

Comprehensibility of Language in the Textbooks of Science, Social Science and Language: A Reference to the Indian Context

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Received: November 30, 2020

Accepted: January 01, 2021

ABSTRACT: In the teaching-learning process, teachers and pupils depend heavily on the textbook which acts as a guide for both. A textbook serves as a take-off and landing ground for both the teacher and the pupil. In most of the cases, textbook is the only tool in the hands of the learner to acquire knowledge and the only tool in the hands of the teacher to impart and transfer knowledge to the learner in the classroom situation. A large number of textbooks are prepared and produced every year in India. Truly speaking, most of these textbooks are often based on some rationale of the textbook writers. The research input in the preparation of textbooks is limited. Consequently, no author is sure whether or not the language being used for the presentation of thematic content in the textbook would be comprehensible to the target group. If the language used in the textbook is not understandable to the learner, his learning is bound to suffer. Thus, comprehensibility of language used in the textbooks is an important factor which helps or hampers in conveying the message to the learner. As we know, textbooks serve as the basis for the language practice that occurs in the classroom, the basis for the content of the lessons, the balance of skills applied and various kinds of language practice the students take part in. The textbook often becomes the major source of contact the students have with the language, apart from the discussion offered by the teacher. For the less-experienced teachers, textbooks function as a form of teacher training. Right from ideas on how to plan and teach lessons to the formats that teachers can apply in the classroom. The article tries to present a relevant issue prevailing in the Indian context. The field of textbook language comprehensibility is comparatively less explored in India. Formal, effective and extensive studies/ research/ training in this direction is solicited as far as India is concerned. Appropriate tools are also required to be developed to apply conclusions of any future studies.

Key Words: textbooks, language, comprehension, education, training, context

Introduction

The textbook will continue to be an essential and useful aid in the teaching-learning process. In a country like India, where schools and students cannot easily afford various kinds of audio-visual aids, the textbook plays a pivotal role in the interaction between the teacher and the learner. In most cases, it may be the only tool in the hands of the teacher to impart knowledge and in the hands of the learner to acquire knowledge.

It is no doubt true that a large number of textbooks are produced in India every year. Most of the textbooks are often based on some rationale of the textbook writers. The guidelines given in the curriculum and syllabi may not be very precise and clear to be of help to the writer. There is generally lack of research input. There is a growing concern regarding the need for improving the quality of textbooks.

Comprehensibility of language used in the textbooks is an important factor which helps or hampers in conveying the message to the learner. If the language used for presentation in a textbook of thematic content is not understandable to the learner, then the whole effort of the textbook writer virtually goes waste. It has also been proved by a number of research studies conducted elsewhere that a student who is good at language, particularly the language used as medium of instruction, is also good in other subject areas. Understanding of concepts depends largely on one's proficiency in the language.

Unfortunately, neither any state nor any central agency has specified any language content to be used in the textbooks in linguistic terms. The result is that norms of linguistic competence of our students, existing as well as expected, are not known. It is essential to find out these norms in respect of children of different age groups and develop necessary tools for the purpose of measuring comprehensibility of language used in textbooks.

Curriculum is developed to achieve educational objectives. The realization of the educational objectives depends upon the quality of curriculum. Thus, curriculum implementation implies development of textual materials including textbooks. The comprehensibility of textual materials, other things remaining constant, is likely to determine the quality of curriculum implementation.

The Concept of Comprehensibility

The term comprehensibility of language has been defined by different educationists in different ways.

Before nineteen fifties, comprehensibility was considered merely as understanding. Comprehension of the text was defined as a type of educational test designed to measure the degree of understanding of material read. Warren (1934) defined comprehension of knowledge about an object, situation, event etc., and the term was considered synonymous to understanding.¹ During fifties a little shift is observed in the definition of the concept of comprehensibility. Comprehensibility is defined as "the state or quality of being comprehensible" (Funk, 1959).² Comprehensible is the adjective, which means capable of being comprehended or grasped by the mind of the learner. Bloom (1956) in his Taxonomy of Educational Objectives pointed out that the term "Comprehension" included those objectives, behaviours or responses which represent an understanding of the literal message contained in a communication.³ This is one of the major contributions in framing the concept of comprehensibility and the same has been used by test makers till now.

