ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

The Contribution of NCERT Mathematics to Analytical Thinking in Competitive Examinations

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Publication Date: 2026/08/18

Abstract: NCERT mathematics textbooks serve as the foundational curriculum for most national-level competitive examinations in India whether it's JEE, NEET, TET, or the UPSC civil services exams. The CBSE follows this syllabus, and several state boards have also adopted it. But what makes these textbooks stand out is their pedagogical philosophy. Rather than encouraging rote memorization, the NCERT framework emphasizes conceptual clarity, logical reasoning, and genuine problem-solving skills. This paper explores how the NCERT mathematics curriculum contributes to developing the analytical thinking abilities that competitive examinations ultimately test. I've drawn upon recent empirical studies from Indian journals that examine problem-solving ability, mathematical anxiety, ICT-mediated teaching approaches, and interventions like Ganitha Kalika Andolana. The evidence suggests that the curriculum framework itself is thoughtfully designed to foster logical and analytical thinking. However, the actual impact on competitive examination performance isn't straightforward. Several factors mediate this relationship. The quality of instruction in the classroom matters enormously. How much problem-solving practice students get, their individual learning styles, and broader socio-economic and institutional factors all play a role. A well-designed curriculum is necessary, but it's not sufficient on its own. The paper concludes by suggesting ways to strengthen the connection between everyday mathematics pedagogy and the analytical demands posed by competitive examinations. The goal is to ensure that students don't just memorize formulas but genuinely develop the reasoning skills they'll need to succeed.

Keywords: *NCERT Mathematics, Analytical Thinking, Competitive Examinations, Problem-Solving Ability, Curriculum Framework.*

How to Cite: P. Sathish; G. A. Shyamala; B. Eniyan; Dr. V. C. Srinivasan (2026) The Contribution of NCERT Mathematics to Analytical Thinking in Competitive Examinations. *International Journal of Innovative Science and Research Technology*, 11(8), 778-787. https://doi.org/10.38124/ijisrt/26aug482

I. INTRODUCTION

Mathematics occupies a unique position in the Indian school curriculum as a subject explicitly intended to train the mind in logical reasoning, abstraction, and structured problem-solving. The National Curriculum Framework (NCF) 2005, developed by NCERT, explicitly states that school mathematics should aim to develop "the child's resources to think and reason mathematically, to pursue assumptions to their logical conclusion, and to handle abstraction," rather than treating the subject as a mere collection of formulas to be memorized (National Council of Educational Research and Training, 2005). This philosophy has shaped successive generations of NCERT mathematics textbooks used across CBSE-affiliated schools and adapted by numerous state education boards throughout India.

At the same time, competitive examinations at every level of Indian education and public employment from the Teacher Eligibility Test (TET) to the Joint Entrance Examination (JEE), the National Eligibility cum Entrance Test (NEET), and the Union Public Service Commission (UPSC) civil services examination place substantial weight on quantitative aptitude and analytical reasoning sections.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

Coaching literature and examination-preparation guides frequently advise candidates to master NCERT mathematics textbooks as a foundational step before attempting advanced problem sets, on the premise that the analytical habits cultivated by the NCERT curriculum transfer directly to competitive examination performance (Aptizone Bhubaneswar, 2025). However, this widely held assumption has received comparatively limited systematic empirical scrutiny in the Indian education research literature.

This paper addresses that gap by synthesizing recent empirical research on mathematics achievement, problem-solving ability, and analytical reasoning in the Indian school context, and by examining how these findings relate to the specific pedagogical design choices embedded in the NCERT mathematics curriculum. The paper further considers whether the analytical skills nurtured through NCERT mathematics are sufficient, on their own, to explain success in competitive examinations, or whether they are substantially mediated by other instructional, psychological, and socio-economic factors.

