THE TEST OF WORd-FINdING ABILITIES IN CHILDREN (GUJARATI) [TWAC-G]

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A DISSERTATION SUBMITTED IN PART FULFILLMENT FOR THE DEGREE OF M.Sc.(SPEECH & HEARING) TO THE UNIVERSITY OF MYSORE.

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1993

DEDICATION

To

Mummy, Papa

You mean the world me.

CERTIFICATE

This is to certify that the Dissertation entitled **"THE TEST OF WORD-FINDING ABILITIES IN CHILDREN (GUJARATI) [TWAC-G]"** *is a bonafide work in part fulfilment for the Degree of Master of*

Science [Speech & Hearing], of the student with the Register Number M-9109.

Director
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Mysore
1993

CERTIFICATE

This is to certify that the Dissertation entitled **"THE TEST OF WORD-FINDING ABILITIES IN CHILDREN (GUJARATI) [TWAC-G]"** *has been prepared under my supervision and guidance.*

Mysore
1993

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DECLARATION

This Dissertation titled " THE TEST OF WORD-FINDING ABILITIES IN CHILDREN (GUJARATI) [TWAC-G]" is the result of my own study under the guidance of Dr.Pratibha Karanth, Head of the Department of Speech Pathology, All India Institute of Speech & Hearing, Mysore and has not been submitted earlier at any University for any other Diploma or Degree.

Mysore
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TABLE OF CONTENTS

	CHAPTERS	PAGE NO.
I.	INTRODUCTION	01 - 04
II.	REVIEW OF LITERATURE	05 - 25
III.	METHODOLOGY	26 - 34
IV.	RESULTS AND DISCUSSION	35 - 48
V.	SUMMARY AND CONCLUSION	49 - 51
	BIBLIOGRAPHY	
	APPENDIX-I	
	APPENDIX-Ia	
	APPENDIX-Ib	
	APPENDIX-I.c	
	APPENDIX-II	

CHAPTER-I

INTRODUCTION

"Daily I have been seeing it
but not able to say it
It's there on my table
my daughter uses it for writing
one minute . . . . . .
I'll tell you,
it's pen, no ink pen,
no it's inkpot."

There is difference between the facile summoning up of words in fluent language when many of them are uttered without our being aware of any special activity, and voluntary searching for words. But if, in the "automatically" occurring flow of words, we stop for any reason, we must always search for words to some degree, for single words or word sequences etc. and among the words which may come to our mind in this search, we have to choose those which fit best.

The ability to find names for things seen or described is central to everyday communication.

The child who can associate a specific word with an object has acquired the fundamental ability to name. Naming is a skill that is learned early and refined throughout adulthood. The skill has been referred to by other terms, including 'word finding, word retrieval, lexical retrieval, lexical loop-up and word recall (Fried-Oken,1987).

Word finding is different in emotional expression, in intentional speech, in speaking of motor series, of phrases in familiar connection of words, in looking for words belonging to concrete objects or abstractions, in repetition etc. (Goldstein,1971).

Word finding is a complex cognitive operation (Ellis,1987) and it may be expected that damage to any of the component processes that are required for word retrieval may lead to naming difficulty. It is frequently observed in children as well as adults.

Almost every aphasic regardless of clinical type or the anatomical localization of lesion, has some difficulty producing names (Goodglass & Blumstein,1973). It is a frequent consequence of pathological states including dementia, delirium and various psychiatric conditions (Geschwind, 1967). Naming errors are seen in both focal and diffuse brain damaged individuals (Zingeser & Berndt,1990).

In children, strong correlation is documented between word-finding skills and low reading achievement, dyslexia, language disorders, learning disabilities, and stuttering (Wolf,1980; Denckla & Rudel,1976a,b; Leonard, Nippold, Kail & Hale,1983; Wiig & semel,1984; Telser & Rutherford,1970).

Based on these experimental results and clinical observations of language disorders, it is evident that any comprehensive diagnostic battery of behaviour in children must

include an assessment of naming skills. Unfortunately there is big diagnostic gap in this area.

Except for two subtests (producing names on confrontation and producing word associations) on the CELF (The Clinical Evaluation of Language Functions,Semel & Wiig,1980), professionals have relied on various informal naming measures to meet these assessment recommendations. These informal tools have been either designed for children such as the North-Western Word Latency Test (Rutherford & Telser,1971) and the Rapid Automatic Naming Test (Denckla & Rudel,1974); or for adults such as the Boston Naming Test (Kaplan, Goodglass & Weintraub,1976). Although these diagnostic measures have proved to be sensitive in identifying word-finding disorders in children and have contributed significantly to our understanding of their word-finding deficits, such measures have lacked the necessary reliability, validity and normative data which would rank them as psychometrically sound diagnostic instrument.

Subtests from tests of intelligence and learning have been used to measure naming but have certain limitations. The Detroit Test of Learning Aptitudes (Baker & Leland,1935, 1959, 1967) has old norms. The verbal fluency subtests of McCarthy Scales of Children's Ability has norms which terminate at 8 1/2 years. The word naming subtest of Stanford-Binet Intelligence Scale (Terman & Merrill,1972) cite only a passing criteria for children of 10 years and older. Some assessment tools (Woodcock,1978; Kaufman & Kaufman,1983) contain tasks that put demands on a child's

retrieval system and various assessment measures designed to assess expressive vocabulary (Gardner,1981; Jorgensen, Barrett, Huisingh & Zachman,1981) have been employed to identify word-finding problems in children. All these tools are not specifically designed to assess word finding skills and thus examiner can only glean information informally about the child's word-finding abilities.

The National College of Education Test of Word Finding (TWF) to assess word-finding skills in elementary school-age children is developed by German (1986). This test is based on the diagnostic model for the assessment of word finding. This test is promising in terms of statistical properties and diagnostic value (Oza,S.1992).

Lack of such tools in India, prompted the construction of the test of Word Finding Abilities in children (Hindi) (TWAC-H) (Oza,1992).

Being a language bound test, there is a need to develop and standardize such test in all languages.

Attempts, herewith, have been made to construct a Test of Word Finding Abilities in children in Gujarati language which is the official language of Gujarat state, an Indo-Aryan language. It is spoken by nearly 2,38,65,243 people in Gujarat state (Nair,U.1979). Also, it is one of the major spoken languages in cosmopolitan cities like Bombay.

REVIEW OF LITERATURE

WHAT IS NAMING?

A fundamental feature of human conceptual and semantic organization is the ability to locate an individual object in multiple taxonomic classes at various hierarchical levels from subordinate (eg. kitchen chair) and basic (eg. chair) labels to more general superordinate level (eg. furniture).

Categorization is one more aspect of naming. A category is a taxonomy of things in the world; it exists whenever two or more distinguishable objects or events are treated as equivalent (Mervis & Rosch,1981).

One of the important functions of categorization is to support inductive inferences. Advantage of such inferences is that they allow children to overcome the power of perceptual similarity and to access non-obvious, internal similarities between category members.

Child is from very early on, engaged in the continual task of deciding which properties are relevant and which are not, not just in grouping but in naming them (Markman,1991).

Object naming commences early in the second year of life. The Stanford Binet IQ Test utilizes naming of line drawings of common objects as early as 2 years 6 months. More commonly used names and more manipulated (used, operated with and upon) objects are named earlier in life. Naming more "figurative" elements is said to be later acquired (Gardner,1973). Colour names are

acquired relatively late in childhood. Numbers and letter names are even later acquired traditionally associated with the begining of formal education.

Earliest words are primarily basic-level nouns. As development proceeds, children learn additional nouns, many of which refer to the same object, but at superordinate and subordinate levels.

Weigel-Crump (1986) found that for each lexical access condition (semantic, rhyming & visual), there was increment in the number of correct responses and a reduction in response latency with age. Performance reached plateau after age 10, achieving an asymptote for the semantic and visual confrontation although not for rhyming condition.

Apart from accuracy and speed, there is difference in naming skills between older and younger children and adults. Older children did not produce associations to the target name, whereas the youngest group did so. (Weigel Crump,1986). Young children sometimes make syntagmatic errors, whereas older children do not. This shows that an immature word-finding system may be prone to produce syntagmatic associations instead of names. Also, when finding verbs they do sometimes produce out-of-class errors (Weigel Crump,1986).

According to Anglin (1977), across diverse languages and cultures, adults readily acknowledge that a given object is at once a member of several different nested classes within a

hierarchical system. But, unlike adults, preschool children often fail to exhibit such flexibility in labelling, they appear reluctant to acknowledge that more than one label may correctly apply to a given object.

However, many have refuted this notion and reported children acknowledging multiple labels (Blewitt & Connor,1981; Blewitt,1987; Au & Glusman,1990; Clark, Gelman & Lane,1985).

According to Waxman & Hatch (1992) children do not reject these labels insisting that each object must have one and only one label. Instead by age 3, and even earlier (Waxman & Senghas,1990; Waxman, Heim & Markow,1990) children have incorporated non-basic level terms into their emerging lexicons.

NAMING IN DISORDERED POPULATION:

Deficits in word-finding have been reported in various language disordered population such as:

1. Aphasia
2. Geriatrics *
3. Right brain damage
4. Closed head injury
5. Stuttering
6. Acute lymphoblastic leukaemia (ALL) *
7. Childhood aphasia
8. Dyslexia

* not considered under language disordered.

Aphasia:

Examination of the pattern of preserved and impaired language functions in aphasic patients as well as analysis of

error rresponses have helped to determine the various functional sources of damage to the word retrieval system (Kohn & Goodglass,1985; Kay & Ellis,1987).

According to Dorze et al(1989) anomia originates from a difficulty in accessing the formal lexical representation and not from a semantic problem.

However, some opine that anomic aphasics are particularly impaired in the structure of their semantic fields and this breakdown leads to inability to retrieve words (Lhermitte et al 1971; Goodglass & Baker,1976). Studies have been reported showing differences in naming between anterior and posterior aphasics (Goodglass & Baker,1976).

Williams & Canter (1982) examined the naming performance of Broca, Wernicke, Conduction & Anomic aphasic patients in confrontation naming and naming in a picture description task. Result showed Broca aphasics perform better in confrontation naming than in picture description, and opposite is true for Wernicke's aphasics. No consistent pattern was found for conduction or anomic aphasic patients. However, Basso et al (1990) did not find such a pattern.

Aging:

Problems of language with advancing age are associated in both the core of the general public and the clinical literature (Kral,1962).

Word finding ability is to a large degree retained in later life (Borod et al,1980; La Barge et al,1986). But according to Nicholas et al(1985) lexical retrieval for common nouns and verbs declined with age, especially after 70 in healthy subjects.

Impairment in the ability to name is a robust characteristic of patients with dementia of Alzheimer (AD) type. However, the cause of this impairment is unclear and explanations range from lexical access problems to disrupted semantic organizations.

AD patients seem to appreciate some semantic features better than other. Superordinate relationships remain relatively intact. (Chertkow et al,1989; Huff et al,1986). However, knowledge of more specific attributes becomes impaired.

Chertkow et al (1989) found that AD patients were impaired in their appreciation of perceptual and functional attributes of specific nouns. Huff et al (1988) reported AD patients significantly worse than normal controls at relating an object to its function. Grober et al(1985) on the other hand argued that AD patients retain knowledge of an objects attributes but the saliency of these attributes is altered such that essential features are considered to be less important. However, Nebes & Brady (1988) reported intact appreciation of semantic features in AD patients.

Sommers et al(1990) reported following factors which may influence naming in AD.

1) increased latencies in recognizing these semantic features.
2) changes in the weighting or saliency of features within the conceptual structure and
3) problems in identifying these semantic features that differentiate between names at the same semantic structure level.

Right Brain Damage:

Joanette et al(1988) analyzed errors as well as the time course of production of vascular right brain damaged subjects (RBD) in a semantic based word-naming task. They suggest, there are no differences between groups in terms of (a) the number of errors (b) the pattern of error types. However, reduction of verbal fluency for semantic criteria was present. This was not the consequence of non-specific factors such as perseveration or aspontaneity but reflects problems with the less automatized processes permitting explorations of semantic organization either because scanning processes are affected or because the presence of discrete semantic impairment prevents scanning from being efficient. Thus right hemisphere contributes to some aspects of lexico-semantic processing necessary for language production.

Closed Head Injury:

On word fluency tasks, brain damaged subjects do not list as many examples as do non-brain damaged subject (Adamovich & Henderson,1984; Wertz, Dronkers, & Shubitowski,1986).

Subjects with closed head injury retrieved significantly fewer examples than did non-brain damaged subjects, but

perception of what category members constitute good examples is relatively intact (Lohman, Ziggas & Pierce, 1989).

Stuttering:

Berry & Eisenson (1956) have suggested that stuttering as a perseverative manifestation may often represent a mild word-finding difficulty, arising from irregularities in cortical development, competition between cortical and subcortical centers concerned with language functions or damaged cortical tissue.

Rutherford & Telser (1967) described a word latency test for use in detecting minimal word-finding problems in stutterers and in children with certain auditory and visual perceptual disorders.

Boysen & cullinan (1971) found negative correlation between the time taken to name object and frequency of occurence of the names in the language. No evidence was found to indicate that stuttering children have longer object-naming latencies than non-stuttering children.

Acute Lymphoblastic Leukaemia (ALL):

Jackel et al(1990) evaluated language abilities of a group of nine children (11.5 to 17.9) treated for acute lymphoblastic Leukaemia (ALL). As a group the leukaemia subjects performed significantly worse than the controls on TOAL-2, CELF & Boston Naming Test.

Childhood Aphasia:

Diminished verbal stock or an impoverished lexicon is commonly reported symptom of acquired childhood aphasia (Bernhardt,1885; Alajouanine & Lhermitte,1965). Hecaen(1983) reported that 44% of his sample of acquired childhood aphasics had naming problems which tended to persist.

Lees & Neville(1990) studied five children aged 6 to 15 years, with acute aphasia, from onset for a period of 2 years. All presented severe problems in confrontation naming at onset, however the error patterns were different in all children.

Dyslexia:

Experienced reading specialists have made note of the expressive language of many dyslexic children.

Jansky & DeHirsch (1973) have proven that a test of naming is first among five most significant predictors of reading progress.

German(1985) compared word finding skills of dysnomic children (Learning Disabled children with word finding problems) with these of L.D. and normal children without word finding problems. L.D. children with word finding problems manifested significantly more errors, longer completion times and more secondary characteristics on letter and colour naming tasks while performing similarly to children without word finding problems on number naming.

Childhood dyslexics were reported to be slow, inaccurate and inconsistent on colour naming on rapid repetition naming (Denckla 1972; Eakin & Douglas,1972).

Wiig, Semel, & Nystrom(1982) reported that language and learning disabled children take longer to name pictures and produce more errors than their academically achieving peers Leonard, Nippold, Kail & Hale(1983) demonstrated that language impaired children name pictures slower than their age matched peers but faster than language matched controls. Fried-Oken & Menyuk (1983a) and Fried-Oken(1984) showed that children with otherwise intact cognitive skills differ significantly from the normal patterns of naming acquisition. While normally developing children between the ages of 4-9 years rely heavily on semantic and perceptual properties of an object to recall a name, the language impaired youngsters do not appear to identify the salient features of an object to retrieve labels. German (1982) & German & Fried-Oken(1984) indicated that language impaired and learning disabled use deviant naming strategies for word recall.

Dyslexic group best discriminated from the nondyslexic, otherwise L.D.group by high percentage of dysphasic errors and prolonged times on repeated naming (Newcombe, Oldfield, Ratcliff & Wingfield, 1971).

Adolescents and adults with developmental dyslexia also made more naming errors than controls with longer naming latencies on Rapid Automatic Naming (RAN) (Wolff, Michel & Ovrut,1990).

Torgesen(1985) suggests rate of access to verbal information in long-term memory as "the most likely candidate for a basic processing difference between reading disabled and normal children. This contention is supported by Wolf's(1984) data showing that early measures (i.e. during Kindergarten) of naming abilities predict future reading competence.

According to Murphy et al(1988) dyslexics rely considerably upon the "indirect" or "assembly of phonology" route.

From a clinical perspective, children with language and L.D. and dysnomia can be expected to have difficulties in several curriculum related areas. They may be unable to work with reading materials which require silent picture naming, matching begining, middle and ending sounds, and finding rhyming words. They may be unable to grasp reading when "look say" method is used.

Whatever be the pathology, children with word-finding problems manifest reduced accuracy, longer completion times and a higher prevalence of secondary characteristics (getures and extra verbalisation).

The presence of repetitions, reformulations and substitutions in a child's spontaneous language should signal to the speech language pathologist and teachers that a child may be manifesting word-finding problem in spontaneous language.

The presence of target word substitutions in a child's spontaneous language should also signal to the observer that a particular child is manifesting difficulties in word finding. Presence of many target word substitution may indicate word-finding problems in children's spontaneous language.

Many researchers have attempted to understand this complex mechanism of word-finding. Models have been proposed, explaining normal and abnormal processes involved in naming.

Explanations principally concern whether disordered naming is due to a disruption of the mechanism for retrieving lexical information (Weigel-Crump & Koenigskhecht 1973),a disruption of automatic reflex like processing (Milberg & Blumstein,1981) or instead to a more basic disruption of the manner in which semantic information is represented (Caramazza & Berndt,1978; Goodglass & Baker,1976; Whitehouse, Caramazza & Zurif,1978; Zurif,1983).

Kail, Hale, Leonard & Nippold (1984) gave a storage elaboration hypothesis and a retrieval hypothesis to explain naming problems in language impaired children. The storage-elaboration hypthesis refer to difficulty accessing words when they are needed because the words are not yet established in the children's lexicons or are represented in a less elaborate form. The retrieval hypothesis suggests that the language impaired child's lexicon is comparable to that of the normally developing child, but the language impaired child uses less efficient

algorithms for retrieving word names, so that the child is more likely to have difficulty retrieving the names from memory when needed.

ASSESSMENT OF NAMING SKILLS:

The Speech & Language Pathologist is often faced with a need to identify children with potentially significant word finding difficulties.

Examination of the pattern of preserved and impaired language functions in aphasic patients, as well as analysis of error responses, have helped to determine the various functional sources of damage to the word retrieval system (Kohn & Goodglas,1985; Kay & Ellis, 1987).

Few naming test are available, which generally assess naming accuracy. The stimuli chosen for such naming tests are often based on word frequency counts. Test items range from words that are used commonly to words that are used rarely in spoken or written language.

However, there are two problems inherent to all naming tests:

1) The tests do not attempt to differentiate word recall problems from the expressive vocabulary problems in children. It is difficult to ascertain whether children demonstrate naming problems because (a) they have never learned the names and therefore cannot retrieve the labels (b) they have reduced expressive lexicon from which to

retrieve names (c) they are in the process of learning names and might supply incorrect labels because of retrieval problems. Thus, a child who receives a low score on a visual confrontation naming test might be displaying an expressive vocabulary problem rather than word retrieval difficulties.

2) The second problem concerns the lack of qualitative information that is obtained from the diagnostic instruments. The final result of most tests is an accuracy score which does not tell the clinician what the child is doing to retrieve names. There are exceptions - The Boston Naming Test (Kaplan et al,1983) uses semantic and phonemic cues to elicit correct labels after pictures have been misnamed. The clinical evaluation of language functions (CELF, Semel & Wiig,1980) measures the type of errors made by the child and provides a more detailed description of naming skills for the clinician.

A modified technique has been developed to address these two issues and to supply the Speech Language Pathologist with accurate, in-depth diagnostic information about a child's naming skills (Fried-Oken,1984). This is called the Double Administration Naming Technique (Fried-Oken,1987) which involves five steps. In first step, standard naming test is administered, followed by second step where re-administration of same test is done. In the third step, single and double error response group is identified. In step four, cues are given for double error

responses. In step five, quanlitative analysis of naming errors and cues done. First the misnamings can be analyzed according to the qualitative nature of the errors. The clinician can describe what children do when they cannot retrieve a word. The examiner sees how the child tags a concept/picture for word meaning and how the child enters the lexicon for word retrieval.

