disadvantage SC students, who often depend on effective classroom instruction for meaningful engagement and comprehension in mathematics.

**Item No. 2: "Do you incorporate real-world examples to make mathematical problems more relatable?"**

Results show that 4.55%, 31.82%, 31.82%, 22.73%, and 9.09% of teachers strongly agree, agree, are neutral, disagree, and strongly disagree, respectively. A total of 36.37% of teachers report contextualizing math using real-world examples, while nearly one-third are uncertain and over 30% disagree. This reveals a mixed pattern of classroom practice, suggesting that a significant number of students may not experience mathematics as an applied or relevant subject. This lack of contextualization could impact motivation and engagement, especially among students from disadvantaged or first-generation backgrounds.

**Item No. 3: "How often do you organize group activities for collaborative problem-solving in mathematics?"**

Results show that 31.82%, 54.55%, 9.09% and 4.55% of teachers strongly agree, agree, are neutral, and strongly disagree, respectively. With 86.37% of teachers supporting collaborative learning, this item demonstrates the broad implementation of group activities in mathematics classes. Such practices are well-supported by research as they promote peer learning, communication skills, and problem-solving, all especially beneficial for SC students who may not receive similar academic reinforcement at home.

**Item No. 4: "Do you provide scaffolded instruction for complex mathematical topics?"**

Results show that 40.91%, 54.55%, and 4.55%, of teachers strongly agree, agree, and neutral respectively. These results reflect overwhelmingly positive support for scaffolded instruction, with 95.46% of teachers affirming its use. Scaffolded teaching helps bridge learning gaps, particularly for students who struggle with abstract or multi-step problems. The absence of disagreement and minimal neutrality suggests this method is a commonly accepted and effective instructional strategy, especially for learners from marginalized groups such as SC students.

**Item No. 5: "Do you differentiate teaching methods to address varying levels of student ability in mathematics?"**

Results show that 13.64%, 4.55%, 45.45% and 36.36% of teachers strongly agree, agree, are neutral, and disagree, respectively. Only 18.19% of teachers actively differentiate instruction, while 36.36% do not, and nearly half remain neutral. This indicates low implementation of differentiated instruction, despite its importance for addressing diverse learning needs in inclusive classrooms. The lack of differentiation may hinder academic

progress for struggling learners, particularly SC students, who benefit significantly from tailored support and adaptive teaching.

**Item No. 6: "Do you include activities that develop critical thinking and problem-solving skills in mathematics?"**

Results show that 22.73%, 36.36%, 31.82%, and 9.09% of teachers agree, are neutral, disagree, and strongly disagree, respectively. Less than one-quarter of respondents actively integrate critical thinking tasks, while 40.91% disagree or strongly disagree. These results suggest that critical thinking is not a central feature of mathematics instruction in many classrooms. Without explicit strategies to promote higher-order thinking, students may rely heavily on rote memorization, which limits deep understanding and real-world application—especially concerning for SC learners who may lack academic enrichment outside school.

**Item No. 7: "Is there an emphasis on inquiry-based learning in your teaching methods?"**

Results show that 18.18%, 27.27%, 4.55%, 27.27%, and 22.73% of teachers strongly agree, agree, are neutral, disagree, and strongly disagree, respectively. Only 45.45% affirm that inquiry-based learning is part of their instructional approach, while nearly half either disagree or strongly disagree. These mixed responses indicate limited adoption of inquiry-oriented teaching, which is essential for encouraging student-led exploration and discovery in mathematics. The underuse of such methods may restrict opportunities for students to develop reasoning and analytical skills, important competencies for SC students to overcome achievement gaps.

Finding: The data reveal that while some active and collaborative strategies, like group activities and scaffolding, are commonly used, higher-order methods such as constructivism, differentiation, and critical thinking are underutilized. The inconsistent adoption of diverse teaching strategies can hinder the academic growth of students, particularly those from marginalized groups, such as SC students, who may rely heavily on school-based instruction due to limited home support. Strengthening pedagogical practices and promoting professional development in learner-centered methodologies are essential to enhance mathematics achievement among all learners.