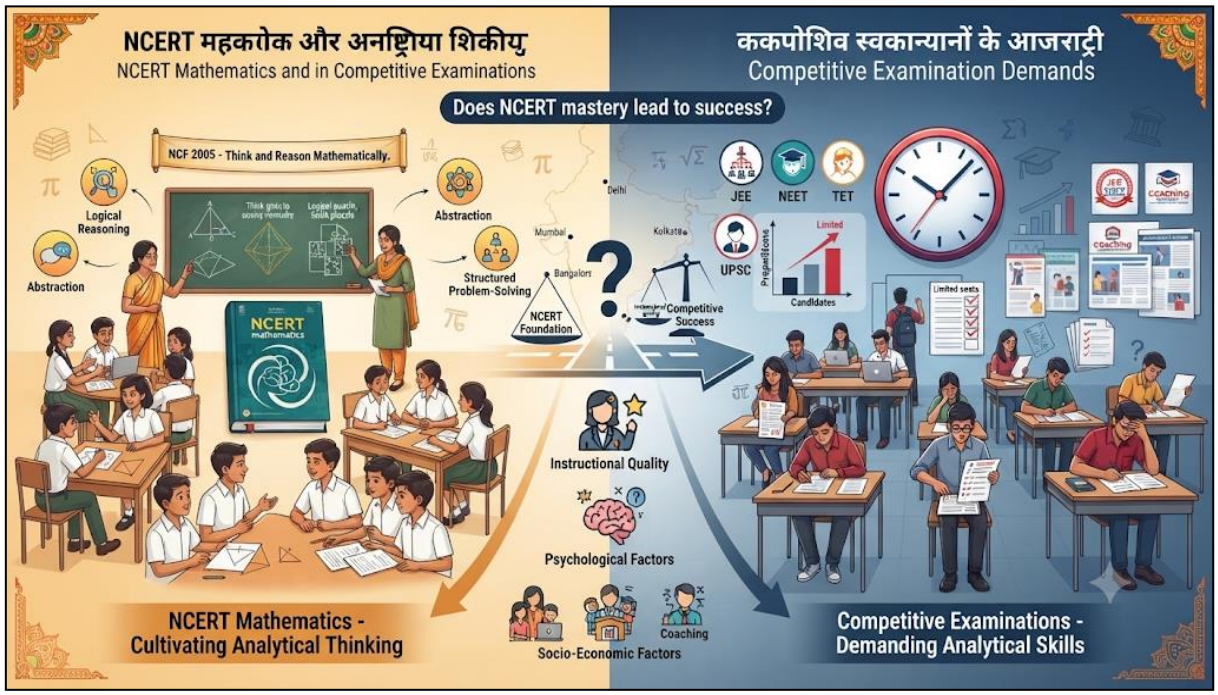

Fig 1 NCERT Mathematics and Competitive Examinations

This illustration contrasts NCERT mathematics education, which fosters analytical thinking and conceptual understanding in a collaborative classroom, with the high-pressure environment of competitive exams like JEE and NEET. A central pathway questions whether NCERT mastery directly leads to success, highlighting mediating factors such as instructional quality, psychological factors, and socio-economic backgrounds that influence student performance.

➢ *Objectives of the Study*

- To examine the pedagogical philosophy underlying the NCERT mathematics curriculum and its stated relationship to analytical thinking.
- To review recent empirical evidence on the relationship between mathematics achievement, problem-solving ability, and analytical reasoning among Indian school students.
- To analyze how competitive examinations assess analytical thinking and the extent to which NCERT-based preparation aligns with these assessment demands.
- To identify the mediating factors instructional quality, ICT integration, mathematical anxiety, learning style, and socio-economic context that influence the transfer of NCERT-based learning to competitive examination performance.
- To propose recommendations for strengthening the contribution of NCERT mathematics pedagogy to analytical thinking outcomes.

II. METHODOLOGY

This paper adopts a qualitative, literature-synthesis methodology. I drew upon primary source material, including official NCERT curriculum policy documents (National Council of Educational Research and Training, 2005, 2006) and the National Education Policy 2020 (Ministry of Education, 2020). Alongside these, I examined recent empirical studies published in Indian peer-reviewed and UGC-indexed journals that address mathematics achievement, problem-solving ability, and analytical reasoning among Indian secondary and higher-secondary students (Kalaivani & Amutha Sree, 2024; Rani & Rani, 2024; Siddiq & Kumar, 2023; Pradeepkumar & Sheela, 2024).

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

I also used studies examining related constructs, such as teacher competency development in the Tamil Nadu context (Balasubramanian, 2023), as reference points. Classical foundational work on mathematical problem-solving (Polya, 1945) served as a theoretical touchstone. Once I had gathered these sources, I synthesized the literature thematically around four axes: curriculum philosophy, empirical achievement evidence, competitive-examination alignment, and mediating instructional factors.

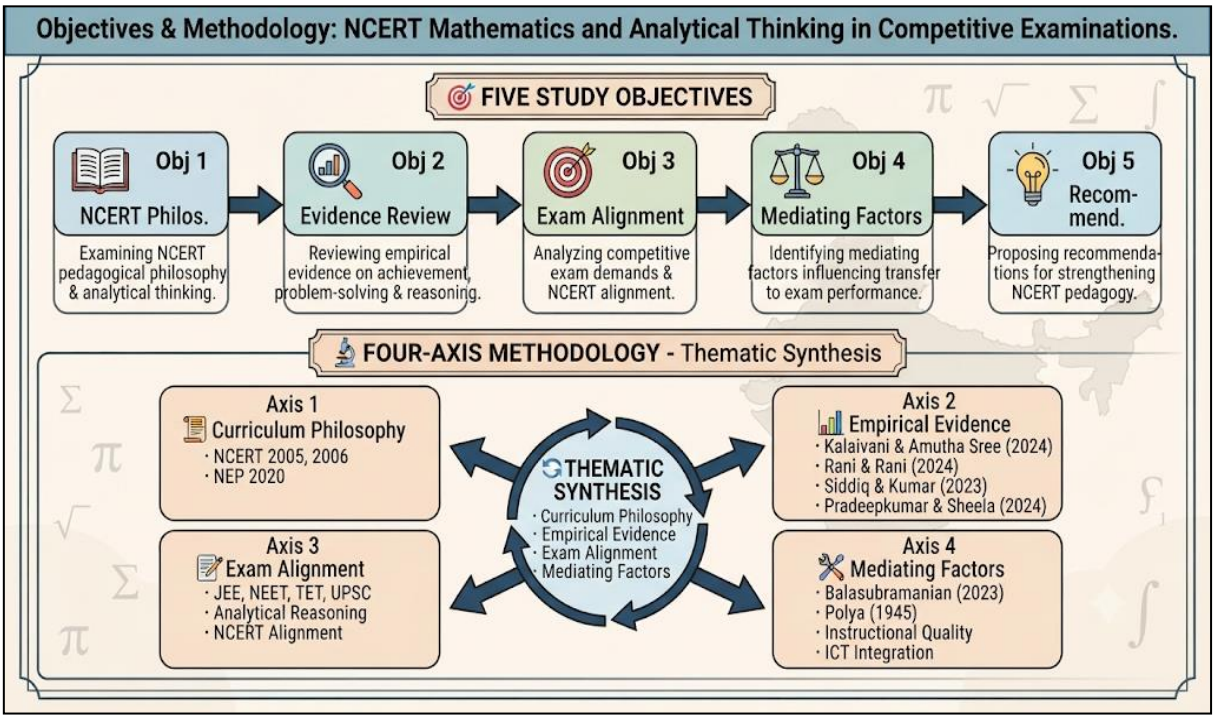

Fig 2 Objectives and Methodology: NCERT Mathematics and Analytical Thinking

This infographic outlines the five study objectives and a four-axis methodology for researching NCERT mathematics in competitive exams. The top section details objectives spanning curriculum philosophy, empirical evidence, exam alignment, and mediating factors. The bottom section presents a thematic synthesis approach across four axes: curriculum philosophy, empirical evidence, exam alignment, and mediating instructional factors.

