)	0.76	Y' = 0.915X ₁ + 0.702X ₂ + 0.236X ₅ - 1.799

Note: (i) All the Values of multiple correlation R cited are significant at 0.01 level.
(ii) Y' is the predicted value of Y, the Reading Comprehension in English

The coefficient of multiple determination, R² as $\Sigma\beta r = 0.5754$ suggests that 57.54 percent of variance in Reading Comprehension in English is attributable to the three psychological variables identified as significant predictors and the contribution of each significant predictor variable to the variation in Reading Comprehension in English is as follows.

- 1) Intelligence 41.90 percent
- 2) Creativity 13.33 percent
- 3) Extraversion 2.30 percent

5.2. CONCLUSION

The study was designed with the major objective of testing the ability of each select predictor psychological variable in predicting Reading Comprehension in English of secondary school pupils and

hence to identify the significant predictors of Reading Comprehension in English. This was tested by framing minor objectives and these objectives were tested through different statistical techniques like one-way analysis of variance, coefficient of correlations and stepwise regression analysis.

By the above procedures, it was found that five psychological variables have significant effect and significant correlations with Reading Comprehension in English for the total sample as well as for sub samples like Girls, Boys, Rural and Urban samples. The psychological variable 'Self-Concept' has significant effect on Reading Comprehension in English for the Total sample and for two subsamples only, like Girls and Rurals. But stepwise regression analysis brought that only three of the five psychological variables are significant predictors of Reading Comprehension in English. These three significant predictors, contributing 57.54 percent of variation in the variance of Reading Comprehension in English are Intelligence (41.90 percent), Creativity (13.33 percent) and Extraversion (2.30 percent).

All these findings led the investigator to conclude that out of the six psychological variables put as predictor (independent) variables, only three of them viz., Intelligence, Creativity and Extraversion turned to be the significant predictors of Reading

Comprehension in English and that too with 41.90 percent, 13.33 percent and 2.30 percent respectively as the percentage of variance contributable to the variation in the variance of Reading Comprehension in English.

5.3. EDUCATIONAL IMPLICATIONS OF THE STUDY

The statistical analyses done for the study led the investigator to conclude that the three variables viz., Intelligence, Creativity and Extraversion are the significant predictors of Reading Comprehension in English with 41.90 percent, 13.33 percent and 2.30 percent respectively as the percentage of variance contributable to the variation in the variance of Reading Comprehension in English.

On the basis of the above findings the investigator put forward the following suggestions for the improvement of the present educational practices and hence for the betterment of the young pupil's Reading Comprehension Ability in English.

The study could identify three psychological predictors of Reading Comprehension in English and among the three, Intelligence was found to have the highest predictive efficiency when compared to Creativity and Extraversion. Implications of the findings of this study are therefore listed as follows.

Most people think that reading is a purely knowledge-based

activity. In fact, reading is a process of acquisition of certain skills with the help of which one is able to comprehend the meaning of the printed text. Now it is found that the child's reading comprehension is highly depended on his mental ability. This implies that all the learners cannot be expected to read and comprehend equally well and equally efficiently.

It is necessary to have a creative mind for the reader to consolidate and reflect upon what has been read and also to relate it to the learner's own knowledge, interests or views.

Some intelligent and creative ways of developing Reading Comprehension that can be followed by our teachers are listed below:

- 1) Allow the children to read through a text/passage and then ask for a suitable title for the same (or ask them to select a title from among three or four given titles).
- 2) Ask the children to suggest the sentence that expresses main idea of the text/passage.
- 3) Provide different learning experiences to comment, describe, add and arrange what is read and transform them into story, poem, drama, description, news bulletin, interview, commentary etc. in the class.

- 4) Use play-way methods such as spelling games, word-game, finding words that aptly describe a picture etc.
- 5) Involve pupils to work with 'Sahitya Samajam', seminars, project works, competition etc.
- 6) At leisure times, encourage the pupils to use the technique 'Look and Say' which will help students practice in recognizing and remembering words which will help to add the vocabulary.
- 7) Asking pupils to say the meaning and to create a sentence of their own using the new words they acquired each day.
- 8) With the help of small speech, create in students the interest for reading. Also give a background of the material that the students shall go through.
- 9) Give the class a story with sentences jumbled up and ask them to put it in the right order (by assigning the correct number to each sentence). This exercise can be made easy or difficult depending on the level of the learners.
- 10) To be up to date with the latest information make students read newspapers in the morning and conduct a 'Thought for the day' session for presenting the so prepared striking news in the class.
- 11) Provide two newspaper reports of the same event but with different reactions. Then ask the pupils for their views or comments.

- 12) Finding time by the language teachers for developing reading skills.
- 13) Equip the school library with plenty of books and journals or magazines to meet the reading interest of the different age groups.
- 14) Allowing peers to discuss on what they have read by asking questions to each other.
- 15) In order to develop students predictive abilities and also to stimulate their interest in reading, suggested activities are,
 - i) Framing hypotheses or predictions about what the text is likely to deal with based on the title alone or the title of the book from which the text is taken.
 - ii) After reading a section of the story or a novel, anticipating or predicting what is likely to happen next.
 - iii) Making them say or write possible endings for stories.

5.4. SUGGESTIONS FOR FURTHER RESEARCH

Based on the findings of the study and on the review of literature, the investigator suggests the following areas for further research.

- 1) A study of the psychological variables causing higher Reading Comprehension in English.
- 2) An experimental study on the effectiveness of activity methods like 'look and say', 'suggest a title', 'vocabulary finding' etc in enhancing Reading Comprehension in English.
- 3) A comparative study of the Reading Comprehension in English between students of mother tongue as medium of Instruction and English as medium of instruction.
- 4) Study on the variables like Anxiety, Introversion, Reading Habits, Interests, Attitude Towards Academic Work as deterrents of Reading Comprehension in English.
- 5) A study on the relation between Reading Comprehension in English and the life skills like Problem Solving Ability, Decision Taking etc.
- 6) A study on the effectiveness of Brain Based Learning on Reading Comprehension in English.
- 7) A comparative study on the effectiveness of Direct Method and Communicative Approach of teaching English on Reading Comprehension in English.

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APPENDICES

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

TEST OF READING COMPREHENSION IN ENGLISH

PART A (DRAFT)

Dr. V. Sumangala
Professor in Education

Deep, P.
Research Scholar

INSTRUCTIONS:

Fifty incomplete sentences to test your ability to comprehend the idea from the incomplete sentences and then to complete the sentences with the most appropriate word from the given four alternatives.

To the first sentence, if 'a' is the correct answer, put an "x" mark under column provided in the separate response sheet.

For eg: Up in the _____ they saw a new star.

- a) Roof b) Ceiling c) Sky d) Tree

(Here, the correct answer is "C". Hence, the circle below the letter "C" which represents the correct answer is marked using the symbol "X" in the response sheet)

Response sheet

a	b	c	d
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

If you feel that the answer marked is wrong, envelope that circle by a rectangle (□) and again put the "X" mark in the circle representing your answer.

The questions being objective type, the investigator decided to give one score each for each question, so that the maximum score for the test is fifty.

The time for answering Part A is 30 minutes

1. I will try to nip the evil in the _____
a. Flower b. Blossom c. Bud d. Fruit
2. Mahatma Gandhi is the _____ of our Nation
a. pioneer b. prince c. father d. architect
3. Metals _____ when they are heated
a. contract b. relax c. project d. expand
4. A person who always believes that the worst will happen is called _____
a. an optimist b. victim c. pessimist d. a hero
5. Raju filled glass with water to the _____
a. margin b. edge c. rim d. brim
6. Reena _____ me of stealing her money
a. threatened b. charged c. accused d. blamed
7. The waves rise usually high when the sea is _____
a. calm b. angry c. rough d. silent
8. There is a _____ of mountain
a. class b. group c. chain d. cluster
9. A child who is filled with fear is a _____ child
a. afraid b. fearsome c. frightful d. frightened
10. Two boys wrote the examination. If we say BOTH DID NOT PASS, it means _____
a. both failed b. neither failed c. neither passed d. one failed
11. Hospitals are places where _____ are treated
a. doctors b. teachers c. patients d. nurses
12. A man who receives guests
a. friend b. gentleman c. host d. inviter
13. One who lives on vegetables only is a /an
a. non-vegetarian b. vegetarian c. parasite d. ascetic
14. One who always looks at the bright (hopeful) side of things
a. invincible b. extempore c. pessimist d. optimist
15. Salt _____ in water, but wax doesn't
a. melts b. drowns c. dissolves d. dilutes
16. One who cultivate the land is a _____
a. planter b. farmer c. agriculturist d. landlord

17. A steam engine is driven by the ___ of steam
a. thrust b. force c. pressure d. energy
18. The police reached the spot much ____
a. lately b. later c. after d. longer
19. ____ is the ship of the desert
a. Elephant b. horse c. camel d. donkey
20. When the sun shines ____ are not visible in the sky
a. moon b. birds c. stars d. aeroplanes.
21. The comet appears ___ in several years
a. always b. once c. twice d. thrice
22. Soman went out in the rain and ___ cold
a. suffered b. caught c. caught d. would catch
23. The country needs a ___ Government to tackle the challenges it faces today
a. stationary b. stagnant c. stable d. sustained
24. We shall drive if the roads are ____
a. clear b. clearly c. clearing d. clarify
25. ____ is one who believes in God
a. A theist b. an atheist c. A sceptic d. An agnostic
26. An outcaste is a person expelled from a ____
a. village b. caste c. nation d. home
27. The food they served to us was really ____
a. delicate b. delicious c. delectable d. dainty
28. A place where fishes are kept ____
a. aviary b. apiary c. aquarium d. sty
29. Don't try to get down the ____ train
a. running b. starting c. fast d. moving
30. Anil returned the lost bag to its rightful owner and was handsomely rewarded for his ____
a. foresight b. wisdom c. honesty d. intelligence
31. The person in charge of a library
a. principal b. librarian c. curator d. undertaker
32. A sound or voice that can be heard is an ____ sound
a. feeble b. audible c. inaudible d. credible

33. Christopher Columbus _____ America
a. invented b. created c. discovered d. founded
34. The nation decided to create a fine _____ in honour of the martyr
a. museum b. momentum c. monument d. momento
35. My friend proved that he was warm and _____
a. hospital b. cold c. hospitable d. indifferent
36. Food is to eat as water is to _____
a. swallow b. flow c. drink d. fire
37. An honest man will not _____ money as bribe
a. except b. accept c. expect d. aspect
38. Smoking is _____ to health
a. good b. best c. great d. injurious
39. The peaks of the Himalayas are covered with _____
a. water b. salt c. snow d. ice
40. Delhi is the _____ of India
a. city b. capital c. country d. state
41. A stitch in time saves _____
a. many b. some c. a lot d. nine
42. Sweet are the uses of _____
a. diversity b. university c. adversity d. duplicity
43. Life is not a bud of _____
a. jasmines b. lilies c. roses d. daffodils
44. A thing of _____ is a joy for ever
a. life b. beauty c. wealth d. art
45. Barking dog _____ bites
a. always b. never c. seldom d. often
46. All that glitters is not _____
a. silver b. gold c. jewels d. diamond
47. The pen is mightier than _____
a. the paper b. the writer c. the sword d. the pencil
48. _____ is more precious than wealth
a. friendship b. health c. confidence d. righteousness
49. All is well that _____ well
a. starts b. runs c. progresses d. ends
50. An _____ vessel makes much noise
a. full b. hollow c. half-filled d. empty

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APPENDIX II

**UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION**

TEST OF READING COMPREHENSION IN ENGLISH

PART A (FINAL)

Dr. V. Sumangala
Professor in Education

Deepa, P.
Research Scholar

INSTRUCTIONS:

Twenty five incomplete sentences to test your ability to comprehend the idea from the incomplete sentences and then to complete the sentences with the most appropriate word from the given four alternatives.

