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Linguistic Competencies as Correlates of Academic Achievement in Science and Social Studies of Secondary School Students

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Abstract

Language includes four skills like-listening, speaking, reading and writing. Every teacher has the responsibility to develop all these skills in every subject. The present study highlights the relationship between Linguistic Competencies as Correlates of Academic Achievement in Science and Social Studies of Secondary School Students.

NEED OF THE STUDY/ RATIONALE OF THE STUDY

“Languages plays central role in learning. No matter what the subject area, students assimilate new concepts largely through language that is when they listen to and talk, read and write about what they are learning and relate this to what they already know. Through speaking and writing, language is linked to the thinking process and is a manifestation of the thinking that is taking place. Thus, by explaining and expressing personal interpretations of new learning in the various subject fields, students clarify and increase both their knowledge of the concepts in those fields and their understanding of the ways in which language is used in each” (Ontario Ministry of Education,1984; quoted in Corson 1990,75)

Similarly, The National Curriculum Framework 2005(NCERT, India) highlights the role of language in learning: ‘Language- as a constellation of skills..... cuts across school subjects and disciplines. Speech and listening, reading and writing are all generalized skills, and children’s mastery over them becomes the key factor affecting success at school. In many situations, all of these skills need to be used together. This is why it is important to view language education as every body’s concern at school and not as a responsibility of the language teacher alone’.

The document further states that “Language education is not confined to the language classroom. A Science, Social Science or Mathematics class is ipso facto a language class. Learning the subject means learning the terminology, understanding the concepts and being able to discuss and write about them critically”.

Thus the above two documents give emphasis that language plays a key role in learning. It is based on the understanding that language promotes learning. For example: if a student is asked to prepare a project report in Science or History, he /she will plan and structure the report and use both language competencies and subject-specific ways of perception, observation, conceptualization and finally, communicate the same to an audience of peers and teachers. This implies that when one is writing observations, opinions, insights and experiences in Science or History, or in any other subject, not only the content has to be accurate and appropriate but also the language chosen has to be appropriate and communicatively efficient.

As per the Board of Secondary Education (B.S.E), Odisha, the courses/subjects taught in secondary schools are Odia, English, Hindi/Sanskrit, Mathematics, Science and Social Science. Most of the teachers globally feel that learning language is basically the responsibility of the language teachers whether it is the first language, second language, third language or

the foreign language. Nowhere there are appropriate language policies which seriously think about the designing of curriculum in such a way where all subject teachers take the responsibility of integrating language in learning the content.

Sometimes the performance of some children is not up to the mark of having good subject knowledge. So, curiosity arises in the mind of a teacher that inspite of having a good subject knowledge why he/she has poor performance in that particular subject. Teacher has taught the concepts properly and the students also have learnt the concepts thoroughly, so, what is wrong? Is it with teaching or any other problem? But teachers lack awareness of the fact that content of any subject can be learnt only when they understand the language.

So, in the state Odisha all subject teachers do not take the responsibility of integrating language in learning the content, thinking that language education is the concern of language teacher alone, rather than concern of every subject teacher. To develop subject knowledge in both Science and Social Studies, children must have language comprehension as well as content knowledge. Contents of any subject can be learnt only when children understand the language. It is very essential that all teachers irrespective of their subjects should own the responsibility of students learning a language in every classroom with all subjects teaching.

It has been found that teachers never try to give enough practice or insists on using correct language in their respective subject areas in order to improve holistically the ability to speak, read, write and listen to various language patterns to enhance the comprehension and learning. Hence, the above facts have inspired the investigator that whether there is relationship between language and subject knowledge learning in science and social studies of secondary school students of Odisha.

Research Questions:

On the basis of the above background of the problem, the following research questions are raised by the researcher in his mind through the present piece of research work:

- 1. What is the level of linguistic competency of class X students?**
- 2. What is the level of academic achievement in Science of class X students?**
- 3. What is the level of academic achievement in Social Studies of class X students?**
- 4. Is there a relationship between linguistic competency and academic achievement in Science?**

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5. Is there a relationship between linguistic competency and academic achievement in Social Studies?
 6. Is there a difference between boys and girls students of class X in terms of linguistic competency and Science and Social Studies?