III. LITERATURE REVIEW

Empirical research on mathematics achievement and problem-solving in the Indian context has expanded considerably in recent years. Kalaivani and Amutha Sree (2024), in a study of 434 high school students in the Puducherry region, found that problem-solving ability, learning style, and home environment together accounted for approximately 20.6% of the variance in mathematics achievement, with problem-solving ability emerging as the strongest individual predictor (beta = 0.253) a finding that directly supports the premise that analytical, problem-solving-oriented instruction (the core design principle of NCERT mathematics) is more strongly associated with achievement than demographic factors such as gender or parental education, which showed no significant contribution in their regression model. Kumar (2014), in an earlier but related study, similarly found that students with better problem-solving ability were consistently better academic performers, reinforcing the centrality of problem-solving skill to mathematics achievement.

Rani and Rani (2024) examined mathematics achievement in relation to mathematical anxiety, concluding that anxiety functions as a significant psychological barrier that can suppress the expression of otherwise well-developed analytical ability, and recommending improved pedagogical approaches to reduce anxiety and build student confidence. This finding is particularly relevant to competitive examination contexts, where time pressure and high-stakes conditions are known to elevate mathematical anxiety beyond classroom levels. Siddiq and Kumar (2023) conducted a quasi-experimental study demonstrating that ICT-mediated, Multiple-Intelligence-based teaching produced significantly greater achievement gains in secondary mathematics than conventional teaching methods, and additionally reduced the gender achievement gap suggesting that the instructional method through which NCERT content is delivered substantially moderates the analytical benefits students derive from the curriculum.

At the primary level, Pradeepkumar and Sheela (2024) evaluated the Ganitha Kalika Andolana (Mathematics Learning Movement) programme in Karnataka, a curriculum-aligned, activity-based intervention explicitly designed to develop “logical thinking and perceptive ability” in young learners through a concrete-representational-abstract pedagogical sequence; their study found statistically significant improvement in student mathematics achievement following implementation, alongside a moderate positive correlation between teacher attitude toward the programme and student outcomes. Yogita (2021) explored a

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

complementary angle, examining whether the integration of Vedic mathematics techniques alongside standard curriculum content improved computational speed, accuracy, and interest in mathematics among secondary students, finding significant gains in all three areas and explicitly noting benefits for competitive examination readiness. Collectively, this literature indicates that the analytical potential of the NCERT curriculum framework is realized unevenly, depending heavily on instructional method, psychological readiness, and supplementary pedagogical interventions.

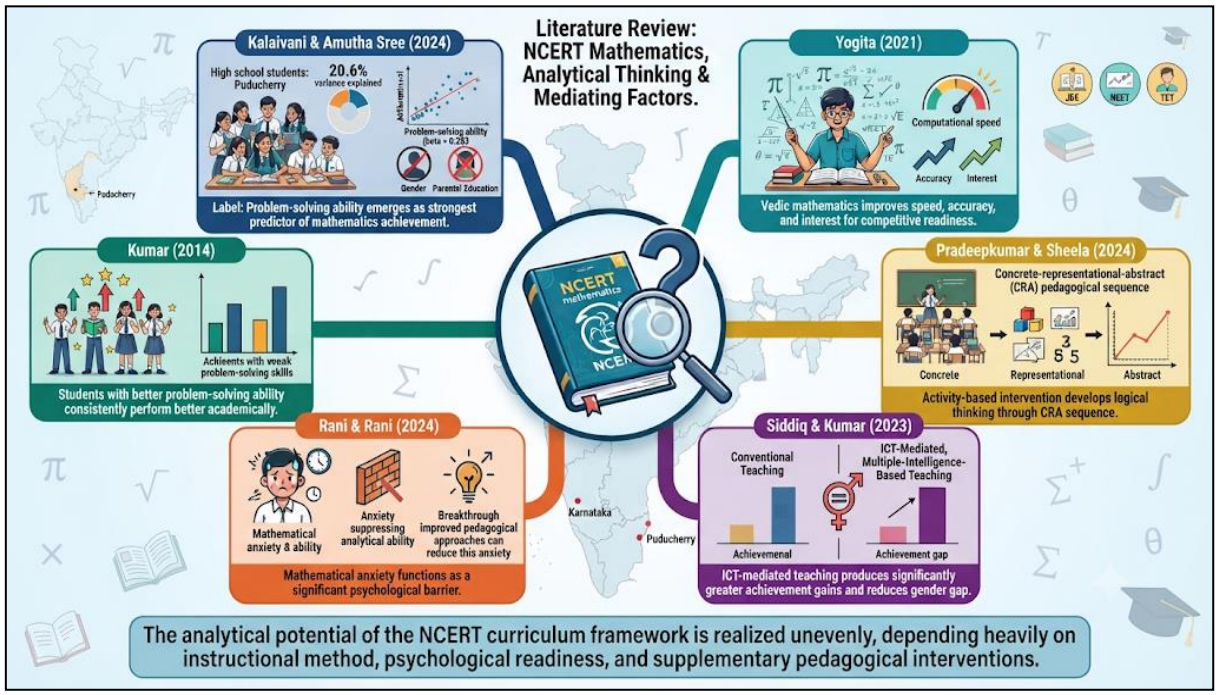

Fig 3 Literature Review: NCERT Mathematics, Analytical Thinking & Mediating Factors

This infographic summarizes six research studies on NCERT mathematics, highlighting that problem-solving ability, instructional methods, and psychological barriers like anxiety significantly impact academic performance. It demonstrates how interventions such as ICT-mediated teaching, the CRA sequence, and Vedic mathematics enhance student achievement and competitive readiness.