***Mathematics achievement is influenced by the teaching methods employed by teachers, where limited use of higher-order strategies may disproportionately affect the learning outcomes of SC students.***

# CHAPTER - V

# FINDINGS, DISCUSSIONS, SUMMARY, EDUCATIONAL IMPLICATIONS & CONCLUSION

# CHAPTER – V

## FINDINGS, DISCUSSIONS, SUMMARY, EDUCATIONAL IMPLICATIONS AND CONCLUSION

### 5.1.0 INTRODUCTION

Chapter - I provided the background of the study, including its rationale, objectives, hypotheses, and delimitations. Chapter - II presented a comprehensive review of related literature to establish the research context. Chapter - III detailed the methodology adopted for the study, including the research design, sample, tools, procedures for data collection, and statistical techniques used. Chapter - IV focused on the analysis and interpretation of data, presenting objective-wise results and findings under relevant sections. The present chapter (Chapter -V) summarizes the major findings of the study, discusses their implications, and draws conclusions based on the data. It also highlights suggestions for educational practice and future research.

### 5.2.0 FINDINGS

1. Non-SC students performed significantly better in mathematics than SC students.
2. Students from higher socio-economic backgrounds achieved higher scores in mathematics.
3. Children of parents in salaried or professional jobs scored higher in mathematics than those from daily wage earners or agricultural backgrounds.
4. Adequate infrastructure supported mathematics learning, but lack of modern resources limited overall achievement.
5. Higher teaching quality and institutional support were associated with improved mathematics performance.
6. Use of traditional methods dominated classrooms, while limited application of innovative strategies negatively impacted mathematics achievement.

### 5.3.0 DISCUSSION OF FINDINGS

The discussions related to the findings are presented in caption 5.3.1 – 5.3.6

### 5.3.1 Difference in Achievement Between SC and Non-SC Students

The first objective of the study was to examine the mathematics achievement of SC and Non-SC students of Class VIII. The mathematics achievement of SC students was found to be significantly lower than that of Non-SC students.

Favourable: Maqbool & Akhter (2019); Bernath & Paul (2016); Das & Halder (2018); ASER (2022); NAS (2021); Roy (2011); Pandey (2011); Kumar (2013); Mishra (2008) – reported

significant achievement gaps between SC and Non-SC students due to systemic inequality, caste-based discrimination, limited access to quality education, and social disadvantages.

Not favourable: Sharma (2014) – Found no significant difference in achievement when schools promoted equity through inclusive pedagogy and equal access to resources.

The present study affirms that caste continues to influence academic achievement in mathematics. The lower performance of SC students could be attributed to reduced academic support at home, differential teacher expectations, and historical social disadvantages.

**Finding:** The mathematics achievement of Non-SC students was found to be higher on average and more consistent, whereas SC students exhibited greater variability in performance, with a considerable proportion scoring at the lower end of the spectrum.

### 5.3.2 Relationship Between Socio-Economic Status and Mathematics Achievement

The second objective of the study was to assess the influence of socio-economic status on mathematics achievement. The study found a positive relationship between socio-economic status and mathematics achievement.

Favourable: Engel (2015); Anjum (2015); Grimm (2008); Shukla & Reddy (2013); Halder (2014); Verma (2016); Ahmed (2018); Jaiswal (2016) – supported a positive relationship between SES and mathematics achievement.

Not favourable: Jaiswal (2016); Banerjee (2017) – Reported that school environment and peer support played a greater role than SES in student achievement.

The present study highlights that while income levels influence achievement for all students, SC students consistently performed below Non-SC students in each SES group. This implies that SES alone does not explain academic disparities; rather, it intersects with caste and educational opportunity.

**Finding:** Students from higher socio-economic backgrounds achieved higher scores in mathematics.

### 5.3.3 Relationship Between Parental Occupation and Mathematics Achievement

The second objective of the study was to investigate the role of parental occupation in mathematics achievement. The findings indicated that students whose parents held salaried or government positions achieved better results in mathematics.

Favourable: Best & Kahn (1970); Singh & Saxena (1995); Bandura (1994); Das & Halder (2018) Maqbool & Akhter (2019); Shukla & Reddy (2013); Verma (2016)

– showed that parental occupation positively influences academic achievement.

Not favourable: Verma (2016); Rao (2019) – Found no consistent correlation between occupation and achievement in certain rural and tribal populations.

In the present study, even among students whose parents had stable jobs, SC students showed comparatively lower achievement than Non-SC peers. This points to the compounded effects of caste and socio-economic identity.

**Finding:** Children of parents in salaried or professional jobs scored higher in mathematics than those from daily wage earners or agricultural backgrounds.