FACTORS AFFECTING WORD FINDING:

Major variables cited and discussed in literature that appear to influence the naming performance in children and adults are as follows:

(1) The characteristics of the referent to be named.
(2) The characteristics of the referent's name.
(3) The type of stimulus presentation.
(4) Facilitating cues.
(5) Miscellaneous.

An integrated understanding of the manner in which these factors may affect naming performances is essential for Speech & Language Clinicians involved in rehabilitation. This helps clinician to develop efficient and systematic therapeutic techniques.

I. CHARACTERISTICS OF THE REFERENT TO BE NAMED.

(a) Operativity: Utilizing concepts from Piaget's cognitive theory, Gardner (1972,1974) suggested that an important contribution to naming performance is the operativity of the element to be named. An operative element is defined as one

that is clearly separate from its surroundings and can be manipulated and "operated on" in a variety of ways and through a variety of sensory modalities. In contrast, figurative elements (eg.cloud) are "continuous" with their surroundings and difficult to manipulate physically and are conceptualized primarily through visual modality.

(b) Semantic category: Naming is a function of semantic category of the object or symbol to be named. Goodglass et al(1966) investigated the hierarchy of aphasic patient's naming difficulties across a variety of categories. For aphasics, letter naming was the easiest and object naming most difficult, intermediate in difficulty were numbers and colours.

According to Gardner (1974) his adult aphasic patients had the most problem with animal names, then colours,then letters and had the least amount of difficulty with numbers. The children had least difficulty naming animals, then colours, and letters and the most difficulty with numbers.

Denckla & Rudel (1974) also reported speed and accuracy differences in naming as a function of semantic category with shorter response times for letters and numbers than for colours and objects. In a second study with normals, non-dyslexic Minimal Brain Damaged (MBD) subjects and dyslexics, they reported similar results (Denckla & Rudel,1976).

Naming abilities of different semantic categories in a rapid automatised naming task have been reported to differentiate children with academic difficulties.

(c) Stimulus uncertainity:

Uncertainity is defined as the consistency with which particular name was used by normal subjects to label a stimulus For eg. a stimulus would represent low uncertainity item if all normal individuals labelled it with the same name (eg. picture of cup). Stimulus uncertainity had no significant effect on the naming error rates and response latencies of the aphasic patients (Mills,1979). However, precise strength of the relationship between word frequency and uncertainity value has not been determined.

II. CHARACTERISTICS OF THE REFERENT'S NAME.

(a) The frequency of occurrence:

The frequency with which words occur in the language is the most documented influence on naming behaviour in both normals and aphasics and has been found to correlate significantly with the age at which children acquire these words.

Word frequency is a significant variable in normal adults (Oldfield & Wingfield,1965) adult aphasics (Wepman et al,1956; Newcombe et al,1965; Rochford & Williams,1965) and in comparative studies between children and adults (Rochford & Williams,1962).

Adult studies clearly indicate that low frequency words are more difficult to retrieve than high frequency words. However,

frequency variables in children with fluency problem (Boysen and Cullinan,1971; Telser,1971) reading problem (Denckla & Rudel,1976; Wolf,1980); language problem (Wiig, Semel & Nystrom,1982; Leonard et al,1983; Fried-Oken,1984) and learning problems (German, 1979,1984) have reported conflicting results.

Generally, it appears that target word frequency may be an important variable to consider when assessing children's word-finding skills. In particular it would seem necessary in assessment to use target words which although within the child's vocabulary are challenging.

(b) Length:

Word frequency and length are not wholly independent. When frequency of occurrence is held constant as word length increases response latencies also increase and misnaming becomes more frequent.

Word length effect may indicate that additional time is required for organisation, formulation, execution of the neuromotor processes involved in the production of longer words.

Goodglass et al(1976) reported increase in naming failure rate with increasing syllable length.

(c) Difficulty context:

A child's success or failure in naming specific items appeared to be related to whether or not the preceding items were successfully named. Brookshire(1972) reported that when aphasic patients were first asked to name pictures that on a pretest had

been difficult to name, they performed worse than expected on subsequent items that were easily named on pretesting.

III. THE TYPE OF STIMULUS PRESENTATION.

(a) Method of eliciting the target word:

On rapid repetitive naming of pictured objects, letters and numbers, dyslexic children scored lower than their age peers.

Children and adults with word finding problems manifest more naming difficulties in random versus sequential type of naming tasks. Thus reciting the alphabet and serial counting have been recommended as useful in diagnostic batteries for the assessment of word-finding problems in children (Wiig & Semel, 1980).

Confrontation naming of pictures is less difficult than finding a word in response to a description, which in turn is easier than naming to a rhyme (Wiegel-Crump,1986).

(b) Varying the stimulus context:

This affects the level of naming response accuracy and speed (Rudel et al 1981). For those between 6-10 years completing a sentence with a noun (auditory) yielded the lowest error scores, naming objects in response to definition (auditory) the highest scores while responding with names to pictured objects (visual) was of intermediate difficulty. Children under six years were most accurate in naming palpated objects while by age 11 years, the object naming accuracy did not appear to be affected by modality or stimulus context.

In a study by Rudel, Denckla & Broman (1981), it was found that only on the sentence completion task which has been found to be the simplest response mode, were the dyslexic subjects selectively less accurate than non-dyslexic learning disabled relative to the control group. The non-dyslexic learning disabled(L.D.) group responded more rapidly but made more perceptual errors.

IV. FACILITATING CUES.

Specific cues which facilitate word recall and word retrieval have been identified in the normal adult literature (Tulving & Pearlstone 1966; Tulving,1974) and in investigation analyzing behaviour of adult aphasics (Berman & Peele,1967; Wiig & Glosus,1971). Naming cues such as phonetic or semantic prompts are used in the assessment of word finding skills in adults and children. Phonemic cue is reported to be most effective (Li & Williams,1989; Wingfield et al,1990). Apart from these gestures, (Hanlan et al,1990), sentence completion tasks, word associations, rhyming, spelling the word, open ended statements and printed texts are some of the cues that have been used (Mizuko & Martin,1991).

Cuing techniques are used in remediation also (Li & Wiliam,1989). Bruce & Howard (1987) have reported computer generated phonemic cues as an effective aid for naming in aphasia.

V. MISCELLANEOUS.

Naming abilities of normal subjects are reported sensitive to age (Borod et al,1980; La Barge et al,1986; Nicholas et al,1985; Van Gorp et al,1986; Albert et al,1987; Rosselli et al,1990). Frequency of correct responses declines as age increases (Kremin et al,1991).

Educational background also is an important factor to be taken into consideration (Borod et al,1980). Kremin et al (1991) found less number of correct responses in low-educated subjects than in high-educated ones.

Sex factor in adults (Rosselli et al,1990) and in children (Kindlan & Garrison,1984) is been reported. Frequency ofcorrect responses was found to be higher in women than in men (Kremin et al,1991).

Taking all above mentioned factors into consideration, National College of Education Test of Word-Finding (TWF) was developed (German,1986). It is a nationally standardised diagnostic instrument designed to provide professionals with an opportunity to observe systematically children's word finding skills in a set of psychometrically sound naming tasks.

This test is based on the word finding assessment/diagnostic model (FIG.l). This three component model employs naming section, incorporates indices traditionally used to define word-finding problems in adults and children and provides for a comprehensive assessment of target word naming errors. This

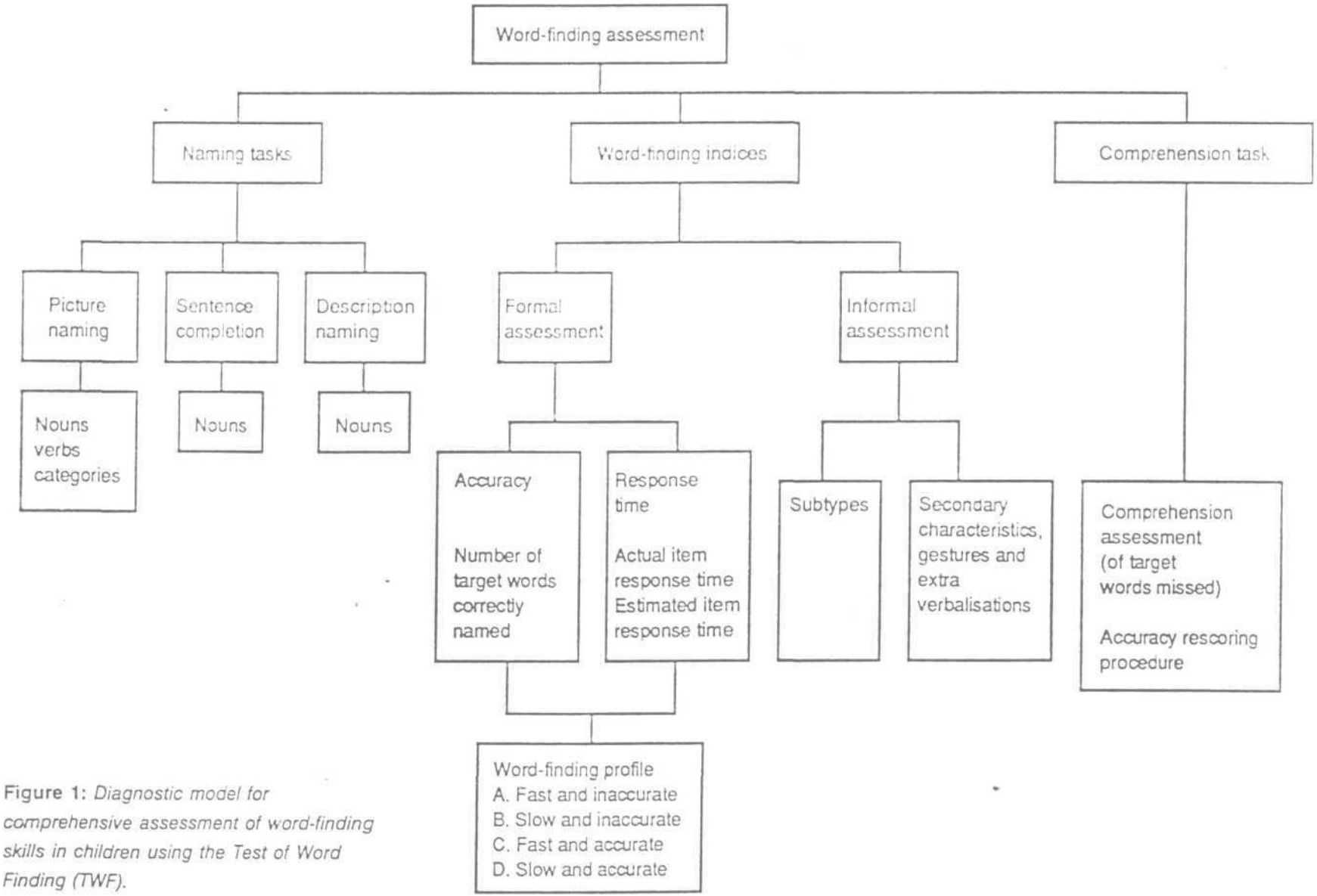


Figure 1: *Diagnostic model for comprehensive assessment of word-finding skills in children using the Test of Word Finding (TWF).*

model has been drawn from both child and adult literature. Both informal and formal indices are employed, as being suggested in the literature. All target word errors are checked for comprehension to aid the examiner in differentiating naming errors due to lack of word knowledge from naming errors due to word finding difficulties.

The test of word finding skills based on the diagnostic model fulfills the following assumptions.

- Children's word-finding skills can best be evaluated when they are asked to find words in multiple naming formats which put demands on the retrieval systems.
- Children's word-finding skills can be observed when they are asked to name words of various syntactic and semantic categories.
- Children's word-finding skills can be characterised according to accuracy, speed, response types and presence of gestures and extraverbalisations.
- Children's knowledge of target words need to be established before naming errors can be considered as word finding errors.

The TWF is thus an overall diagnostic test which overcomes all the drawbacks of all other subtests described earlier.

Hence, this test of word-finding becomes an evident choice as the basis of the current study.

CHAPTER-III

METHODOLOGY

The Test of Word-finding Abilities in Children (Gujarati) TWAC-G is based on the Test of Word-finding by German (1986).

TEST CONSTRUCTION:

250 words were drawn randomly from primary school text books of Maharashtra, story books and vocabulary list. This list was then given to 10 judges who were either teachers of primary school or parents having child of age between 5-9 years. Words were rated by judges on 4 point rating scale as follows:

0 -> unfamiliar
1 -> slightly familiar
2 -> familiar
3 -> very familiar.

Words for the present test were selected out of this list; the basis of which is stated in each subsection described below.

The test consists of 5 subtests.

SECTION-1: PICTURE NAMING: Nouns

This section is designed to assess speed and accuracy when naming pictorial referents of one-to-four syllable noun target words of different semantic categories.

The pictures are black & white drawings on 4'x6' card. Vocabulary selection was done according to following parameters.

Syntax :

nouns : 100%

Target Word Frequency:

Low (unfamiliar)	: 25%
Mid (slightly familiar)	: 25%
High (familiar)	: 25%
Very high (very familiar)	: 25%

Syllabication:

Monosyllabic words	: 25%
Two syllable words	: 62.5%
Three syllable words	: 10%
Four syllable words	: 2.5%

Semantic categories:

Animals	: 10%
Birds	: 5%
Insects	: 5%
Fruits	: 5%
Flowers	: 5%
Vegetable & Food	: 5%
Plant & Weather	: 5%
Shapes	: 2.5%
Body parts	: 15%
Clothing	: 10%
Religion	: 5%
Household articles	: 5%
Useful instruments	: 7.5%
Vehicles	: 10%
Professions	: 5%

Total number of items included in this section are 40 and are arranged in hierarchy (Appendix-1).

SECTION-2: SENTENCE COMPLETION NAMING.

This section was designed to assess accuracy when naming target words in an intrasensory auditory closed format presentation. The child is asked to complete the sentence by filling in the target word. This format proved useful in identifying children with word-finding problems. (German, 1979,1984), reading disorders (Rudel, Denckla & Broman, 1981) and adults with naming disorders (Barton, et al,1969). There are 20 test items, all using declarative present tense sentences consisting of a minimum of two and maximum of four associations to the target word. Sentences either define the target word (40%) or contain vocabulary which is judged to be highly associated with the target word (60%). Vocabulary selection was structured according to syntax, target word frequency and syllabication.

Syntax:

Nouns	: 90%
Adjectives	: 10%

Target word familiarity:

Low	: 25%
Mid	: 25%
High	: 25%
Very high	: 25%

Syllabication:

Monosyllabic words	: 25%
Bisyllabic words	: 50%
Trisyllabic words	: 10%
Four syllable words	: 15%

Totally 20 items are arranged in hierarchical order from least familiar to most faimilar words.

SECTION 3: DESCRIPTION NAMING.

This section is designed to assess naming accuracy in an intrasensory auditory synthesis task where the subject is required to name a target word implied by three attributes. Such tasks have also been used to identify children with word finding problems (German,1979,1984), reading disorders (Rudel et al,1981) and adults with naming disorders (Barton et al,1969; Goodglass & Stuss,1979; Luria,1980).

All descriptions are in the form of questions defining the target word with two to four salient attributes. Each description includes a functional attribute and one to three of the following features identified as the most salient attributes of the target word: semantic category, composition, location, size, parts or colour.

Representation of target words by this vocabulary criteria follows:

Syntax:

Nouns	: 90%
Adjectives	: 10%

Target word familiarity:

Low	: 25%
Mid	: 25%
High	: 25%
Very high	: 25%

Syllabication:

Monosyllabic words	: 10%
Two syllable words	: 55%
Three syllable words	: 30%
Four syllable words	: 5%

20 sentences are arranged from least difficult to most difficult.

SECTION 4: PICTURE NAMING : Verbs

This section is designed to assess accuracy in naming action target words. The child is asked to lable the action in the picture.

Representation of the vocabulary selection variables is as follows:

Syntax:

Verbs	: 100%

Target word familiarity:

Low : 25%

Mid : 25%

High : 25%

Very high : 25%

Syllabication:

Two syllable words : 80%

Three syllable words : 15%

Four syllable words : 5%

There are 20 pictorial representations of actions on 4"x6" card.

SECTION-5: PICTURE NAMING : Categories.

Here, the child is asked to name the implied category word for three subordinate or basic level words pictured. Luria (1980) has recommended category-naming tasks for the assessment of word-finding skills in adult aphasics. Scuh task is also useful in assessing children with word-finding problems.

Representation of vocabulary selection variables is as follows:

Syntax:

Nouns : 100%

Target word familiarity:

Low : 40%

Mid : 20%

High	: 20%
Very high	: 20%
Taxonomic level:	
Superordinate level	: 100%
Syllabication:	
Two syllable words	: 60%
Three syllable words	: 40%

This section consists of words from 5 categories for each of which the subject has to provide the category label eg. vegetables for a picture of brinjal, potatoes and cauliflower.

Entire test is given in Appendix-1.

SUBJECTS:

Four groups, 10 subjects in each, participated in this study. These four groups were taken according to the grade in which they were, and the age. Equal number of males and females were taken.

		Males	Females
Grade-I	(5-6 years) :	5	5
Grade-II	(6-7 years) :	5	5
Grade-III	(7-8 years) :	5	5
Grade-IV	(8-9 years) :	5	5

All the subjects were native speakers of Gujarati, studying in Gujarati medium school. All subjects were reported to have normal hearing, no neurological impairment and no history of speech problems.

DATA COLLECTION:

Random selection of the students was done from each class and the test was administered in a quiet room. Subject's responses were transcribed, coded, and scored on-line. Test format is given in Appendix-II. General encouragement was occasionally given.

TEST ADMINISTRATION:

Children were asked to see the picture or listen the sentence carefully and name the same. Sentences were repeated if required. Children were provided with examples if needed. Stop watch was used to time the responses. Responses given within 5 seconds and responses given between 5-10 seconds were noted separately. After 10 seconds, children were provided with phonetic or semantic cue, which was given alternatively. The responses were scored '0' if the child was unable to name after presentation of cue.

Any secondary characteristics like extraverbalisation, gestures, circumlocutions etc. were noted down.

Error responses were also noted down (target word substitution) to carry out response analysis later.

In order to differentiate word-finding naming errors from naming errors due to lack of knowledge, comprehension assessment was done. Here pictures and sentences representing the target words on which child made errors were taken and recognition task was carried out.

CRITERIA FOR TEST INTERPRETATION:

(1) ACCURACY: This was determined with the help of two paradigms i.e. Correct -> Response item answered is correct

Incorrect-> Response item answered is incorrect

2) SPEED: Two paradigms were taken into consideration.

Fast -> Gave responses within 5 seconds.

Slow -> Gave responses between 5-10 seconds.

3) CUEING: Two types of cues were given alternatively, when child failed to respond.

Phonetic Cue: The first phoneme or syllable of the word is given by tester. For eg. For the word / / the phonetic cue will be /1/

Semantic Cue: Here the child is provided with further information about the target word (referent). Cues given may be superordinate or subordinate class, functional associate, locative associate, etc.

(4) ACCURACY & TIME PROFILES: Based on accuracy and speed scores obtained in the present study, one can classify child's naming performance in one of the following four profiles.

Profile A -> Fast and inaccurate

Profile B -> Slow and inaccurate

Profile C -> Fast and accurate

Profile D -> Slow and accurate

CHAPTER-IV

RESULTS AND DISCUSSION

The test of Word-Finding Abilities in children (Gujarati) TWAC-G was administered on 40 normal children, 10 from each grades I to IV. Subjects ranged in age from 5-9 years.

