

A Study on Testing the Proficiency of Functional Knowledge in Written Discourse in Engineering College Students A Case Study from Coimbatore, Tamilnadu, India

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Abstract

The different aspects of discourse are Structure, Meaning, Style, Function and Situation. The focus of this paper is to investigate the proficiency level of the respondents in the area of Functional knowledge in written discourse. Knowledge about discourse may be structural, conceptual and functional. The focus of this paper is to evaluate the proficiency of discourse knowledge in written discourse with special reference to technical English writing skill of the target group. The capacity of the target group's inference of the usage of technical discourse is examined. Writing is an important part of the engineering course and is an area where students often need plenty of training. A test was conducted to see how far the students have functional knowledge in written discourse.

Key Words: Discourse Knowledge, Aspects of discourse, Structure, writing skills

Methodology

To examine and to evaluate the proficiency of functional knowledge in written discourse with special reference to technical English writing skill, a test was conducted manually. Sixty students were selected at random from different branches of engineering. A questionnaire with five questions were administered and analyzed carefully.

Introduction

Despite years of language education in schools, second language learners have deficiency in specialized knowledge about discourse, meaning of words (semantics) and knowledge about word order and other grammatical phenomena. Apart from the knowledge about the various

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levels or dimensions of language including discourse, which is supposed to be coming under structural or grammatical knowledge, some linguists talk about the role of ‘functional’ knowledge in discourse processing which is about what various linguistic elements ‘do’ in their specific environment, both within and beyond the structural context.

The functional view of language is concerned with the role of its elements and structures. For an analogy, let’s take the toothbrush example. Generally, the function of a toothbrush is to clean one’s teeth. In language, function designates the role that an expression plays in a larger unit, in particular, the relationship of an expression in question within other larger expressions and the purpose or communicate act for which an expression is used. The fundamental functional differences of knowledge and discourse require different structures. Discourse – whether spoken or written – is basically linear or sequential, where as knowledge structures are probably hierarchical and network like.

Basic Properties of Expert Knowledge

- Knowledge about structure (X is composed of Y)
- Knowledge about form (X has the form of Y)
- Knowledge about function (X has the function of Y, X does Y)

Written discourse in the academia contains a wide range of fairly traditional genres, for example, dissertation, research article, laboratory report, academic essay, etc., and rhetorical structures, for example, process description, classification, summary, providing the cause and effect and comparison and contrast.

Discourse Knowledge

Discourse knowledge is very essential for the comprehension and production of talks and texts. We should have knowledge in the following areas.

Discourse knowledge includes-

1. Knowledge about the text structure

The sentences comprising the text structure

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The cohesive devices combining the sentences coming under a text.

2. Knowledge about the conceptual structure-

The concepts conveyed by the sentences found in the text.

The coherence or meaning relation between the concepts conveyed by the constituent sentences of a text.

3. Knowledge about the communicative act for which the text is produced various sub-communicate acts occurring in a text.

4. Knowledge about the situation, persons, associated with the text production and text comprehension, etc.

All these 4 aspects, structural, conceptual, functional and situational aspects fall under the broad fabric of discourse knowledge.

Role of Discourse Function

Discourse functions play a significant role in scientific writing. Jordan (1986.pp.26-28), Jordan (1999 pp.14-63) and Hamp-Lyons and Heasley (2006 pp. 25-102) discuss how effective use of discourse functions can help writers produce good texts. Trimble (1996) also explains discourse functions under the heading Rhetorical functions of language of Science. Jordan (1999 pp. 34-35) believes that definition is very important in writing. He claims definition makes ideas clear to the reader; He provides a sample sentence structure serving as a model of a definition: A teacher is a person who imparts knowledge or gives instruction to atleast one person.

Testing of Functional Knowledge

Identifying the Problem-Reason-Solution-Evaluation:

In the first question of Questionnaire – I a passage was given and students had to identify the problem stated in the passage, the reason given, the solutions given and their own evaluation about the passage. It was found out that 74% had identified all the 4 items namely, problem, reasons, solutions and evaluation. Among the remaining, 21% students were not able to identify either the solution part or evaluation part and 5% of the respondents had not given any answer.