To the first sentence, if 'a' is the correct answer, put an "x" mark under column provided in the separate response sheet.

For eg: Up in the _____ they saw a new star.

- a) Roof b) Ceiling c) Sky d) Tree

(Here, the correct answer is "C". Hence, the circle below the letter "C" which represents the correct answer is marked using the symbol "X" in the response sheet)

Response sheet

a	b	c	d
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

If you feel that the answer marked is wrong, envelope that circle by a rectangle (□) and again put the "X" mark in the circle representing your answer.

The questions being objective type, the investigator decided to give one score each for each question, so that the maximum score for the test is twenty five.

The time for answering Part A is 15 minutes

1. I will try to nip the evil in the _____
a. Flower b. Blossom c. Bud d. Fruit
2. Mahatma Gandhi is the _____ of our Nation
a. pioneer b. prince c. father d. architect
3. Metals _____ when they are heated
a. contract b. relax c. project d. expand
4. A person who always believes that the worst will happen is called _____
a. an optimist b. victim c. pessimist d. a hero
5. Hospitals are places where _____ are treated
a. doctors b. teachers c. patients d. nurses
6. A man who receives guests
a. friend b. gentleman c. host d. inviter
7. One who lives on vegetables only is a /an
a. non- vegetarian b. vegetarian c. parasite d. ascetic
8. one who always looks at the bright (hopeful) side of things
a. invincible b. extempore c. pessimist d. optimist
9. Salt _____ in water, but wax doesn't
a. melts b. drowns c. dissolves d. dilutes
10. _____ is the ship of the desert
a. Elephant b. horse c. camel d. donkey
11. When the sun shines _____ are not visible in the sky
a. moon b. birds c. stars d. aeroplanes.
12. We shall drive if the roads are _____
a. clear b. clearly c. clearing d. clarify
13. The food they served to us was really _____
a. delicate b. delicious c. delectable d. dainty
14. A place where fishes are kept _____
a. aviary b. apiary c. aquarium d. sty
15. Anil returned the lost bag to its rightful owner and was handsomely rewarded for his _____
a. foresight b. wisdom c. honesty d. intelligence
16. The person in charge of a library
a. principal b. librarian c. curator d. undertaker

17. Christopher Columbus _____ America
a. invented b. created c. discovered d. founded
18. Food is to eat as water is to _____
a. swallow b. flow c. drink d. fire
19. Smoking is _____ to health
a. good b. best c. great d. injurious
20. The peaks of the Himalayas are covered with _____
a. water b. salt c. snow d. ice
21. Delhi is the _____ of India
a. city b. capital c. country d. state
22. A stitch in time saves _____
a. many b. some c. a lot d. nine
23. All that glitters is not _____
a. silver b. gold c. jewels d. diamond
24. _____ is more precious than wealth
a. friendship b. health c. confidence d. righteousness
25. An _____ vessel makes much noise
a. full b. hollow c. half-filled d. empty

TEST OF READING COMPREHENSION IN ENGLISH**(PART A)****RESPONSE SHEET**

Name of the student :

Name of School:

Standard :

Boy/Girl :

Q.No.	A	B	C	D
1	O	O	O	O
2	O	O	O	O
3	O	O	O	O
4	O	O	O	O
5	O	O	O	O
6	O	O	O	O
7	O	O	O	O
8	O	O	O	O
9	O	O	O	O
10	O	O	O	O
11	O	O	O	O
12	O	O	O	O
13	O	O	O	O
14	O	O	O	O
15	O	O	O	O
16	O	O	O	O
17	O	O	O	O
18	O	O	O	O
19	O	O	O	O
20	O	O	O	O
21	O	O	O	O
22	O	O	O	O
23	O	O	O	O
24	O	O	O	O
25	O	O	O	O

APPENDIX IV

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

TEST OF READING COMPREHENSION IN ENGLISH

PART A

SCORING KEY

Q.No.	Answer
1	C
2	C
3	D
4	C
5	C
6	C
7	B
8	D
9	C
10	C
11	C
12	A
13	B
14	C
15	C
16	B
17	C
18	C
19	D
20	C
21	B
22	D
23	B
24	B
25	D

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

TEST OF READING COMPREHENSION IN ENGLISH

PART B (DRAFT)

Dr. V. Sumangala
Professor in Education

Deepa, P.
Research Scholar

Instructions

There are fifteen passages in the test. Based on each passage three objective type questions are to be answered. The questions being objective type the investigator decided to give one score each for each question, so that the maximum score for the test is forty five.

The test consists of fifteen passages each having three objective type questions. After reading a passage carefully, answer the questions based on that passage. Four alternative answers (a, b, c, d) are given for each question. You have to select the correct answer and indicate that in the answer sheet. If the answer to a question is 'a' put an 'x' mark under column 'a' provided in the separate response sheet.

Example:

Response sheet

a	b	c	d
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The time for answering part B of the test is 30 minutes

Read the passages given below and answer the questions that follow:

I. Nowadays life in cities has become dangerous for various reasons. First of all, it is dangerous to walk about in cities because always various kinds of vehicles keep moving at terrific speed. The smoke released by them poisons the atmosphere, and consequently it is dangerous to breath in this polluted air. The food that we get in cities is also lacking in purity. Nowadays, everything is grown with chemical fertilizers which may cause danger to the consumers of fruits, vegetables and other things grown thus. We do not get anything that is absolutely pure. The water also is sometimes contaminated. Hence, it is better to get out of cities at least for some days every month; and to eat food which is not contaminated; and to breath in fresh air which is conducive to excellent health.

1. What causes air pollution in cities?
 - a. Chemical fertilizers.
 - b. Noise of vehicles.
 - c. The smoke released by vehicles.
 - d. Contaminated water.
 2. What makes the food we get in cities impure?
 - a. The chemical fertilizers used to grow the food.
 - b. Air pollution.
 - c. The smoke from the vehicles.
 - d. Impure water in cities.
 3. What according to the passage is the first step city dwellers should take against the dangers they are exposed to?
 - a. They should leave their cities once and for all.
 - b. They should avoid vegetables and fruits.
 - c. They should not use vehicles.
 - d. They should get out of cities at least for some days every month.
- II. Man is the only creature that consumes without producing. He does not give milk, he does not lay eggs, he is too weak to pull the plough, he cannot run fast enough to catch rabbits. Yet he is lord of all the animals. He sets them to work, he gives back to them the bare minimum that will prevent them from starving, and the rest he keeps for himself.
4. Name the creature that consumes without producing?
 - a. cow.
 - b. Horse.
 - c. Dog.
 - d. Man.

5. What is the status of man?
 - a. Lord of all animals.
 - b. Saint.
 - c. Social.
 - d. Antisocial.
6. He does not lay eggs. Who?
 - a. Dog
 - b. Man
 - c. Hen
 - d. Cow

III. In the vast space that surrounds the earth there are innumerable bodies like planets and satellites. They are unimaginably large bright bodies. Of these, the moon is the earth's nearest neighbour. As you know the moon has no light of its own. It only reflects the sun's rays. The moon is a lifeless world, a world without air or water. The moon itself is a place of extreme temperature. It is a land with dry, tough, and hard rocky soil covered with fine dust. The whole surface is pitted with craters and hollows. During travel through space towards the moon, as one goes farther away from the earth's gravity, one suffers a strange feeling of weightlessness.

7. Why does the moon only reflect the sun's rays?
 - a. Because it has no light of its own.
 - b. Because it is a place of extreme temperature.
 - c. Because it is the earth's nearest neighbour.
 - d. Because its surface is pitted with craters and hollows.
8. What is meant by unimaginably large bright bodies?
 - a. Bodies which are too large and bright to be imagined.
 - b. Bodies which are too small and bright to be imagined.
 - c. Imaginary bodies which are large and bright.
 - d. The large bright bodies are full of imagination.
9. Which of the following statements is true?
 - a. The moon has a comfortable cool climate.
 - b. The moon has a white, sandy smooth surface.
 - c. There are no living organisms on the moon.
 - d. The moon is the earth's distant neighbour.

IV. Some 2500 years ago, Siddhartha, who eventually became the Buddha, is also known to have gone through strenuous training in the martial arts and competitive games. The most thrilling moment came when he had to win the hand of his future bride in marriage through open competitive games. After winning the various events the crowning event was the cutting down of a huge palm tree with a single stroke of the sword. Most of the competitors just could not

send the blade across the body of the trunk – so tough and enormous was the tree. Siddhartha's turn came. With utter concentration of the soul and body, he wielded the sword with the speed of lightning, sending it across the trunk of the tree. Strangely enough, even though it was cut, it did not fall. A moment later, as the palm tree swayed to the waft of a soft breeze, it fell showing the feather line mark left between the stump and the trunk of the tree. The audience broke into peals of excitement.

10. How was Siddhartha required to win the hand of his future bride?
 - a. By force.
 - b. By wooing.
 - c. By romance.
 - d. By open competitive games.
 11. What happened as the tree swayed to the waft of the breeze?
 - a. It fell down.
 - b. There was no change.
 - c. Everybody enjoyed the breeze.
 - d. Nothing happened.
 12. What was the reaction of the audience?
 - a. They became gloomy.
 - b. They were indifferent.
 - c. They broke into peals of excitement.
 - d. They were sad.
- V. Vidya Sagar was a very generous and charitable man. From his early year, he helped the poor and the needy. As a boy at school, he often give some of the little food he had to eat, to another boy who had none. If one of his school fellows fell ill, he would go to his house, sit by his bed and nurse him. When he grew rich, hundreds of poor widows and orphans were supported by him.
13. What sort of man was Vidya Sagar?
 - a. A lean man.
 - b. A silent man
 - c. A dull man
 - d. A very generous and charitable man.
 14. How did he help the poor students at school?
 - a. He gave them coats to wear.
 - b. He gave them some of the little food he had to eat.
 - c. He gave them rewards.
 - d. He gave them beds to sleep.