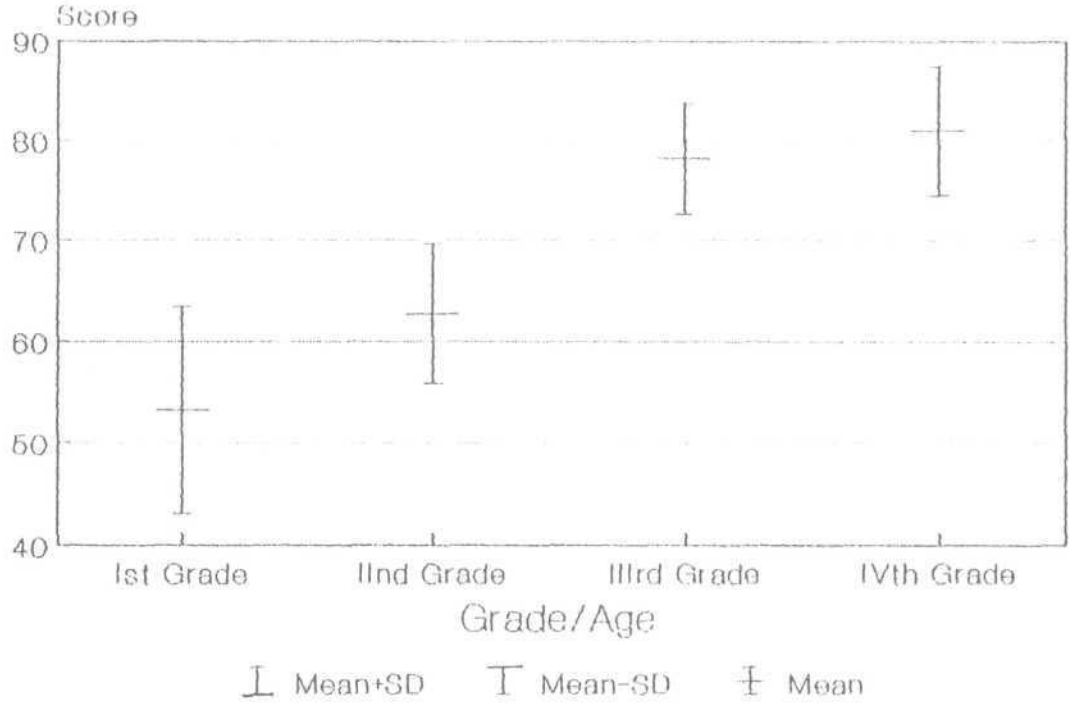
Whole test consists of 105 items. Total raw score for each child was calculated where '1' point was given to each correct response and '0' to an incorrect response. This was used to determine child's accuracy index. This index was irrespective of the speed and cues given, it depended entirely on the correctness of the responses to the target word.

Total raw score was divided into three categories. Number of responses given within 5 seconds (fast response, was used to determine speed index), number of responses given between 5-10 seconds and number of responses given using cues. Statistical analysis for all these categories was carried out, results are discussed below:

1. TOTAL ACCURACY (RAW) SCORE.

Table-1 gives the mean, standard deviation and standard error of mean for correct responses across all age groups.

Total Accuracy Scores



Graph I

TABLE-1:

Grade/Age		Mean	S.D.	Std.error of M
I	(5-6)	53.3	10.16	3.386
II	(6-7)	62.8	6.85	2.283
III	(7-8)	78.2	5.60	1.866
IV	(8-9)	81.0	6.49	2.163

It is clear from the Table, as age increases number of correct scores increases. In other words as the child grows up, his/her accuracy in naming improves. Representation of this developmental trend is in graph-1. Results are in agreement with earlier study where mean scores ranged from 67.75 to 87.40 (Oza,1992).

On analysis of variance (ANOVA) between individual subject score and total grade score there was significant difference among different grades in performance at 5% and 1% level of significance. However, the increment in scores is not linear. There was no statistically significant difference between performance of grade III & IV students. This can be attributed either to heterogeniety of last group as compared to other groups or the test is not sensitive enough to differentiate between these two group. Intersubject variability was permissible at 5% level of significance but not at 1% . This is evident from high standard deviation within groups.

2. RESPONSE SCORE (within 5 seconds).

Table-2 shows the mean, standard deviation and standard error of mean for responses within 5 seconds.

TABLE-2:

Grade/Age		Mean	S.D.	Std. error of Mean
I	(5-6)	33.9	8.25	2.75
II	(6-7)	47.1	6.15	2.05
III	(7-8)	64.5	5.95	1.98
IV	(8-9)	67.1	7.13	2.38

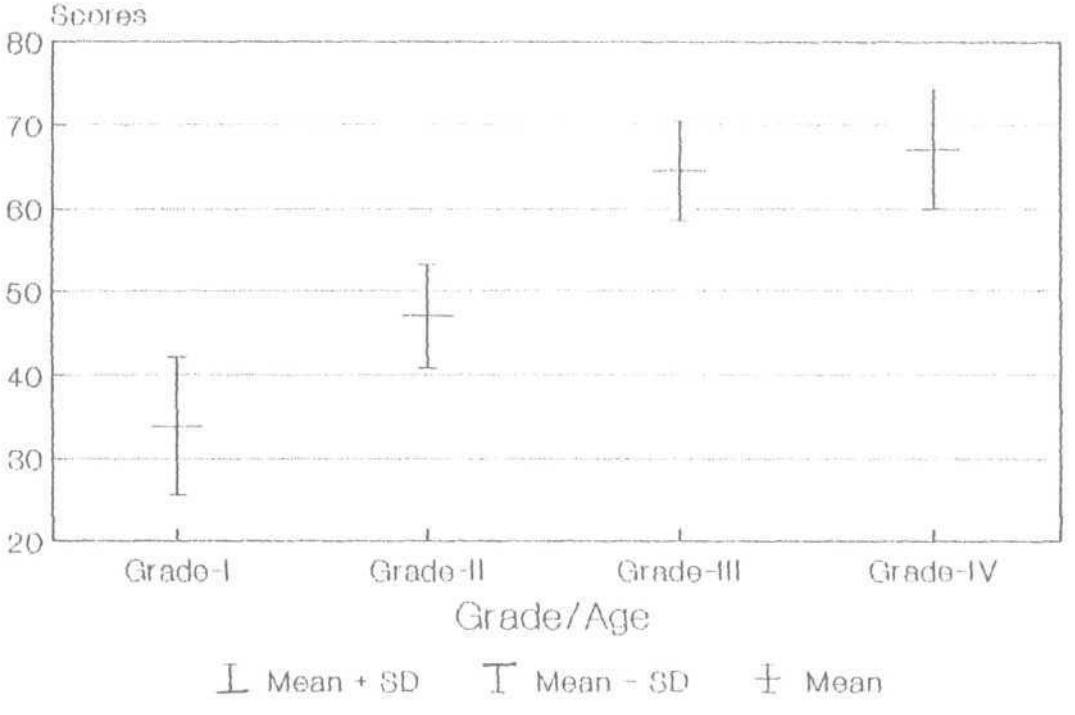
Similar to accuracy score, here also as age increases, more number of responses are given within 5 seconds. It can be easily compared in terms of %.

Grade	% responses given within 5 secs.
I	63.6%
II	75.0%
III	82.48%
IV	82.84%

Combined analysis of variance showed significant difference in performance of different age groups and permissible intersubject variability. But ANOVA of Grade III Vs IV showed no statistical difference in performance between these two groups as total score results. Graph-2 shows mean scores and standard deviation.

These results can also be interpreted as, the child's speed in word finding improves with age till 8 years, after that there is little or no improvement. Somewhat similar finding is reported

Total score within 5 sec.



graph -II

by Weigel-Crump(1986). He found that for each lexical access condition (semantic, rhyming and visual) there was increment in the number of correct responses and a reduction in response latency with age. Performance reached plateau after age 10, achieving an asymptote for the semantic and visual confrontation but not for rhyming condition. However, present results need to be tested using larger sample and modified test material, incorporating more number of difficult words.

3. RESPONSE SCORE BETWEEN 5-10 SECONDS.

Table-3 gives mean number of responses given between 5-10 seconds along with standard deviation and standard error of mean.

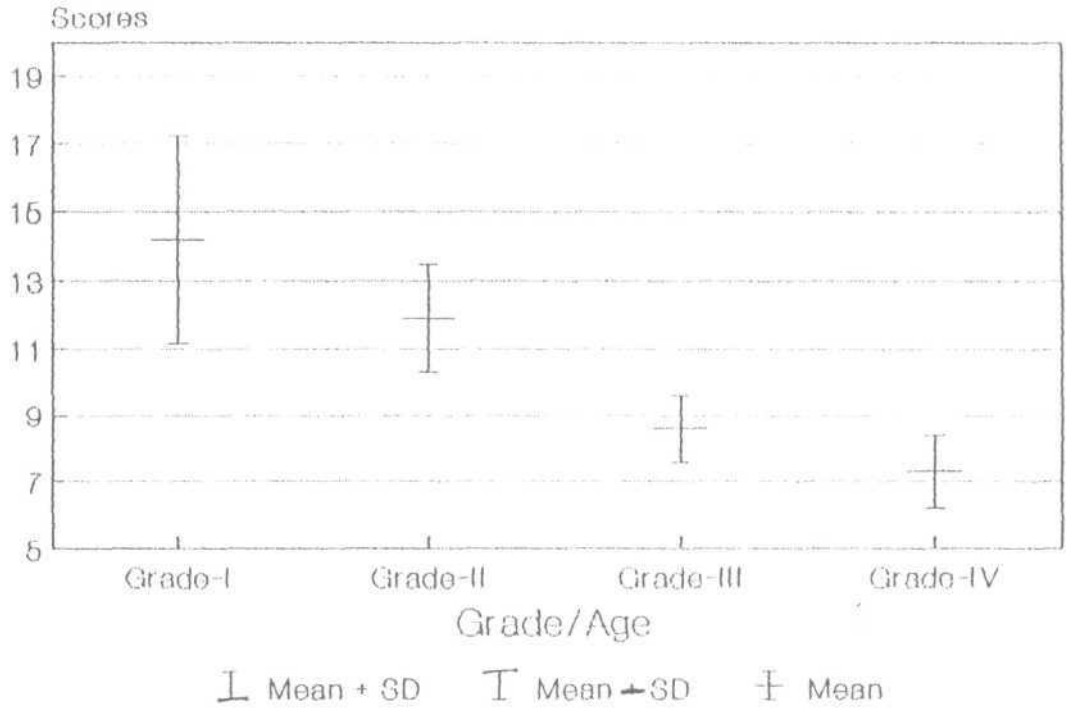
TABLE-3:

Grade	Mean	S.D.	Std. error of Mean
I	14.2	3.03	1.01
II	11.9	1.58	0.526
III	8.6	1.02	0.34
IV	7.3	1.10	0.366

As age increases response latency decreases and thus responses falling between 5-10 seconds decreases. ANOVA showed significant difference among age groups in performance and permissible intersubject variability.

This shows that more number of late responses are given by younger children (Graph-3). This is in agreement with earlier study (Oza,1992).

Score between 5-10 secs.



graph III

4. RESPONSES WITH CUES.

Table-4 shows the mean, S.D. and standard error of mean for responses with cues (phonetic and semantic)

TABLE-4:

Grade	Mean	S.D.	Std. error of Mean
I	5.2	1.24	0.413
II	3.8	1.54	0.513
III	5.1	1.81	0.603
IV	6.6	5.003	1.667

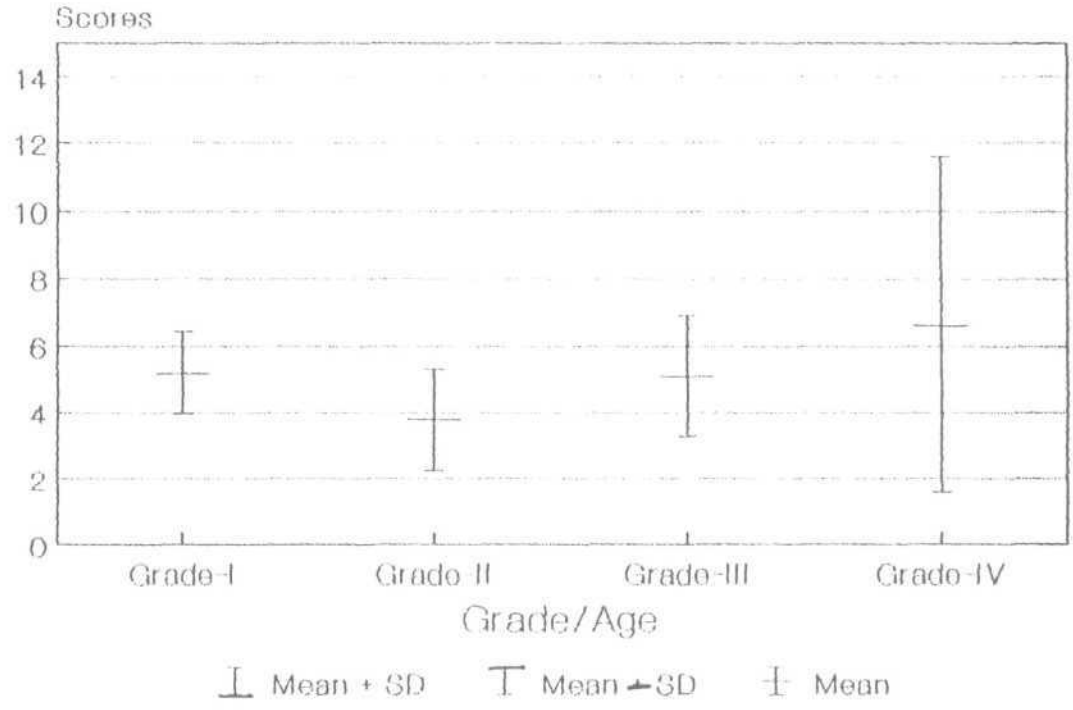
Results in this category are different. Here, subjects of II grade required least number of cues followed by III, IV & I.. No specific pattern is observed and present results are in conflict with earlier results where Oza (1992) found developmental trend in requirement of cues i.e. as child grows up, his need for a phonetic/semantic cue for word finding decreases.

This difference in results can be attributed to large S.D. in grade-IV scores (Graph-4). Three subjects scored very high and excluding these scores, mean score comes to 3.5 which is the least in all four age groups.

Here both phonetic and semantic cues were given alternatively to find efficacy of both types of cuing in word retrieval process. It was found that both cues helped equally.

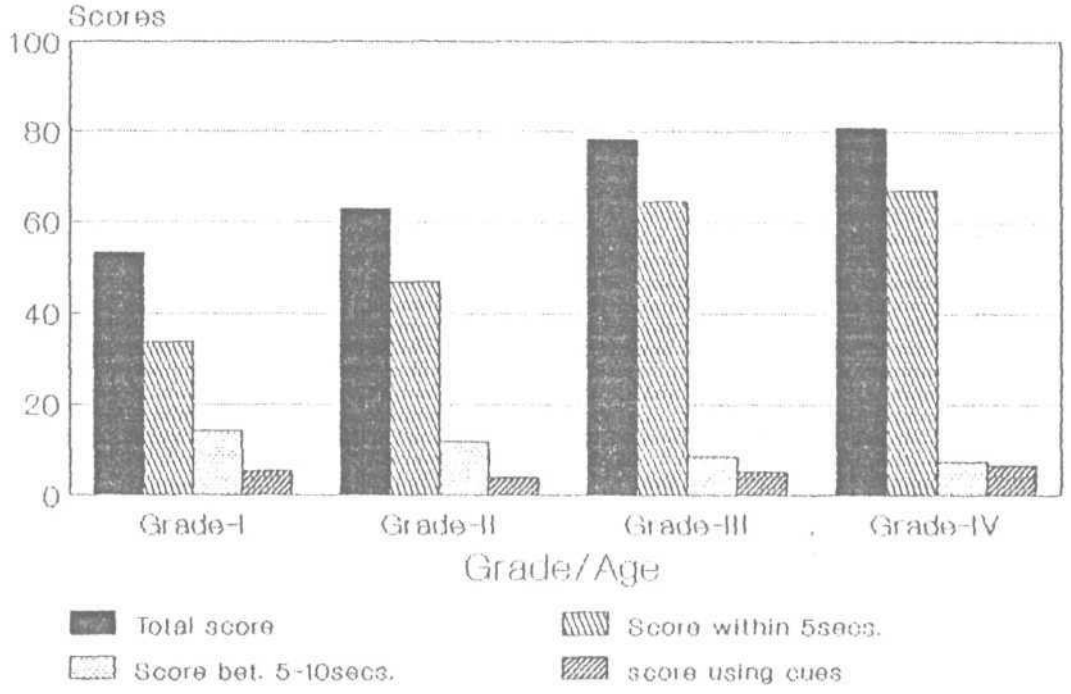
Graph V shows combined results of all categories across all age groups.

Scores using cues



graph IV

Scores of all categories across four grps



graph V

Table 5 and 6 gives the 25th, 50th, 75th, 90th and 100th percentile scores for each age group for total accuracy score and scores within 5 seconds respectively.

TABLE-5 : Total accuracy score

Grades	25	50	75	90	100
I	45	56.5	62.0	64	68
II	57	65.0	66.0	69	73
III	72	77.0	81.5	85	88
IV	73	80.0	85.5	89	90

TABLE-6 : Responses within 5 seconds

Grade	25	50	75	90	100
I	25	34	39.5	42	46
II	41.5	48	50	53	57
III	58	64	66.5	72	75
IV	59	68	71.5	73	79

These scores can be used to determine the performance level in a particular child with respect to accuracy and speed.

The accuracy and time indices can be employed concurrently to establish profiles of children's word-finding behaviour. Based on cut-off scores given in Table 7, child can be placed in one of the four profiles.

TABLE-7 :

-		I	II	III	IV
Accuracy Score	Mean	53.3	62.8	78.2	81
	S.D.	10.16	6.85	5.6	6.49
Score within 5 secs.	Mean	33.9	47.1	64.5	67.1
	S.D.	8.25	6.15	5.95	7.13

Profile A: Fast and inaccurate: Children placed inthis category would be those whose total speed score (0-5 secs) is within or more than their grademates, but their accuracy score is below one S.D. of the mean standard score of their classmates.

Profile B: Slow and inaccurate : Would be those children whose total speed index score is one S.D. below the mean of their grademates and their accuracy score is also below one S.D. from the mean score of their agemates.

Profile C: Fast and accurate: Would be those whose time measurements are within or above the mean of children of their age and whose accuracy score is also within or above the mean score of their standardisation grade sample peers.

Profile D: Slow and accurate : Would be those whose total speed score is one S.D. below the mean of their grademates while their accuracy score is within or above mean score of their peers. eg. If a 6 1/2 year old child scores a total of 63 out of which 35 responses are within 5 secs, then the child will be placed in

Profile D i.e. slow and accurate as his accuracy score is higher and speed score is lower than his peers.

Identification of naming profiles can be helpful in programming for children with word-finding problems. Determining a particular child's naming profile may be the first step in deciding remediation strategies, compensatory techniques and self-advocacy goals for a child at home and at school (German,1989).

RESPONSE ANALYSIS:

An informal evaluation which is useful for the identification of children with word-finding problems is the analysis of the types of substitutions they manifest when they are having difficulty naming target words. This analysis provides insights into semantic structure and semantic processing and frequently indicates to the examiner the child's general knowledge about a target word he or she is unable to name (German, 1989). . Substitution types have been identified in the residual speech of adult aphasics (Rinnert & Whitaker,1973; Coughlan & Warrington,1978) and error analysis have been clinically useful in the identification of types of adult aphasia (Barton et al,1969; Williams & Canter,1982; Kohn & Goodglass,1985) and types of adult word finding disorders (Geschwind, 1967; Rochford,1971). Investigations analysing children's responses during word lapses have also indicated unique naming patterns in dyslexics (Denckla & Rudel, 1976a) learning disabled children (German,1982) and children with language disorders (Fried-Oken,1984).

Results of present study were analysed by studying target word substitution. Errors exhibited by children in their response to the test items in sections 1,2 & 3 are given in table.