### 5.3.4 Relationship Between School Infrastructure and Mathematics Achievement

The second objective was to determine the effect of school infrastructure on mathematics achievement. The findings showed that basic infrastructure was adequate, but there was a notable lack of digital tools and modern teaching aids.

Favourable: Shaikh (2015); ASER (2022); NAS (2021) – emphasized the role of quality infrastructure and learning tools in improving achievement.

Not favourable: Banerjee (2017) – Found that infrastructure alone had little impact unless accompanied by effective teaching practices.

The current findings suggest that although school buildings and classrooms may be structurally sound, the absence of enrichment tools limits effective instruction.

**Finding:** Adequate infrastructure supported mathematics learning, but lack of modern resources limited overall achievement.

### 5.3.5 Relationship Between Quality of Teaching and Institutional Support and Mathematics Achievement

The second objective was to study the relationship between the quality of teaching and mathematics achievement. It was found that while teachers generally reported adequate training, they identified insufficient institutional support and resource constraints, particularly for SC students.

Favourable: NAS (2021); Vygotsky (1978); NCERT (2020); Ahmed (2018) – reported that quality teaching and administrative support positively impact student performance.

Not favourable: Rao (2019) – Found no significant improvement in student achievement despite formal teacher training, due to lack of home support and learner motivation.

The findings of the present study show that quality teaching requires not only individual teacher competency but also institutional commitment, resources, and encouragement to adopt inclusive, student-centered approaches.

**Finding:** Higher teaching quality and institutional support were associated with improved mathematics performance.

### 5.3.6 Relationship between the teaching method employed and Mathematics Achievement

The third objective was to study the teaching methods employed by teachers and their relationship with mathematics achievement. The findings revealed that while teachers commonly used traditional chalk-and-talk approaches and group activities, more advanced methods such as differentiated instruction, inquiry-based learning, and constructivist techniques were less frequently employed.

Favourable: Bruner (1960); Kapur (2018); Crow & Crow (1963); Shaikh (2015) – emphasized that inquiry-based, student-centered, and differentiated pedagogies enhance conceptual understanding and mathematics achievement.

Not favourable: Singh (2012) – found that mere adoption of modern methods without teacher clarity or support did not significantly impact student performance.

The findings of the present study suggest that the effectiveness of teaching methods depends not only on the techniques used but also on how well they are implemented and supported. Traditional methods were dominant, while student-centered practices were limited, potentially affecting SC students' engagement and learning outcomes.

**Finding:** Use of traditional methods dominated classrooms, while limited application of innovative strategies negatively impacted mathematics achievement.

## 5.4.0 SUMMARY

The summary of the present research study is presented under the following captions 5.4.1 – 5.4.7.

### 5.4.1 STATEMENT OF THE PROBLEM

The statement of the problem of the present research was worded as follows:

***"A STUDY OF ACHIEVEMENT IN MATHEMATICS OF CLASS VIII STUDENTS BELONGING TO SCHEDULED CASTE OF KHURDHA DISTRICT, ODISHA."***

### 5.4.2 CONCEPTUAL FRAMEWORK OF THE STUDY

The study explored mathematics achievement among SC students in relation to socio-economic status, parental occupation, school infrastructure, and quality of teaching. It was grounded in the understanding that educational inequality, particularly caste-based, continues to hinder academic success in India. The National Education Policy (NEP) 2020 advocates for inclusive, equitable, and quality education that addresses such disparities. Vygotsky's sociocultural theory, Bandura's self-efficacy theory, and findings from ASER and NAS reports guided the interpretation of learning gaps rooted in systemic disadvantages.

### 5.4.3 OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1. To assess the level of achievement in mathematics of class VIII students.
2. To identify the factors influencing the achievement in mathematics of class VIII students, such as socio-economic status, school infrastructure, quality of teaching, and parental occupation.
3. To study the methods employed by the teachers for teaching mathematics.

### 5.4.4 POPULATION AND SAMPLE

The population of the study comprised Class VIII students from government schools in Khurdha district, Odisha. The sample included SC and Non-SC students from selected schools in the district.

### 5.4.5 SAMPLING TECHNIQUE AND SAMPLE SIZE

The sample was selected using random sampling technique. The study included 200 Class VIII students from 10 government schools of Khurdha district. Among them, 60 were SC students and 140 were Non-SC students.

### 5.4.6 TOOLS USED FOR DATA COLLECTION

1. Mathematics Achievement Records
2. Questionnaire for teachers regarding school infrastructure and instructional practices.
3. Checklist for students, collecting data on parental occupation and socio-economic background.