Sample Answers

- i) Evaluation: 'The floor is constructed strongly and there will be no problem of sag and horizontal cracks.
- ii) The floor of the room on the first floor is beginning to sag cracks and poor quality of construction on the room'.
- iii) Reason and evaluation is mixed. The concentration of several tons of heavy equipment in the middle of the room. If the problem is not attended to quickly, the floor is likely to collapse.

Quantification of Errors committed in problem-solution identification

S.No	Correct	Incorrect	No answer
1.	74%	21%	5%

Definition

Besides structural and conceptual organization, discourses have higher order organization called functional organization which sub forms under it.

- i) Speech act aspects underlying the discourse (communicative act).
- ii) The macro function of a text such as narration, description, argumentation, exposition, etc.
- iii) Specific rhetorical functions of a science discourse such as definition, description, classification, visual representation, etc. These aspects particularly the knowledge behind the production and comprehension of discourse could be tested only by i) giving discourse of specific types and asking some questions related to discourse comprehensions. ii) Eliciting discourses or encouraging production by giving hints.
 - With such conception in forms four tests were designed to test the knowledge in enabling the comprehension and production of discourses. They are meant for testing the tasks such as
 - i) Giving a small definition to certain technical terms.

- ii) Identifying the paragraph style.
- iii) Comprehending the discourse and its macro structure
- iv) Comprehending the discourse and its macro structure

In technical and scientific language and discourse, definition of technical terms plays an important role and hence it is considered as a rhetorical function. The definition of a technical term may be formal or non-formal or semi-formal. In order to test the ability of students in this rhetorical function, some technical terms were given and they were asked to give definitions for those terms so as to enable us to evaluate whether the students have highlighted the functional and formal aspect of those terms in their definitions. Technical writings have subject specific terms with the meaning of which many people may not be familiar. Moreover certain terms mean one thing to non- technical persons and another thing to technical experts. For example, the term 'Communication' includes 4 language skills for a language teacher but in the world of electronics, it has a different significance. In science and technology, a technical term is defined to convey a precise meaning. Generally, technical terms are circumscribed with precision and exactitude when compared to normal language vocabulary items. The term 'Cell' is defined in one way in Biology and in another way in Electronics.

A definition has two distinct parts. First, the term should be identified as an item coming under a large group or category. Then, its distinguishing characteristics are to be specified in such a way that no other object, device, or process should fit into the definition.

Technical Term ----- Category ----- Characteristic features.

Suppose we want to define the term 'Resistor,' we have to determine the group or category to which it belongs. It involves determining the super ordinate terms. It is an electronic device. Now, it's distinguishing characteristics or function is to be specified. It controls the flow of current. Now the definition can be presented:

"A Resistor is an electronic device that controls the flow of current".

Discourse knowledge includes awareness and knowledge about defining terms.

The second question of this questionnaire was created to test the Engineering students' ability to create definitions for certain technical terms. Five technical terms were given with a request to give a short definition for them. 46% of students had given appropriate definitions for 3 and more than 3 terms; 26% had given definitions to only less than 3 terms; 28% had given wrong definitions.

Some Samples

(i) Resistor – used to control the flow of current.

(ii) Calculator - used for doing calculations.

(Neither the technical term nor the category to which it belongs is provided. So the definition is not complete in formal terms but it is acceptable in functional terms.

Samples for Totally Wrong Answers

i) Resistor – It is a device, resistance passes through circuit is known as resistor.

ii) Calculator – It is a device. It is electronic machine and using solving problems.

iii) Nuclear Reactor – Nuclear Reactor is a device and control fission and fusion reaction.