Response Category	Code	Description	Example
Superordinate	SUP	Target word substitutions which name the semantic class in which the target word belongs.	Tree/Branch
Coordinate	CO	Target word substitutions which are at the basic level and/or in the same semantic class as the target word.	Shirt/Jacket
Subordinate	SUB	Target word substitutions which represent a subgroup of the target word.	Wheel/Cycle
Functional attributes	FA	Target word substitutions which attend to the uses of a target word. These substitutions may represent functional attributes of the target word.	used for weighing/ balance
Locative attributes	LA	Target word substitutions which indicate the location of the target word.	One who is in the court/ judge.
Compositional attributes	COM	Target word substitutions which indicate the material of which the target object is composed.	Cloth/Shirt
Unspecified nouns	UN	Target word substitutions which are non-specific and provide little information.	Money/Res-ignation
Circulocutions	C	Multiword substitutions for target words that either describe the target word with respect to function, its visual attributes or	Wild animal, runs fast/ Leopard

		its location. May include non-specific or indefinite words.	
Substitution * plus self corrections	SC	Target word substitutions in any of the categories above followed by the correct response.	Clock, no calendar
No Response	NR	No response within the 15 second time period.	
Use of other languages *		Other than Gujarati lang. is used in target word substitution.	Judge/ balu/
Use of synonyms*		Word substituted is synonym to target word.	/nisrani/ for / sidi i.e ladder

* considered as an acceptable response.

Response analysis of target word substitutions in the naming to verb section, while similar to noun classification, needs to consider unique substitution categories which are specific to this task. These are given in the following table.

Superordinate verb responses	SUPV	Target word substitutions which represent a general action that is super-ordinate to the target action.	Handicraft/ tearing
Coordinate verb responses	COV	Target word substitutions at the basic level which are in the same semantic class as the target word.	to sow/ to plough
Subordinate verb responses	SUBV	Verbal target word substitution which represent subordinate actions or actions in a subgroup of the target word.	to bathe/ to swim
Associated verb responses	AV	Verbal target word substi-tutions which may be highly associated with the target verb.	to stitch/ to knit

Pro-verbal action responses	PVA	Target word substitutions which represent non-specific overly general verbals.	to make/ to build
Picture labelling	PL	Noun target word substitutions representing an object in the picture.	bird/to fly
Circumlocutions	CV	Multiword substitutions for target words which either describe the target word with respect to its function, its visual attributes or its location. May include non-specific words or associated action responses.	making squares, pasting etc. for tearing
Substitution Plus Self correction	SC	Target word substitutions in any of the categories above followed by the correct response.	sowing,no ploughing
No Response	NR	No response within the 15 second time period.	

Apart from above errors, there were articulatory errors mainly omission. Two children said /pə̃gɪjʊ̃/ for /pəʈə̃gɪjʊ̃/

Substitution of Hindi words like /bʰalu/ and /isʈɪpʰa/ may be due to influence of Hindi movies.

Other English word substitutions reveal frequent use of these words like kitchen, butterfly and driver for /rɒsoɖʊ̃/ /pəʈə̃gɪjʊ̃/ and /sarəʈʰi/ respectively. The word /pardərsk/ (transparent) was not named by most of the children.

Most of the younger children when asked to name silver like colour i.e. /ʧandi dʒevo rʌŋ/ gave innovative

adjectives like /tʃandəni/ (moon light), /tʃanderi/ etc. Older age group i.e. 8-9 years gave correct response i.e. ruperi.

In category naming initially children of grade I and II did not understand the task and they named all the items instead of category. After providing one example they performed better.

SECONDARY CHARACTRISTICS :

During naming tasks, behaviours which accompany efforts to verbalise target words in constrained or spontaneous naming situations are secondary characteristics. Two types of secondary characteristics, gestures and extra verbalisations may be present during naming. Extraverbalisations appear to aid children in their search for target words as well as indicating the child's knowledge of target word. The gestural behaviour gives a nonverbal support to word finding process.

Johnson & Myklebust (1967) observed secondary characteristics in children with learning disability when having difficulties retrieving words. According to them younger children may use acoustic representations of the target word and still others may use gestures or pantomime to communicate their message. Wiig & Semel(1984) indicate that learning-disabled children may produce 'idiosyncratic hand movements' or manifest 'facial grimaces' or 'hit the table', 'swing a leg' or 'tap a rhythm with one foot' when they are struggling to find a word to express their thoughts. Fried-Oken (1984) categorized these behaviours as error types, and labelled gestures as 'non-verbal circumlocutions' and comments as 'non-informative responses'

German(1985), classifying these behaviours as secondary characteristics of word-finding difficulties, conducted analyses on the frequency of occurrence of gestures and extra verbalisations in the naming behaviour of language-impaired children with learning disabilities. She reported that children with word-finding problems manifested significantly more gestures and extraverbalisation on those naming tasks where their performance showed more errors and longer response times while not manifesting these behaviours to any great degree on those naming tasks in which their performance was similar to that of their normal language learning counterparts.

Oza(1992) found that gestures and extraverbalisations were seen more among younger children compared to older group. These were along with circumlocutions and more evident when using compositional or locative attributes.

In the present study only extraverbalisation behaviour was observed. Children of all grades exhibited this behaviour.

COMPREHENSION ASSESSMENT:

Comprehension assessment ensured that words were within the vocabulary of selected children. Thus test results are not affected due to limited vocabulary or other receptive problems.

Thus overall test results indicate sensitivity of the test in differentiating word finding performance in children of 5-8 years. However, it does not seem to be helpful in the last group i.e. IV grade (8-9 years).

Actually, there is a need to incorporate more number of difficult words which will aid in differentiating IIIrd and IVth grade students.

CHAPTER-V

SUMMARY AND CONCLUSION

The Test of Word Finding Abilities in Children (Gujarati) (TWAC-G) is based on the diagnostic model (Fig-1) which employs naming sections, incorporates indices traditionally used to define word finding problems in adults and children and provides for a comprehension assessment of target word naming errors.

The test was administered to 40 normal, Gujarati speaking children of primary grades. Age ranged from 5-9 years.

Test provides accuracy index and speed index along with percentile scores and naming profiles.

Response analysis was done by studying the target word substitution errors. Secondary characteristics were noted down during the word finding process.

Comprehension assessment is included in present test, which aids the examiner in the differentiation of receptive Vs expressive language difficulties.

Both quantitative and qualitative analysis leads to following intepretations:

1) As age increases, child's accuracy and quickness in naming increases, showing a developmental trend. However, this was not true for performance of 8-9 years group.

2) There is no correlation between age and requirement of cues for word-finding task.

3) More number of circulocutions, self correction, and substitutions were observed in first group i.e. 5-6 years.

4) Extraverbalisation, like description and circumlocution was seen in all children irrespective of age.

5) Comprehension assessment revealed 100% score for all subjects.

6) Test is helpful for children between 5-8 years of age.

Thus the presented Test of Word-finding Abilities in Children becomes useful for Speech & Language professionals as well as educators. This test provides the examiner with overall assessment of children's word-finding skills. Further, clinical remediation strategies can be formulated based on given test results.

Limitations of the study

1) Due to time constraint, the test was administered on limited population. It needs to be standardized on large population which adequately represent various factors like geographical region, socioeconomic condition, influence of other languages, etc.

10086

2) Finding out individual item 'response latency' was practically difficult. This information may provide further insight into delays in naming and speed index. In future using sophisticated instruments/ this can be done.

3) The test needs to be modified in terms of difficulty to include age group of 8-9 years (IV Grade).

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APPENDIX-I

THE TEST OF WORD-FINDING ABILITIES IN CHILDREN (GUJARATI)

SECTION - I : Picture Naming : Nouns

SECTION - II : Sentence completion

SECTION - III : Description naming

SECTION - IV : Picture Naming : Verbs

SECTION - V : Picture Naming : Categories

GENERAL INSTRUCTIONS

1. The patient should be seated in comfortable position preferably facing the examiner.

2. Besides test material, additional items required are stopwatch, paper, pencil and test format (response sheet).

3. Score each item as it is administered. After presenting the stimulus, start the stop watch and record whether the correct response is given within 5 seconds or between 5-10 seconds. If child fails to respond provide phonemic or semantic cue. Score "1" point for each correct answer irrespective of time taken or cue given. Mark "0" for incorrect or no response.

4. Do not give any nonverbal cues, such as raising eyebrows, nodding for correct answers, etc. Occasional encouraging comments can be given.

5. Note down the target word substitution and secondary characteristics during the naming process.

SECTION - I: PICTURE NAMING : NOUNS (40 ITEMS)

Present picture cards in the order given below. Ask the child to look at the picture carefully and name it quickly. Picture cards are given in Appendix-Ia.

Test items are as follows:

1.	ગાય	/gaj/	cow
2.	કૂતરો	/kuʈro/	dog
3.	ચકલી	/ʧʌkli/	sparrow
4.	પતંગિયું	/pʌtəŋɪjũ/	butterfly
5.	ગુલાબ	/gulab/	rose
6.	ઘાસ	/gʰas/	grass
7.	અંગુઠો	/ʌŋuʈʰo/	thumb
8.	ચશ્મા	/ʧʌʃma/	spectacles
9.	સાઈકલ	/saɪkʌl/	cycle
10.	બસ	/bʌs/	bus
11.	રીંછ	/rĩʧʰ/	bear
12.	કરોળિયો	/kʌroɭɪjo/	spider
13.	બી	/bi/	seed
14.	કળી	/kʌɭi/	bud
15.	મરચાં	/mərəʧã/	chilly
16.	બગલ	/bʌgʌl/	armpit
17.	હાર	/har/	necklace
18.	દીવો	/ɖivo/	a lamp
19.	ચાકુ	/ʧakU/	knife
20.	પાટા	/paʈa/	rail

21.	શેરડી	/ʃeɾʌɖi/	sugarcane
22.	લસણ	/lʌsʌɳ/	garlic
23.	ઢીંચણ	/ɖʱĩtʃʌɳ/	knee
24.	ખભો	/kʰʌbʰo/	shoulder
25.	જકીટ	/ʤakiʈ/	jacket
26.	થાંભલો	/t̪ʰãmbʰlo/	pillar
27.	સીડી	/siɖi/	ladder
28.	ત્રાજવાં	/t̪ɾaʤʌvã/	a balance
29.	રથ	/rʌtʰ/	chariot
30.	ન્યાયાધીશ	/njajaɖ̪ʰiʃ/	judge
31.	દીપડો	/ɖ̪ipʌɖo/	leopard
32.	ગરુડ	/gʌruɖ/	an eagle
33.	ડાળી	/ɖaɭi/	a branch
34.	ત્રિકોણ	/t̪ɾɪkoɳ/	triangle
35.	પોપચાં	/poptʃã/	eyelid
36.	કોણી	/koɳi/	elbow
37.	બાંય	/bãj/	sleeve
38.	પારણું	/paɾɳũ/	cradle
39.	શંખ	/ʃʌnkʰ/	conch-shell
40.	કડિયો	/kʌɖɪjo/	a mason

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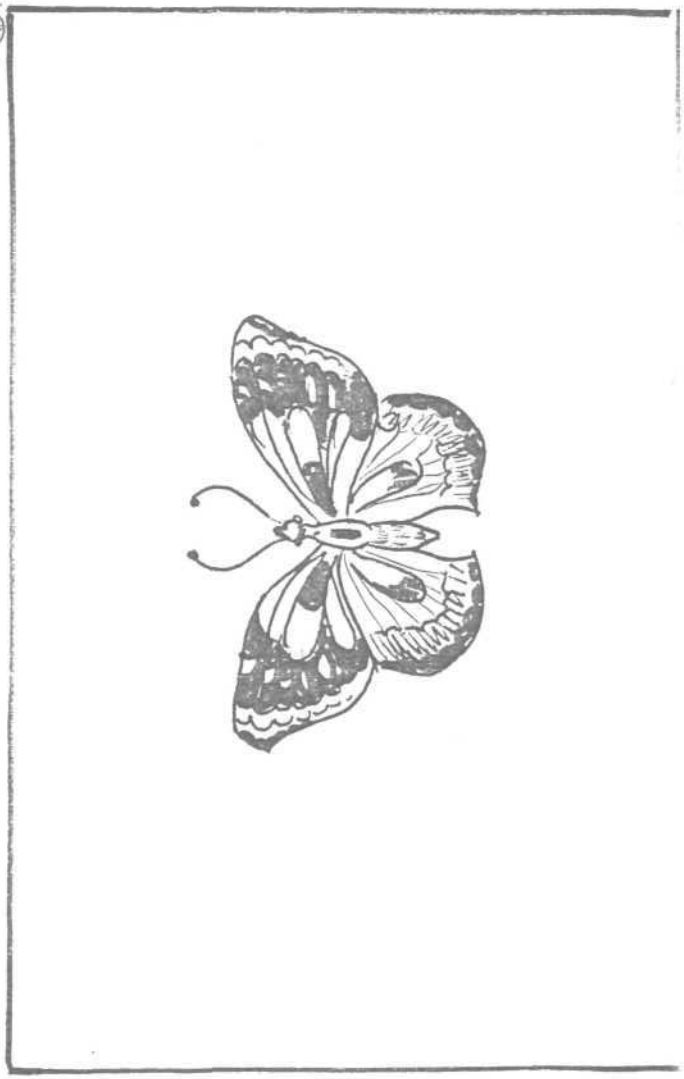
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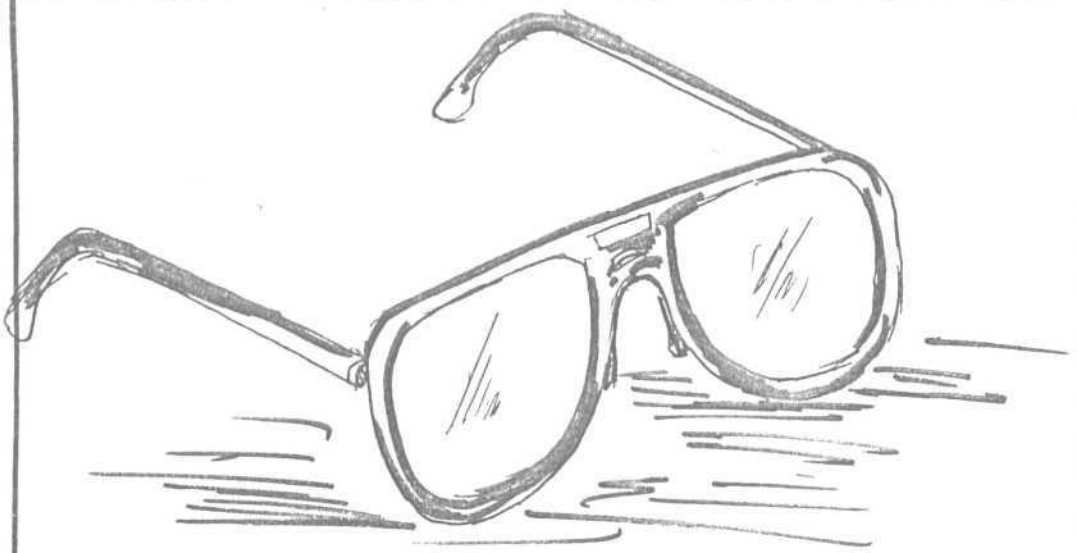

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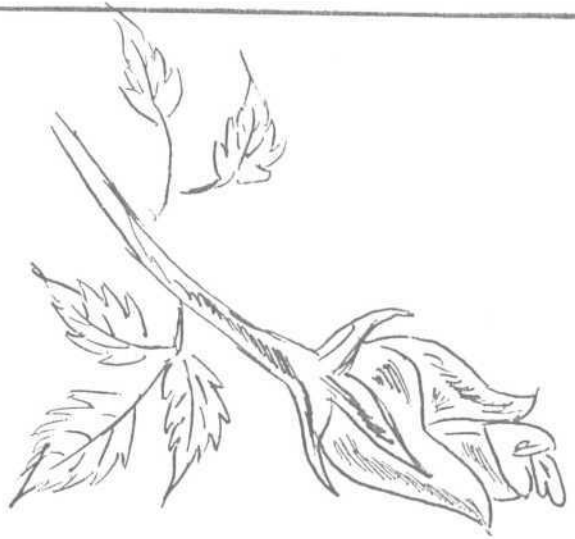

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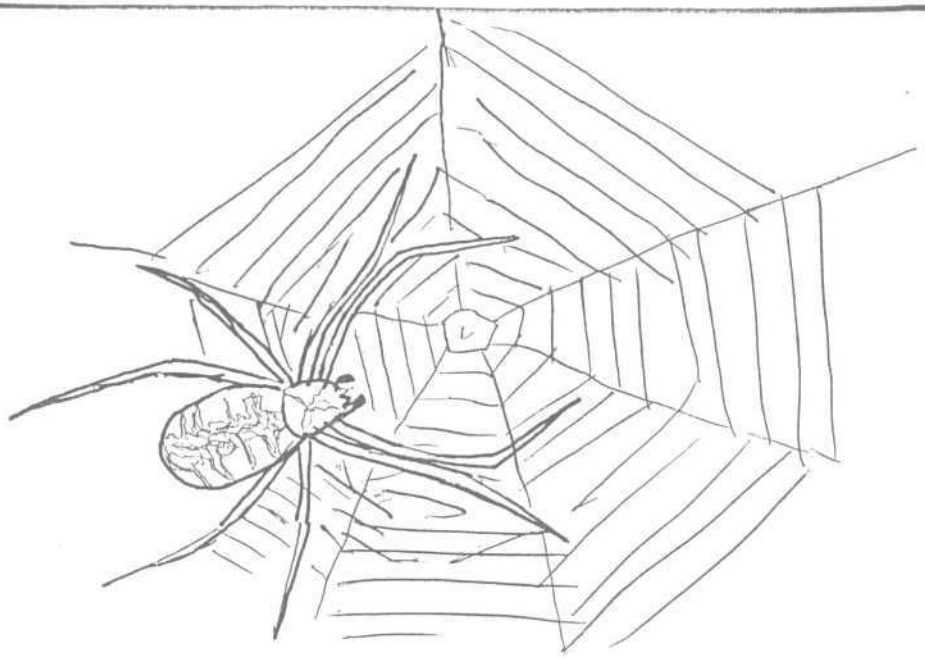

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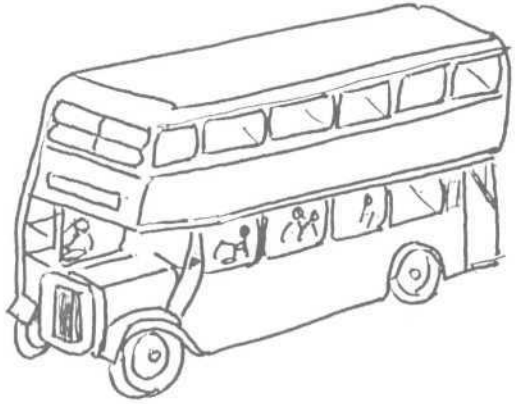

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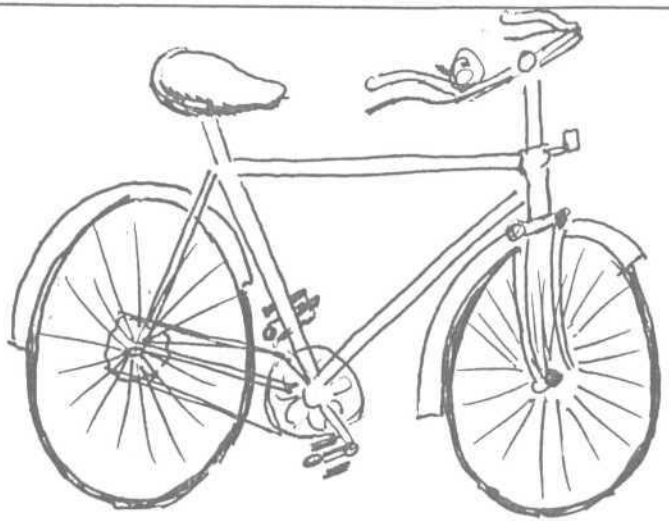