A number of definitions of comprehensibility are available during nineteen sixties. Among these, the definitions given by Gaddie (1961), Coulson et al. (1962), English and English (1965), Gove (1966), Monroe (1968), Meethan (1969) and Blishen (1969) are important. English and English (1965) defined comprehensibility as "the ease with which a complex object or verbal expression can be understood; while it depends on the person who is to understand, comprehensibility is conceived as a property of the object".⁴ A reading text measures the respondent's ability to obtain information by reading a passage, the respondent usually being required to answer questions about its content. Blishen, in his definition, emphasized intelligent grasping of the situation at hand.⁵ Philip Babcock Gove defined the term 'comprehended' as seeing the nature, significance, or meaning of; grasp mentally; attain to the knowledge of⁶ Reithman (1965), Lindsay (1961) and Posner (1965) observed that approaches to concept identification are moving towards an analysis of comprehension. The goal is to understand how stimuli are mapped into cognitive representations which allow the subject to go beyond the information explicitly given in order to evaluate new statements. The ease of comprehension depends upon the initial structure and upon the transfer of situation.

The deviation of the concept of comprehensibility was towards a more global characterization in nineteen sixties and a few important terminology like "ease at which", "intelligent grasping", "initial structure", "transfer situation" are added to describe the concept more clearly. For the construction of comprehensibility tests broader areas were covered and comprehensibility of textual material was considered as ability to obtain information and reproduce through proper answering of the questions. Bloom's contribution in the last decade affected the entire field of test construction. Several test makers on comprehensibility of language, formulated and used their own working definition. For example, Mosberg and Shima (1969) have seen comprehension as a system of processes involving linguistic, psychological and perceptual events. Bormuth (1969) mentioned comprehension skills as a set of generalized knowledge acquisition skills which permit people to acquire and exhibit information gained as a consequence of reading printed language.⁷

If we analyse the definitions on comprehensibility of language during nineteen seventies, we will find an elevation towards the communication model. This became possible because of the enriched knowledge of instructional material and design which influenced a lot in changing the concept of comprehensibility. More clearly, the concept of comprehension started on viewing from input-output processing. The main contributors in this decade are Hartmann and Stork (1973) and Wolman (1977).⁸ In their view, "Comprehension" is constructive which involves prior knowledge, intentions, content, and task demands, in combination with input structure to control processing. Hartmann and Stork pointed out comprehension as one of the basic linguistic skills, consisting of the ability to listen and understand speech (aural comprehension) or to read and understand written language (visual comprehension).⁹ Thus we see how the concept of comprehensibility has changed from simple understanding to input information processing through several stages. At present most of the test makers prefer to consider "Comprehension" as translation, interpretation and extrapolation while constructing tests on comprehensibility of language.

The presentational quality of the textual material is one of the important factors for the comprehensibility of the students. This presentational quality of the textual material is determined by a number of factors like, objectives to be fulfilled by the material, organization of the content, style of presentation including examples and illustrations. Once the objectives are finalized and the message of the content to be communicated is organized logically or psychologically, the medium of its communication comes into focus. The medium of communication refers to language, which carries the message. The presentation

can be straightdescription or it can be punctuated by verbal or non-verbal examples. Another aspect of the medium of communication of the content refers to the style through which content is presented. The style can be viewed from different angles. From the linguistic point of view it includes the choice from among the various combinationary possibilities of the words, the phrases, the sentences, the paragraphs, sections, subsections and units. The type of style selected for communicating particular content-textual material, contributes to its comprehensibility to a great extent.

Once the comprehensibility of the language used in the textbooks is known, it will be an easy task to establish the norms. The comprehensibility of language as an area of research is relatively less explored in India. Several fragments of works are conducted abroad on different aspects of comprehensibility of language. The comprehensibility of language used in textbooks should always be judged before accepting any textbook to achieve the curricular objectives. This is so because even the vast enriched content matter presented in a textbook will not do any good to the students, if its language, i.e., its communicability is not up to the reach of the students. The language ability of our children is not judged properly as there are no norms as such that what should actually be.

Understanding the three Terms:

The three important terms, viz., comprehensibility, language and textbooks should be defined for the understandability of the problem. The term "Comprehensibility" has been defined by different experts in different times and in different ways. We prefer the definition by English and English given in 1965. They defined comprehensibility as "the ease with which a complex object or verbal expression can be understood; while it depends on the person who is to understand, comprehensibility is conceived as a property of the object". Comprehensibility is a potential emerging from two sources, the learner and the learning material. From the learner's point of view, comprehensibility can be defined as the ability to process reading materials in a way that he can translate, interpret and extrapolate the content (textual material). From the view point of the textual material, comprehensibility can be defined as the quality of the presentation of the content (linguistic content) which leads the student to translate, interpret and extrapolate to understand the textual material with reasonable effort.

Language has been defined by various linguists and scholars. According to Carroll "a language is a structural system of arbitrary vocal sounds and sequences of sounds which is used or can be used, in interpersonal communication by an aggregation of human beings, and which rather exhaustively catalogues the things, events and processes in the human environment."¹⁰ Block and Trager define language as a system of arbitrary vocal symbols by means of which a society or group cooperates".¹¹ Encyclopaedia Britannica states that "Language is the chief means of human communication. As conventionally defined language consists of vocal sounds to which meanings have been assigned by cultural convention; it is often supplemented by various gestures".¹² In the words of Halliday, "Language can be thought of as organised noise used in situations, actual situations, or in other words contextualised systematic sound":¹³ the above definitions of language highlight the following properties or characteristics of language:

- a) Language is a means of communication.
- b) Language is a system of arbitrary vocal symbols.
- c) Language is always systematic.
- d) A language is spoken and understood in a specific group, class or community.