### 5.4.7 STATISTICAL TECHNIQUES USED

The following statistical techniques were employed to analyze the data:

1. Mean
2. Standard Deviation (SD)
3. Percentage distribution

### 5.5.0 EDUCATIONAL IMPLICATIONS

The findings of this study have several implications for stakeholders in the education system:

### 5.5.1 Implications for Students

SC students must be provided with additional academic support in mathematics, including peer mentoring, remedial classes, and enriched learning experiences. Programs should build their confidence, address gaps in foundational knowledge, and encourage engagement with problem-solving and conceptual learning.

### 5.5.2 Implications for Teachers

Teachers need training in learner-centered approaches like constructivism, differentiation, and the use of performance data to tailor instruction. Teachers must also adopt inclusive practices that address diverse classroom needs and encourage SC students through feedback, scaffolding, and collaborative tasks.

### 5.5.3 Implications for Parents

Parents, particularly from marginalized backgrounds, must be made aware of their role in supporting their children's learning. Awareness programs and home-school communication channels can empower parents to assist with homework, foster positive attitudes toward education, and ensure regular school attendance.

### 5.5.4 Implications for Teacher Training Institutes

Teacher education programs must incorporate training in inclusive pedagogy, use of ICT tools, and data-driven instruction. Pre-service and in-service programs should prepare teachers to work in diverse classroom contexts and address caste- and income-based disparities.

### 5.5.5 Implications for Curriculum Developers

Mathematics curricula should integrate culturally relevant examples and contexts familiar to SC students. Activities should promote critical thinking and inquiry. The curriculum must also encourage differentiated instruction to address diverse learning needs.

### 5.5.6 Implications for School Administrators

School heads must ensure equitable distribution of resources across rural and urban schools, strengthen teacher support systems, and create a culture of collaboration. Infrastructure improvements must be paired with support for teaching aids, feedback systems, and continuous professional development.

## 5.6.0 SUGGESTIONS FOR FURTHER STUDIES

1. A longitudinal study can be conducted to track SC students' progress in mathematics over multiple years.
2. Comparative studies can be undertaken to examine mathematics achievement in SC students across different districts or states.
3. Action research may be conducted on the effectiveness of differentiated and inquiry-based teaching methods for SC learners.
4. Studies can explore the impact of parental involvement programs on SC students' performance.
5. Gender-based analysis can be conducted to explore intersectionality among SC girls in mathematics achievement.

6. ICT-based interventions can be studied for their effectiveness in supporting marginalized learners.

### 5.7.0 LIMITATIONS OF THE STUDY

1. The study was confined to government schools in Khurdha district and may not be generalizable to private or other district schools.
2. Only Class VIII students were considered.
3. The analysis relied on existing school data; standardized testing was not conducted independently.

### 5.8.0 CONCLUSION

This study highlights the urgent need to address educational inequities in mathematics achievement among SC students in Khurdha district. The interplay of caste, socio-economic status, pedagogy, and institutional support is central to understanding the problem. With coordinated efforts at all levels—policy, school, and community—meaningful improvements in educational outcomes for marginalized students can be achieved.

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# *APPENDICES*

## *APPENDIX I*

## QUESTIONNAIRE FOR MATHEMATICS TEACHERS

- Name of the School: _____
- Name of the Teacher: _____
- Teaching Experience: _____ years
- Educational Qualification: _____

TEACHER RATING SCALE

This rating scale is designed to evaluate teaching practices, resources, and challenges related to mathematics achievement among Class VIII students belonging to Scheduled Castes in Khordha District. Each item is rated on a scale from 1 to 5, where:

ଶିକ୍ଷକ ମୂଲ୍ୟାୟନ ମାପକାଠି

ଖୋର୍ଦ୍ଧା ଜିଲ୍ଲାରେ ଅନୁସୂଚିତ ଜାତିର ଅଷ୍ଟମ ଶ୍ରେଣୀ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ମଧ୍ୟରେ ଶିକ୍ଷାଦାନ ଅଭ୍ୟାସ, ସମ୍ବଳ ଏବଂ ଗଣିତ ସଫଳତା ସମ୍ବନ୍ଧୀୟ ଆହ୍ୱାନର ମୂଲ୍ୟାଙ୍କନ କରିବା ପାଇଁ ଏହି ରେଟିଂ ସ୍କେଲ ପ୍ରସ୍ତୁତ କରାଯାଇଛି । ପ୍ରତ୍ୟେକ ଆଇଟମକୁ 1 ରୁ 5 ପର୍ଯ୍ୟନ୍ତ ସ୍କେଲରେ ମୂଲ୍ୟାଙ୍କନ କରାଯାଏ, ଯେଉଁଠାରେ:

1 = Strongly Disagree (ଦୃଢ଼ ଭାବରେ ଅସହମତି)
2 = Disagree (ଅସହମତି)
3 = Neutral (ନିରପେକ୍ଷ)
4 = Agree (ସହମତ)
5 = Strongly Agree (ଦୃଢ଼ ଭାବରେ ସହମତ)

### TEACHING METHODS AND STRATEGIES| ଶିକ୍ଷାଦାନ ପ୍ରଣାଳୀ ଏବଂ ରଣନୀତି

1. Do you regularly use constructivist teaching approaches to help students build their understanding of mathematical concepts?
   ଆପଣ ନିୟମିତ ଭାବରେ ଗଠନମୂଳକ ଶିକ୍ଷାଦାନ ପ୍ରଣାଳୀ ବ୍ୟବହାର କରି ଛାତ୍ରମାନଙ୍କୁ ଗାଣିତିକ ଧାରଣା ବିଷୟରେ ବୁଝିବାରେ ସାହାଯ୍ୟ କରନ୍ତି କି?

   Rating: ___ (1-5)
2. Do you incorporate real-world examples to make mathematical problems more relatable?

   ଗାଣିତିକ ସମସ୍ୟାକୁ ଅଧିକ ସମ୍ପର୍କୀୟ କରିବାକୁ ଆପଣ ବାସ୍ତବ-ବିଶ୍ୱ ଉଦାହରଣଗୁଡ଼ିକୁ ଅନ୍ତର୍ଭୁକ୍ତ କରନ୍ତି କି?
   Rating: ___ (1-5)
3. How often do you organize group activities for collaborative problem-solving in mathematics? ଗଣିତରେ ସହଯୋଗୀ ସମସ୍ୟାର ସମାଧାନ ପାଇଁ ଆପଣ କେତେଥର ଗୋଷ୍ଠୀ କାର୍ଯ୍ୟକଳାପକୁ ସଂଗଠିତ କରନ୍ତି?

   Rating: ___ (1-5)
4. Do you provide scaffolded instruction for complex mathematical topics?
   ଆପଣ ଜଟିଳ ଗାଣିତିକ ବିଷୟଗୁଡିକ ପାଇଁ ସ୍କାଫୋଲ୍ଡ ନିର୍ଦ୍ଦେଶ ପ୍ରଦାନ କରନ୍ତି କି?

   Rating: ___ (1-5)
5. Do you differentiate teaching methods to address varying levels of student ability in mathematics?

ଗଣିତରେ ବିଭିନ୍ନ ସ୍ତରର ଛାତ୍ର ଦକ୍ଷତାକୁ ସମାଧାନ କରିବା ପାଇଁ ଆପଣ ଶିକ୍ଷାଦାନ ପ୍ରଣାଳୀକୁ ଭିନ୍ନ କରନ୍ତି କି?

Rating: ___ (1-5)

6. Do you include activities that develop critical thinking and problem-solving skills in mathematics? ଗଣିତରେ ସମାଲୋଚନାତ୍ମକ ଚିନ୍ତାଧାରା ଏବଂ ସମସ୍ୟା ସମାଧାନ କୌଶଳ ବିକଶିତ କରୁଥିବା କାର୍ଯ୍ୟକଳାପକୁ ଆପଣ ଅନ୍ତର୍ଭୁକ୍ତ କରନ୍ତି କି?
   Rating: ___ (1-5)
7. Is there an emphasis on inquiry-based learning in your teaching methods?
   ଆପଣଙ୍କ ଶିକ୍ଷାଦାନ ପ୍ରଣାଳୀରେ ଅନୁସନ୍ଧାନ ଭିତ୍ତିକ ଶିକ୍ଷଣ ଉପରେ ଏକ ଗୁରୁତ୍ୱ ଅଛି କି?