➢ *NCERT Mathematics Curriculum: Structure and Pedagogical Philosophy*

The NCERT mathematics curriculum is built on the vision articulated in the National Curriculum Framework 2005, which rests on the premise that "all students can learn mathematics and that all students need to learn mathematics," and explicitly rejects a purely procedural or memorization-based approach in favor of conceptual understanding (National Council of Educational Research and Training, 2005).

The National Focus Group Position Paper on the Teaching of Mathematics further elaborates this philosophy. It emphasizes that mathematics education should cultivate the ability to "formulate and solve problems," to "use abstraction to perceive relationships and structure," and to "reason and prove" rather than simply compute (National Council of Educational Research and Training, 2006). This emphasis is structurally embedded in NCERT textbooks through worked examples that model multi-step reasoning, exercises that progress from routine to non-routine problems, and an intentional avoidance of excessive rote drilling.

The National Education Policy 2020 reaffirms and extends this orientation. It calls for a shift toward competency-based learning and explicitly identifies mathematical and computational thinking as foundational skills for the twenty-first century, to be developed from the foundational stage of schooling onward (Ministry of Education, 2020). This policy alignment situates NCERT mathematics not merely as a subject-specific curriculum but as a deliberate vehicle for cultivating transferable analytical and logical reasoning capacities intended to serve students across academic and professional contexts, including competitive examinations.

➢ *Analytical Thinking: Conceptual Framework*

Analytical thinking, for the purposes of this paper, is understood as the capacity to break down complex problems into constituent parts, identify underlying patterns and relationships, apply logical rules systematically, and arrive at justified conclusions. This framing draws on George Polya's classical four-stage model of mathematical problem-solving understanding the problem, devising a plan, carrying out the plan, and looking back to verify the solution which remains foundational to mathematics education pedagogy worldwide and underlies much of the structured problem-solving approach embedded in NCERT textbook exercises (Polya, 1945). Competitive examinations, particularly their quantitative aptitude and reasoning sections, are explicitly designed to assess these same component skills under time-constrained conditions, typically through multiple-choice

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

items that reward efficient pattern recognition and logical elimination alongside computational accuracy.

Importantly, analytical thinking as cultivated through classroom mathematics instruction and analytical performance under competitive examination conditions are related but not identical constructs. Classroom problem-solving typically allows extended time, partial credit for method, and low-stakes conditions, whereas competitive examinations impose strict time limits, all-or-nothing scoring, and high psychological stakes. This distinction is central to understanding why strong NCERT-based conceptual grounding does not automatically translate into competitive examination success without additional practice under examination-like conditions.

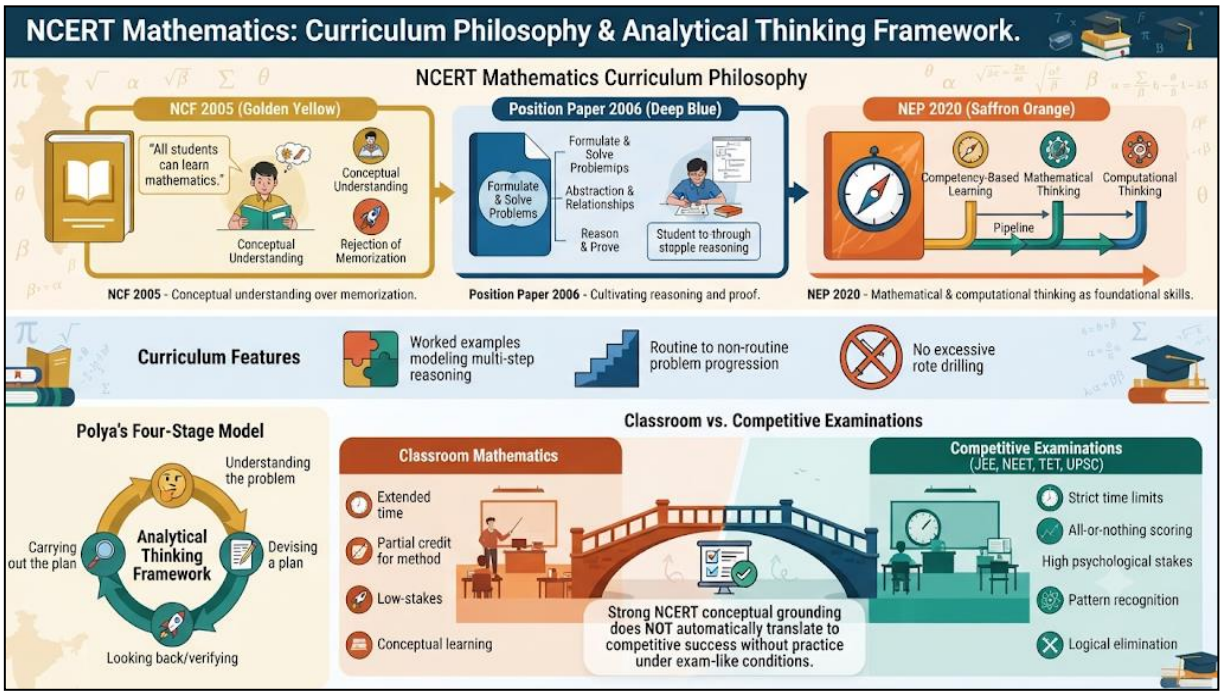

Fig 4 NCERT Mathematics: Curriculum Philosophy & Analytical Thinking Framework

This infographic outlines the philosophy of the NCERT mathematics curriculum across policy documents like NCF 2005, Position Paper 2006, and NEP 2020. It details core curriculum features alongside an analytical thinking framework featuring Polya's four-stage model, while contrasting the structured approach of classroom learning with high-stakes competitive examinations.