15. What did he do for widows and orphans when he became rich?
- He scolded them.
 - He was afraid of them.
 - He supported the widows and orphans.
 - He killed the widows and orphans.
- VI. Champaran is the land of King Janaka. Just as it abounds in mango groves, so used it to be full of indigo plantations till the year 1917. The Champaran tenant was bound by law to plant three out of every twenty with indigo for his land lord. This system was known as the Tinkathia system, as three had to be planted with indigo.
16. What is the historical importance of the place mentioned in the passage?
- The place was ruled by King Janaka.
 - The place was ruled by Champaran.
 - The place was ruled by tenant.
 - The place was conquered by King Janaka.
17. How was the place important economically?
- Champaran was the land of King Janaka.
 - The place was full of mango groves.
 - The place was full of indigo plantations.
 - The place was known for Tinkathia system.
18. What is the Tinkathia system?
- Planting mango groves.
 - Boundless laws.
 - The system of planting trees.
 - The Champaran tenant was bound by law to plant three out of every twenty with indigo for his land lord.
- VII. William Wordsworth (1770-1850) the English poet was born at Cockermonth in 1770, and died at Grasmere in 1850. The son of an attorney, he enjoyed a country boyhood in the Luke District. A visit to France in 1791 made him an ardent Republican and an admirer of the French revolution, but the later excesses of the revolution disappointed him. He collaborated with Coleridge in writing the Lyrical Ballads (1798). He was made poet Laureate in 1843. He is generally called the poet of nature. He seemed to believe in the existence of an all-pervading God-a God that existed in the meanest and commonest things in nature.
19. Where was William Wordsworth born?
- At Grasmere.
 - In Japan.
 - At Cockermonth.
 - In France.

20. Who helped him to write the *Lyrical Ballads*?
- Coleridge.
 - Shakespeare.
 - Keats.
 - Shelley.
21. What was his belief about God?
- He seemed to believe in nature.
 - God existed in everything even in the meanest and the commonest thing in nature.
 - Admirer of God.
 - He did not believe in the existence of an all- pervading God.
- VIII. The children of Travancore can play on their beach with sands called rare earths, containing mineral substances. They were made during thousands of years out of rare rocks carried by rainwater into the sea. The sea, after grinding them into small particles, has deposited them on the beach.
22. What are Rare Earths?
- Sands containing mineral substances.
 - Sands containing metals and its compounds.
 - Sands containing gaseous particles.
 - Sands containing colloidal substances.
23. How long did the Rare Rocks take to get converted into Rare Earths?
- Hundreds of years.
 - Millions of years.
 - Thousands of years.
 - None of the above.
24. How did the rocks reach the sea?
- By the process of evaporation.
 - By the process of condensation.
 - By the process of sublimation.
 - Carried by rain water.
- IX. A teacher once told his pupils I shall give a beautiful present to the child who brings the brightest thing to the class tomorrow. The next day several children brought many bright things they were able to find such as bright stones, a watch glass, a small piece of shining silver, a pin of gold with bright stones. Then little Sunder ran into the room. In his hands he held a gentle snow white dove. Some red drops on its wings showed that it had been hurt.

"Oh, master" cried Sunder "I was looking for something bright when I saw some cruel boys throwing stones at this poor dove. I caught it up and ran here. Oh I am afraid it will die." And as he spoke the dove closed his soft eyes, dropped its head and died.

From Sunder's eyes there fell upon the poor doves broken wing, two tears, large and bright. The master laid the dead bird on his desk. Then he turned to the children and said "My children, there is no brighter thing on earth than a tear of pity." Give the gift to Sunder, cried the children. "We know now what you mean".

25. The most appropriate title of the passage.
- A tear of pity
 - Sunder and dove
 - The brightest thing on earth
 - A beautiful present
26. What is the brightest thing on earth according to the teacher?
- A snow-white bird
 - A tear of pity
 - Shining silver
 - Bright stone
27. What does the story teach us?
- That we should be kind towards birds and animals.
 - That we should not kill birds and animals.
 - That we should shed tears for birds.
 - That we should kill birds and animals.
- X. Lal Bahadur was born on 2nd October, 1904 near Varanasi. His father was a poor school master at Varanasi. Lal Bahadur studied in a High School till 1921. Later he joined the Kasi Vidhya Peeth and took a first class in Shastri degree. Then he was drawn to the freedom movement.
- Born and brought up in poverty, Lal Bahadur rose to the high office of Prime Minister. He was very honest. He used to be very simple in his dress and food. He worked hard for unity and peace. But he did not live long. After his death, he was honoured with the 'Bharatha Ratna' for the great services done by him.
28. The most appropriate title for this passage.
- A school master
 - Lalitha Devi
 - A great man from a poor family.
 - Bharatha Ratna Award.

29. Why was Shastri honoured with Bharatha Ratna award?
- because he was an honest man.
 - Because he worked hard for honesty and peace.
 - Because of the great services done by him.
 - Because he took Shastri Degree.
30. What was the goal of Lal Bahadur?
- To get Bharatha Ratna Award.
 - To become the Prime Minister of India
 - To become the school master
 - To work for unity and peace.

XI. Animals and birds grow their own clothes. Sheep are covered with wool, bears are covered with fur, dogs with hair and birds with feathers. But men have to make their clothes. Dress is worn for three reasons. It is worn for warmth, for decency and for show. In cold countries clothes are needed to keep us warm. But in all countries we see that people wear clothes. It is for the sake of decency. But much of the dress is worn as ornament. So most people like to wear beautiful clothes. They want to make themselves look fine. But we must remember that beautiful clothes do not necessarily make us gentle and good. It is foolish to spend too much money on clothes. It is a form of vanity. But a gentleman will always see that his dress is neat and clean.

31. Choose the correct statement.
- Only animals make their clothes.
 - Animals and birds grow their own clothes.
 - Only man makes clothes
 - Only birds grow their clothes.
32. a. In all countries people wear clothes to keep themselves warm.
b. In all countries people wear clothes for decency
c. All people wear clothes for vanity.
d. In all countries people wear clothes for ornament.
33. a. Beautiful clothes make people gentle.
b. It is foolish to wear beautiful clothes.
c. Beautiful clothes do not necessarily make us gentle.
d. Beautiful clothes are not neat and clean.

XII. Have you ever seen snow? A lot of countries never have snow, or they have it only on the top of very high mountains. In Scotland and in the north of England there is a lot of snow every winter, but in the south of England, there is usually very little.

When a student from a warm country like Malaya or Singapore comes to Britain in the autumn for the first time, he feels cold at first. There are often dark clouds, grey sky and cold rain in Britain in autumn, and most student from warm counties do not like this.

But snow is different. Although it is very cold, it is also very beautiful. Perhaps after several dark mornings, the students wakes up one day, and there is a lot of light in his room. He looks out of the window and there is the snow, on the ground and on the roofs of the houses and everywhere. The light in his room came from that smooth, clean, beautiful white snow.

34. Which of the following is a correct statement?
- Every winter there is a lot of snow all over England
 - There is snow in the north of Scotland
 - Every winter there is a lot of snow in the north of England.
 - Every winter there is a lot of snow in the south of England
35. Why is there a lot of light in the students room?
- Because it is early morning
 - Because it is too late
 - Because there is snow every where
 - Because of the grey sky
36. Which of the following is described as beautiful?
- The snow
 - The light in the students room
 - The roof of the buildings
 - The dark clouds

XIII. The Golden temple stands in the city of Amritsar. It is most sacred to the Sikhs. It stands in the heart of city of Amritsar. In fact, the city grew up round the temple. The temple stands in the centre of a big tank which is always full to brim with clear water. The tank was excavated by Guru Ram Dasji, in the year 1589. On all the four sides of the tank runs a broad path paved with beautiful marble tiles. A marble cause way leads to the temple proper. The walls of the temple are also made of marble. There are beautiful floral decorations on the walls. The temple is open to all castes and creeds. The reflection of the temple in the clear water of the tank is a sight to see.

37. What does the passage describe?
- The tank around the Sikh temple
 - The religion of the Sikhs
 - The famous Golden temple of the Sikhs
 - The walls of the temple

38. The tank was excavated by Guru Ram Dasji. Here, what do you mean by the word 'excavated'?
- Inaugurated
 - Dug up
 - Made
 - First used

39. For whom is the temple open to?
- Only the Sikhs
 - Only the Hindus
 - Only the Sikh men
 - Every one

XIV. The policy of planned industrial development, which we have adopted in the last two decades has sometimes been criticized as a calculated abandonment of Gandhism. Those who level this charge and advocate cottage industries, do not themselves refrain from using the products of large industries such as aircraft, automobiles and telephones. Gandhiji did not shun the railways and was a punctilious user of watches. And if we use railways and watches does it make sense not to manufacture them ourselves? Gandhiji's advocacy of cottage industries should therefore be understood in the correct context. He was intensely concerned with poverty. He abhorred waste. He wanted to use the latent energies of the vast army of rural unemployed to produce more goods for the nation and some wealth for themselves. Then again like other sensitive men before him, he was reacting to the brutal effects of the first phase of industrialization. As a seer concerned with the ultimate condition of man, he wanted to caution us against becoming of prisoners of our own devices. In his copious writing on the place of the machine, there are many passages which show that Gandhiji's outlook was broader and more humanely practical than some literalist interpretations would have us believe.

40. What is the main idea of the passage?
- The planned development of industry is necessary.
 - We should set up bit industries
 - Gandhiji was not opposed to development
 - Our industrial policy is not opposed to Gandhian outlook
41. What can we infer from the passage?
- Gandhiji was humanely practical.
 - Gandhiji had written much about the machines.
 - Gandhiji was not opposed to big industries.
 - Gandhiji wanted cottage industries.

42. What was the approach of the writer in this passage?
- Cynical
 - Argumentative
 - Defensive
 - Hostile
- XV. One would like to tell the story of the life of Marie Curie like a legend. She was a woman who belonged to an oppressed nation. She was poor. She was beautiful. A powerful vocation summoned her from her motherland, Poland, to study in Paris where she lived through year of poverty and solitude. There she met a man whose genius was akin to hers. She married him, their happiness was great. By the most desperate effort they discovered a magic element, Radium. This discovery provided mankind with the means of treating a dreadful disease.
43. To which country did Marie Curie belong?
- Poland
 - Paris
 - France
 - Germany
44. What kind of a person was her husband?
- A saint
 - A hard hearted man
 - A genius
 - A dull man
45. Why was radium called a magic element?
- Because of its terrific movement.
 - Because its discovery provided mankind with the means of treating a dreadful disease.
 - Because of its discovery by Marie Curie and her husband.
 - None of the above.

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATIONTEST OF READING COMPREHENSION IN ENGLISH
PART B (Final)Dr. V. Sumangala
Professor in EducationDeepa, P.
Research Scholar**Instructions:**

There are ten passages in the test. Based on each passage objective type questions are to be answered. The questions being objective type, the investigator decided to give one score each for each question, so that the maximum score for the test is twenty five.

After reading a passage carefully, answer the questions based on that passage. Four alternative answers (a, b, c, d) are given for each question. You have to select the correct answer and indicate that in the answer sheet. If the answer to a question is 'a' put an 'x' mark under column 'a' provided in the separate response sheet.

Example:

Response sheet

a	b	c	d
⊗	○	○	○

The time for answering part B of the test is 25 minutes

Read the passages given below and answer the questions that follow:

I. Nowadays life in cities has become dangerous for various reasons. First of all, it is dangerous to walk about in cities because always various kinds of vehicles keep moving at terrific speed. The smoke released by them poisons the atmosphere, and consequently it is dangerous to breath in this polluted air. The food that we get in cities is also lacking in purity. Nowadays, everything is grown with chemical fertilizers which may cause danger to the consumers of fruits, vegetables and other things grown thus. We do not get anything that is absolutely pure. The water also is sometimes contaminated. Hence, it is better to get out of cities at least for some days every month; and to eat food which is not contaminated; and to breath in fresh air which is conducive to excellent health.