   Rating: ___ (1-5)

- RESOURCES AND INFRASTRUCTURE (ସମ୍ବଳ ଏବଂ ଭିତ୍ତିଭୂମି)

8. Are technological tools like graphing calculators or educational software used during your math lessons?
   ଆପଣଙ୍କ ଗଣିତ ପାଠ୍ୟକ୍ରମରେ ଗ୍ରାଫିଂ କାଲକୁଲେଟର କିମ୍ବା ଶିକ୍ଷାଗତ ସଫ୍ଟୱେର୍ ପରି ବୈଷୟିକ ଜ୍ଞାନକୌଶଳ ଉପକରଣଗୁଡ଼ିକ ଅଛି କି?

   Rating: ___ (1-5)
9. Do you believe the school's infrastructure supports effective mathematics teaching?
   ଆପଣ ବିଶ୍ୱାସ କରନ୍ତି ଯେ ବିଦ୍ୟାଳୟର ଭିତ୍ତିଭୂମି ପ୍ରଭାବଶାଳୀ ଗଣିତ ଶିକ୍ଷାଦାନକୁ ସମର୍ଥନ କରେ?

   Rating: ___ (1-5)
10. Are adequate teaching materials available to support math instruction?
    ଗଣିତ ଶିକ୍ଷାକୁ ସମର୍ଥନ କରିବା ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ଶିକ୍ଷାଦାନ ଉପଲବ୍ଧ କି?

    Rating: ___ (1-5)
11. Are there adequate extracurricular programs or support systems to enhance mathematical learning?
    ଗାଣିତିକ ଶିକ୍ଷଣକୁ ବଢ଼ାଇବା ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ପାଠ୍ୟକ୍ରମ କାର୍ଯ୍ୟକ୍ରମ କିମ୍ବା ସମର୍ଥନ ପ୍ରଣାଳୀ ଅଛି କି?

    Rating: ___ (1-5)
12. Do you feel there is equitable resource allocation for schools in rural and urban areas?
    ଆପଣ ଅନୁଭବ କରୁଛନ୍ତି କି ଗ୍ରାମାଞ୍ଚଳ ଏବଂ ସହରାଞ୍ଚଳର ବିଦ୍ୟାଳୟଗୁଡ଼ିକ ପାଇଁ ସମାନ ଉତ୍ସ ବଣ୍ଟନ ଅଛି?

    Rating: ___ (1-5)
13. Are classroom observations or feedback mechanisms in place to improve teaching practices? ଶିକ୍ଷାଦାନ ଅଭ୍ୟାସରେ ଉନ୍ନତି ଆଣିବା ପାଇଁ ଶ୍ରେଣୀଗୃହର ପର୍ଯ୍ୟବେକ୍ଷଣ କିମ୍ବା ମତାମତ ପ୍ରଣାଳୀ ଅଛି କି?

    Rating: ___ (1-5)

- STUDENT-CENTERED PRACTICES( ଛାତ୍ର-କେନ୍ଦ୍ରିତ ଅଭ୍ୟାସଗୁଡିକ)

14. How do you address mathematics anxiety among students?
    ଆପଣ ଛାତ୍ରମାନଙ୍କ ମଧ୍ୟରେ ଗଣିତ ଚିନ୍ତାକୁ କିପରି ସମାଧାନ କରିବେ?

    Rating: ___ (1-5)
15. Do you find that parental involvement positively affects students' mathematical achievement?

ଆପଣ ଜାଣନ୍ତି କି ପିତାମାତାଙ୍କ ଯୋଗଦାନ ଛାତ୍ରମାନଙ୍କର ଗାଣିତିକ ସଫଳତା ଉପରେ ସକରାତ୍ମକ ପ୍ରଭାବ ପକାଇଥାଏ?

Rating: ___ (1-5)

16. Are students encouraged to ask questions and actively participate during math lessons?
ଗଣିତ ପାଠ୍ୟକ୍ରମରେ ପ୍ରଶ୍ନ ପଚାରିବା ଏବଂ ସକ୍ରିୟ ଭାବରେ ଅଂଶଗ୍ରହଣ କରିବାକୁ, ଛାତ୍ରମାନେ ଉତ୍ସାହିତ କି?

Rating: ___ (1-5)

17. Do you identify and focus on 'hard spots' or difficult areas in mathematics for targeted teaching?
ଆପଣ ଲକ୍ଷ୍ୟ ରଖିଥିବା ଶିକ୍ଷାଦାନ ପାଇଁ ଗଣିତର 'ହାର୍ଡ ସ୍ପଟ୍' କିମ୍ବା କଷ୍ଟଦାୟକ ସ୍ଥାନଗୁଡିକ ଚିହ୍ନଟ କରି ଧ୍ୟାନ ଦିଅନ୍ତି କି?

