



Verbal Reasoning Ability and Academic Achievement of Secondary School Students: A Correlational Study

Research Scholar- Rajatriya Shantiben Jivabhai

Guide- Prof Dr. Nitin M Raval

Faculty of Education

Swaminarayan University, Kalol

Abstract

Verbal reasoning ability, the capacity to understand, analyse, and reason using concepts expressed in words, is widely regarded as a key cognitive determinant of scholastic success. The present study was undertaken to examine the relationship between verbal reasoning ability and academic achievement among secondary school students, and to explore whether this relationship differs by gender. A sample of 300 secondary school students (150 boys and 150 girls) studying in Standard IX and X was drawn from schools affiliated to the Gujarat Secondary and Higher Secondary Education Board using a stratified random sampling technique. Verbal reasoning ability was measured using a standardized Verbal Reasoning Test, while academic achievement was operationalized as the percentage of marks obtained by students in their most recent annual examination. Data were analysed using descriptive statistics, Pearson's product-moment correlation, and the t-test for independent samples. Results revealed a positive and statistically significant correlation ($r = 0.52$, $p < 0.01$) between verbal reasoning ability and academic achievement, indicating that students with higher verbal reasoning ability tend to achieve better academic outcomes. No statistically significant difference was found between boys and girls on verbal reasoning ability ($t = 1.18$, $p > 0.05$). The findings underscore the importance of nurturing verbal reasoning skills through language-rich pedagogy, and carry implications for curriculum design, remedial instruction, and teacher training programmes, particularly in the context of the National Education Policy (NEP) 2020's emphasis on foundational literacy and higher-order thinking.

Keywords: *Verbal Reasoning Ability, Academic Achievement, Secondary School Students, Correlational Study, Cognitive Ability*



1. Introduction

Education, in its truest sense, aims at the holistic development of the learner's intellectual, emotional, and social faculties. Among the various cognitive abilities that contribute to a student's overall academic functioning, reasoning ability occupies a place of particular importance. Reasoning ability, broadly defined, is the mental process of drawing logical conclusions from available information, and it manifests in several forms — verbal, numerical, abstract, and spatial. Of these, verbal reasoning ability is especially significant in the Indian school context, where instruction, textbooks, and examinations are overwhelmingly language-mediated.

Verbal reasoning ability refers to the capacity to comprehend, analyse, and manipulate concepts expressed through language — identifying relationships between words, drawing inferences from written passages, detecting analogies, and evaluating verbal arguments logically. Since the bulk of classroom teaching, textbook content, and examination questions in Indian secondary schools are presented in verbal form, a student's ability to reason verbally has a direct bearing on how effectively they can comprehend instructional material, follow classroom discourse, and articulate their understanding in written examinations.

Academic achievement, on the other hand, is the most commonly used yardstick for evaluating the outcome of the educative process. It reflects not merely rote memorisation but the learner's ability to understand, apply, and communicate knowledge — competencies that are themselves undergirded by reasoning ability. Investigating the relationship between verbal reasoning ability and academic achievement is therefore of considerable theoretical and practical interest, since it can help educators, curriculum planners, and policy-makers identify cognitive levers that can be strengthened to improve learning outcomes.

The National Education Policy (NEP) 2020 places strong emphasis on the development of foundational literacy, critical thinking, and reasoning skills as core competencies to be nurtured from the early years through secondary education. In this backdrop, the present study attempts to empirically examine the extent to which verbal reasoning ability is associated with academic achievement among secondary school students, and whether this relationship holds uniformly across boys and girls.



2. Review of Related Literature

A review of the existing body of research provides a useful backdrop for situating the present investigation.

Sharma (2018) studied the reasoning ability of secondary school students in relation to their academic performance and found a moderate positive correlation, concluding that students with higher reasoning ability tended to perform better across subjects, particularly language and social science.

Patel and Desai (2019) investigated verbal and non-verbal reasoning ability among Gujarati-medium secondary school students and reported that verbal reasoning ability was a stronger predictor of academic achievement than non-verbal reasoning, attributing this to the language-dependent nature of classroom instruction and assessment.

Kumari (2020), in a study conducted among government and private school students, found that private school students scored significantly higher on verbal reasoning tests, and that this difference was mirrored in their academic achievement scores, suggesting an interaction between school environment, language exposure, and reasoning development.

Reddy and Rao (2021) examined gender differences in reasoning ability and found no significant difference between boys and girls on verbal reasoning tasks, though girls scored marginally higher on tasks requiring reading comprehension and inference.

Joshi (2022) explored the relationship between cognitive abilities and academic achievement under the emerging NEP 2020 framework and emphasised those pedagogical practices that actively engage students in verbal reasoning tasks — such as debate, structured discussion, and analogical reasoning exercises — meaningfully enhance both reasoning ability and scholastic performance over time.

Mehta (2023) conducted a study among South Gujarat secondary school students and found a significant positive relationship between verbal reasoning ability and achievement in language subjects specifically, while the relationship with mathematics achievement was comparatively weaker.