1. What causes air pollution in cities?
 - a. Chemical fertilizers.
 - b. Noise of vehicles.
 - c. The smoke released by vehicles.
 - d. Contaminated water.
 2. What makes the food we get in cities impure?
 - a. The chemical fertilizers used to grow the food.
 - b. Air pollution.
 - c. The smoke from the vehicles.
 - d. Impure water in cities.
 3. What according to the passage is the first step city dwellers should take against the dangers they are exposed to?
 - a. They should leave their cities once and for all.
 - b. They should avoid vegetables and fruits.
 - c. They should not use vehicles.
 - d. They should get out of cities at least for some days every month.
- II. Man is the only creature that consumes without producing. He does not give milk, he does not lay eggs, he is too weak to pull the plough, he cannot run fast enough to catch rabbits. Yet he is lord of all the animals. He sets them to work, he gives back to them the bare minimum that will prevent them from starving, and the rest he keeps for himself.
4. Name the creature that consumes without producing?
 - a. cow.
 - b. Horse.
 - c. Dog.
 - d. Man.

5. What is the status of man?
- Lord of all animals.
 - Saint.
 - Social.
 - Antisocial.

6. He does not lay eggs. Who?
- Dog
 - Man
 - Hen
 - Cow

III. Some 2500 years ago, Siddhartha, who eventually became the Budha, is also known to have gone through strenuous training in the martial arts and competitive games. The most thrilling moment came when he had to win the hand of his future bride in marriage through open competitive games. After winning the various events the crowning event was the cutting down of a huge palm tree with a single stroke of the sword. Most of the competitors just could not send the blade across the body of the trunk – so tough and enormous was the tree. Siddhartha's turn came. With utter concentration of the soul and body, he wielded the sword with the speed of lightning, sending it across the trunk of the tree. Strangely enough, even though it was cut, it did not fall. A moment later, as the palm tree swayed to the waft of a soft breeze, it fell showing the feather line mark left between the stump and the trunk of the tree. The audience broke into peals of excitement.

7. How was Siddhartha required to win the hand of his future bride?
- By force.
 - By wooing.
 - By romance.
 - By open competitive games.
8. What was the reaction of the audience?
- They became gloomy.
 - They were indifferent.
 - They broke into peals of excitement.
 - They were sad.

IV. Vidya Sagar was a very generous and charitable man. From his early year, he helped the poor and the needy. As a boy at school, he often give some of the little food he had to eat, to another boy who had none. If one of his school fellows fell ill, he would go to his house, sit by his bed and nurse him. When he grew rich, hundreds of poor widows and orphans were supported by him.

9. What sort of man was Vidya Sagar?
- A lean man.
 - A silent man
 - A dull man
 - A very generous and charitable man.
10. How did he help the poor students at school?
- He gave them coats to wear.
 - He gave them some of the little food he had to eat.
 - He gave them rewards.
 - He gave them beds to sleep.
11. What did he do for widows and orphans when he became rich?
- He scolded them.
 - He was afraid of them.
 - He supported the widows and orphans.
 - He killed the widows and orphans.
- V. William Wordsworth (1770-1850) the English poet was born at Cockermouth in 1770, and died at Grasmere in 1850. The son of an attorney, he enjoyed a country boyhood in the Luke District. A visit to France in 1791 made him an ardent Republican and an admirer of the French revolution, but the later excesses of the revolution disappointed him. He collaborated with Coleridge in writing the *Lyrical Ballads* (1798). He was made poet Laureate in 1843. He is generally called the poet of nature. He seemed to believe in the existence of an all-pervading God-a God that existed in the meanest and commonest things in nature.
12. Where was William Wordsworth born?
- At Grasmere.
 - In Japan.
 - At Cockermouth.
 - In France.
13. Who helped him to write the *Lyrical Ballads*?
- Coleridge.
 - Shakespeare.
 - Keats.
 - Shelley.
14. What was his belief about God?
- He seemed to believe in nature.
 - God existed in everything even in the meanest and the commonest thing in nature.
 - Admirer of God.
 - He did not believe in the existence of an all- pervading God.

- VI. The children of Travancore can play on their beach with sands called rare earths, containing mineral substances. They were made during thousands of years out of rare rocks carried by rainwater into the sea. The sea, after grinding them into small particles, has deposited them on the beach.
15. What are Rare Earths?
- Sands containing mineral substances.
 - Sands containing metals and its compounds.
 - Sands containing gaseous particles.
 - Sands containing colloidal substances.
16. How long did the Rare Rocks take to get converted into Rare Earths?
- Hundreds of years.
 - Millions of years.
 - Thousands of years.
 - None of the above.
17. How did the rocks reach the sea?
- By the process of evaporation.
 - By the process of condensation.
 - By the process of sublimation.
 - Carried by rain water.
- VII. Lal Bahadur was born on 2nd October, 1904 near Varanasi. His father was a poor school master at Varanasi. Lal Bahadur studied in a High School till 1921. Later he joined the Kasi Vidhya Peeth and took a first class in Shastri degree. Then he was drawn to the freedom movement. Born and brought up in poverty, Lal Bahadur rose to the high office of Prime Minister. He was very honest. He used to be very simple in his dress and food. He worked hard for unity and peace. But he did not live long. After his death, he was honoured with the 'Bharatha Ratna' for the great services done by him.
18. The most appropriate title for this passage.
- A school master
 - Lalitha Devi
 - A great man from a poor family.
 - Bharatha Ratna Award.
19. Why was Shastri honoured with Bharatha Ratna award?
- because he was an honest man.
 - Because he worked hard for honesty and peace.
 - Because of the great services done by him.
 - Because he took Shastri Degree.

VIII. Animals and birds grow their own clothes. Sheep are covered with wool, bears are covered with fur, dogs with hair and birds with feathers. But men have to make their clothes. Dress is worn for three reasons. It is worn for warmth, for decency and for show. In cold countries clothes are needed to keep us warm. But in all countries we see that people wear clothes. It is for the sake of decency. But much of the dress is worn as ornament. So most people like to wear beautiful clothes. They want to make themselves look fine. But we must remember that beautiful clothes do not necessarily make us gentle and good. It is foolish to spend too much money on clothes. It is a form of vanity. But a gentleman will always see that his dress is neat and clean.

20. Choose the correct statement.
- Only animals make their clothes.
 - Animals and birds grow their own clothes.
 - Only man makes clothes
 - Only birds grow their clothes.
21. a. Beautiful clothes make people gentle.
b. It is foolish to wear beautiful clothes.
c. Beautiful clothes do not necessarily make us gentle.
d. Beautiful clothes are not neat and clean.

IX. The Golden temple stands in the city of Amritsar. It is most sacred to the Sikhs. It stands in the heart of city of Amritsar. In fact, the city grew up round the temple. The temple stands in the centre of a big tank which is always full to brim with clear water. The tank was excavated by Guru Ram Dasji, in the year 1589. On all the four sides of the tank runs a broad path paved with beautiful marble tiles. A marble cause way leads to the temple proper. The walls of the temple are also made of marble. There are beautiful floral decorations on the walls. The temple is open to all castes and creeds. The reflection of the temple in the clear water of the tank is a sight to see.

22. What does the passage describe?
- The tank around the Sikh temple
 - The religion of the Sikhs
 - The famous Golden temple of the Sikhs
 - The walls of the temple
23. For whom is the temple open to?
- Only the Sikhs
 - Only the Hindus
 - Only the Sikh men
 - Every one

X. One would like to tell the story of the life of Marie Curie like a legend. She was a woman who belonged to an oppressed nation. She was poor. She was beautiful. A powerful vocation summoned her from her motherland, Poland, to study in Paris where she lived through year of poverty and solitude. There she met a man whose genius was akin to hers. She married him, their happiness was great. By the most desperate effort they discovered a magic element, Radium. This discovery provided mankind with the means of treating a dreadful disease.

24. To which country did Marie Curie belong?

- a. Poland
- b. Paris
- c. France
- d. Germany

25. Why was radium called a magic element?

- a. Because of its terrific movement.
- b. Because its discovery provided mankind with the means of treating a dreadful disease.
- c. Because of its discovery by Marie Curie and her husband.
- d. None of the above.

APPENDIX VII

TEST OF READING COMPREHENSION IN ENGLISH

PART B

RESPONSE SHEET

Name of the Student :

Name of School:

Standard :

Boy/Girl :

Q.No.	A	B	C	D
1	O	O	O	O
2	O	O	O	O
3	O	O	O	O
4	O	O	O	O
5	O	O	O	O
6	O	O	O	O
7	O	O	O	O
8	O	O	O	O
9	O	O	O	O
10	O	O	O	O
11	O	O	O	O
12	O	O	O	O
13	O	O	O	O
14	O	O	O	O
15	O	O	O	O
16	O	O	O	O
17	O	O	O	O
18	O	O	O	O
19	O	O	O	O
20	O	O	O	O
21	O	O	O	O
22	O	O	O	O
23	O	O	O	O
24	O	O	O	O
25	O	O	O	O

APPENDIX VIII

**UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION**

TEST OF READING COMPREHENSION IN ENGLISH

PART B

SCORING KEY

Q.No.	Answer
1	C
2	A
3	D
4	D
5	A
6	B
7	D
8	C
9	D
10	B
11	C
12	C
13	A
14	B
15	A
16	C
17	D
18	C
19	C
20	B
21	C
22	C
23	D
24	A
25	B

TEST OF INTELLIGENCE FOR SECONDARY SCHOOL PUPILS

Dr. V. Sumangala
Professor in Education
University of Calicut

Sholy Joseph
Research Scholar
Department of Education

This test is meant for measuring your intelligence. The test contains 38 questions in three sections.

(Test I 14, Test II 13, Test III 11).

Questions under Test I (iii) and Test I (iv) should be answered in separate sheets of paper.

Test I (i)

1. Balu moved from his home to the seashore to see the sun set. After walking a short distance he turned to his left and walked a little. Again he turned to left and walked. But he could not see sun set. Here the problem is that
 - A. He was walking towards the east.
 - B. He was walking towards the south
 - C. He was walking towards the north.
 - D. He was walking towards east-west direction.

2. When a competitive test was conducted for two classes all the students became successful. A reward had been declared for the better one. The criteria for deciding the class eligible for the reward are.
 - A. The class in which the top scorer studied
 - B. The class, which contain the highest number of full scorers.
 - C. The average of the marks.
 - D. The class, which contains the highest number of successful students.

3. State that $11 + 2 = 1$. In which situation does this statement become true.
 - A. In relation to time
 - B. In relation to negative numbers
 - C. In relation to money
 - D. Never possible

4. Containers of different height and shape are placed on a table. Which of these contains the largest quantity of water.
 - A. The container, which has the top most height.
 - B. The container, which has the top most basement area.
 - C. The container, which has the top most circumference of the base.
 - D. The container, which has the top most volume.