Rating: ___ (1-5)

18. How do you address the needs of students who struggle with basic mathematical concepts?
ମୌଳିକ ଗାଣିତିକ ଧାରଣା ସହିତ ସଂଘର୍ଷ କରୁଥିବା ଛାତ୍ରଛାତ୍ରୀଙ୍କ ଆବଶ୍ୟକତାକୁ ଆପଣ କିପରି ସମାଧାନ କରିବେ?

Rating: ___ (1-5)

19. Are peer tutoring or mentorship programs in place to support struggling learners?
ସଂଘର୍ଷପୂର୍ଣ୍ଣ ଶିକ୍ଷାର୍ଥୀଙ୍କୁ ସମର୍ଥନ କରିବା ପାଇଁ ସାଥୀ ଶିକ୍ଷାଦାନ କିମ୍ବା ପରାମର୍ଶଦାତା କାର୍ଯ୍ୟକ୍ରମ ଅଛି କି?

Rating: ___ (1-5)

## TEACHER PREPAREDNESS AND SUPPORT (ଶିକ୍ଷକ ପ୍ରସ୍ତୁତି ଏବଂ ସମର୍ଥନ)

20. Do you feel adequately trained to teach middle-stage mathematics?
ଆପଣ ମଧ୍ୟମ ପର୍ଯ୍ୟାୟ ଗଣିତ ଶିକ୍ଷା ଦେବା ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ତାଲିମପ୍ରାପ୍ତ ଅନୁଭବ କରୁଛନ୍ତି କି?

Rating: ___ (1-5)

21. Are professional development opportunities provided to enhance your teaching skills in mathematics? ଗଣିତରେ ଆପଣଙ୍କ ଶିକ୍ଷାଦାନ ଦକ୍ଷତା ବୃଦ୍ଧି କରିବା ପାଇଁ ବୃତ୍ତିଗତ ବିକାଶ ସୁଯୋଗ ପ୍ରଦାନ କରାଯାଇଛି କି?

Rating: ___ (1-5)

22. Do you receive adequate administrative support to implement innovative teaching strategies?
ଅଭିନବ ଶିକ୍ଷାଦାନ ରଣନୀତି କାର୍ଯ୍ୟକାରୀ କରିବା ପାଇଁ ଆପଣ ପର୍ଯ୍ୟାପ୍ତ ପ୍ରଶାସନିକ ସମର୍ଥନ ପାଆନ୍ତି କି?
Rating: ___ (1-5)

23. Do you use performance data to inform your teaching practices?
ତୁମର ଶିକ୍ଷାଦାନ ଅଭ୍ୟାସକୁ ଜଣାଇବା ପାଇଁ ତୁମେ କାର୍ଯ୍ୟଦକ୍ଷତା ତଥ୍ୟ ବ୍ୟବହାର କରୁଛ?

Rating: ___ (1-5)

24. Are there additional interventions or resources needed to improve SC students' performance in mathematics?
ସେଠାରେ ଅତିରିକ୍ତ ହସ୍ତକ୍ଷେପ କିମ୍ବା ଉତ୍ସ ଅଛି କି? ଗଣିତରେ SC ଛାତ୍ରମାନଙ୍କ କାର୍ଯ୍ୟଦକ୍ଷତାକୁ ଉନ୍ନତ କରିବା ପାଇଁ ଆବଶ୍ୟକ?

Rating: ___ (1-5)

- SOCIO-ECONOMIC AND CULTURAL FACTORS (ସାମାଜିକ-ଅର୍ଥନୈତିକ ଓ ସାଂସ୍କୃତିକ କାରକ)

25. Are you aware of any socio-economic barriers that hinder students' learning in mathematics?
ଗଣିତରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଠପଢ଼ାରେ ବାଧା ସୃଷ୍ଟି କରୁଥିବା କୌଣସି ସାମାଜିକ-ଅର୍ଥନୈତିକ ପ୍ରତିବନ୍ଧକ ବିଷୟରେ ଆପଣ ଅବଗତ ଅଛନ୍ତି କି?