Taken together, the reviewed studies converge on a broadly positive association between verbal reasoning ability and academic achievement, while also indicating some inconsistency



regarding gender differences and subject-specific effects. This suggests a continuing need for context-specific empirical investigation, which the present study seeks to address.

3. Need and Significance of the Study

Despite a fair volume of research on reasoning ability and academic achievement, relatively few studies have focused specifically on verbal reasoning ability — as distinct from general or non-verbal reasoning — among secondary school students in the Gujarat context. Secondary education represents a critical transitional stage where students are expected to move from concrete, rote-based learning toward more abstract, analytical modes of thinking. Understanding the extent to which verbal reasoning ability is linked to academic achievement at this stage can help teachers design instructional strategies that consciously build reasoning skills alongside content knowledge, rather than treating the two as separate goals.

Further, in light of NEP 2020's call for competency-based and reasoning-oriented pedagogy over rote memorisation, empirical evidence on this relationship can help curriculum developers and teacher-training institutions calibrate instructional design, remedial programmes, and assessment practices in a more evidence-informed manner. The findings of this study may therefore be of practical value to secondary school teachers, teacher educators, curriculum framers, and educational policy-makers.

4. Statement of the Problem

The problem for the present study is stated as follows: "A Study of Verbal Reasoning Ability of Secondary School Students in Relation to Their Academic Achievement."

5. Objectives of the Study

- To measure the level of verbal reasoning ability among secondary school students.
- To measure the level of academic achievement among secondary school students.
- To study the relationship between verbal reasoning ability and academic achievement of secondary school students.
- To compare the verbal reasoning ability of male and female secondary school students.

6. Hypotheses

In line with the above objectives, the following null hypotheses were formulated for empirical testing:



- H_{01} : There exists no significant relationship between verbal reasoning ability and academic achievement of secondary school students.
- H_{02} : There exists no significant difference between male and female secondary school students with respect to their verbal reasoning ability.

7. Delimitations of the Study

- The study was delimited to secondary school students studying in Standard IX and X.
- The study was delimited to schools affiliated to the Gujarat Secondary and Higher Secondary Education Board (GSHSEB).
- The sample was delimited to 300 students drawn from selected schools in Gujarat.
- Academic achievement was delimited to the percentage of marks obtained in the most recent annual examination.

8. Method

8.1 Research Design

The descriptive survey method, employing a correlational research design, was adopted for the present study, as it is best suited to examining the relationship between two naturally occurring variables — verbal reasoning ability and academic achievement — without any experimental manipulation.

8.2 Population and Sample

The population for the study comprised all secondary school students studying in Standard IX and X in schools affiliated to the Gujarat Secondary and Higher Secondary Education Board. A sample of 300 students (150 boys and 150 girls) was selected from six secondary schools using a stratified random sampling technique, with gender and school as stratification variables to ensure proportional representation.

8.3 Tools Used

- Verbal Reasoning Test (VRT): A standardized test comprising items on verbal analogies, verbal classification, logical deduction from statements, sentence completion, and reading comprehension-based inference, used to measure students' verbal reasoning ability.



- Academic Achievement Record: The percentage of marks obtained by students in their most recent annual examination, collected from official school records, was used as the measure of academic achievement.

8.4 Procedure of Data Collection

Prior permission was obtained from the concerned school authorities. The Verbal Reasoning Test was administered to the sampled students under standard, uniform testing conditions, with clear instructions and adequate time allowed for completion. Academic achievement scores were subsequently collected from the official examination records maintained by the respective schools, and the two sets of scores were matched at the level of the individual student for analysis.

8.5 Statistical Techniques

- Descriptive statistics (Mean and Standard Deviation) were used to describe the sample's performance on both variables.
- Pearson's Product-Moment Coefficient of Correlation was used to study the relationship between verbal reasoning ability and academic achievement.
- The t-test for independent samples was used to compare verbal reasoning ability between boys and girls.

9. Data Analysis and Interpretation

9.1 Descriptive Statistics

Table 1 presents the descriptive statistics for verbal reasoning ability and academic achievement of the sampled secondary school students.

Table 1: Descriptive Statistics of Verbal Reasoning Ability and Academic Achievement

Variable	N	Mean	S.D.
Verbal Reasoning Ability (VRT)	300	62.41	10.82
Academic Achievement (%)	300	68.73	12.35

Table 1 shows that the sampled students obtained a mean score of 62.41 (S.D. = 10.82) on the Verbal Reasoning Test and a mean academic achievement of 68.73 per cent (S.D. = 12.35), indicating moderate variability in both variables across the sample.



9.2 Testing of Hypothesis 1

To test the first null hypothesis, Pearson's coefficient of correlation was computed between verbal reasoning ability scores and academic achievement percentages of the 300 sampled students. The results are presented in Table 2.