Test I (ii)

1. I have got 14 coins of Rs. 5/- with the denominations of 25 ps and 50ps. The equation to find out the number of 25ps and 50ps coins is ____?
(x = the number of 25ps coins, y = 50ps coins)
- $25x+50y=5$
 - $x + y=14, 25x - 50y=5$
 - $x+y=14, 25x+50y=5$
 - $x+y=14, 25x+50y=500$
2. When 1 is added to the double of a particular number and the same number is subtracted from the product we get nine. The algebraic equation for the statement is
- $x^2+1-x=9$
 - $2x+1-x=9$
 - $2(x+1)-x=9$
 - $2^2+1-x=9$

Test I (iii)

Instruction: Answer in detail the following questions in separate sheets

- 8 adults and 2 children have to cross a river. There is only one boat in which either 2 children or one adult can sail at a time. How can they cross the river?
- You have got two measuring jars of 3 liters and 8 liters. By using those jars how can you take one liter of oil?

Test I (iv)

For the following questions only one answer is correct. Find out the correct answer and write the procedure how you got the answer.

- Bill is taller than Tom.
- Peter is taller than Sam.
- Peter is shorter than Tom.
- Bill is shorter than Mike.
- Sam is taller than Jack.

Who is tallest?

- A. Bill B. Sam C. Mike D. Peter

- A. B C D & E are five rivers. A is smaller than B and longer than E. C is the longest river. D is smaller than B and longer than A. Which of those is the smallest river?

- A. B B. C C. D D. E

4. A cricket ball is lighter than a hockey ball. Volleyball is lighter than a football. A hockey ball is lighter than a football, but heavier than tennis ball. Which of these the heaviest?
- A) Hockey ball B) Cricket ball C) Volleyball D) Football

Test I (V)

In each of the following questions there is a relationship between the first two words. The third and fourth words have the same relationship. Find out the correct relationship.

1. Lecturer is to learner as [a. The teacher b. A film] is to [a. The viewer b. The actor]
- A. Teacher is to viewer
B. Film is to viewer
C. Teacher is actor
D. Film is to actor
2. Eye is to tear as [a. Mouth, b. Nose] is to [a. The cheek. b. Saliva]
- A. Mouth is to cheek
B. Nose is to mouth
C. Mouth is to saliva
D. Nose is to saliva.
3. Sugar is to energy as [a. Five b. Force] is to [a. Heat b. Log.]
- A. Fire is to heat
B. Force is to heat
C. Fire is to log
D. Force is to log.

Test II (i)

For each of the following questions there is a relationship between the first two terms. The third and fourth terms also have the same relationship. Find out the missing terms.

1. Grapes: Wine:: Wheat: _____
A. Corn flour B. Field C. Corn D. Bread.
2. Factory: Product:: School: _____
A. Teacher B. Student C. Education D. Building
3. LXM: 12X13:: VXW: _____
A. 21X22 B. 24X26 C. 9X11 D. 22X23.

Test II (ii)

Four words or letters are given for each of the following questions. Three of them are interrelated. Find out the one, which is quite different from the other three.

1. A silver B. Sink C. Lead D. Iron
2. A. PM B. CM C. DM D. MP
3. A. Parallalogram B. Triangle C. Square D. Rectangle

Test II (iii)

Find out the missing

1. 2, 6, 12, 20, 30 _____ 56, _____
A. 40 B. 42 C. 45 D. 44
2. 5, 11, 17, _____ 29, 35, _____
A. 19 B. 42 C. 23 D. 25

Test II (iv)

Find out the missing items in the following matrix.

1. $\begin{bmatrix} 2 & 4 & 14 \\ 3 & 5 & 22 \\ ? & 6 & 32 \end{bmatrix}$
A. 10 B. 12 C. 16 D. 49

Test II (v)

Each of the following questions are life situations. Write your response to them.

1. Don't sleep under trees during night: The reason is _____
A. The tree may fall down.
B. The tree may contain wild creatures.
C. The expels carbon decide which is harmful to us.
D. The tree expel oxygen during night.
2. Anil is interested in helping poor people because
A. He likes praise of others
B. He considers it as his duty.
C. To get the support of people when he becomes an MLA.
D. To become famous.

3. The inevitable factor for success in life _____?
- Education
 - Money
 - Sincerity and hard work
 - High political influence
4. Children should not smoke because
- It is a bad habit.
 - It is the advice of elders.
 - It is an unnecessary expenditure
 - It is injurious to health.

Test III (i)

For the following questions to find the answers consider more than one factor. Choose the correct answer from those given under the question

1. The sound of one gun fired from a place takes two minutes to reach another place. How much time will it take for sound of fire guns fixed from the same place to reach the same another place.
- A. 10 minutes B. 2 minutes C. 5 minutes D. 4 minutes

Test III (ii)

To find answers to the following questions one or more factors are needed. Choose the correct answer from the given options.

1. What is the total number of people in a line if 'A' is the seventh person from both ends of the line?
- A. 12 B. 13 C. 14 D. 7
2. Hitha was in the habit of visiting Ebin every Sunday evening. The first day she came at 4.30. Then she came at 5.20, 6.30 and 8.00. After that what time did she come?
- A. 9.00 B. 9.30 C. 9.40 D. 9.50
3. Alense and Jesny have got Rs. 100/- and Rs. 60/- respectively. How much money should Alense give Jesny for the equal distribution of the amount between them.
- A. Rs. 40/- B. Rs. 20/- C. Rs. 30/- D. Rs. 10/-
4. The cost of a camera including its case is Rs. 5000/-. The cost of the camera is Rs. 4500/- higher than the case. What is the cost of the case?
- A. Rs. 4500/- B. Rs. 5000/- C. Rs. 250/- D. Rs. 500/-

5. The population of Ernakulam city become double in every 20 years. In 1940 it was 4000. In which year did the population become half the population of 1960.
A. 1950 B. 1940 C. 1920 D. 1980

Test III (iii)

Some of the following statements are true and others false. The first line contains a clue for the solution of the given problem. The second line contains the actual problem. Find out the relationship between the two words in the first line. Apply this relationship in the second line.

1. Paintings are made by skillful persons.
Novel is to author as painting is to _____.
A. Creativity B. Artist C. Colour D. Canvas.
2. Gandhinagar is famous for gems.
Bangalore is to Karnataka as Gandhinagar is to _____.
A. India B. Gujarat C. Delhi D. Kerala.
3. Star doesn't shine.
Sea is to ship as stars is to _____.
A. Sky B. Clouds C. Night D. Telescope.
4. Millilitre is the basic unit of measuring jar.
Kilogram is to gram as milliliter is to _____.
A. CC B. Matter C. Litre D. Volume
5. Thunder makes sound
If lightning is visible, thunder is _____.
A. Shocking B. Audible C. Cloudy D. Dangerous.

A COMPREHENSIVE TEST OF CREATIVITY

Dr. V. Sumangala
Professor in Education

Instructions

This Questionnaire is intended to measure the Creativity that is in you. The answers of these questions are not categorized as 'true' or 'false'. The entire answers shall be considered as 'true'.

To each item, try to write appropriate and extraordinary answers by comprehending the instructions fairly. Check the models for answering each question. Begin to write the questions only when the teacher says 'start' and stop writing when you hear 'stop'.

Section A

Here are some opening and concluding letters of some words given below. You have to fill the blanks by using one or more letters.

Time: 5 mts.

Example: Pa ka

- | | |
|--------------|-------------------|
| 1. Palaka | 6. Paka |
| 2. Pattika | 7. Pathrika |
| 3. Padaruka | 8. Paribhavikkuka |
| 4. Patharuka | 9. Pakaruka etc. |
| 5. Paduka | |

- a) ka _____ ka
b) Ma _____ ka

II. In the following two items one simile each is given. You have to complete the sentences by using simile. Time: 5 mts.

Example: As fragrance to

Lovely Rose

1. Virtue for scholar
2. Wealth for noblemen

- a) Profoundity for Ocean
- b) Letters for words

III. Two adjectives are given below. Write down as many words as possible which comes under each category.

Example:

Which could be described as 'hard'.

- | | |
|-------------|-----------------|
| 1. Diamond. | 5. Long Journey |
| 2. Scowl | 6. Drought |
| 3. Anger | 7. Flood |
| 4. Mockery | 8. Famine etc. |

- a) Which can be described as arousing hatred.
- b) Which can be described as thrilling to ears.

IV. Certain things are given below. Write the ordinary and extraordinary uses of each.

Time: 6 mts.

Example : Brick

1. To construct building
2. To make hearth.
3. To make boundary around garden.
4. Pulverize to use as manure for plants.
5. Pulverize and dissolve in water to use as paint.
6. To throw at animals.
7. To use as door stop.
8. To use as paper weight.
9. To make book case etc.
 - a. Newspaper
 - b. Tyre

V. Here are the names of some things which are used in our daily life. Suggest the ways in which these could be reformed. You need not be bothered about whether your suggestions are practical or not.

Time: 6 mts.

Example: Pen

1. which could add and reduce the gravity of letters.
2. which shows signal when ink is exhausted.
3. which has nibs that would come out when it is needed.
4. which can be used with different ink.
 - a. Note book
 - b. School bag

VI. Some impossible happenings are given below. Suggest the consequences if these take place.

Time: 6 mts.

Example: There is no death

- 1) Over population
- 2) Rising diseases
- 3) The serious problem of shelter.
- 4) Serious problem of famine.
- 5) Scarcity of water etc.
 - a) Sea and lake would turn into land.
 - b) We could breath in water.

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

SCALE OF ACHIEVEMENT MOTIVATION

Dr.Kamala S.Pillai
Professor in Education

C. Salim Kumar
Research Scholar

Instructions:

Read carefully the statements given below. For each statement, three responses "Y", "U» and "N" are possible and these denotes "YES", "UNDECIDED" and "NO" respectively. Separate sheet is provided for recording your responses. Mark your response with the symbol "X" inside the circle of your response (Y,U,N) for each statement. Try to mark your response to each and every statement.

1. I like to avoid those lessons which I find difficult to study.
2. I would try to utilize maximum of my ability for doing any work
3. I usually study the lessons taught each day, that day itself.
4. I have the feeling that I am lazy.
5. I often put off things I know I should do today.
6. I like hard work.
7. I used to do very little work which I can do.
8. I would spend more time in studying difficult lessons.
9. I find satisfaction in doing well in my studies.
10. I like to mingle with others, who are good at studies like me.
11. Each time I try to score more marks than my previous examinations.
12. I find satisfaction when I do a work in a befitting manner.
13. I get satisfaction in doing a work better than my earlier work even if I don't outperform others.
14. I would be able to complete my studies very well.
15. I like to present my activities which others can consider as models.
16. I want to become a person admired by others.
17. I want others to come to me for clearing their doubts.
18. I like to be admired of my abilities.
19. I want others to consider my opinions of great value.