Keeping in view the above characteristics, the language can summarily be defined as a structured system of arbitrary vocal symbols by the means of which people of a speech community communicate with each other.

It is expected that the student would comprehend any instructional material including textbooks either by reading it independently or with the help of a teacher. This is an important factor while testing the comprehensibility of language used in textbooks. The comprehension of a text, in fact, implies the understanding of language used in the text which means understanding of the words, phrases, and sentences used in text and the content or subject matter. In school situation, the content is first conceived of as a curricular area which is generally divided into different inter-related units. Each unit is, then, further divided into various teaching units, i.e., lessons. Lessons generally consist of paragraphs which are composed of various inter-related sentences, phrases and words. Therefore the term "language" here includes the inter-sentential level, intra-sentential level and vocabulary.

Several definitions are available on textbooks. Webster's Dictionary defines, "A textbook is any manual of instruction, a book containing a presentation of the principles of the subject used as basis of

instruction". Encyclopaedia of EducationalResearch (Third Edition) describes, "In the modernsense, and, as commonly understood, the textbookis a learning instrument usually employed inschools and colleges to support a programme ofinstruction. In ordinary usage the textbook isprinted, it is non-consumable, it is hardbound, itserves an avowed instructional purpose and it isplaced in the hands of the learner". The Writer'sHandbook for the Development of EducationalMaterials, says, "Textbook is the term for a book used in a course as the base around which thecourse is built".¹⁴

After analysing the definitions of textbook, the following characteristics of a textbook may be considered:

- a) Textbook is an instructional aid or instructional material.
- b) Textbook contains only selected material.
- c) Textbook material is given in a condensedform.
- d) Textbook follows a systematic organizationof material.
- e) It is a base around which a course is built.
- f) Textbook material is in accordance with theneeds and interests of learners.
- g) It is written in such a language that is comprehensible to the learners.
- h) Textbook facilitates learning.
- i) Textbook is a means to attainment of instructional objectives,
- j) Textbook is prescribed for a particular classand it relates to a particular subject.

Studies in India

In India, research on different aspects of comprehensibility of language is few and far between. Most of the researches conducted are at Master's level and did not go deep into the problem of comprehensibility of language as such.¹⁵

Studies in vocabulary comprised one fourth ofthe total number of studies conducted in India in the field of comprehensibility of language used intextbooks. Vocabulary is the most essentialpreliminary step in learning a language. Researchon vocabulary is, therefore, of fundamental importance with regard to language comprehensibility.Basic vocabulary of children was studied in Hindiby RukmaniRamchandra (1960).¹⁶As a master'sthesis in Education, Sharma (1964) studied thevocabulary of students who have passed theprimary class examination in the rural areas ofMadhya Pradesh. Rathore (1966) studied thedisability in Hindi spellings as a master's thesis ineducation. Shivananda's (1976) thesis was on itemanalysis of paragraph meaning and word meaning(sub-test of standard Achievement Test). Basic

Hindi vocabulary in Haryana was studied in thecase of children of class IV by Sharma (1972) andclass VI by Shankar (1971). Keshar (1972) produceda 3500 word vocabulary for teaching of English inIndian Schools. Mishra (1972) with an eye to thisproblem of vocabulary tried to assess if the juvenileliterature of Hindi fulfilled this objective. Activevocabulary was surveyed by Sinha (1975) in caseof Mundari Children (Bihar) and by Pai and Jeyapaul(1974) in case of Tripura Children. CIIL(1972), compiled common vocabulary betweenHindi and thirteen other regional languages. Inanother study CIIL (1971) compiled recall vocabulary in thirteen Indian languages. We find no research on sentences.¹⁷

Shukla (1976) studied the Gujarati vocabulary ofstudents of the Surat District studying in standardI to V in the age group 6 to 11 years. He observed that students writing yielded, 1,11,869 running words along with other things. Kalra (1977) investigated the Basic Hindi vocabulary of children ofthird class (Usually 8+) in the state of Haryana. The total number of words he collected was 1632.Dasgupta (1978) studied the Basic Vocabulary inBengali at Primary Level.Borude (1975) in his study tried to measure association value of nonsense syllabus and meaningful words in Marathi. In a psycholinguistic studyBarr (1974) analysed the auditory perceptualdisorders in children with reference to languagelearning. Mishra et al. (1974) again studied thebilinguals Hindi. They concluded that non-Hindi speakers carried over grammatical features as wellas modes of literary expression from the mothertongue into Hindi, some of which were in theprocess of assimilation.