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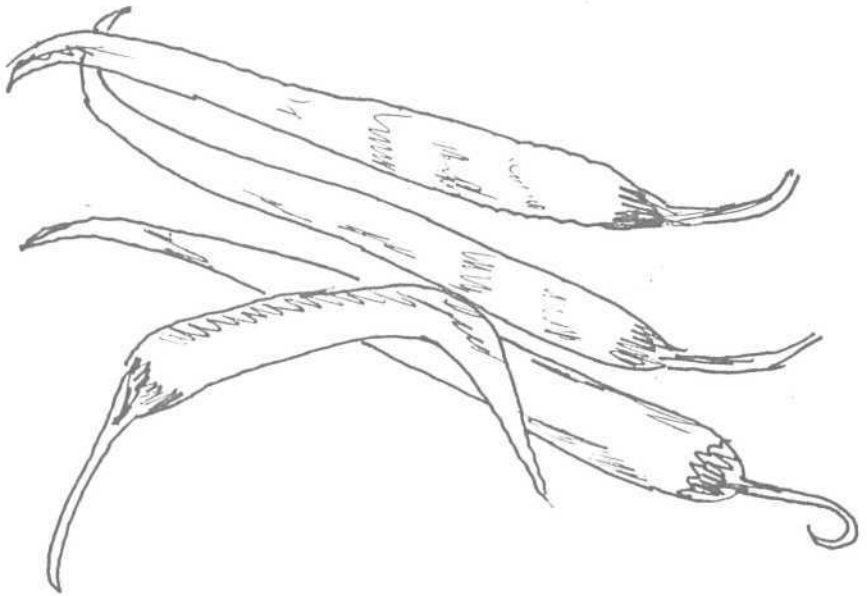

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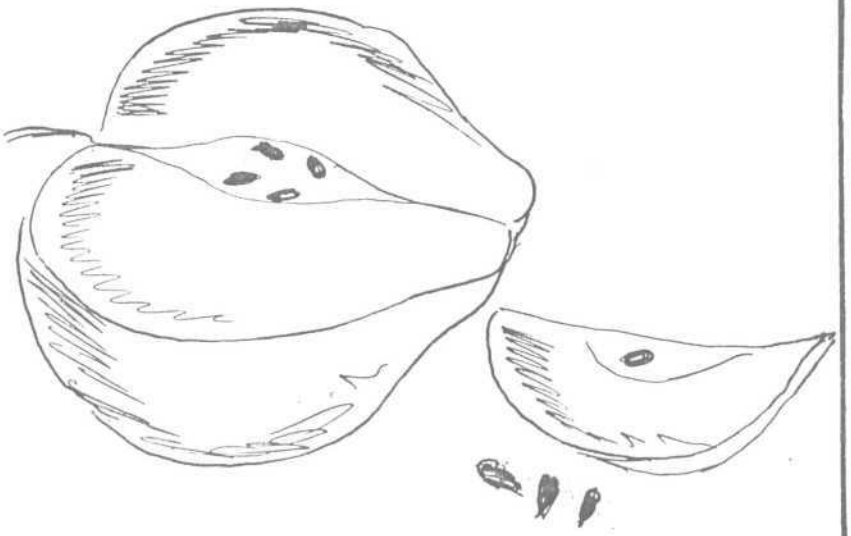

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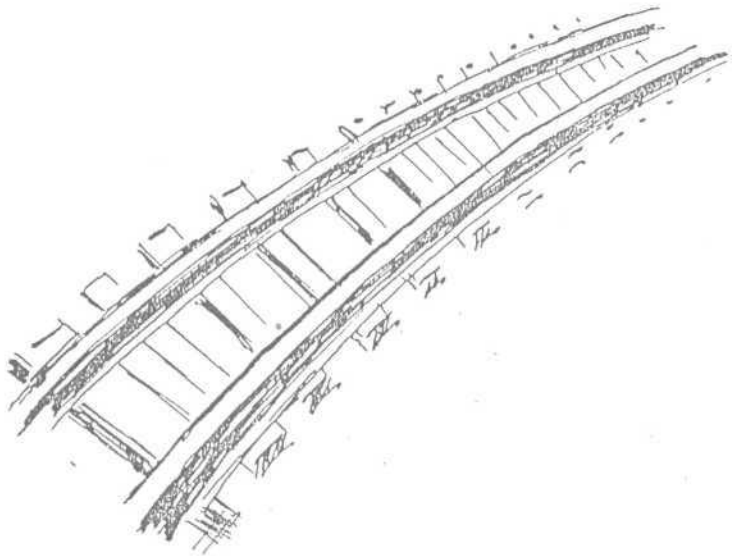

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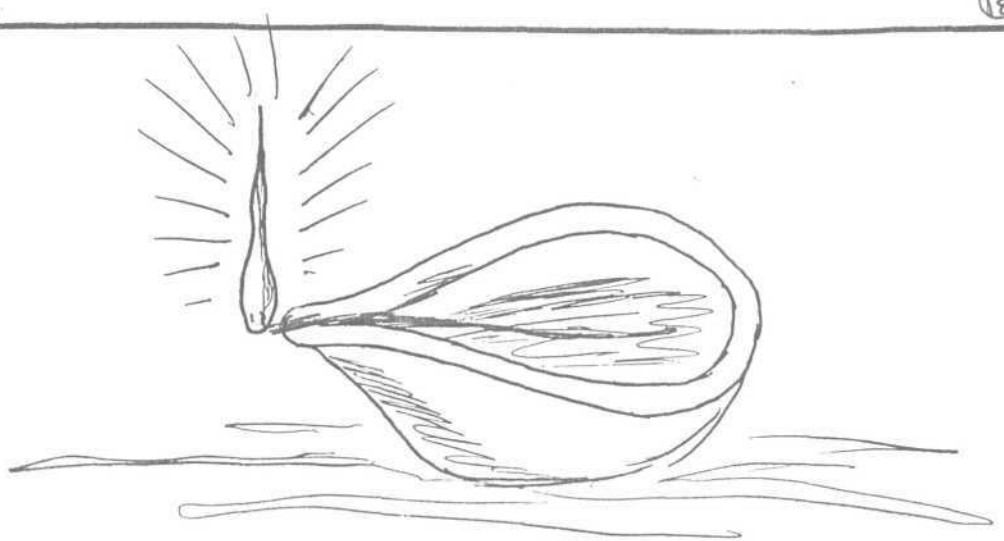

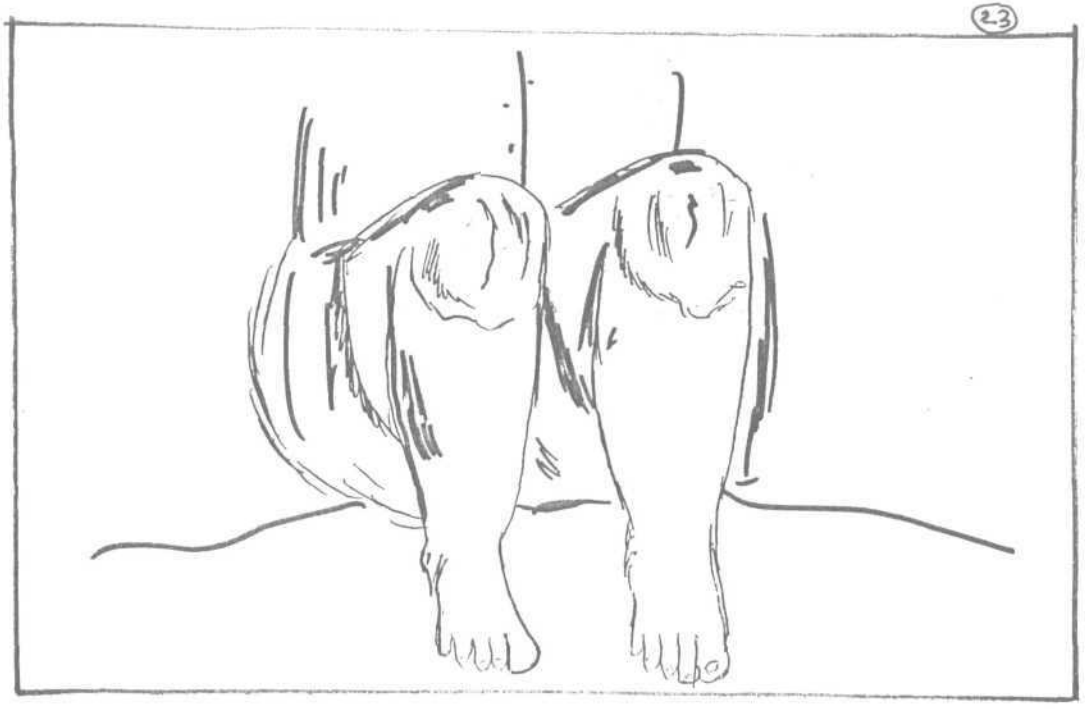
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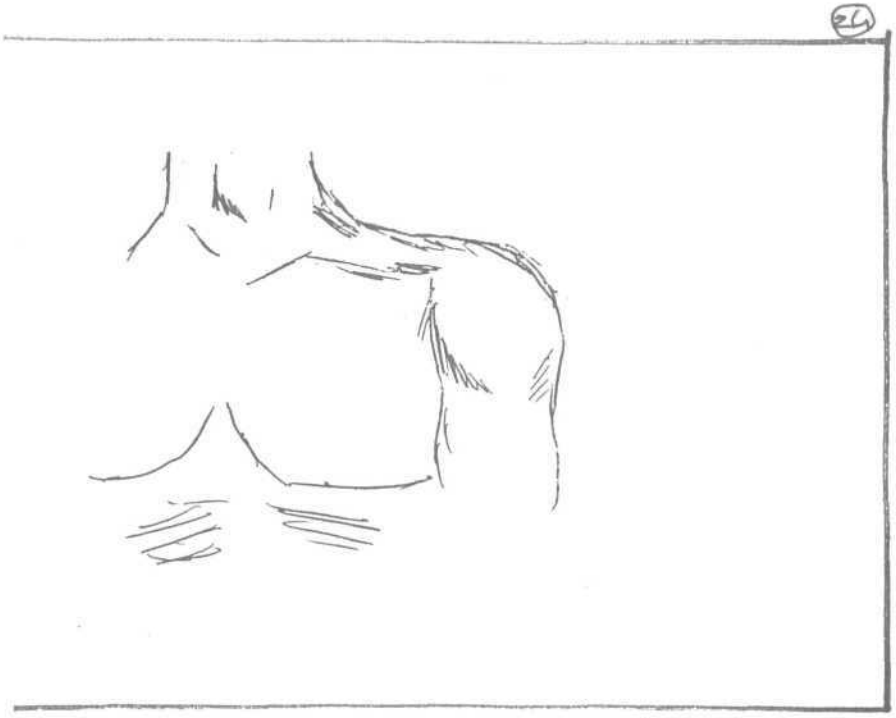
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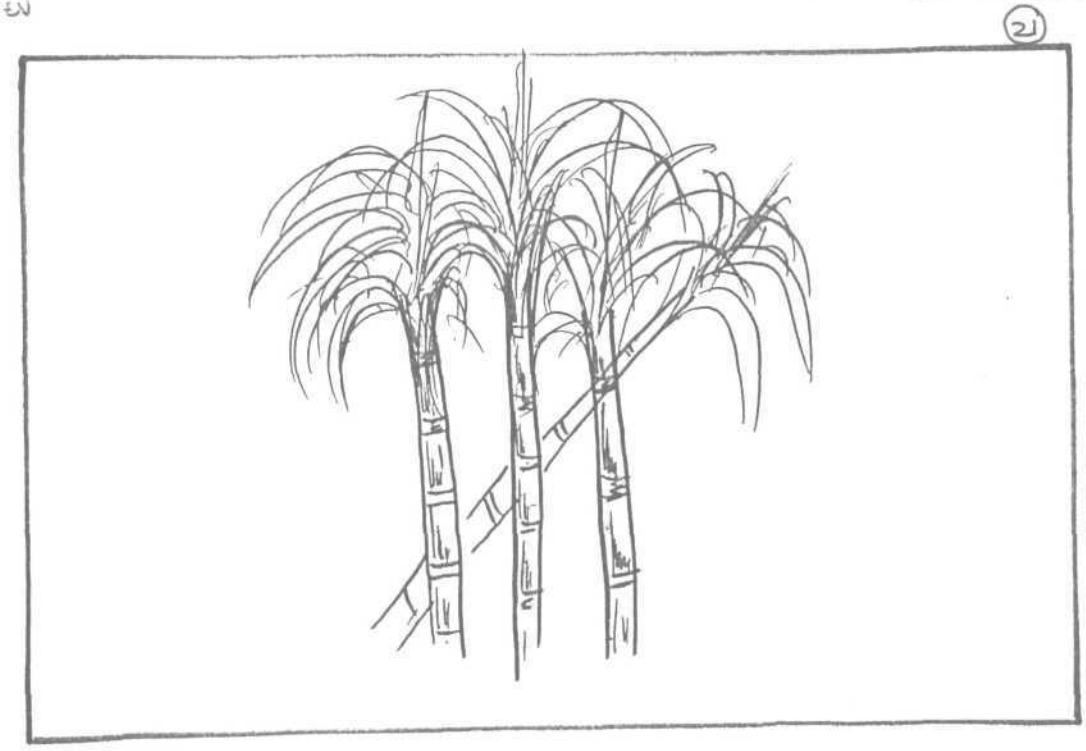
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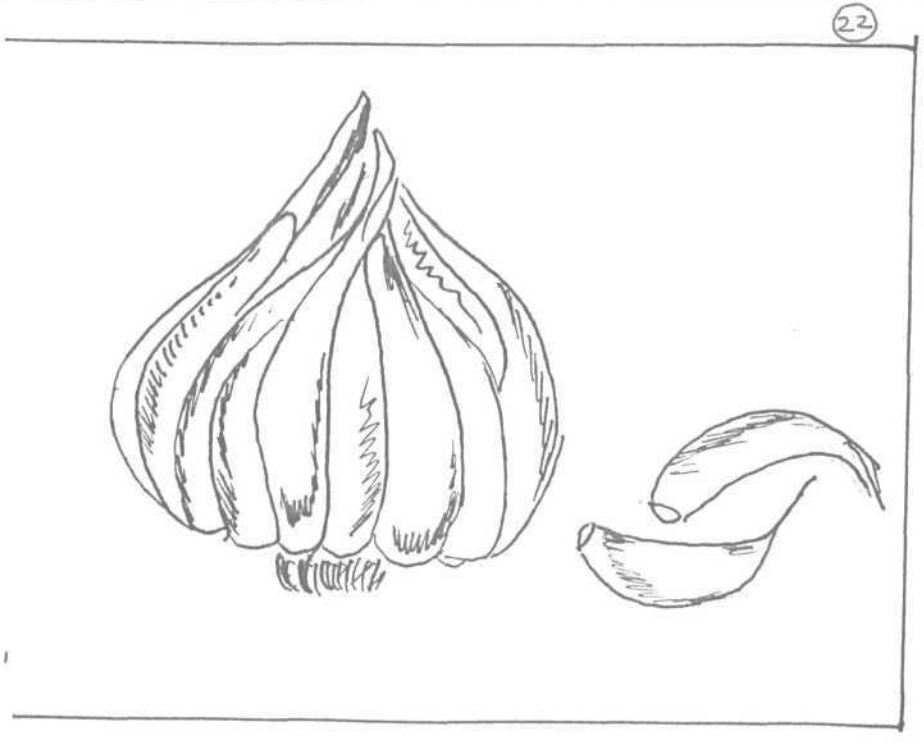
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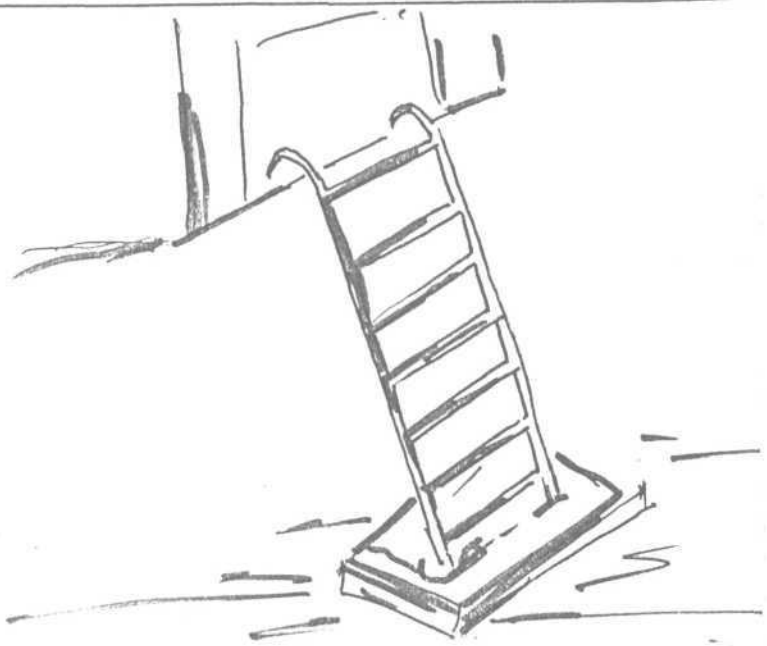

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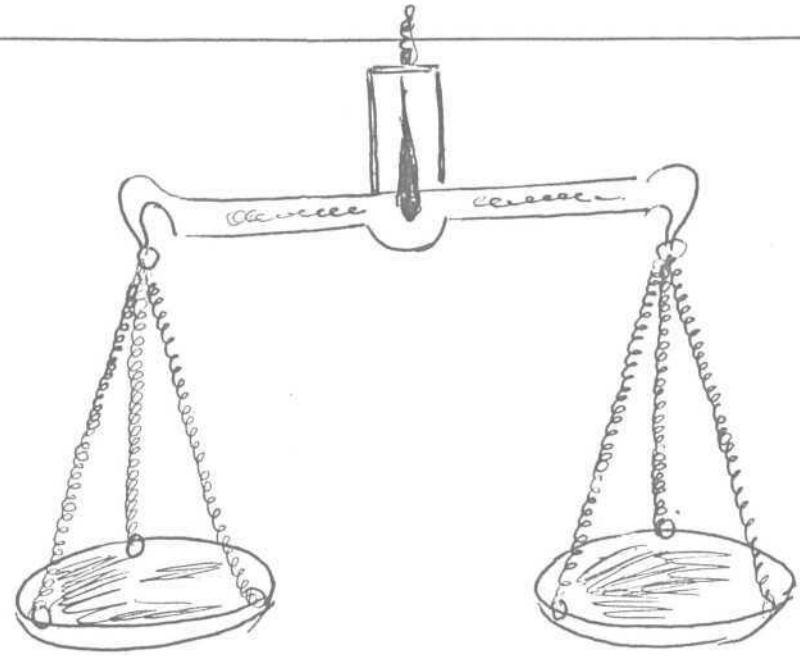

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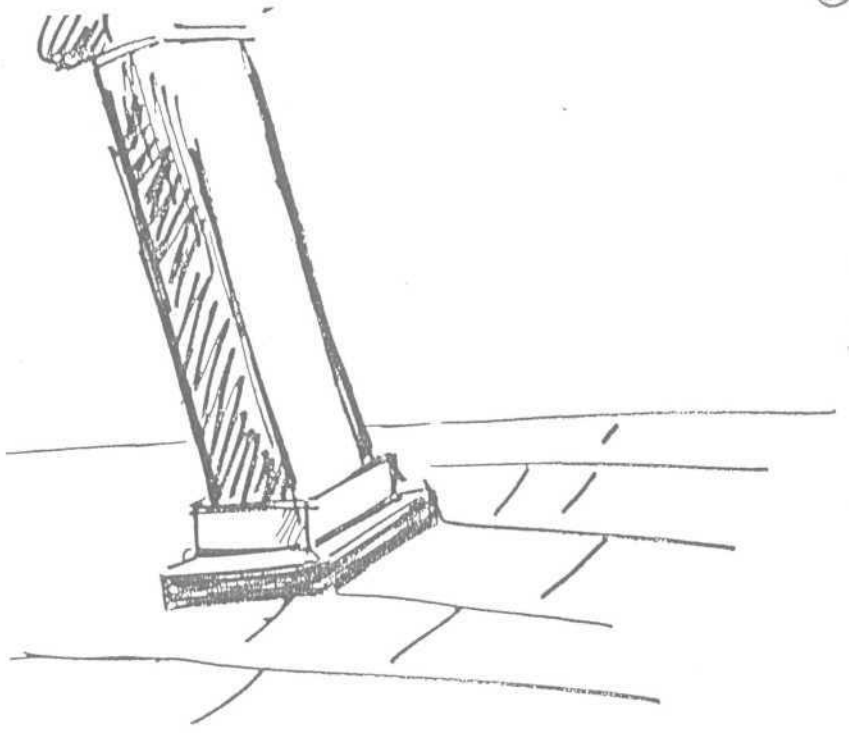