➢ *NCERT Mathematics and the Development of Analytical Thinking*

The evidence reviewed in Section 4 supports the proposition that NCERT's problem-solving-oriented pedagogical design does meaningfully contribute to analytical thinking development, but that this contribution is strongly moderated by instructional quality. Kalaivani and Amutha Sree's (2024) finding that problem-solving ability was the single strongest predictor of mathematics achievement (more influential than gender, religion, community, or parental education) suggests that where NCERT's problem-solving orientation is genuinely realized in classroom practice, it produces measurable analytical benefit. However, Siddiq and Kumar's (2023) finding that ICT-mediated, differentiated instruction produced significantly greater gains than conventional delivery of the same broadly NCERT-aligned CBSE content indicates that curriculum design alone is insufficient pedagogical delivery substantially determines whether the curriculum's analytical potential is realized in practice.

The Ganitha Kalika Andolana intervention studied by Pradeepkumar and Sheela (2024) offers a particularly instructive case: by supplementing standard primary mathematics curriculum with a concrete-representational-abstract instructional sequence explicitly aimed at developing "logical thinking and perceptive ability," the programme produced significant achievement gains, suggesting that structured pedagogical scaffolding can meaningfully amplify the analytical benefits latent in NCERT-aligned curriculum content. Similarly, Yogita's (2021) findings on Vedic mathematics integration suggest that supplementary computational and pattern-recognition techniques, layered onto standard curriculum content, can further sharpen the speed and accuracy dimensions of analytical performance that are particularly rewarded in competitive examination settings.

➢ *NCERT Mathematics and Competitive Examinations*

Across a wide range of Indian competitive examinations TET, JEE, NEET, NMTC, and various UPSC and state civil service examinations NCERT mathematics is consistently identified in examination-preparation guidance as the recommended foundational resource, on the reasoning that these examinations test conceptual clarity and applied

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

reasoning rather than memorized formulas. This positions NCERT mathematics as a common analytical foundation across otherwise disparate examination tracks: TET candidates are assessed on pedagogical and content mastery of school-level mathematics; JEE and NEET candidates require rapid, accurate application of mathematical reasoning under severe time constraints; and UPSC candidates encounter quantitative aptitude and data-interpretation questions that similarly reward structured analytical reasoning over rote computation.

However, the gap between NCERT-based conceptual mastery and actual competitive-examination performance is where much of the observed variance in candidate outcomes arises. Coaching institutions and test-preparation literature consistently emphasize that NCERT mastery represents a necessary but not sufficient condition for competitive success, requiring supplementation with timed practice, exposure to varied problem formats, and explicit strategy training for multiple-choice reasoning under time pressure. This aligns with the psychological-barrier evidence from Rani and Rani (2024): even students with strong conceptual and analytical grounding may underperform in competitive examination conditions if mathematical anxiety is not addressed, since anxiety has been shown to suppress the expression of otherwise adequate analytical ability under evaluative pressure.