20. I dislike being the centre of attention.
21. I like to take my own decisions.
22. I want to mingle with important persons in the community.
23. I like others to appreciate my good activities.
24. Even if I am top in my class studies always I like to continue my studies.
25. I try harder to win the top positions when I am in competition with others.
26. I judge my performance on whether I do better than others rather than just getting a good result.
27. It is important to me to perform better than others on a task.
28. I would study my lessons so that I get the top rank in my class.
29. It gives me pleasure in doing things which I am sure to win.
30. If there is tough competition, my performance will be better.
31. I never neglect opportunities of better performance in my studies.
32. I don't mind working hard while others are having fun.
33. There is continuous effort behind the success of my accomplishments in studies.
34. I could study well as I am getting more recognition.
35. The most important thing about studies is the accomplishment.
36. I usually get the trophies and prizes for studies.
37. There is satisfaction in work involving technical knowledge and skill.
38. I find satisfaction in studying materials which require high intellectual ability and skill.
39. I feel like giving up a work which I am unable to do correctly.
40. I feel doubt about my learning style whether it will help to attain the goal.
41. I think I am able to study better than anybody else.
42. In all study matters, my opinions always come first.
43. I used to take initiative in discussing study matters with my classmates.
44. I would enjoy having authority over my classmates.
45. If given the chance, I would become a good leader.
46. My classmates take notice of what I say.
47. I usually think, I am the leader of my group.
48. I enjoy taking initiative in what my classmates should do and get things done.
49. When we plan an activity I would like to direct it myself rather than someone else taking the lead.
50. I like to give direction to my classmates and get things going accordingly.

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

SELF-CONCEPT SCALE

Dr. V. Sumangala
Professor in Education

Mrs. K.B. Sujatha
Research Scholar

Instructions

Forty statements are given to find out your opinion about yourselves. You have to respond to each statement in the way described below.

You have to mark your responses in any of the five ways: A - Very much like this; B - Like this; C - Uncertain; D - Not like this; E -Not at all like this, by putting 'X' mark in the circle of the separate response sheet representing your response. Mark only in one circle for each statement. After marking if you want to change your response draw a square around your first response and then mark in the circle of your newly preferred response.

1. I can live in any circumstance.
2. I am hated by all.
3. I am a good class leader.
4. I don't know about my abilities and achievements.
5. I am less able in many fields when compared to others.
6. I like to live according to new concepts and ways of living.
7. I dare to point out the mistakes of the teachers.
8. I can face and speak to any audience without nervousness.
9. Whether right or wrong, I will express my opinion.
10. I am least worried even if others make fun of me.
11. I feel nervousness even when teachers asks questions to somebody else in the class.
12. I have many friends.

13. I use to note the drawbacks and defects in other persons.
14. I can deal with other persons as I wish to.
15. Others do not like me.
16. I am hot tempered.
17. I can understand the difficulties of others.
18. Whenever I do something I care for what others will think of me.
19. I am satisfied with the ways others deal with me.
20. I belong to a happy and contended family.
21. I help my parents in the household work.
22. My parents scold me even for simple things.
23. My dealings with other members of the family are not good.
24. I am first in sports and games.
25. I have an attractive physical appearance.
26. I can defeat my enemies.
27. In my class I am first in studies.
28. Others don't like my appearance.
29. I have a good flair of talk and it is appreciated by others.
30. I am regular in doing home works.
31. In my class I am the weakest one in studies.
32. I am jealous of others who get very high marks.
33. I cannot concentrate in my studies.
34. Teacher reads my answers in the class as these are best.
35. I can study for a long time without getting bored.
36. I belittle students who care for classroom studies only.
37. I am less intelligent to attain high in studies.
38. I do things accepted by the society only.
39. I am not faithful to others.
40. I do insist on religious matters.

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ബഹിർമുഖത നിർണ്ണയാവലി

(DRAFT)

Dr.V.Sumangala
Professor in Education

Deepa,P.
Research Scholar

നിർദ്ദേശങ്ങൾ

നിങ്ങൾ പ്രത്യേക സാഹചര്യങ്ങളിൽ എങ്ങനെ പെരുമാറുന്നു/പ്രതികരിക്കുന്നു എന്നറിയുവാനുള്ള പ്രസ്താവനകളാണ് ഇതോടൊപ്പം തന്നിട്ടുള്ളത്. ഓരോ പ്രസ്താവനയും സശ്രദ്ധം വായിച്ച് നിങ്ങളുടെ പ്രതികരണങ്ങൾ ഇതിനായി പ്രത്യേകം തന്നിരിക്കുന്ന കടലാസ്സിൽ 'Yes' 'No' എന്നിവയിൽ ഏതെങ്കിലും ഒന്നിനെ സൂചിപ്പിക്കുന്ന വൃത്തത്തിനുള്ളിൽ അടയാളംകൊണ്ട് രേഖപ്പെടുത്തുക.

പ്രസ്താവനകൾ

1. നിങ്ങൾ നിങ്ങളുടെ സമയത്തിന്റെ ഭൂരിഭാഗവും പഠിക്കുന്നതിന് ചിലവഴിക്കാൻ ഇഷ്ടപ്പെടുന്നു.
2. നിങ്ങൾ ഒരു പുതിയ സ്ഥലത്തോ സാഹചര്യത്തിലോ എത്തിപ്പെടുമ്പോൾ അസ്വസ്ഥനോ, വിവശനോ ആയതായി തോന്നുന്നു.
3. നിങ്ങളെ ആരെങ്കിലും അധികേഷപിക്കുകയോ പരിഹസിക്കുകയോ ചെയ്യുമ്പോൾ നിങ്ങൾക്ക് ദേഷ്യം വരുന്നു.
4. നിങ്ങളെ മറ്റുള്ളവർ വിമർശിക്കുമ്പോൾ നിങ്ങൾക്ക് അത് ഉൾക്കൊള്ളാൻ കഴിയുന്നില്ല.
5. നിങ്ങളുടെ രക്ഷിതാക്കൾ നിങ്ങൾക്ക് ഒന്നാം റാങ്ക് പ്രതീക്ഷിക്കുമ്പോൾ അത് നിങ്ങളെ അസ്വസ്ഥനാക്കുന്നു.
6. ക്ലാസ്സിൽ വച്ച് അദ്ധ്യാപകൻ വിമർശിക്കുമ്പോൾ നിങ്ങൾ എങ്ങനെ പ്രതികരിക്കണമെന്നറിയാതെ അസ്വസ്ഥനാകുന്നു.
7. മറ്റുള്ളവരുടെ പ്രശ്നങ്ങൾ നിങ്ങളെ വിഷമിപ്പിക്കുന്നു.
8. മറ്റുള്ളവരുടെ മുൻപിൽ വച്ച് നിങ്ങളെ ആരെങ്കിലും കളിയാക്കുമ്പോൾ നിങ്ങൾക്ക് വളരെ വിഷമം തോന്നുന്നു.
9. മറ്റുള്ളവർക്ക് അസന്തുഷ്ടിയുണ്ടാക്കുന്ന തീരുമാനങ്ങളെടുക്കാനും നിങ്ങൾക്ക് മടിയില്ല.
10. കാര്യങ്ങൾ വെട്ടിത്തുറന്നുപറയുന്നവരെയും അനുഭവങ്ങൾ എളുപ്പത്തിൽ പ്രകടിപ്പിക്കുന്നവരെയും നിങ്ങൾ ഇഷ്ടപ്പെടുന്നില്ല.

11. ബുദ്ധിമുട്ടാതെ കാര്യങ്ങൾ നേടിയെടുക്കാനാണ് നിങ്ങൾക്ക് താല്പര്യം.
12. കളികളിൽ ഏർപ്പെട്ട് സമയം പാഴാക്കുമ്പോൾ നിങ്ങൾക്ക് കുറ്റബോധം തോന്നാറുണ്ട്.
13. മറ്റുള്ളവർക്ക് കേൾക്കാൻ പറ്റാത്തത്രയും മൃദുവായാണ് നിങ്ങൾ സംസാരിക്കുന്നത്.
14. മറ്റുള്ളവർക്ക് പറ്റുന്ന വീഴ്ചകളെ നിങ്ങൾ പരിഹസിക്കാറുണ്ട്.
15. മറ്റുള്ളവരുടെ വിജയം നിങ്ങളെ അസുയാലുവാക്കുന്നു.
16. അടിക്കടി സുഹൃത്തുക്കളെ മാറ്റാൻ നിങ്ങൾക്ക് കഴിയില്ല.
17. കഠിനമായ ജോലികൾ ചെയ്യാൻ പ്രാപ്തമല്ലെന്ന് നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
18. നിങ്ങൾ ഒരു വിഡ്ഢിയാണെന്ന് മറ്റുള്ളവർ കരുതുന്നതായി നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
19. നിങ്ങളുടെ പരിമിതികളെക്കുറിച്ച് നിങ്ങൾ ബോധവാനാണ്.
20. നിങ്ങൾ ഒന്നിനും കൊള്ളാത്തവനാണെന്ന് നിങ്ങൾ വിചാരിക്കുന്നു.
21. നിങ്ങൾ സ്വതന്ത്രനല്ലെന്ന് നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
22. ചെയ്തുപോയ കാര്യങ്ങളെ വിലയിരുത്തുന്ന സ്വഭാവം നിങ്ങൾക്കുണ്ട്.
23. ആവേശമുണർത്തുന്ന കാര്യങ്ങൾ ചെയ്യാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നില്ല.
24. ഗൗരവമുള്ള കാര്യങ്ങൾ നിങ്ങൾക്ക് താൽപര്യമില്ല.
25. നിങ്ങളുടെ വിശ്രമ സമയം മുഴുവൻ സാമൂഹ്യപ്രവർത്തനങ്ങളിൽ ഏർപ്പെടുന്നതിൽ നിങ്ങൾ സന്തോഷം കണ്ടെത്തുന്നു.
26. നിങ്ങൾ പിന്നീട് ബദ്ധപ്പാടുണ്ടാക്കുന്ന പ്രവൃത്തികൾ ചെയ്യാനിഷ്ടപ്പെടുന്നു.
27. മറ്റുള്ളവരിൽ കുറ്റം കണ്ടത്താൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
28. ഒരു ഭാഗ്യദോഷിയാണ് താനെന്ന് നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
29. പ്രശസ്തനാകണമെന്നാണ് നിങ്ങളുടെ ആഗ്രഹം.
30. ക്ലാസ്സിൽ സൗമ്യനായിരിക്കാൻ നിങ്ങൾ ആഗ്രഹിക്കുന്നു.
31. നിങ്ങളുടെ പ്രവർത്തികൾ അംഗീകരിക്കപ്പെടണമെന്ന് നിങ്ങൾ എപ്പോഴും ആഗ്രഹിക്കുന്നു.
32. മറ്റുള്ളവരുമായി വാഗ്വാദങ്ങളിലോ തർക്കങ്ങളിലോ ഇടപെടാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
33. മറ്റുള്ളവരുമായി ദുഃഖവും തുറന്നതുമായ ഒരു സമീപനം നിങ്ങൾ ആഗ്രഹിക്കുന്നു.
34. ഏത് ആഗ്രഹവും സാധിപ്പിക്കുന്നതിനും അതിന് വിഘാതമായി നിൽക്കുന്ന ഏതു പ്രശ്നത്തെയും നേരിടുന്നതിനുമുള്ള ഉറച്ച മനസ്സ് നിങ്ങൾക്കുണ്ട്.
35. മറ്റുള്ളവരുടെ ശ്രദ്ധ നിങ്ങളിലേക്കാകർഷിക്കാൻ നിങ്ങൾ എല്ലായിപ്പോഴും ശ്രമിക്കാറുണ്ട്.
36. സാഹസിക കൃത്യങ്ങൾ ചെയ്യാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
37. നിങ്ങളെ മറ്റുള്ളവർ കുറ്റം പറയുന്നത് നിങ്ങൾ കാര്യമാക്കാറില്ല.
38. പ്രശ്നങ്ങളെ അഭിമുഖീകരിക്കുമ്പോൾ നിങ്ങൾ ഏറെ അവശാനാവുകയും അതിൽ നിന്ന് മോചനം നേടാൻ മണിക്കൂറുകളോളം എടുക്കുകയും ചെയ്യുന്നു.