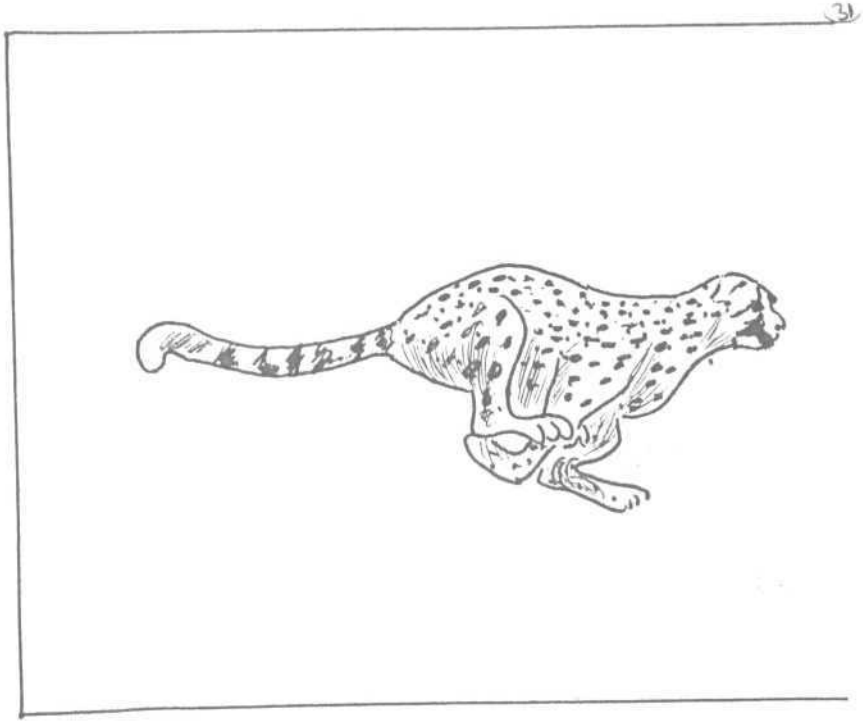

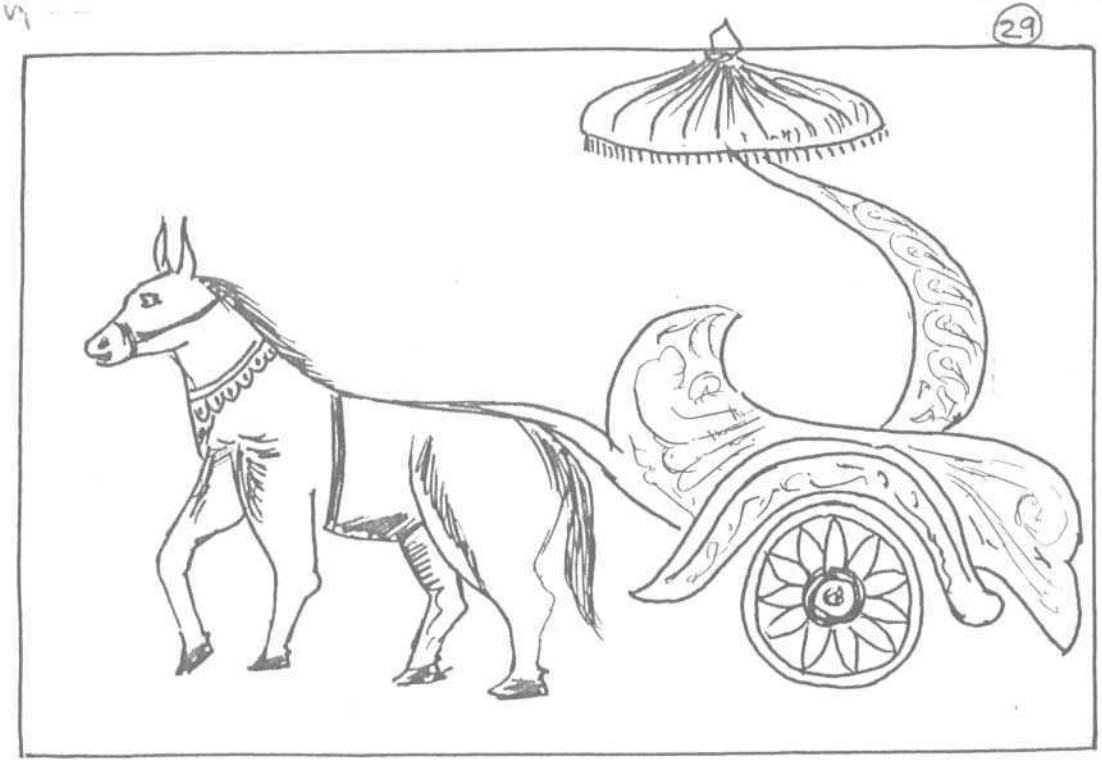

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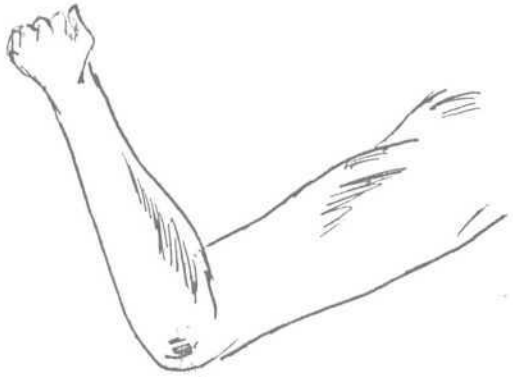

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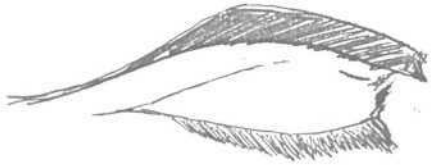

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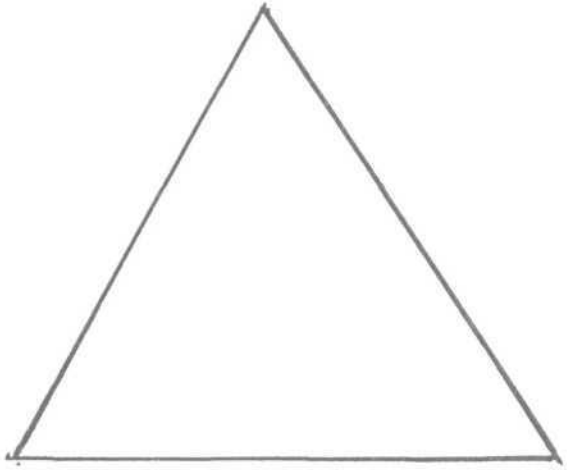

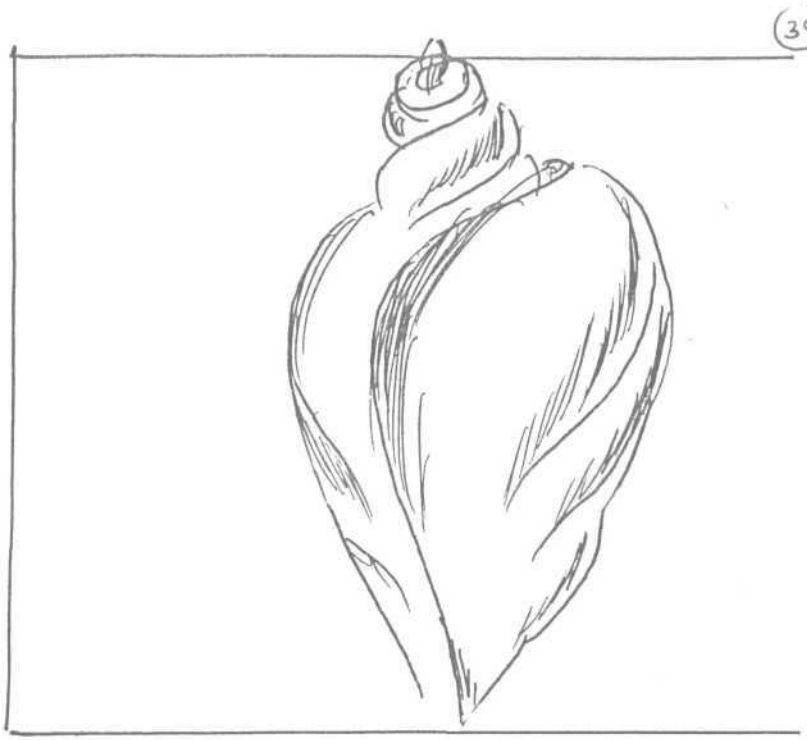

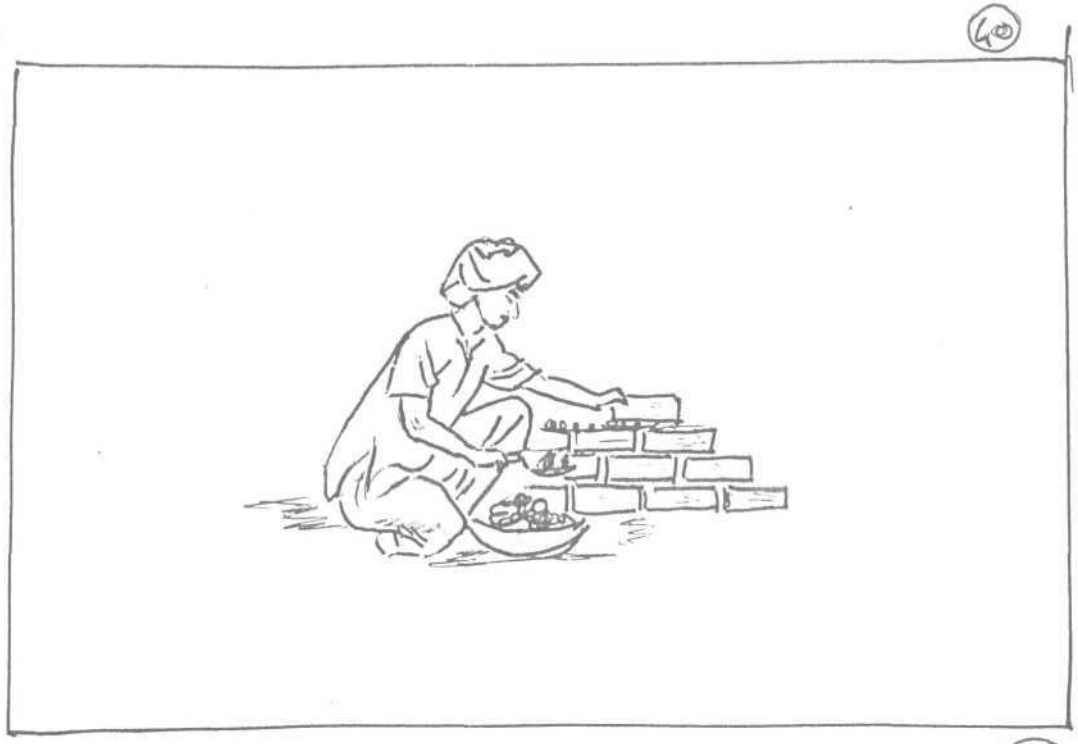

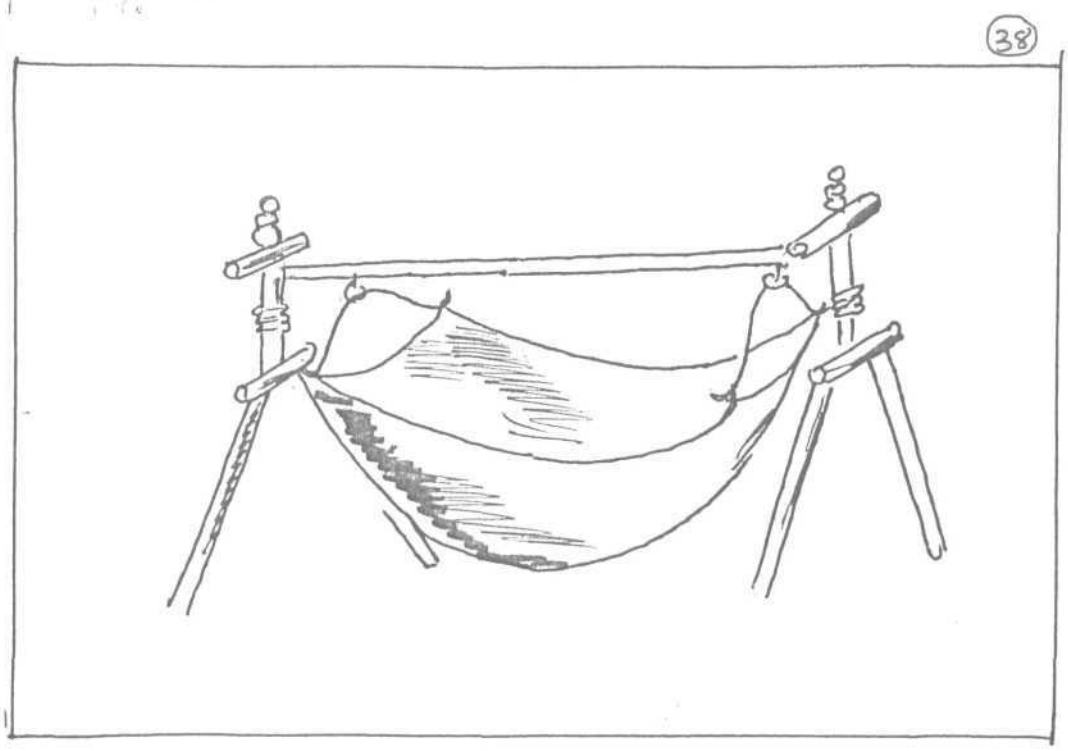

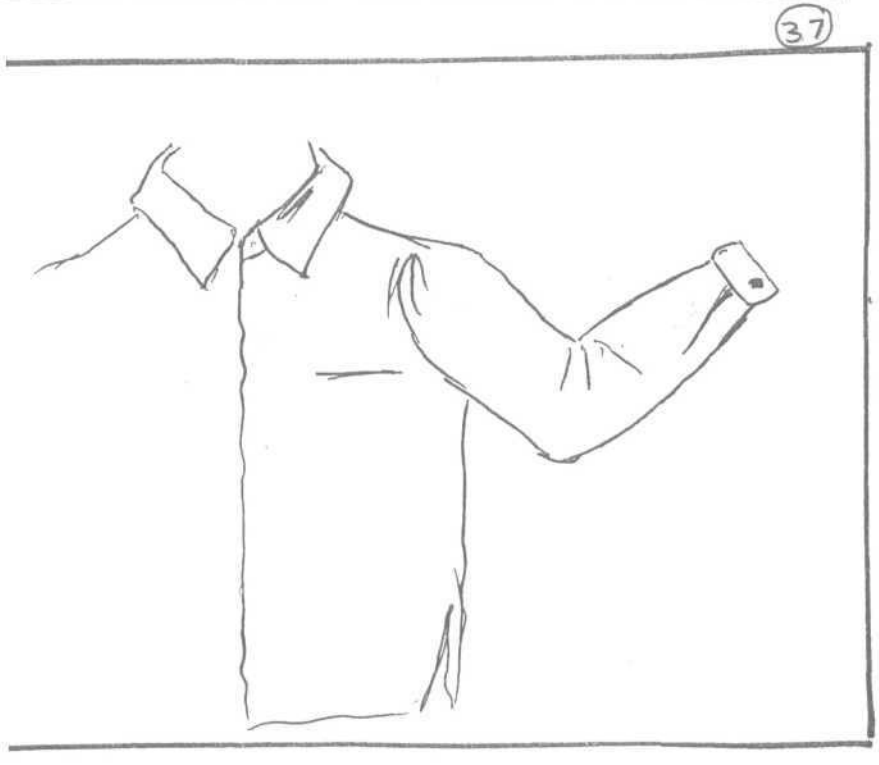

SECTION-11 : SENTENCE COMPLETION (20 ITEMS)

Ask the child to listen the sentence carefully and name the missing word in order to complete the sentence.

1. આપણે કાનથી સાંભળીયે છીએ અને ..... થી સુંઘીયે છીએ. (નાક)

/apɳe kanʈʰi sambʰʌɬije tʃʰie ɔne ..... ʈʰi sungʰije tʃʰie/ (nak) /

We hear through our ears and smell through our ..... (nose)

2. જેમ શિયાળામાં ઠંડી પડે છે, તેમ ..... માં વરસાદ પડે છે. (ચોમાસા)

/dʒem ʃɪjaɬamɑ̃ ʈʰʌndi pʌɖe tʃʰe, ʈem ..... mɑ̃ vʌrsad̪ pʌɖe tʃʰe. (tʃomasa) /

It's cold during winter and it rains during ..... (monsoon)

3. જંગલી પ્રાણીઓ ..... માં રહે છે. (જંગલ)

/dʒʌŋli praɳio ..... mɑ̃ rəhe tʃʰe. (dʒʌŋʌl) /

Wild animals live in the ..... (Forest)

4. પક્ષી ઝાડ પર ..... બાંધી રહે છે. (માળો)

/pʌkʃi dʒaɖ pʌr ..... bɑ̃d̪ʰi rəhe tʃʰe. (maɬo) /

The birds build ..... on the tree (nest)

5. કોબ્રા એક ઝેરી ..... છે. (સાપ)

/kobra ek dʒʰeri ..... tʃʰe (sap) /

Cobra is a poisonous ..... (snake)

6. સ્વેટર બનાવવા ..... વપરાય છે. (ઊન)

/sveʈʌr bʌnavʌva ..... vʌpʌraj tʃʰe. (un) /

We use ..... to make a sweater (wool)

7. પહેલાં વાસણો પિત્તળમાંથી બનતાં, પરંતુ આજકાલ ..... માંથી બને છે. (સ્ટીલ)

/pʌhelɑ̃ vasɳo pɪʈʰmɑ̃ʈʰi bʌnʌʈɑ̃, pʌrʌntu adʒkal ..... mɑ̃ʈʰi bʌne ʧʰe (stil)/

Earlier vessels were made out of brass, but now they are made out of ..... (steel)

8. ચાંદલો ..... પર કરાય. (કપાળ)

/ʧɑ̃ɖlo ..... pʌr kʌraj. (kʌpaɭ)/

You put bindi on the .....(forehead)

9. સૂર્ય .....દિશામાં આથમે છે. (પશ્ચિમ).

/surj ..... ɖɪʃamɑ̃ aʈʰme ʧʰe. (pʌʃʧɪm)/

Sun sets in the .....(West)

10. જેની આરપાર જોઈ શકાય તેને ..... કહેવાય. (પારદર્શક)

/dʒeni arpar dʒoi ʃʌkaj ʈene ..... kʌhevaj (pardɖarʃk)/

The thing through which we can see across is called ..... (transparent)

11. જે માંસ ખાય તેમને માંસાહારી કહેવાય, જે માંસ ન ખાય તેમને ..... કહેવાય. (શાકાહારી).