Statement of the problem:

In order to find out the answer of the above stated research questions the present study is stated as follows:-

“Linguistic Competencies as Correlates of Academic Achievement in Science and Social Studies of Secondary School Students”.

Objectives of the study:-

The objectives of the present study are stated as follows:-

1. To study the linguistic competency of class X students.
2. To study the academic achievement of class X in Science and Social Studies.
3. To study the relationship between linguistic competency and academic achievement in Science of class X students.
4. To study the relationship between linguistic competency and academic achievement in Social Studies of class X students.
5. To compare the mean scores of boys and girls students of class X in relation to language competency, academic achievement in Science and Social Studies.

Hypotheses:-

The hypotheses of the present study are stated as follows:

1. There exists no significant relationship between linguistic competency and academic achievement in Science of class X students.
2. There exists no significant relationship between linguistic competency and academic achievement in Social Studies of class X students.
3. There exists no significant difference in mean scores of boys and girls students of class X in relation to language competency, academic achievement in Science and Social Studies.

4. Delimitation of the study:

The present study has been limited in the following manner:

- **The study is limited to three variables i.e. Linguistic Competency, Academic Achievement in Science and Academic Achievement in Social Studies.**
- **The study is limited on Class X secondary school students of Govt. and Govt. - Aided schools studying under the Board of Secondary Education, Odisha.**
- **The study is delimited to two districts i.e. Balasore and Bhadrak of the State of Odisha.**

DESIGN OF THE STUDY

INTRODUCTION:-

A design of the study refers to planning stage of research work, which is usually made logically visualizing the objectives and practicability. A design of the study is the blue print of research work. It serves as a guide to the investigator. It is called as the heart of the research work. It is just like central processing unit of computer. It covers the detailed description of the manner in which decisions have been made on research method, type of data needed, tools and devices used for data collection and method of data collection. An investigator may present definition of the population, the size of the sample, the rationale of the size of the sample, the method of sampling, the reliability and validity of the tools used, directions given to the students, the type of the data analysis, statistical methods employed, how the data will be organized and presented for data analysis and interpretation of result.

In the light of the objectives, the present research work has been designed in the following heads-

Research method

Population and sample

Tools and techniques used

Collection of data

Statistical techniques used

Each of the above stated heads are discussed in detail in the following pages-

RESEARCH METHOD

In the present research work, the researcher wants to study the relationship between linguistic competency with academic achievement in Science and Social Studies of 10th class students of Balasore and Bhadrak districts of Odisha. Whether the linguistic competency has good impact on academic achievement in Science and Social Studies of 10th class students is the sole motive of present research work. So far as the research methodology is concerned, the present study comes under the scope of 'Descriptive Research'. This method can tell us about what exists at present by determining the nature and degree of existing conditions.

POPULATION AND SAMPLE

In Balasore district, there are 59 Govt. High Schools and 275 Government-Aided High Schools. In total there are 334 high schools and the students studying there constitute one part of the

population of present research study. Out of 59 govt. high schools, 10 high schools have been selected and out of 275 govt. aided high school, 10 high schools have been selected randomly.

Similarly in Bhadrak district, there are 42 Govt. High Schools and 206 Govt-Aided High Schools. In total there are 248 high schools and the students studying there constitute the other part of the population of present research study. Out of 42 govt. high schools, 10 high schools have been selected and out of 206 govt. aided high school, 10 high schools have been selected randomly. From each school, 10 students (5 male and 5 female) have been randomly selected as sample.

TOOLS AND TECHNIQUES USED

The investigator has used the following tools in the present study of his research work.

Language Competency Test in first Language(Odia) [Prepared and Standardized by the Investigator]

Academic achievement in Science (Half-Yearly Test) Prepared and developed by Board of Secondary Education, Cuttack, Odisha

Academic achievement in Social Studies (Half-Yearly Test) Prepared and developed by Board of Secondary Education, Cuttack, Odisha

Language Competency Test (Standardized by the Investigator)

A Language has four basic skills i.e. listening, speaking reading and writing. The students must have competency in each and every skill of the language.