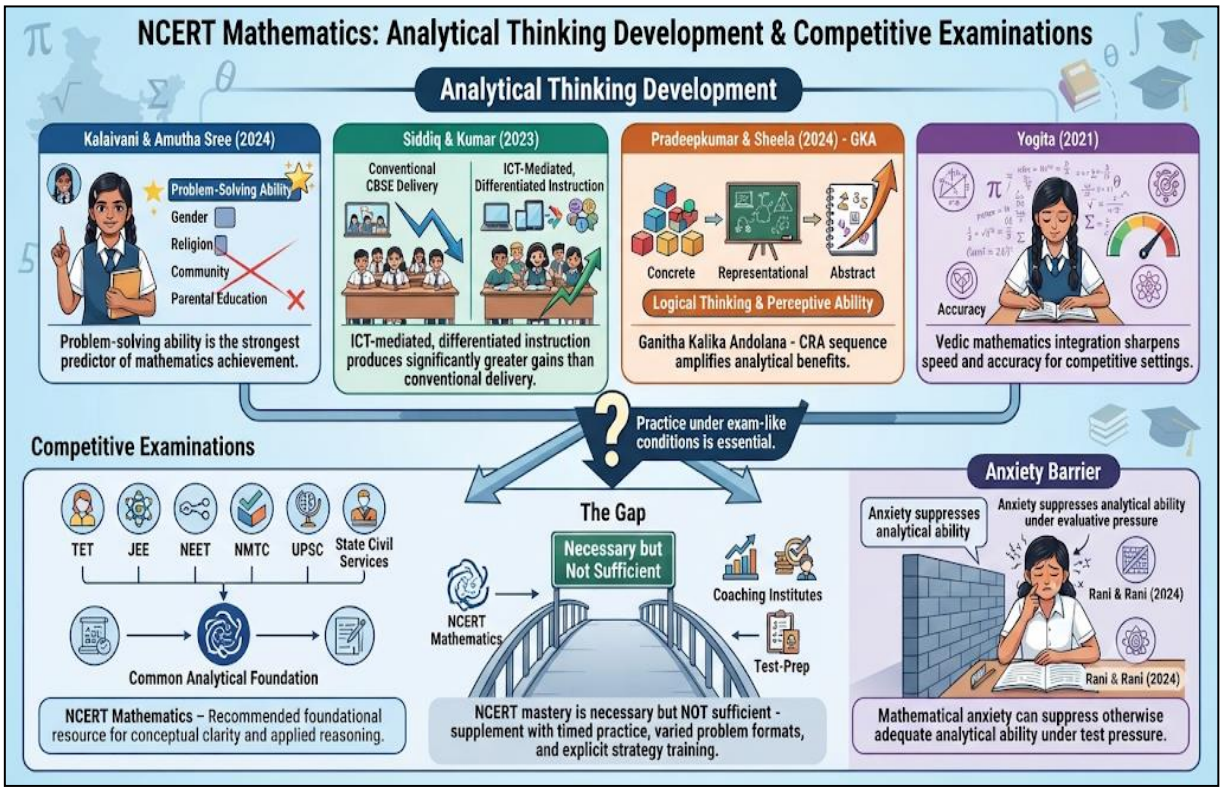

Fig 5 NCERT Mathematics: Analytical Thinking Development & Competitive Examinations

This infographic maps how analytical thinking develops through problem-solving, ICT integration, and the CRA sequence. It positions NCERT mathematics as a foundational base for competitive exams like JEE, NEET, and UPSC. However, it emphasizes that curriculum mastery is necessary but insufficient without exam-conditioned practice, and notes that mathematical anxiety can impede performance under pressure.

- *Empirical Evidence: Problem-Solving Ability and Achievement*

Synthesizing the quantitative findings reviewed above provides a coherent empirical picture. Kalaivani and Amutha Sree (2024) report that problem-solving ability (beta = 0.253) was the strongest predictor of mathematics achievement among ten independent and demographic variables tested, followed by learning style (beta = 0.196) and home environment (beta = 0.156), while several demographic variables gender, religion, community, and parental education showed no statistically significant contribution. Kumar (2014), studying a sample of 200 students from classes VI to X, similarly found that students with superior problem-solving ability consistently achieved higher academic performance. Anwar (2015) further linked problem-solving ability specifically to students' attitude toward mathematics, suggesting a reinforcing relationship in which analytical confidence and positive disposition toward the subject mutually strengthen one another over time.

Gupta (2013) extended this line of inquiry to students from Scheduled Caste and Scheduled Tribe backgrounds, finding that problem-solving ability remained significantly associated with academic achievement even after accounting for social category, though overall achievement levels varied by socio-economic context underscoring that while NCERT's analytical pedagogy is designed to be universally

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

accessible, its realized benefits are not fully insulated from broader structural inequities in Indian education. Pathak (2015), studying pupil-teachers, found that problem-solving ability similarly predicted academic achievement among trainee educators, suggesting that the analytical habits cultivated through mathematics pedagogy have relevance extending into professional teacher preparation itself, with downstream implications for how effectively the next generation of teachers can, in turn, cultivate analytical thinking in their own students.

IV. CHALLENGES AND GAPS

Several challenges limit the full realization of NCERT mathematics' analytical potential in competitive examination outcomes. First, instructional quality varies substantially across schools and regions; as demonstrated by Siddiq and Kumar (2023) and Pradeepkumar and Sheela (2024), the same broadly NCERT-aligned content produces markedly different achievement outcomes depending on whether it is delivered through conventional, teacher-centred methods or through differentiated, activity-based, or technology-mediated approaches. Second, mathematical anxiety, as documented by Rani and Rani (2024), represents a significant and often under-addressed psychological barrier that can prevent students from demonstrating analytical ability they otherwise possess, particularly under the high-stakes, time-constrained conditions typical of competitive examinations.

Third, socio-economic and infrastructural disparities, highlighted in Gupta's (2013) study of Scheduled Caste and Scheduled Tribe students, mean that access to supplementary resources coaching support, digital learning tools, conducive home environments remains uneven, compounding the gap between curriculum design intent and realized competitive-examination outcomes. Fourth, a persistent disconnect exists between the untimed, low-stakes problem-solving environment of typical classroom mathematics instruction and the timed, high-stakes, multiple-choice format of most competitive examinations, meaning that conceptual mastery of NCERT content alone does not automatically confer examination-specific analytical fluency without deliberate, supplementary timed practice.

A fifth challenge concerns the coaching-industry ecosystem that has grown around competitive examination preparation in India. While this paper does not treat commercial coaching literature as a primary evidentiary source, its widespread advice to master NCERT textbooks before progressing to advanced problem sets is itself indirect evidence of a broadly shared professional consensus that NCERT content constitutes a necessary analytical foundation, even though it is commonly treated as insufficient on its own. This creates a structural inequity: students who can afford supplementary coaching gain systematic timed-practice exposure that translates NCERT-based conceptual understanding into examination-ready analytical fluency, while students reliant solely on school instruction may possess comparable underlying analytical ability without an equivalent opportunity to develop examination-specific performance skills. Addressing this gap within the public schooling system, rather than leaving it to be filled unevenly by private coaching markets, is therefore an important equity consideration for policymakers.