/dʒe mɑ̃s kʰaj ʈemne mɑ̃sahari kʌhevaj, dʒe mɑ̃s nʌ kʰaj ʈemne ..... kʌhevaj (ʃakahari)/

If meat eaters are called non-vegetarians, non-meat eaters are called .....(vegetarians)

12. જે લેખ લખે છે, તેને ..... કહે છે. (લેખક)

/dʒe lekʰ lʌkʰe ʧʰe, ʈene ..... kʌhe ʧʰe (lekʰɔk)/

Person who writes stories is called .....(writer)

13. ચંદ્ર ગોળ થાળી જેવો .....નાં દિવસે દેખાય છે. (પૂનમ).

/ʧʌndr goɭ tʰɑɭi dʒevo ..... nɑ̃ dɪvse ɖekʰaj ʧʰe. (puɳʌm)/

The moon is full and round on .....(full moon day)

14. હાથીનાં બચ્ચાંને ..... કહેવાય. (મદનિયું)

/hatʰinã̄ bʌʧʧãne ..... kʌhevaj. (mʌdnɪjʊ̃)/

A baby elephant is called .....(Baby elephant)

15. જો આપણે કોઈ ભૂલ કરીએ, તો ..... માંગવી જોઈએ. (માફી)

/ʤo apʌɳe koi bʰul kʌrije, ʈo ..... mãgvi ʤoije. (mapʰi)/

If we have committed a mistake, we should ..... (apologize)

16. જેને નોકરીમાંથી પોતાની મરજીથી નીકળી જવું હોય, તે ..... આપે છે. (રાજીનામું)

/ʤene nokrimãtʰi poʈani mʌrʤitʰi nikʌli ʤʌvʊ̃ hoj, ʈe ..... ape ʧʰe. (raʤinamʊ̃)/

A person who is voluntarily quiting the job gives ..... (resignation)

17. જે રથ ચલાવે, તેને ..... કહે છે. (સારથી)

/ʤe rʌtʰ ʧʌlave, ʈene ..... kʌhe ʧʰe (saɾʈʰi)/

The person who drives chariot is called ..... (charioteer)

18. સોનું, ચાંદી, લોખંડ વગેરેને ..... કહેવાય. (ધાતુ)

/sonʊ̃, ʧandi, lokʰʌndʌ vʌgerene ..... kʌhevaj (dʱatu)/

Gold, Silver, Iron etc.are called .....(metal)

19. જેમ કીડી દરમાં રહે છે; સિંહ, વાઘ વગેરે ..... માં રહે છે. (ગુફા)

/ʤem kidi dʌrmã̄ rʌhe ʧʰe; sĩh, vagʰ vʌgere ..... mã̄ rʌhe ʧʰe (gupʰa)/

Ants stay in the anthill, Lion and Tigers stay in ..... (cave)

20. મધમાખી ..... ભેગું કરે છે. (મધ)

/mʌdʱmakʰi ..... bʰegʊ̃ kʌre ʧʰe. (mʌdʱ)/

Honeybee collects .....(honey)

SECTION - III: DESCRIPTION NAMING (20 ITEMS)

Ask the child to listen carefully and name the described word quickly.

1. નદી પાર કરવા શેમાં બેસવું પડે? (હોડી)

/nəd̪i par kʌrva ʃemä besvü pʌɖe? (hoɖi)/

What do you use to cross the river? (boat)

2. દિવાળીમાં બાળકો શું ફોડે છે? (ફટાકડા)

/[illegible]/

What do children burst during Diwali? (crackers)

3. સમય જોવા માટે લોકો શું વાપરે છે? (ઘડિયાળ)

/sʌmʌj dʒova maʈe loko ʃü vapre tʃʰe? (gʰʌɖɪjaɖ)/

What do people use to see the time? (watch)

4. એ શું છે, જે સફેદ હોય છે, ગાય અથવા ભેંશમાંથી મળે છે અને એને પીવાથી તાકાત મળે છે? (દૂધ)

/e ʃü tʃʰe, dʒe sʌpʰeɖ hoj tʃʰe, gaj ət̪ʰʌva bʰëʃmätʰi mʌɭe tʃʰe əne ene pivatʰi t̪akat̪ mʌɭe tʃʰe? (d̪ud̪ʰ)/

What is that we get from cow & buffalo, which is white in colour and it gives us strength? (milk)

5. એ કયું પ્રાણી છે, જેની લાંબી સૂંઢ અને ટૂંકી પૂંછડી હોય છે? (હાથી)

/e kʌjü praɳi tʃʰe dʒeni lambi süɖʰ əne ʈüki pütʃʰɖi hoj tʃʰe? (hat̪ʰi)/

Name the animal with a long trunk and a short tail. (elephant)

6. ઘરનાં કયા ઓરડામાં બા રસોઈ બનાવે છે? (રસોડું)

/gʰʌrnä kʌja orɖamä ba rʌsoi bʌnave tʃʰe? (rʌsoɖü)/

Name the place where mother cooks at home. (kitchen)

7. એ કોણ છે, જે મંદિરમાં રહે છે, અને ભગવાનની પૂજા કરે છે? (પૂજારી)

/e koɳ tʃʰe dʒe mʌndɪrmɑ̃ rʌhe tʃʰe, ane bʰʌgvanni pudʒa kʌre tʃʰe? (pʊdʒari)/

Who stays in the temple and performs pooja? (Pujari)

8. લોકો તારીખ અને વાર શેમાં જોય છે? (કેલેન્ડર)

/loko t̪arikʰ ane var ʃemɑ̃ dʒoj tʃʰe? (kelendʌr)/

In what do we see the date and the day? (calander)

9. એ શું છે, જેનો લાલ રંગ છે, અને આપણાં શરીરમાં વહે છે? (લોહી)

/e ʃũ tʃʰe, dʒeno lal rʌŋ tʃʰe, ane apɳɑ̃ ʃʌrirmɑ̃ rʌhe tʃʰe? (lohi)/

What is that which is red in colour and flows in our body? (blood)

10. સોના જેવા રંગને સોનેરી કહેવાય, એમ ચાંદી જેવા રંગને શું કહેવાય? (રૂપેરી)

/sona dʒeva rʌŋne soneri kʌhevaj, em tʃand̪i dʒeva rʌŋne ʃũ kʌhevaj (rʊperi)/

If gold like colour is called golden, then what is the silver like colour called? (silver)

11. એ શું છે, જે પહાડોમાંથી નીકળે છે અને સાગરમાં જઈ મળે છે? (નદી)

/e ʃũ tʃʰe dʒe pʌhad̪omɑ̃ʈʰi nɪkʌle tʃʰe ane sagʌrmɑ̃ dʒʌI mʌle tʃʰe? (nʌd̪i)/

What is it that flows through the mountain and joins the sea? (river)

12. કયા પ્રાણીની શરીરની ચામડીમાંથી ઊન મળે છે? (ઘેટું)

/kʌja praɳinɑ̃ ʃʌrirni tʃamd̪imɑ̃ʈʰi ʊn mʌle tʃʰe? (gʰeʈũ)/

From which animal do we get wool? (sheep)

13. જે ભણેલું ન હોય તેને શું કહેવાય ? (અભણ)

/ʤe bʰʌɳelũ nʌ hoj ʈene ʃũ kʌhevaj ? (ʌbʰʌɳ)/

What do we call a person who is unable to read and write? (Illiterate)

14. જે માટીનાં માટલાં અને બીજાં સાધનો બનાવે એ કોણ ? (કુંભાર)

/ʤe maʈinã maʈlã ʌne bidʒã sadʰno bʌnave e koɳ ? (kʊmbʰar)/

Name the person who makes pots and other vessels out of mud and clay ? (Potter)

15. નારિયેળનાં કડક ભાગને શું કહેવાય , જેને તોડીને ખોપરું કાઢવામાં આવે છે ? (કાચલી)

/narɪjeɭnã kʌdʌk bʰagne ʃũ kʌhevaj , ʤene ʈodine kʰoprũ kadʰvamã ave ʧʰe ? (katʃli)/

What is the hard part of coconut called, on breaking which we get coconut? (shell)

16. જેમ હાથની હથેળી , એમ પગની શું ? (પાની)

/ʤem haʈʰni hʌtʰeɭi , em pʌgni ʃũ ? (pani)/

If the hand has a palm, what does the leg have? (heel)

17. એ કઈ ચીજ છે , જેને જોડી જોડીને મકાન બનાવાય છે ? (ઈંટ)

/e kʌɪ ʧiʤ ʧʰe , ʤene ʤodi ʤodine mʌkan bʌnavaj ʧʰe ? (ĩʈ)/

Name the thing which we join to make a house. (brick)

18. આંખમાંના કાળા ગોળાકાર ભાગને શું કહેવાય ? (કીકી)

/ãkʰmãna kaɭa goɭakar bʰagne ʃũ kahevaj ? (kiki)/

What is the black round portion of the eye called? (Pupil)

19. વહેલી સવારને શું કહેવાય ? (પરોઢ)

/ʋʌheli sʌvarne ʃũ kʌhevaj ? (pʌrodʰ)/

What is early morning called? (dawn)

20. એ કયું ફૂલ છે, જે રાતનાં ખીલે છે? (રાતરાણી)

/e kʌjũ pʰul tʃʰe, dʒe raṯnä kʰile tʃʰe? (raṯrani)/

Name the flower which blooms at night? (Ratrani)

SECTION - IV: PICTURE NAMING : Verbs (20 ITEMS)

Ask the child to look at the picture carefully and name the action carried out. Picture cards are in Appendix Ib.

1.	વાંચવું	/vãtʃvũ/	to read
2.	ઊડવું	/ʊɖvũ/	to fly
3.	રડવું	/rʌɖvũ/	to cry
4.	પીવું	/pivũ/	to drink
5.	સૂવું	/sʊvũ/	to sleep
6.	ખંજવાળવું	/kʰʌndʒvaɭvũ/	to scratch
7.	તરવું	/t̪ʌrvũ/	to swim
8.	ફાડવું	/pʰaɖvũ/	to tear
9.	સીવવું	/sivʌvũ/	to sew/stitch
10.	ઊતરવું	/ʊt̪ʌrvũ/	to come down
11.	ગૂંથવું	/gũt̪ʰvũ/	to knit
12.	બાંધવું	/band̪ʰvũ/	to build/construct
13.	પીગાળવું	/piglʌvũ/	to melt
14.	લૂછવું	/lʊʧʰvũ/	to wipe
15.	નમવું	/nʌmʌvũ/	to bend
16.	વાવવું	/vavʌvũ/	to sow/plant
17.	ખેડવું	/kʰeɖvũ/	to plough
18.	વગાડવું	/vʌgaɖvũ/	to play (a musical instrument, etc.)
19.	વીંટવું	/vĩʈvũ/	to wrap
20.	તોળવું	/t̪oɭvũ/	to weigh

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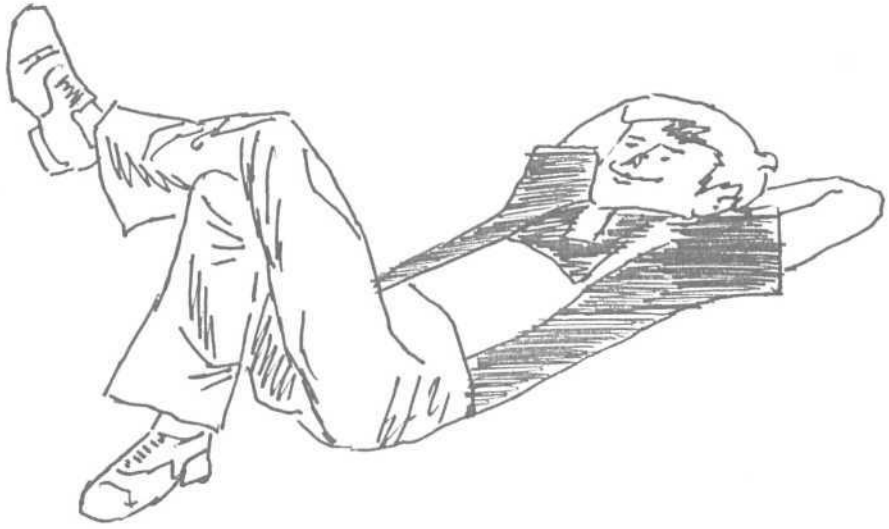

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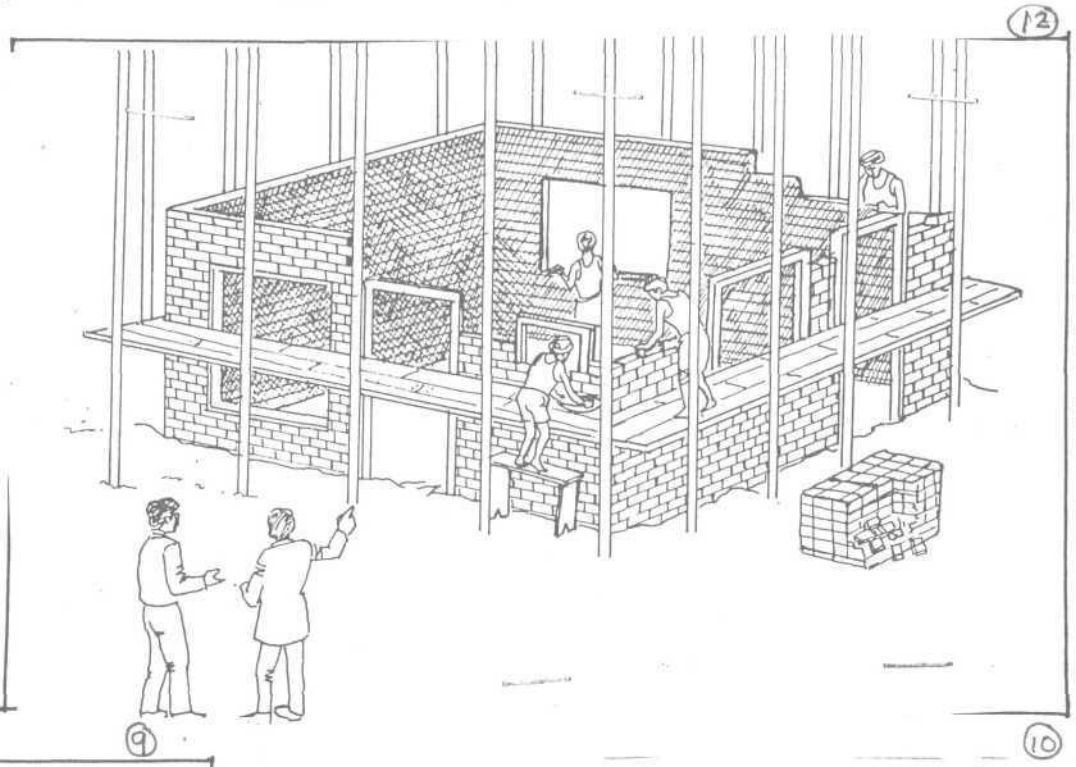
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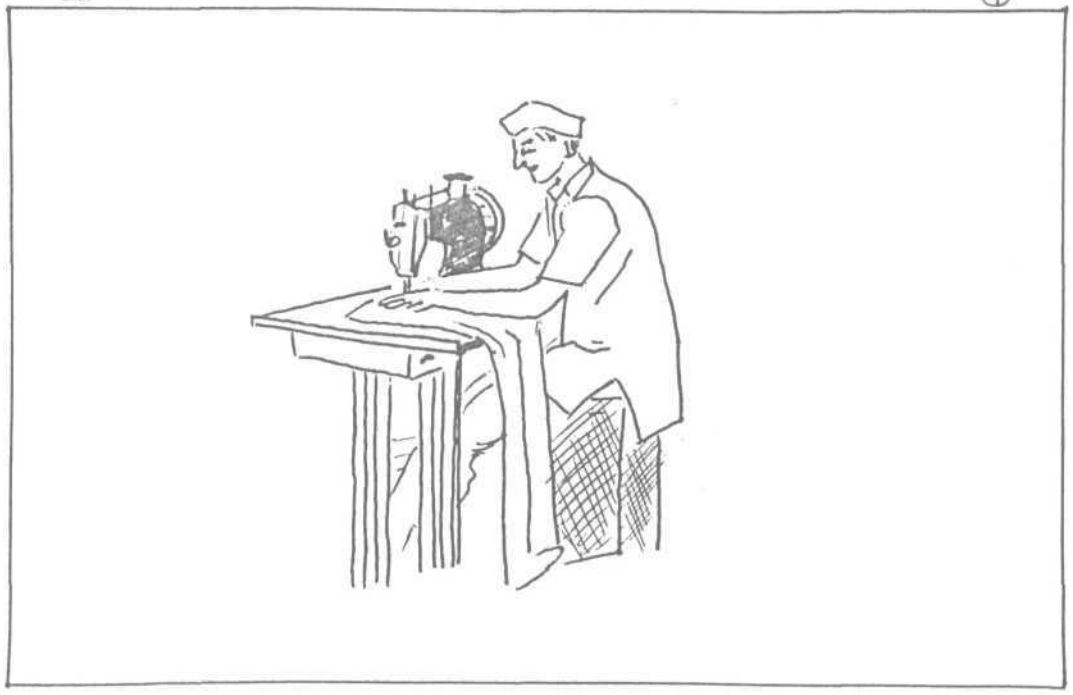
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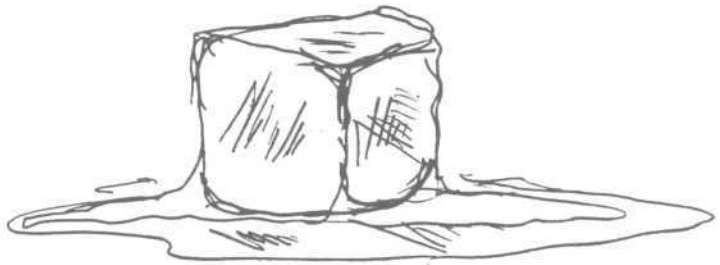

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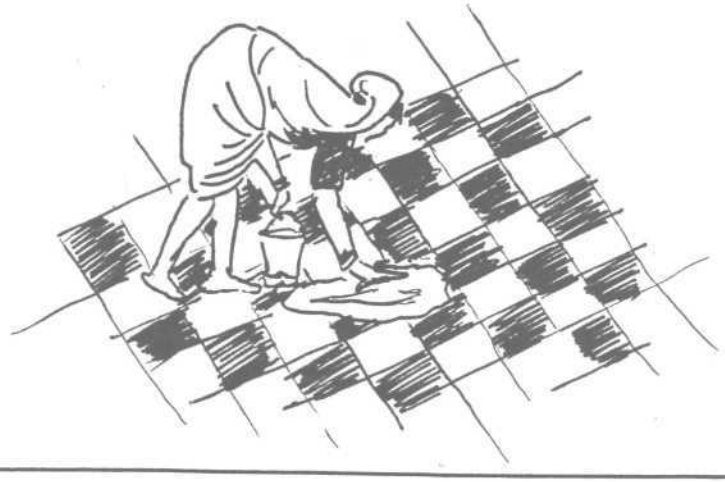

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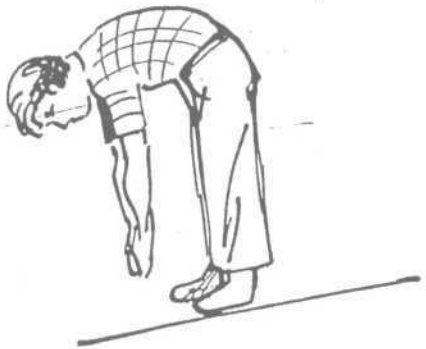