Table 2: Coefficient of Correlation between Verbal Reasoning Ability and Academic Achievement

N	df	Coefficient of Correlation (r)	Level of Significance
300	298	0.52	Significant at 0.01 level

As shown in Table 2, the obtained value of r (0.52) is greater than the table value required for significance at the 0.01 level for $df = 298$. Hence, the null hypothesis H_{01} — that there exists no significant relationship between verbal reasoning ability and academic achievement — is rejected. It is concluded that there exists a positive and statistically significant relationship between verbal reasoning ability and academic achievement of secondary school students.

9.3 Testing of Hypothesis 2

To test the second null hypothesis, the t-test for independent samples was applied to compare the mean verbal reasoning ability scores of boys and girls. The results are presented in Table 3.

Table 3: Comparison of Verbal Reasoning Ability of Boys and Girls

Group	N	Mean	S.D.	t-value	Result
Boys	150	63.12	11.04	1.18	Not Significant
Girls	150	61.70	10.58	($p > 0.05$)	($df = 298$)

The obtained t-value of 1.18 ($df = 298$) is less than the table value required for significance at the 0.05 level. Hence, the null hypothesis H_{02} — that there exists no significant difference between male and female secondary school students with respect to their verbal reasoning ability — is accepted. It is concluded that boys and girls do not differ significantly in their verbal reasoning ability.

10. Results and Discussion



The findings of the present study reveal a positive and statistically significant correlation ($r = 0.52$) between verbal reasoning ability and academic achievement of secondary school students. This finding is consistent with the observations of Sharma (2018) and Patel and Desai (2019), and reaffirms the theoretical proposition that reasoning ability, particularly in its verbal form, underlies much of what is assessed through conventional, language-mediated school examinations. Students who can efficiently comprehend verbal information, draw logical inferences, and articulate relationships between concepts are better equipped to understand instructional content, follow classroom explanations, and perform well in written assessments.

The absence of a statistically significant gender difference in verbal reasoning ability aligns with the findings of Reddy and Rao (2021), and suggests that verbal reasoning ability, at the secondary school stage, develops largely independent of gender when students are exposed to comparable instructional environments and opportunities.

The moderate (rather than very high) strength of the obtained correlation also suggests that academic achievement is a multiply-determined outcome, influenced by several other factors beyond verbal reasoning ability — such as study habits, motivation, socio-economic background, quality of teaching, and home environment — that were beyond the scope of the present study but merit consideration in future research.

11. Educational Implications

- Teachers should consciously integrate verbal reasoning tasks — such as analogies, logical sequencing, and inference-based comprehension exercises — into regular classroom instruction across subjects, not only language classes.
- Curriculum designers, in line with the NEP 2020 emphasis on foundational literacy and critical thinking, may embed structured verbal reasoning activities within textbooks and workbooks at the secondary stage.
- Remedial instructional programmes for academically weaker students should include targeted verbal reasoning enrichment activities as a means of improving comprehension and overall academic performance.
- Teacher education programmes should sensitize prospective teachers to the role of verbal reasoning ability in learning, equipping them with pedagogical strategies to nurture this ability in the classroom.



- Since no significant gender difference was found, verbal reasoning enrichment programmes can be designed uniformly for both boys and girls without the need for gender-differentiated intervention.

12. Conclusion

The present study set out to examine the relationship between verbal reasoning ability and academic achievement among secondary school students, and to explore possible gender differences in verbal reasoning ability. The findings indicate a significant positive relationship between the two variables, confirming that verbal reasoning ability is an important cognitive correlate of academic success at the secondary school stage. No significant difference was observed between boys and girls in verbal reasoning ability, indicating that gender is not a determining factor for this ability at this educational stage. The study reinforces the need for pedagogical approaches that deliberately cultivate verbal reasoning skills, in keeping with the broader goals of NEP 2020, so as to enhance the overall academic achievement of secondary school students.

References

- Joshi, R. (2022). Cognitive abilities and academic achievement of secondary school students in the context of NEP 2020. *Journal of Educational Research and Practice*, 14(2), 45–58.
- Kumari, S. (2020). A comparative study of verbal reasoning ability of government and private school students. *Indian Journal of Educational Studies*, 9(3), 112–121.
- Mehta, P. (2023). Verbal reasoning ability and subject-wise academic achievement of secondary school students in South Gujarat. *Gujarat Journal of Educational Research*, 11(1), 33–47.
- Ministry of Education, Government of India. (2020). National Education Policy 2020. MHRD.
- Patel, K., & Desai, M. (2019). Verbal and non-verbal reasoning ability as predictors of academic achievement among Gujarati-medium students. *Journal of Indian Education*, 45(2), 78–90.
- Reddy, N., & Rao, V. (2021). Gender differences in reasoning ability among secondary school students: An empirical study. *International Journal of Educational Psychology*, 8(4), 201–214.
- Sharma, A. (2018). Reasoning ability and academic performance of secondary school students. *Indian Educational Review*, 56(1), 12–24.