- 39 മറ്റുള്ളവരുമായി നല്ലൊരു സാമൂഹിക ബന്ധം ഉണ്ടാക്കിയെടുക്കുവാൻ നിങ്ങൾ താല്പര്യപ്പെടുന്നു.
- 40 ഏതെങ്കിലും തരത്തിലുള്ള പ്രയാസങ്ങൾ അനുഭവിക്കുമ്പോൾ നിങ്ങൾ കണ്ണീർ പൊഴിക്കാറില്ല.
- 41 നിങ്ങൾ ഭൂതകാലം വിസ്മരിക്കുവാനും വർത്തമാനകാലകാര്യങ്ങളുമായി പൊരുത്തപ്പെടുവാനും താല്പര്യപ്പെടുന്നു.
- 42 നിങ്ങൾ ആരോടേങ്കിലും ദേഷ്യപ്പെടുകയാണെങ്കിൽ ശാന്തനാകുവാൻ ഏറെ സമയമെടുക്കുകയും പെട്ടെന്ന് തന്നെ അയാൾക്കെതിരെ നിങ്ങൾ പ്രതികരിക്കുകയും ചെയ്യുന്നു.
- 43 മറ്റുള്ളവരെ പരിഗണിക്കുവാനും മറ്റുള്ളവരുടെ പരിഗണന നേടുവാനും നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 44 നിങ്ങൾ എപ്പോഴും സ്വന്തം ആശയങ്ങൾ കൊണ്ടു നടക്കുവാനും മറ്റുള്ളവരുടെ ഉപദേശങ്ങൾക്ക് ചെവി കൊടുക്കാതിരിക്കുവാനും ശ്രമിക്കുന്നു.
- 45 നിങ്ങൾക്ക് ഒട്ടേറെ വിനോദവൃത്തികളുണ്ട്.
- 46 നിങ്ങൾ ഒരു വായാടിയാണ്.
- 47 നിങ്ങൾ ഏറെ ഓജസ്വിയാണ്.
- 48 നിങ്ങൾ പുതിയ പരിചയക്കാരെ കണ്ടുമുട്ടുവാൻ ഇഷ്ടപ്പെടുന്നു.
- 49 നിങ്ങൾ പുറത്തേക്കിറങ്ങുവാൻ ഏറെ ഇഷ്ടപ്പെടുന്നു.
- 50 മറ്റുള്ളവരെ പരിചയപ്പെടുന്നതിനേക്കാൾ നിങ്ങൾ വായന ഇഷ്ടപ്പെടുന്നു.
- 51 മറ്റുള്ളവരുടെ കൂടെയാവുമ്പോൾ നിങ്ങൾ ഏറെ ശാന്തനാണ്.
- 52 നിങ്ങൾ കൂട്ടുകാരോട് ഫലിതവും തമാശകഥകളും പറയുവാൻ ഇഷ്ടപ്പെടുന്നു.
- 53 മറ്റുള്ളവർ നിങ്ങളോട് സംസാരിക്കുമ്പോൾ നിങ്ങൾക്ക് മിക്കപ്പോഴും പ്രത്യുത്തരം ഉണ്ട്.
- 54 പെട്ടെന്ന് ചെയ്യേണ്ടതായ പ്രവർത്തികൾ ഉടൻതന്നെ ചെയ്യുവാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 55 കിട്ടുന്ന സമയംകൊണ്ട് ചെയ്തുതീർക്കാവുന്നതിലുമേറെ പ്രവർത്തികൾ നിങ്ങൾ ചെയ്യുന്നു.
- 56 സമപ്രായക്കാരുമായുള്ള ബന്ധം ഒഴിവാക്കാൻ നിങ്ങൾ ശ്രമിക്കുന്നു.
- 57 ഏകാകിയായിരിക്കുവാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 58 പരീക്ഷ അടുക്കുമ്പോൾ നിങ്ങൾക്ക് അസ്വസ്ഥതയുണ്ടാകുന്നു.
- 59 കുറ്റാന്വേഷണ കഥകൾ വായിക്കുവാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 60 പുതിയ സൗഹൃദം ഉണ്ടാക്കിയെടുക്കുവാൻ നിങ്ങൾ അവസരങ്ങൾ കണ്ടെത്തുന്നു.

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

EXTRAVERSION INVENTORY (DRAFT)

Dr. V. Sumangala
Professor in Education

Deepa, P.
Research Scholar

Instructions:

The statement given below are used to know the way in which you behave/respond to some given situations. Kindly read each statement carefully and enter your responses in the response sheet by putting a (✓) mark inside the circle around 'Yes' or 'No'. Please do not leave any item unanswered.

1. You like to spend most of your time for studies.
2. You feel uncomfortable or nervous when put in a new place or in a new situation.
3. You lose your temper when someone insults you or makes fun of you.
4. You always get possessed when others criticize you.
5. It disturbs you when your parents expect the very first rank from you.
6. You feel disturbed to respond when the teacher criticise you in front of the class.
7. You are very much worried of others problems
8. You feel very sad when someone tease you in front of others.
9. You have no hesitation to take decisions that may displease others.
10. You do not like people who are too frank and who express their feelings easily.
11. You try to get things without taking pains.
12. You feel guilty of wasting your time playing games.
13. You speak so mildly that none could hear you.
14. You laugh at the follies of others.
15. You are jealous of others success.
16. You cannot change your friends often.
17. You feel that you are incapable of doing hard work.
18. You often feel that others consider you as a fool.
19. You are conscious of your limitations.
20. You think that you are good for nothing.
21. You feel that you are not independent.
22. You have the habit of evaluating your past actions.
23. You do not like to do exciting things.
24. You do not like to pay attention on serious matters.
25. You find pleasure in spending your leisure time on social activities.
26. You like to do things which creates difficulties later.

27. You like to find fault with others.
28. You feel that you are unlucky.
29. You wish to be popular.
30. You like to be passive in the class.
31. You always like to be approved.
32. You like to indulge in arguments or conflict with others.
33. You like to be frank with others.
34. You are strong to achieve your ambition and ready to face any problem that may hinder your ambition.
35. You always like to draw the attention of others towards you.
36. You like to do adventurous activities.
37. You never minds, when others say ill of you.
38. You are very sick when you face problems and it take hours for you to recover from it.
39. You want to build up a good social relationship with others.
40. You never burst into tears, even at times of difficulty
41. You want to forget the past, and adjust with the present.
42. It takes time for you to cool down and will act against when you are angry with someone.
43. You like to care others, and to be cared by others.
44. You always have your own ideas and never pay attention to others.
45. You have many hobbies.
46. You are a loose talker.
47. You are active.
48. You enjoy meeting new people.
49. You like going out.
50. You prefer reading to meeting people.
51. You are often quiet when you are with others.
52. You like cutting jokes and telling funny stories to your friends.
53. You always have a “ready answer” when people talk to you.
54. You like doing things which demand you to act quickly.
55. You do more things than you have time.
56. You try to avoid peer group relationship.
57. You like to be alone.
58. You feel disturbed at times of examination.
59. You like to read detective stories.
60. You seek opportunities to make friends.


UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ബഹിർമുഖത്വ നിർണ്ണയാവലി
(FINAL)

Dr.V.Sumangala
Professor in Education

Deepa.P.
Research Scholar

നിർദ്ദേശങ്ങൾ

നിങ്ങൾ പ്രത്യേക സാഹചര്യങ്ങളിൽ എങ്ങനെ പെരുമാറുന്നു/പ്രതികരിക്കുന്നു എന്നറിയുവാനുള്ള പ്രസ്താവനകളാണ് ഇതോടൊപ്പം തന്നിട്ടുള്ളത്. ഓരോ പ്രസ്താവനയും സശ്രദ്ധം വായിച്ച് നിങ്ങളുടെ പ്രതികരണങ്ങൾ ഇതിനായി പ്രത്യേകം തന്നിരിക്കുന്ന കടലാസ്സിൽ 'Yes' 'No' എന്നിവയിൽ ഏതെങ്കിലും ഒന്നിനെ സൂചിപ്പിക്കുന്ന വൃത്തത്തിനുള്ളിൽ അടയാളംകൊണ്ട് രേഖപ്പെടുത്തുക. 

പ്രസ്താവനകൾ

- 1 നിങ്ങൾ നിങ്ങളുടെ സമയത്തിന്റെ ഭൂരിഭാഗവും പഠിക്കുന്നതിന് ചിലവഴിക്കാൻ ഇഷ്ടപ്പെടുന്നു.
- 2 നിങ്ങളുടെ രക്ഷിതാക്കൾ നിങ്ങൾക്ക് ഒന്നാം റാങ്ക് പ്രതീക്ഷിക്കുമ്പോൾ അത് നിങ്ങളെ അസ്വസ്ഥനാക്കുന്നു.
- 3 മറ്റുള്ളവരുടെ മുൻപിൽ വച്ച് നിങ്ങളെ ആരെങ്കിലും കളിയാക്കുമ്പോൾ നിങ്ങൾക്ക് വളരെ വിഷമം തോന്നുന്നു.
- 4 മറ്റുള്ളവർക്ക് അസന്തുഷ്ടിയുണ്ടാക്കുന്ന തീരുമാനങ്ങളെടുക്കാനും നിങ്ങൾക്ക് മടിയില്ല.
- 5 കാര്യങ്ങൾ വെട്ടിത്തുറന്നുപറയുന്നവരെയും അനുഭവങ്ങൾ എളുപ്പത്തിൽ പ്രകടിപ്പിക്കുന്നവരെയും നിങ്ങൾ ഇഷ്ടപ്പെടുന്നില്ല.
- 6 ബുദ്ധിമുട്ടാതെ കാര്യങ്ങൾ നേടിയെടുക്കാനാണ് നിങ്ങൾക്ക് താല്പര്യം.
- 7 മറ്റുള്ളവരുടെ വിജയം നിങ്ങളെ അസുയാലുവാക്കുന്നു.
- 8 കഠിനമായ ജോലികൾ ചെയ്യാൻ പ്രാപ്തനല്ലെന്ന് നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
- 9 നിങ്ങൾ ഒരു വിഡ്ഢിയാണെന്ന് മറ്റുള്ളവർ കരുതുന്നതായി നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
- 10 നിങ്ങൾ ഒന്നിനും കൊള്ളാത്തവനാണെന്ന് നിങ്ങൾ വിചാരിക്കുന്നു.