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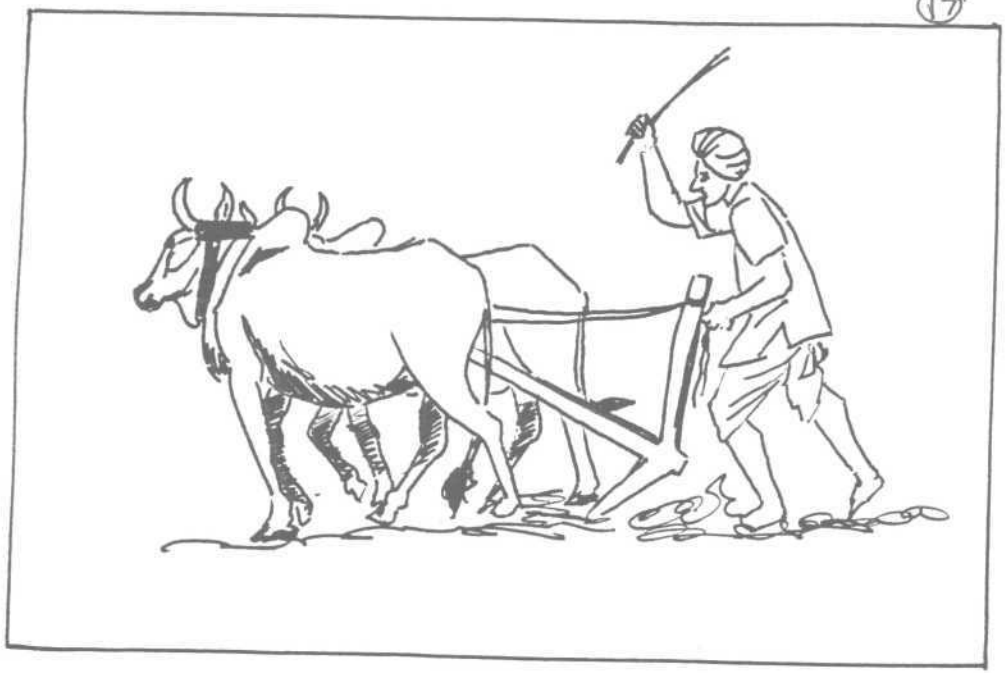

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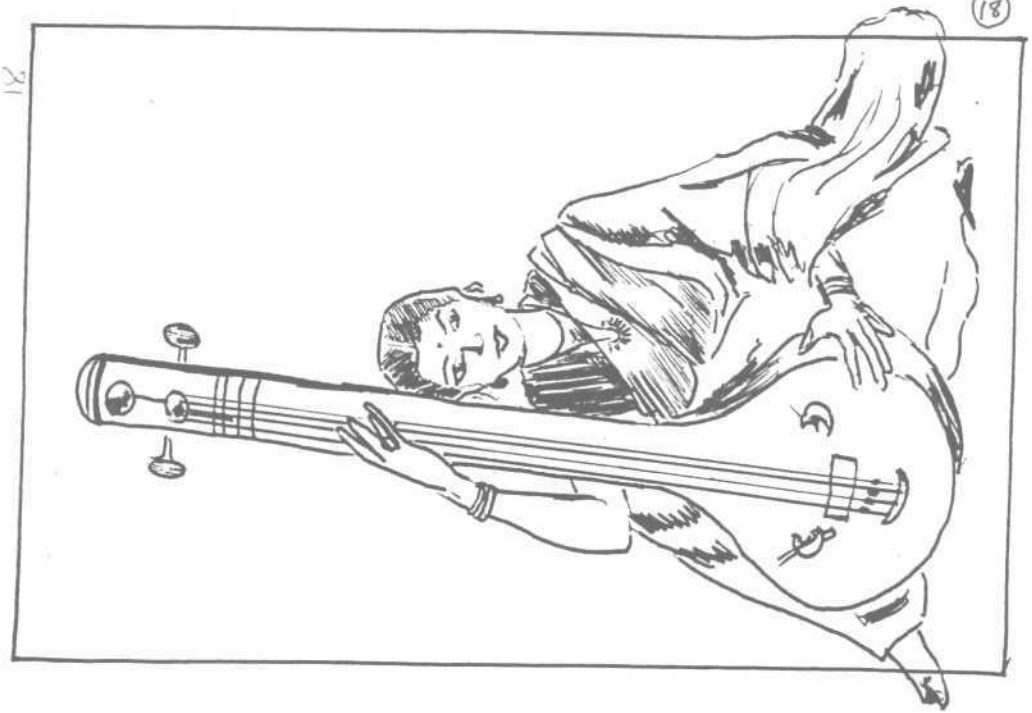

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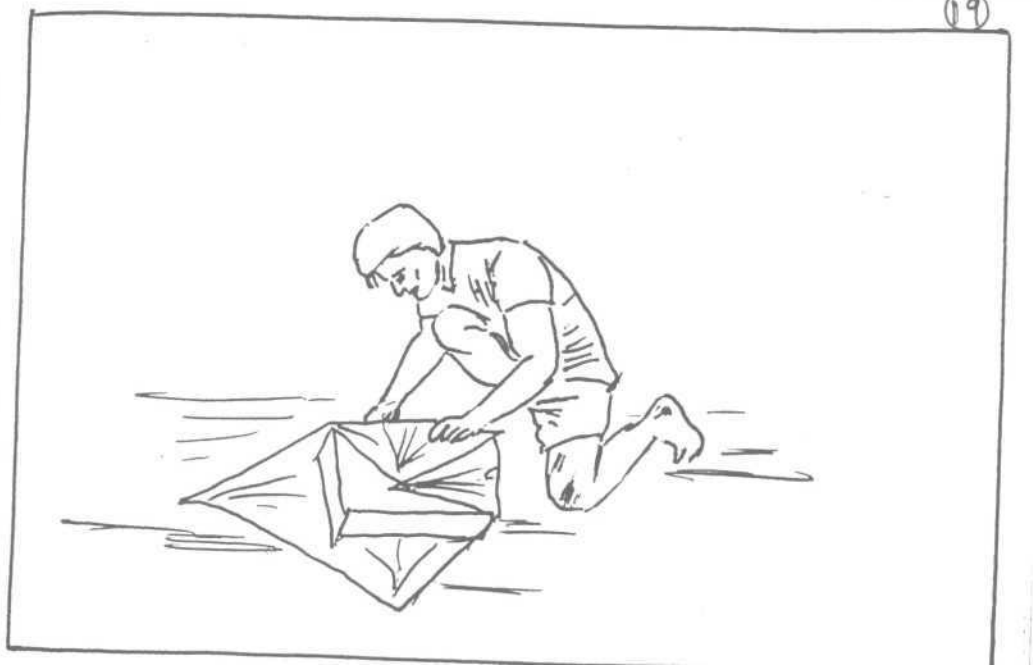

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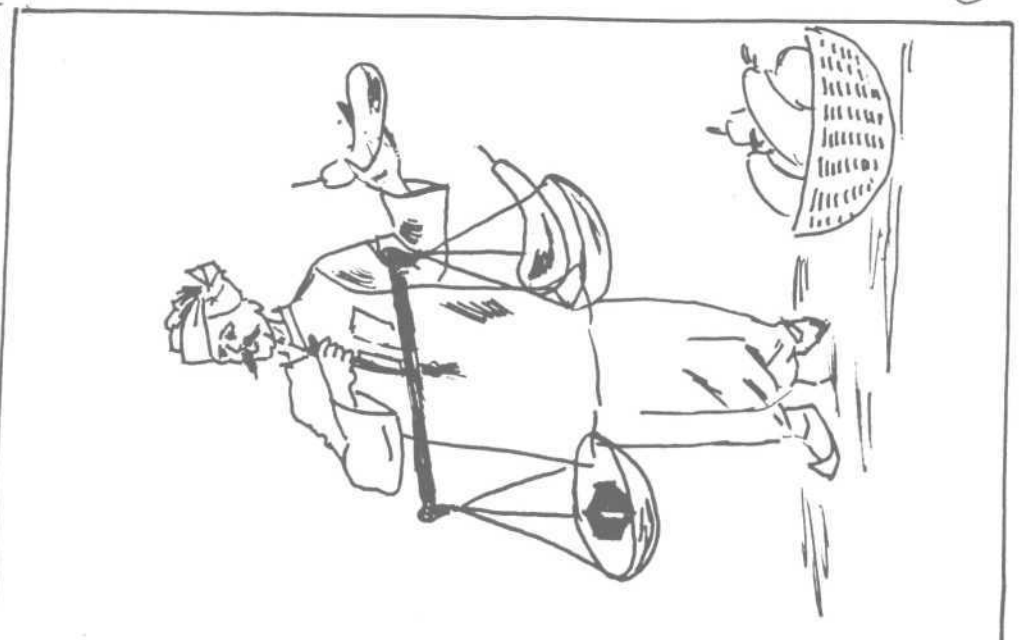

SECTION - V : PICTURE NAMING - Categories (5 ITEMS)

Ask the child to look all pictures carefully and name the category they belong to. Give example of "fruits" if child doesn't understand, Picture cards are given in Appendix Ic.

1.	ફૂલો	/pʰulo/	flowers
2.	શાકભાજી	/ʃakbʰadʒi/	vegetables
3.	જીવજંતુ	/dʒivdʒʌnt̪ũ/	insects
4.	આકાર	/akar/	shapes
5.	વાદ્યંત્ર	/vadʒɪnt̪r/	musical instruments

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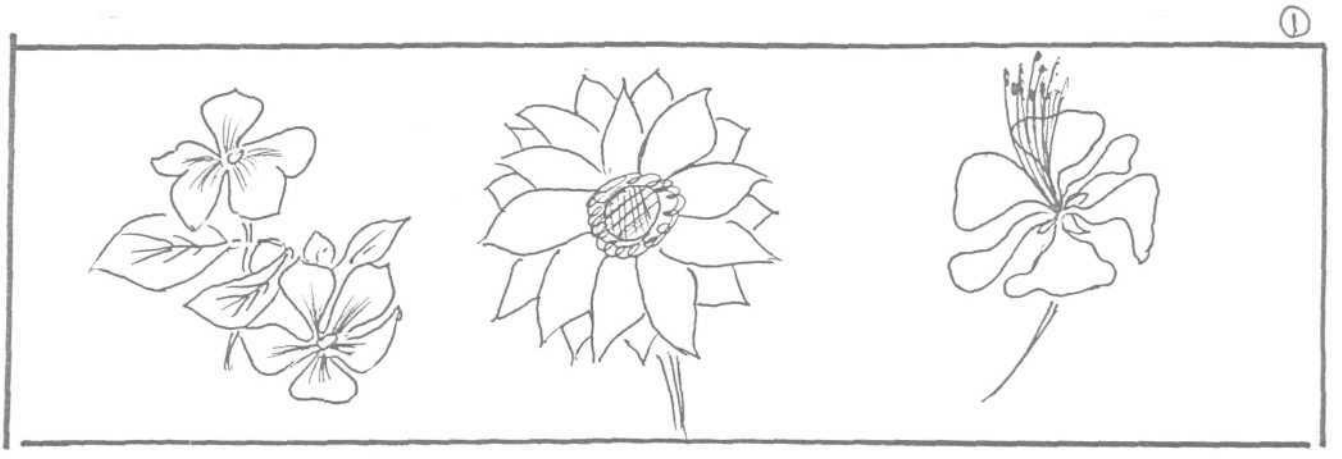

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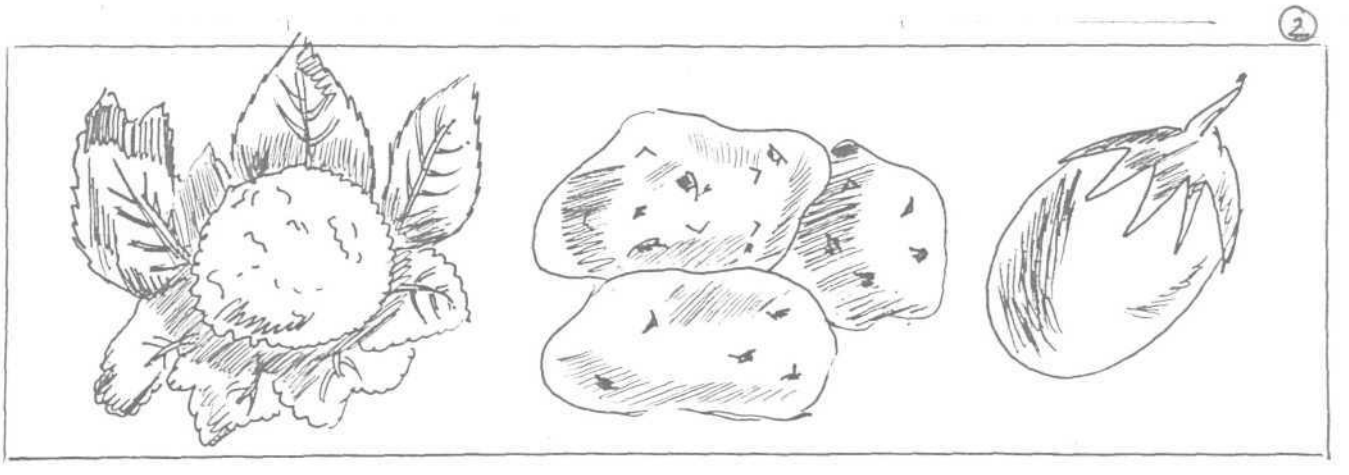

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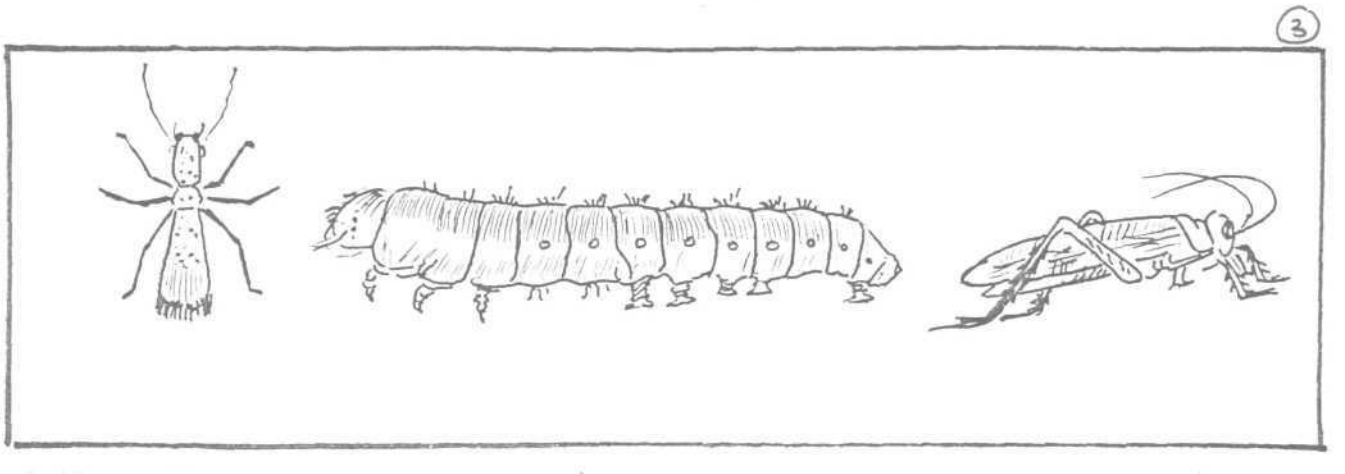

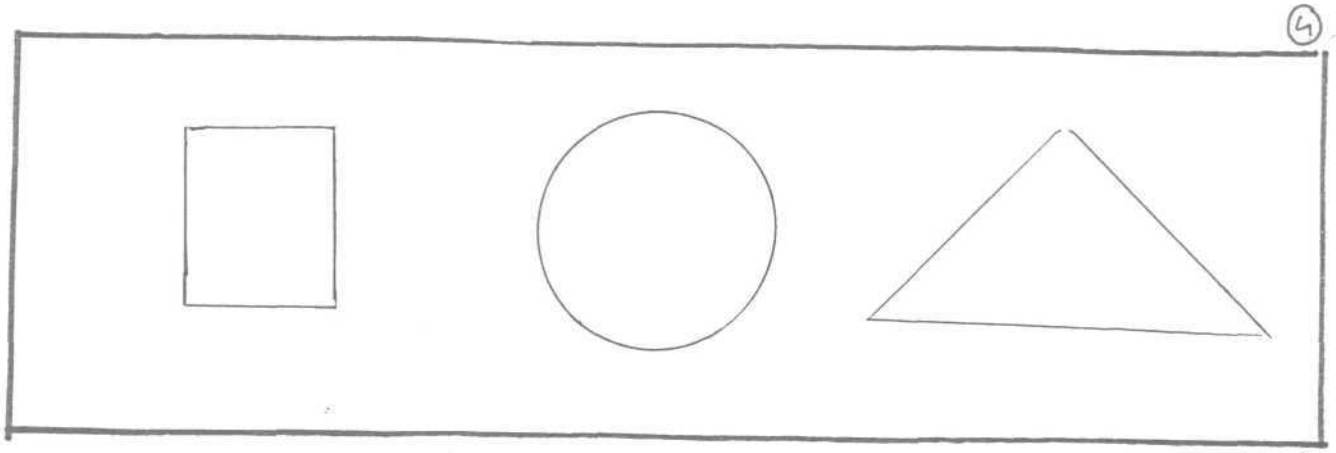
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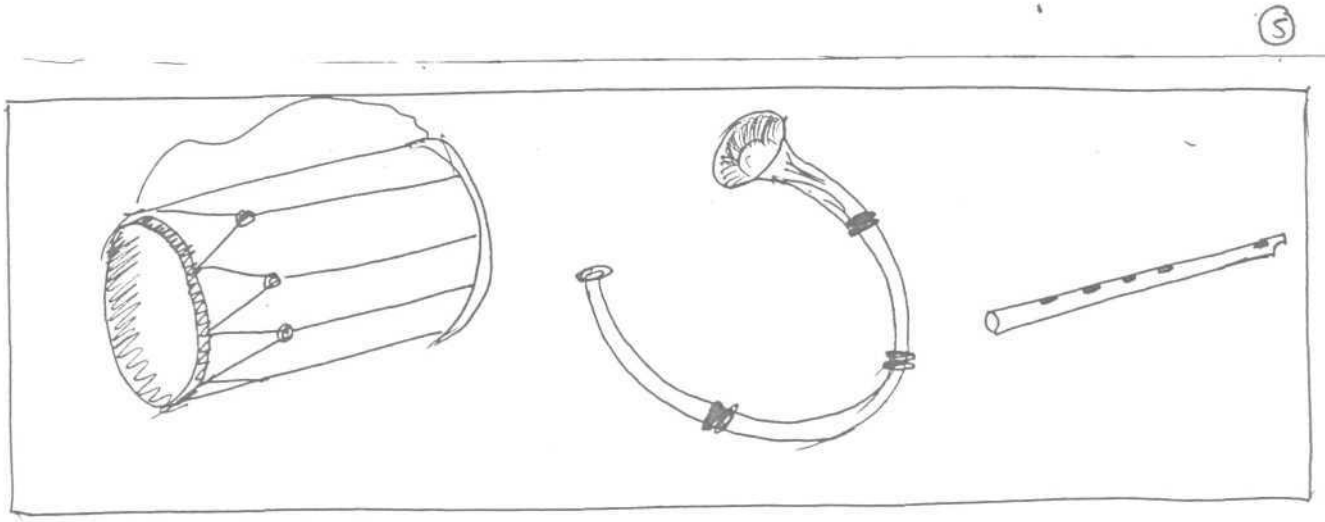
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TEST OF WORD FINDING ABILITIES IN CHILDREN

Name : Age :

Class : Sex :

1. Picture Naming : Nouns

No.	Response	Time	Cue	Code	No.	Response	Time	Cue	Code
1					21				
2					22				
3					23				
4					24				
5					25				
6					26				
7					27				
8					28				
9					29				
10					30				
11					31				
12					32				
13					33				
14					34				
15					35				
16					36				
17					37				
18					38				
19					39				
20					40				

2. Sentence Completion

No.	Response	Time	Cue	Code	No.	Response	Time	Cue	Code
1					11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

3. Description Naming

No.	Response	Time	Cue	Code	No.	Response	Time	Cue	Code
1					11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

4. Picture Naming : Verbs

No.	Response	Time	Cue	Code	No.	Response	Time	Cue	Code
1					11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

5. Category Naming : Noun

No.	Response	Time	Cue	Code
1				
2				
3				
4				
5				