iv) Photo copier – It is a device and copying the photo is a camera

Quantification of Errors Committed in Defining Technical Terms

S.No	Out of 5 (> 3)	Out of 5 (< 3)	Totally wrong	No answer
1.	46%	26%	28%	-

Identifying the Style

In the same questionnaire, the third question was framed in order to test the students ability of evaluating the style adopted by the author in a passage which has four paragraphs reflecting all types of styles namely, exposition, narration, description and argumentation.. The students' responses when analyzed, it was observed that 40% of students had identified all the

styles or macro functions of discourse namely, exposition, narration, description and argumentation. 10 % had difficulty in identifying description. 50% of students were not able to identify narration and exposition. The difficulty is because the students were not thoroughly familiar with discourse styles. Though the narrative, descriptive, expository or argumentative styles are well differentiated, it is not always easy to place individual pieces or paragraphs in one of these divisions. When a person takes up the other forms of discourse, the difficulty becomes still greater. Description and narration are frequently used in exposition. If a boy is asked to explain the working of a steam engine, he would, in all likelihood, begin with a description of an engine. If his purpose is to explain how an engine works and was not to tell how an engine looks, the whole composition becomes expository. Moreover students were less exposed to the type of exercise distinguishing the factors that contributed to the demarcation of the varieties of style and hence they fail in evaluating the style of a passage.

Quantification of Errors Committed in Evaluating the Style

S.No	Correct	Incorrect (60%)		No answer
1.	40%	In identifying description 10%	Narration and exposition 50%	-

Purpose Identification

In the fourth question, a passage was given and some questions pertaining to the author's intention or purpose of writing the given passage, the intended user for whom this passage was written and the sentence pattern used in the passage were asked. In the analysis of the responses of students, it was found out that only 20% had written all the correct answers, 54% had given wrong answers. 26% had made mistake in the answers related to the user of this passage and the sentence pattern used in the passage.

Samples of Wrong Answers

1. *Author's purpose of writing this passage –*

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- i) *“We can make the simple torch using above components.*
 - ii) *“For creating awareness among all about electrical devices and its working.”*
2. *For whom is this passage written?*
 - i) *For the people.*
 - ii) *Written for the usefulness of the readers to connect electrical devices.*
3. *The sentence pattern used in the passage:*
 - i) *Complicated sentences are used.*
 - ii) *Simple sentences are used in this passage*

Quantification of Errors committed in identification of purpose

S.No	Correct	Partially Correct	Incorrect	No answer
1.	20%	26%	54%	-

Functional Knowledge

When we speak about a tool or a technical or scientific concept or object, or its physical appearance, its component parts are described one by one in some logical order either in the order in which they appear or in the order of its importance that is with reference to its functioning. Sometimes an Engineer is required to describe a product or an object and its functions to his clients and customers and many of them may be non- technical persons. Hence, when he describes a product, he faces the daunting task of explaining even simple facts in simple language. In matter of functioning, he need not go into the minute details. A mere demonstration followed by the few details of function will serve the purpose. Knowledge about the ways of describing the structure, function, process etc or knowledge about the rhetorical function of description is part of discourse knowledge and it is to be tested among engineering students.

In the fifth question, a descriptive passage on the washing machine was given and three questions like the description of the machine, the mechanism of the washing machine, etc were asked. From the analysis of the students' responses, it was found out that 26%of students had given the correct answer. 6% of students had written all wrong answers. 68% of students had

made mistakes in writing the answer for the description of the machine. Instead of writing the exact description, they had written about the uses of the machine along with the description. 14% of students hadn't answered correctly about the boon and the bane aspect. In this 4% had written the answer for "boon" and 4% had wrongly answered for "boon".

Quantification of Errors committed in Descriptive Passage

S.No	Correct	Partially Correct	Incorrect	No answer
1.	26%	68%	6%	-

Conclusion

In general, the 'no answer' results could probably be due to some participants' failure to understand fully the instructions given during the administration of the questionnaire. Students' lack of confidence was observed during the completion of the given writing task, since some of them submitted their papers with nothing written or with something written which was irrelevant to the question. A review of the responses of the other questions reveals that respondents have limited knowledge about the structure of paragraphs, have difficulty in organizing ideas, difficulty in identifying the purpose of the author and the style adopted, etc. On the whole, these tests have proved that respondents have very limited exposure and training in all the areas related to discourse knowledge. Unless these respondents have enough knowledge about discourse, they cannot exhibit their skills in comprehension and production which will be the next stage or the stage of discourse performance.

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