It is a great demerit that the modern IndianLanguages taught in schools have not been linguistically analysed nor the basic vocabulary has beenidentified, keeping in view the use of the languagein question in different spheres of education,administration and social inter-course. Therefore,the vocabulary studies are all based on the languagetextbook written without any linguistic analysis.In the year 1942 one test of reading abilityappeared in the Indian Journal of Psychology.The unpublished work, "Measurement of LinguisticAbility of Primary School Children" was conducted by Javil (1945) as a Master's thesis inEducation. Samad (1965) submitted his Master'sthesis on comprehension tests in English for 9thclass. Sharma's Hindi writing scale for primaryschool children was published in the Journal of Education and Research Paper

Psychology in 1957. During the same year Siddiqui tried to find out norms for Burt's test of English (reading) as Master's thesis in Education. Javil (1961) again published his workop "Measurement of Linguistic Ability of Primary School Children."

Reading skill is intrinsically connected with vocabulary. A group of three studies centering on different aspects of reading has been conducted in India intensively. Narayanaswami (1969) investigated reading comprehension at college level. Ansuya (1970) in her study found that reading efficiency, speed and comprehension were related to student's performance. Rahman (1959) sought to locate means of encouraging reading for pleasure. Ramalingappa (1961) submitted his Master's thesis in Psychology on Reading and Comprehension in relation to Academic Achievement.

"A study of Reading Ability in English" was the Master's thesis of Athley (1963). Bhatnagar (1968) studied reading difficulties of class VI students in Hindi. Reading and comprehension in relation to class achievement of primary school children was studied by Nagalakshmi (1968). Deshpande (1973) attempted to improve the teaching to beginner through improvement in the preparation of reading materials and in the process of evaluating reading programme. In another study Ahuja and Ahuja (1974) assessed speed and comprehension in silent and oral reading of Mysore school children of 12+. Krishnamurti (1971) studied reading readiness of pre-school children by developing reading readiness tests and other materials. Bhagoliwal in 1973 in his study tried to find out the effect of printing art on reading ability of Hindi book print.

Some studies are available on comprehension of reading and listening. During the year 1961 Brave, as part of his Master's degree in Education, studied the listening comprehension of students in 7 and 8 classes of Marathi secondary school. Nagalakshmi (1962) constructed simple oral comprehension test. Giri (1963) studied the relationship between the reading comprehension in Hindi and academic achievement in class 9 and 10 as part of Master's thesis in Education. Another study was conducted by Lal (1964) titled "An Investigation into the Mistakes in Hindi Reading." Research wing of Bombay Municipal Corporation (1970) sought to improve and develop spoken and written language of children communication. Chaturvedi and Mohale (1972) assessed the position of different languages at different stages of school education in India. They observed that time allotted for language teaching and learning is more than forty percent of the total time in school time table.¹⁸

A few studies are also available on textbooks. Chaudhry (1962) as a Master's thesis in Education surveyed the textbooks prescribed in General Science for classes 6, 7 and 8. Nair (1963) presented "A Content Analysis of Social Studies Textbooks of the School Classes" as his Master's thesis in Education. In the same year Saraswathi (1963) prepared score cards and formulated evaluation criteria for reviewing textbooks in General Science at Primary grades for the Master's thesis in Education. In the year 1966, Kaur critically analysed the textbooks in Social Studies for 4 and 5 classes of junior basic schools in Punjab. During the same year Sharma submitted his Master's thesis in Education. He dealt with the problem, "A Critical Analysis of the Social Studies Books Prescribed in 5th Class". A Critical Study of the Textbooks in English used in English-Medium Schools was presented by Agarwal (1967) as Master's thesis in Education.¹⁹ During 1970-72 Department of Textbook (NCERT) prepared a book on Preparation, Presentation and Evaluation of Textbooks in Mother tongue. The department also published several research studies on textbooks. "A comparative study of textbooks in mother tongue" was conducted by Rastogi and Sharma covering all theoretic and linguistic aspects of textbooks of 6 languages at Primary level.

In 1978, Srivastava and his associates conducted a study in Delhi University. The problem was of Evaluating Communicability of the Manual for Community Health Workers in Village Settings. There they have suggested some improvement of the pamphlet on health care by W.H.O.²⁰

Conclusion

In conclusion we can say that researches in India in the field of language comprehensibility are confined to reading ability, reading and listening comprehension, basic vocabulary and some related aspects of language learning. Works on syntactic development are still needed. Comprehensive work regarding the study of the comprehensibility of language used in the textbooks is yet to be undertaken with more focused efforts.

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