In the present research work, the researcher has developed a language competency test in the First language i.e. Odia of class X students of Odisha based on reading and writing skill. The essential criteria that a researcher looks for, while preparing a tool of research are validity, reliability, objectively and usability. As the language competency test in Odia language of the present research work is subjective in nature but not in objective nature, the researcher has developed language competency test in Odia by fulfilling the first two criteria i.e. validity and reliability of a research tool.

COLLECTION OF DATA:

On the eve of actual field visit, the researcher moved towards the District Education Office of Balasore and Bhadrak districts to collect the list of secondary schools under their jurisdiction. Then the researcher personally visited the randomly selected secondary schools of both the districts one by one in different working days of the schools. Prior to visiting the schools, the researcher had made ready the sufficient copies of the language competency test for students to use during administration in the schools. After reaching the school, the researcher introduced himself to the school Headmaster/ Headmistress, explained the purpose of his visit to the school, the work to be done and took their permission for administering the test to the students. In the class room again, the researcher introduced himself before the classroom teacher and students and explained the purpose of his research work and the role and

ways of responding by the students to the language competency test. The head of the institution and his/her staff were highly impressed by the nature of the problem under study and were kind enough to extend their whole-hearted co-operation in enabling the investigator to collect the data.

Then the investigator distributed the test copies among the students and informed the students about the specific instructions, i.e. how to respond, purpose of the test, nature and time limit of the test etc. The tests were administered in the room where there was good sitting arrangements, well-lighted and ventilated facilities etc. At the time of actual administration of the tests, necessary steps were taken to control and minimize cheating habits of the students. They were also informed that the collected data will be used for research purpose and their responses would be kept strictly confidential and therefore, they should be frank, bold, honest and sincere in answering the questions. After giving responses by the subjects, the investigator collected the questionnaires and answer sheets carefully from each and every administered student.

After the completion of administration of language test, the investigator collected the marks secured by the same administered students in class-X Half-Yearly examinations conducted by B.S.E, Odisha in the subjects like Science and Social Studies from the school Class –X Half-Yearly Result Register. At last, the researcher left the school thanking to headmaster/ headmistress, teachers, students, official and supporting staff for their kind corporation in collection of research data.

Statistical Techniques used:

In order to analyze the data of present search work, the investigator has used the following statistics:-

- 1. Bar Diagram and Pi-chart to study the level of language competency, academic achievement in Science and Social Studies of 10th class students.**
- 2. Product-moment correlation to find out the correlation between language competency test with academic achievement in Science and Social Studies of 10th class students.**
- 3. Descriptive statistics i.e. mean, SD SED, 't' test to find out the significant difference between boys and girls students of class 10th in terms of language competency, academic achievement in Science and Social Studies.**

Main Findings: In the light of the interpretation of the results of present investigation as already discussed in the previous chapter, the main findings are stated as follows:

Level of linguistic Competency, Academic Achievement in Science and Social Studies of 10th class students.

- Near about 0.50% students of class X have average level of linguistic competency, 57% students have above average level of competency and 42.50% students have below average level of linguistic competency.
- Near about 07% students of class X have average level of academic achievement in Science, 51% students have above average level of academic achievement in Science and 42% of students have below level of academic achievement in Science.
- Near about 03% students of class X have average level of academic achievement in Social Studies. 39% have below average level of academic achievement in Social Studies and 58% students have above average level of academic achievement in Social Studies.

Analysis of correlation coefficient Between Independent Variable and Dependent variables of class X students

- There is significant relationship between linguistic competency and academic achievement in Science of class X students.
- There is significant relationship between linguistic competency and academic achievement in Social Studies class X students.

Analysis of Differences in Independent Variable and Dependent variables in terms of Boys and Girls students of class X.