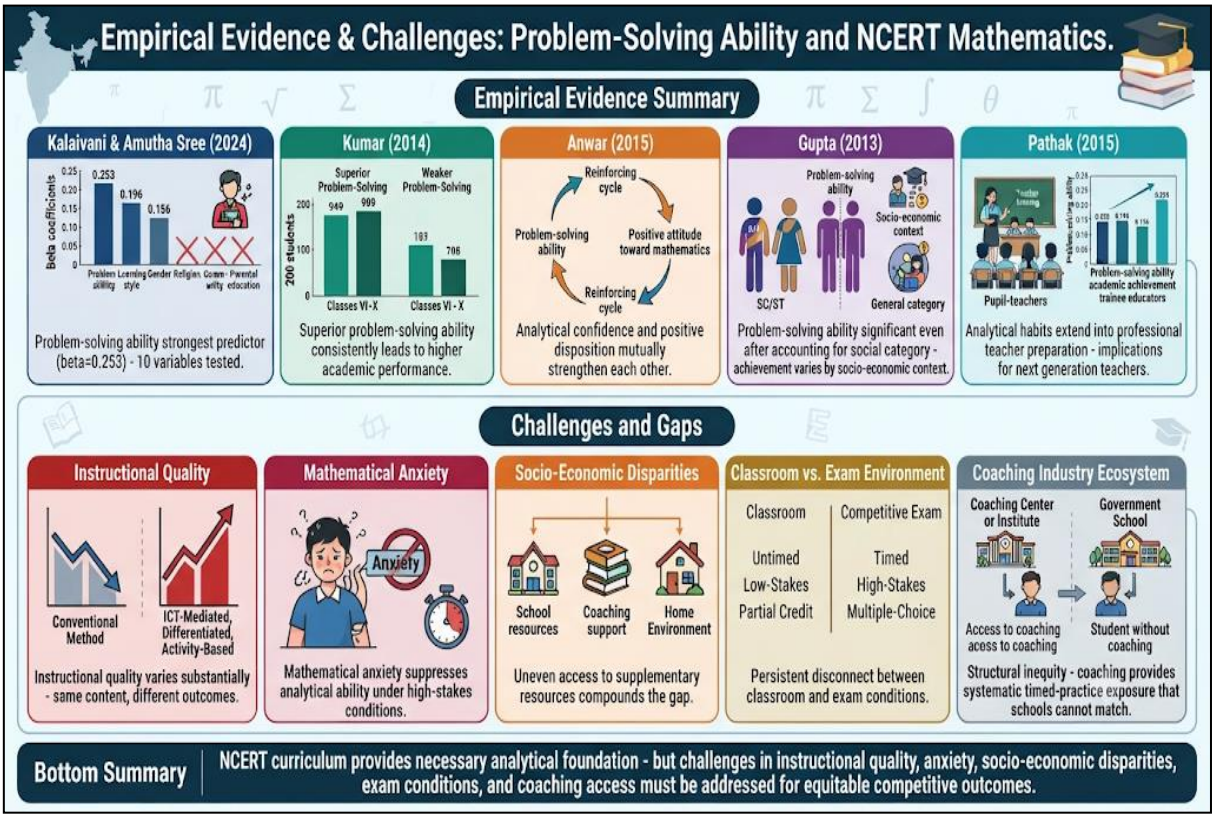

Fig 6 Empirical Evidence & Challenges: Problem-Solving Ability and NCERT Mathematics

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

This infographic summarizes empirical studies demonstrating that problem-solving ability is the strongest predictor of mathematics achievement. It highlights five major challenges that hinder equitable outcomes in NCERT mathematics and competitive exams, including variable instructional quality, mathematical anxiety, socio-economic disparities, classroom-exam environment disconnects, and inequities within the private coaching ecosystem.

V. DISCUSSION: TOWARD AN INTEGRATED VIEW

Bringing together the curriculum-philosophy evidence (Sections 5–6), the achievement evidence (Sections 7 and 9), and the challenges identified above (Section 10), a coherent picture emerges in which NCERT mathematics functions as a necessary but not sufficient condition for strong competitive-examination performance. The curriculum's explicit design intent cultivating reasoning, abstraction, and structured problem-solving rather than rote computation aligns closely with the analytical skills that competitive examinations are designed to assess, and the empirical literature confirms that problem-solving ability is indeed among the strongest predictors of mathematics achievement among Indian students. However, the realization of this analytical potential in practice depends on a chain of mediating factors: the quality and method of classroom instruction, the presence of anxiety-reducing and confidence-building pedagogy, the availability of structured timed practice, and equitable access to supplementary resources.

This integrated view suggests that debates which treat NCERT curriculum adequacy and competitive-examination outcomes as a simple direct relationship are, on the evidence reviewed here, incomplete. A more accurate framing treats the NCERT curriculum as providing the raw analytical substrate the conceptual vocabulary and reasoning habits upon which instructional quality, psychological readiness, and equitable access to practice opportunities must all operate before that substrate is reliably converted into competitive-examination success. This framing has direct implications for how the education system should be evaluated: low competitive-examination pass rates in a given region should not be interpreted automatically as evidence of curriculum inadequacy, but should instead prompt investigation into the mediating instructional and structural factors identified in this paper.

VI. RECOMMENDATIONS

Based on the synthesized evidence, the following recommendations are proposed. First, teacher training programmes should place greater emphasis on problem-solving-centred and technology-mediated instructional methods, given the demonstrated achievement gains associated with such approaches over conventional delivery (Siddiq & Kumar, 2023). Second, schools should integrate structured, low-stakes timed problem-solving practice into regular mathematics instruction from an early stage, so that students develop familiarity with examination-like conditions well before they encounter high-stakes competitive examinations. Third, targeted interventions to reduce mathematical anxiety including confidence-building pedagogy and gradual exposure to timed assessment should be incorporated systematically into mathematics curricula, particularly in the years preceding major competitive examinations (Rani & Rani, 2024).