- 11 നിങ്ങൾ സ്വതന്ത്രനല്ലെന്ന് നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
- 12 ആവേശമുണർത്തുന്ന കാര്യങ്ങൾ ചെയ്യാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നില്ല.
- 13 ഗൗരവമുള്ള കാര്യങ്ങൾ നിങ്ങൾക്ക് താൽപര്യമില്ല.
- 14 മറ്റുള്ളവരിൽ കുറ്റം കണ്ടത്താൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 15 ഒരു ഭാഗ്യദോഷിയാണ് താനെന്ന് നിങ്ങൾക്ക് തോന്നാറുണ്ട്.
- 16 ക്ലാസ്സിൽ സൗമ്യനായിരിക്കാൻ നിങ്ങൾ ആഗ്രഹിക്കുന്നു.
- 17 മറ്റുള്ളവരുമായി ദുഃഖവും തുറന്നതുമായ ഒരു സമീപനം നിങ്ങൾ ആഗ്രഹിക്കുന്നു.
- 18 ഏത് ആഗ്രഹവും സാധിപ്പിക്കുന്നതിനും അതിന് വിഘാതമായി നിൽക്കുന്ന ഏതു പ്രശ്നത്തെയും നേരിടുന്നതിനുമുള്ള ഉറച്ച മനസ്സ് നിങ്ങൾക്കുണ്ട്.
- 19 സാഹസിക കൃത്യങ്ങൾ ചെയ്യാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 20 പ്രശ്നങ്ങളെ അഭിമുഖീകരിക്കുമ്പോൾ നിങ്ങൾ ഏറെ അവശാനാവുകയും അതിൽ നിന്ന് മോചനം നേടാൻ മണിക്കൂറുകളോളം എടുക്കുകയും ചെയ്യുന്നു.
- 21 ഏതെങ്കിലും തരത്തിലുള്ള പ്രയാസങ്ങൾ അനുഭവിക്കുമ്പോൾ നിങ്ങൾ കണ്ണീർ പൊഴിക്കാറില്ല.
- 22 നിങ്ങൾ ആരോടൊരിക്കലും ദേഷ്യപ്പെടുകയാണെങ്കിൽ ശാന്തനാകുവാൻ ഏറെ സമയമെടുക്കുകയും പെട്ടെന്ന് തന്നെ അയാൾക്കെതിരെ നിങ്ങൾ പ്രതികരിക്കുകയും ചെയ്യുന്നു.
- 23 മറ്റുള്ളവരെ പരിഗണിക്കുവാനും മറ്റുള്ളവരുടെ പരിഗണന നേടുവാനും നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 24 നിങ്ങൾക്ക് ഒട്ടേറെ വിനോദവൃത്തികളുണ്ട്.
- 25 നിങ്ങൾ ഏറെ ഓജസ്വിയാണ്.
- 26 നിങ്ങൾ പുറത്തേക്കിറങ്ങുവാൻ ഏറെ ഇഷ്ടപ്പെടുന്നു.
- 27 മറ്റുള്ളവരെ പരിചയപ്പെടുന്നതിനേക്കാൾ നിങ്ങൾ വായന ഇഷ്ടപ്പെടുന്നു.
- 28 സമപ്രായക്കാരുമായുള്ള ബന്ധം ഒഴിവാക്കാൻ നിങ്ങൾ ശ്രമിക്കുന്നു.
- 29 ഏകാകിയായിരിക്കുവാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 30 പരീക്ഷ അടുക്കുമ്പോൾ നിങ്ങൾക്ക് അസ്വസ്ഥതയുണ്ടാകുന്നു.
- 31 കുറ്റാനുഷ്ഠന കഥകൾ വായിക്കുവാൻ നിങ്ങൾ ഇഷ്ടപ്പെടുന്നു.
- 32 പുതിയ സൗഹൃദം ഉണ്ടാക്കിയെടുക്കുവാൻ നിങ്ങൾ അവസരങ്ങൾ കണ്ടെത്തുന്നു.

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

EXTRAVERSION INVENTORY (FINAL)

Dr. V. Sumangala
Professor in Education

Deepa, P.
Research Scholar

Instructions:

The statement given below are used to know the way in which you behave/ respond to some given situations. Kindly read each statement carefully and enter your responses in the response sheet by putting a (✓) mark inside the circle around 'Yes' or 'No'. Please do not leave any item unanswered.

1. You like to spend most of your time for studies.
2. It disturbs you when your parents expect the very first rank from you.
3. You feel very sad when someone tease you in front of others.
4. You have no hesitation to take decisions that may displease others.
5. You do not like people who are too frank and who express their feelings easily.
6. You try to get things without taking pains.
7. You are jealous of others success.
8. You feel that you are incapable of doing hard work.
9. You often feel that others consider you as a fool.
10. You think that you are good for nothing.
11. You feel that you are not independent.
12. You do not like to do exciting things.
13. You do not like to pay attention on serious matters.
14. You like to find fault with others.
15. You feel that you are unlucky.
16. You like to be passive in the class.
17. You like to be frank with others.
18. You are strong to achieve your ambition and ready to face any problem that may hinder your ambition.

19. You like to do adventurous activities.
20. You are very sick when you face problems and it take hours for you to recover from it.
21. You never burst into tears, even at times of difficulty
22. It takes time for you to cool down and will act against when you are angry with someone.
23. You like to care others, and to be cared by others.
24. You have many hobbies.
25. You are active.
26. You like going out.
27. You prefer reading to meeting people.
28. You try to avoid peer group relationship.
29. You like to be alone.
30. You feel disturbed at times of examination.
31. You like to read detective stories.
32. You seek opportunities to make friends.

APPENDIX XVII

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

EXTRAVERSION INVENTORY

RESPONSE SHEET

Name of the Student:

Name of School :

Standard :

Boy/Girl :

	Yes	No
1	O	O
2	O	O
3	O	O
4	O	O
5	O	O
6	O	O
7	O	O
8	O	O
9	O	O
10	O	O
11	O	O
12	O	O
13	O	O
14	O	O
15	O	O
16	O	O

	Yes	No
17	O	O
18	O	O
19	O	O
20	O	O
21	O	O
22	O	O
23	O	O
24	O	O
25	O	O
26	O	O
27	O	O
28	O	O
29	O	O
30	O	O
31	O	O
32	O	O

APPENDIX XVIII

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

EXTRAVERSION INVENTORY

SCORING KEY

Qn.No.	Answer		Qn.No.	Answer
1	No		17	Yes
2	No		18	Yes
3	No		19	Yes
4	Yes		20	No
5	No		21	Yes
6	No		22	Yes
7	No		23	Yes
8	No		24	Yes
9	No		25	Yes
10	No		26	Yes
11	No		27	No
12	No		28	No
13	No		29	No
14	No		30	No
15	No		31	Yes
16	No		32	Yes

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

SCALE OF ATTITUDE TOWARDS ACADEMIC WORK

Dr. V. Sumangala

Professor in Education

Mumthas N. S.


Research Scholar

Instructions

This is a test to measure the attitude of students towards academic work. For this, 40 statements are given. Each statement is in such a way that, the responses can be 'Strongly Agree'(SA), 'Agree' (A), 'Uncertain' (U), 'Disagree' (D) or 'Strongly Disagree' (SD). After reading each statement, please mark your response (SA, A, U, D or SD) by putting an 'X' mark in the circle which denotes your response, against the ordinal number of the respective statement in the response sheet.

If you feel that the answer marked is wrong, envelope that answer by a rectangle () and then mark your next choice of answer by putting 'X' mark.

1. Opportunities to participate in discussions on academic subjects should not be wasted.
2. Other activities are interesting than learning.
3. Learning is an activity which is only for examination purpose.
4. To me, learning without interruption is impossible.
5. A good student keeps a fixed time every day for learning.
6. It is important for me to learn any academic subject clearly and thoroughly.
7. A student who concentrates only on learning related activities loses his valuable life experiences.
8. We experience mental happiness and contentment when we learn new things.
9. Clearing the doubts of fellow students is also a type of learning.

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10. Learning is mainly for getting a job.
 11. I am not interested in any activity, including learning which does not give immediate results.
 12. Learning is a boring activity.
 13. Besides teaching lessons, teachers should give guidance on how to learn also.
 14. As physical and cultural contests have great importance now a days, co-curricular activities should be given more weightage than curricular activities.
 15. Discussions, debates and question sessions are the best times for daydreaming.
 16. To read academic articles in periodicals is more interesting than reading stories and novels.
 17. Reading should be a hobby to students.
 18. Pupils should attend with care educational programmes broadcasted in radio, T.V. and news papers.
 19. Students should take part in quiz, discussions, and debates and not in sports or games.
 20. Learning should be student's main activity and enjoyment.
 21. I am not interested in making friendship with those who are indulged in learning related activities only.
 22. Interference of parents in learning is intolerable.
 23. There is no need to hesitate to approach teachers and friends to clear doubts.
 24. Only those students who take active interest in learning become teacher's favourites.
 25. The insistence of teachers and parents to study even on holidays is intolerable.

26. I hate schooling.
27. Sitting in classroom for hours together leads to boredom.
28. School activities do not develop life skills.
29. Education in schools do not lead to personality development.
30. School education hinders the freedom that a student should enjoy.
31. Keeping school premises neat and clean is also a part of educational activity.
32. We should strive to raise the position of our school in academic activities.
33. School education develops noble values in individuals.
34. Each day I feel happy when the school ends.
35. Homeworks given by teachers is a tedious work.
36. The frequent strikes at school make me happy.
37. We should willingly take up any work given by teachers.
38. I am often a late comer in school.
39. Discipline in class is necessary for learning.
40. Teaching is a noble profession as learning is throughout needed.

APPENDIX XX

DETAILS OF THE SAMPLE STUDIED

Sl. No.	Name of School	Urban/ Rural	Efficiency Level	No. of Boys	No. of Girls	Total
1.	Govt. High School, Narikkuni	Rural	Average	26	22	48
2.	Govt. High School Karaparamba	Urban	Average	17	28	45
3.	P. V. S. Higher Secondary School, Eranhikkal	Rural	Average	18	27	45
4.	Elathur Boys High School	Rural	Inferior	28	-	28
5.	Elathur Girls High School	Rural	Superior	-	32	32
6.	R.E.C. Govt.Higher Secondary School, Chathamangalam	Rural	Average	24	22	46
7.	Payimbra High School	Rural	Average	18	12	30
8.	Gov.T Ganapat Girls Higher Secondary School	Urban	Superior	-	45	45
9.	Govt. Model Higher Secondary School	Urban	Superior	38	-	38
10.	Ramanattukara Sevamandir High School	Rural	Superior	22	31	53
11.	Govt. V. H. S.S. Meenchandra	Urban	Inferior	44	-	44
12.	Beypore Govt. Higher Secondary School	Rural	Average	22	24	46
13.	Chailiyam Imbichi Haji Higher Secondary School	Rural	Average	25	20	45
14.	P.B.M. High School, Chaliyam	Rural	Average	27	10	37
15.	G.V.H.S.S.Thamarassery	Rural	Inferior	24	25	49
16.	N.G.O. Quarters High School	Urban	Average	12	16	28
17.	St. Michael's Higher Secondary School	Urban	Superior	-	64	64
18.	A.K.K.R. Girls, Chelannur	Rural	Superior	-	40	40
19.	Govt. high School, Azchavattam	Urban	Inferior	18	19	37

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