- There is no significant difference between the mean scores of boys and girls in terms of linguistic competency.
- There is no significant difference between the mean scores of boys and girls in terms of academic achievement in Science.
- There is no significant difference between the mean scores of boys and girls in terms of academic achievement in Social Studies,

Discussion of Results:

From the results of present, it is clear that there is significant positive relationship between linguistic competency and academic achievement in Science and Social Studies of 10th class students. Similar findings were reported in support of the results of the present study by Cummins and Swain (1986) Bellingham (1993) Wille (2006); Maleki and Zangami (2007); Fakeye and Ogynsigi (2009), Sahra gard et.al (2011); Kumar (2014); Hota (2019); Rudd and Honkiss (2020); Waluyo and Panmei (2022); and Devi (2023). This finding is contrary to the findings of Bayliss and Raymond (2004), and Wayne (2006).

Secondly, there are no significant sex differences between boys and girls students of class X in terms of linguistic competency, academic achievement in Science and Social Studies. The findings of Amaravathi and Bhukya (2015) and Sahragard et. al. (2011) are similar to the present finding i.e- in relation to linguistic competency. Similarly, the findings of Patel (1992), Sahragard et al (2011); and Das (2021) are similar to the present findings in relation. to academic achievement in Science and Social Studies.

As regards the findings relating to different levels i.e. level of linguistic competency, level of academic achievement in Science and level of academic achievement in Social Studies, no such study having a similar or dissimilar finding was found.

The Educational Implications

The educational implications of the present study has much more importance in the present day context as there is a growing realization of focusing attention on language education. Language plays a central role in learning. No matter what the subject areas students assimilate new concepts largely through language that is when they listen to and talk, read and write about what they are learning and relate this to what they already know. The National Curriculum Framework 2005 (NCERT, India) highlights the role of language learning: ‘Learning - as a constellation of skills..... cuts across school subjects and disciplines. Speech and listening, reading and writing are all generalized skills, and children's mastery over them becomes the key factor affecting success at school. In many situations all of these skills need to be used together. This is why it is important to view language education as every body's concern at school, and not as a responsibility of the language teacher alone.

The document further states that, "Language education is not confined to the language classroom. A Science, Social Science or Mathematics class is ipso facto a language class. Learning the subject means learning the terminology, understanding the concepts and being able to discuss and write about them critically”.

Therefore, the present study i.e. Linguistic Competencies as Correlates of Academic Achievement in Science and Social Studies of Secondary School Students, provides empirical basis for understanding that how much linguistic competencies of secondary school students is related to academic achievement in Science and Social Studies, and how far the differences exist in mean scores between boys and girls in relation to above variable, which can be useful for educational administrators, curriculum framers, policy makers and teachers in adopting correct remedial / measures.

The findings of present study reveal that there is significant positive relationship between linguistic competency and academic achievement in Science and Social Studies of 10th class students. This indicates that proficiency in Odia language is helping the 10th class students in learning the subjects of Science and Social Studies positively. On the other hand, the findings relating to different levels i.e. level of linguistic competency, level of academic achievement in Science and level of academic achievement in Social Studies are not encouraging. In linguistic competency, near about 42.50 % of 10th class students have below average level of linguistic competency. Therefore, an effort has to be made by the Odia language teacher through different remedial measures that how the students belonging to below average level of linguistic competency group will reach to the average level of linguistic competency group. Similarly, in the level of academic achievement in Science and Social Studies near about 42% and 39% of 10th class students fall under the category of below average group respectively. Hence, how the students of this group will reach to the average level group of academic achievement in Science and Social Studies, should be the effort on the part of subject teachers through adopting different effective techniques i.e. remedial teaching, individualized instruction, child-centered education and guidance and counseling services etc.

Lastly, the findings of present study indicate that there are no significant differences between the mean scores of boys and girls of 10th class students in terms of linguistic competency, academic achievement in Science and Social Studies. Though statistically there is no significant differences between boys and girls in terms of above variables, the average scores of boys are descriptively more than girls in all the three variables. So, efforts should be made by language teachers as well as subject teachers that how there can be equivalence or similarities in the performance of both boys and girls students in relation to variables.

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