    Rating: ___ (1-5)

26. Do you observe gender differences in the achievement levels of students in mathematics?
ଆପଣ ଗଣିତରେ ଛାତ୍ରମାନଙ୍କ କୃତିତ୍ୱ ସ୍ତରରେ ଲିଙ୍ଗଗତ ପାର୍ଥକ୍ୟ ଦେଖୁଛନ୍ତି କି?

    Rating: ___ (1-5)

27. How do you handle language barriers, if any, while teaching mathematics?
ଗଣିତ ପଢ଼ାଇବା ସମୟରେ ଯଦି କୌଣସି ଭାଷା ପ୍ରତିବନ୍ଧକ ଥାଏ, ତେବେ ଆପଣ କିପରି ମୁକାବିଲା କରିବେ?

    Rating: ___ (1-5)

28. Do you think that SC students in your class face specific challenges in understanding mathematical concepts?
ଆପଣ ଭାବନ୍ତି କି ଆପଣଙ୍କ ଶ୍ରେଣୀରେ ଏସସି ଛାତ୍ରମାନେ ଗାଣିତିକ ଧାରଣାକୁ ବୁଝିବାରେ ନିର୍ଦ୍ଦିଷ୍ଟ ଆହ୍ୱାନର ସମ୍ମୁଖୀନ ହୁଅନ୍ତି?

    Rating: ___ (1-5)

29. Do you believe that the current curriculum meets the needs of students from marginalized backgrounds?
ଆପଣ ବିଶ୍ୱାସ କରନ୍ତି କି ବର୍ତ୍ତମାନର ପାଠ୍ୟକ୍ରମ ଅବହେଳିତ ପୃଷ୍ଠଭୂମିର ଛାତ୍ରଛାତ୍ରୀଙ୍କ ଆବଶ୍ୟକତାକୁ ପୂରଣ କରେ?

    Rating: ___ (1-5)

# *APPENDIX II*

## STUDENT INFORMATION QUESTIONNAIRE

Please fill in the following details honestly. Your responses will be kept confidential and used only for academic purposes.

1. Name: _____
2. Class: _____
3. Gender: ☐ Male ☐ Female ☐ Other
4. Name of the School: _____
5. Age: _____ Years

6. Monthly Family Income (Please tick one):
   ☐ Below ₹5,000
   ☐ ₹5,001 – ₹10,000
   ☐ ₹10,001 – ₹20,000
   ☐ ₹20,001 – ₹50,000
   ☐ ₹50,000 and Above

7. Parental Occupation (Please tick one):
   ☐ Agriculture
   ☐ Daily Wages Earner
   ☐ Government Job
   ☐ Private Sector Job
   ☐ Business

# *APPENDIX III*

## CLASSROOM OBSERVATION SCHEDULE

This observation tool is designed for researchers to evaluate classroom practices during mathematics instruction for Class VIII Scheduled Caste students. Each item should be rated on a 5-point scale: Poor, Fair, Good, Very Good, Excellent.

Rating Scale:

1 – Poor, 2 – Fair, 3 – Good, 4 - Very Good, and 5 - Excellent

Observation Rating Table

| Sl.No. | Observation Item | Rating |
|---|---|---|
| 1 | The lesson objectives were clearly stated at the beginning of the class. | |
| 2 | The teacher's lesson plan was well-structured and logical. | |
| 3 | The teacher used a variety of instructional strategies. | |
| 4 | The teacher connected the lesson content with real-life examples. | |
| 5 | Students were actively involved throughout the lesson. | |
| 6 | The teacher encouraged students to ask and answer questions. | |
| 7 | The teacher addressed the needs of both high and low achievers. | |
| 8 | Adaptations were made for students facing difficulty in understanding concepts. | |
| 9 | The teacher maintained discipline effectively throughout the class. | |
| 10 | Time was managed efficiently during the lesson. | |
| 11 | Relevant teaching aids were used to support learning. | |
| 12 | The teacher effectively used blackboard/whiteboard or digital tools. | |
| 13 | Group work or peer collaboration was encouraged during the lesson. | |
| 14 | Students were given opportunities to discuss and solve problems togetl | |
| 15 | The teacher used questioning techniques to check understanding. | |
| 16 | Formative assessment strategies (e.g., quizzes, quick checks) were used. | |
| 17 | The teacher provided constructive feedback during the lesson. | |
| 18 | The teacher's voice and language were clear and appropriate. | |
| 19 | The classroom atmosphere was conducive to learning. | |
| 20 | The teacher demonstrated enthusiasm and motivation while teaching. | |