Fourth, curriculum-aligned supplementary programmes such as Ganitha Kalika Andolana, which have demonstrated measurable gains in logical thinking and achievement, merit wider replication and adaptation across states (Pradeepkumar & Sheela, 2024). Fifth, equity-focused resource allocation is needed to ensure that the analytical benefits of NCERT-based pedagogy are not disproportionately concentrated among socio-economically advantaged students, addressing the disparities documented by Gupta (2013). Finally, teacher competency frameworks as illustrated by the broader skill-development literature emerging from Tamil Nadu (Balasubramanian, 2023) should explicitly incorporate analytical and technological pedagogical competencies as core requirements for mathematics educators, given their demonstrated influence on student outcomes.

VII. LIMITATIONS

This paper is based on a qualitative synthesis of existing published literature rather than original primary data collection, and therefore does not establish direct causal evidence linking NCERT curriculum design to competitive examination performance. Most of the empirical studies reviewed were conducted at the level of individual states, districts, or institutions, and their findings may not generalize uniformly across India's diverse educational contexts. Furthermore, direct comparative data linking specific NCERT-based classroom interventions to subsequent competitive examination outcomes remains limited in the published literature; future research employing longitudinal designs that track students from NCERT-based classroom instruction through to competitive examination performance would substantially strengthen the evidentiary basis for the relationships proposed in this paper.

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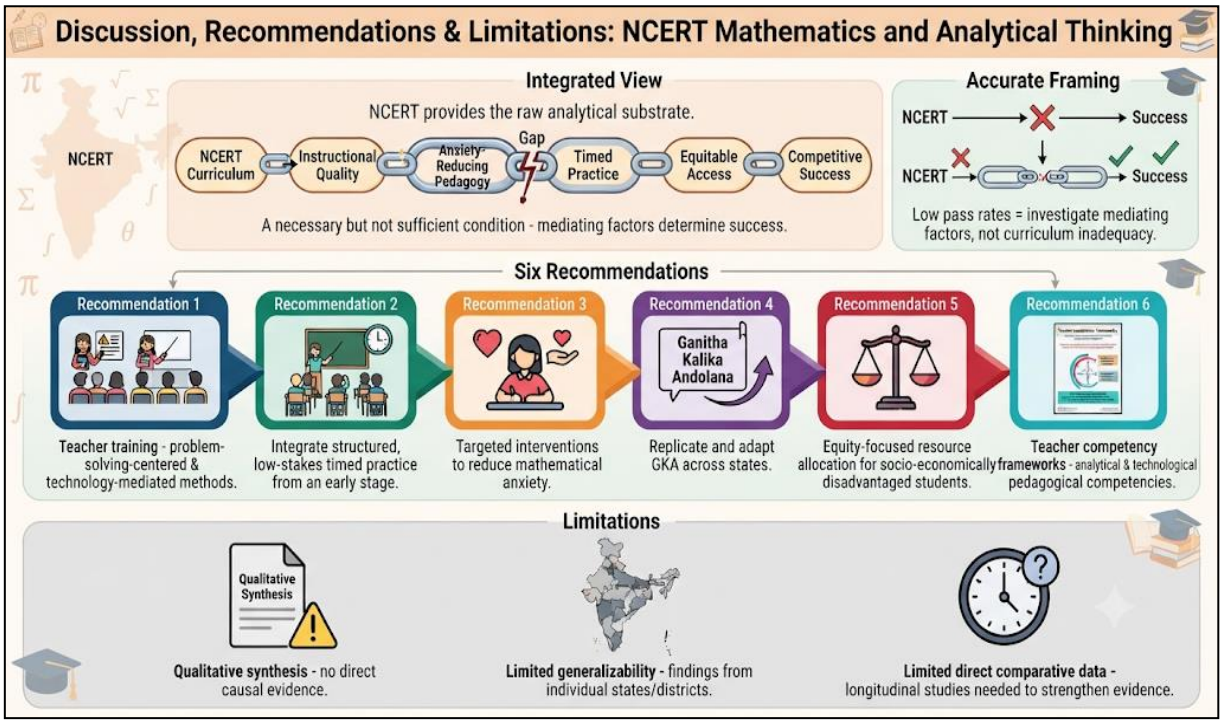

Fig 7 Discussion, Recommendations & Limitations: NCERT Mathematics and Analytical Thinking

This infographic presents an integrated discussion on NCERT mathematics, establishing it as a necessary raw analytical substrate that requires supporting mediating factors for competitive success. It outlines six strategic recommendations spanning teacher training, anxiety reduction, and equity resource allocation while acknowledging current study limitations such as qualitative synthesis reliance and limited geographical generalizability.

VIII. CONCLUSION

The NCERT mathematics curriculum is explicitly and deliberately designed to cultivate analytical thinking through conceptual understanding, structured problem-solving, and logical reasoning rather than rote memorization, and the empirical literature reviewed in this paper broadly supports the proposition that problem-solving ability is among the strongest predictors of mathematics achievement among Indian students. However, the transfer of this analytical foundation into competitive examination success is neither automatic nor uniform: it is substantially mediated by instructional quality, the presence or absence of supplementary pedagogical interventions, students' psychological readiness under time pressure, and broader socio-economic access to educational resources. Strengthening the contribution of NCERT mathematics to competitive examination outcomes therefore requires not only fidelity to the curriculum's analytical design philosophy, but also deliberate investment in teacher capability, anxiety-reducing pedagogy, timed practice infrastructure, and equitable access ensuring that the analytical potential embedded in the curriculum is realized by all students, not only those with access to the most favorable instructional and institutional conditions.

REFERENCES

[1]. Anwar, E. (2015). Problem solving ability of secondary school students in relation to their attitude towards mathematics. Indian Journal of Research, 4(10), 67–68.
[2]. Balasubramanian, M. (2023). Aasiriyar Aathisoodi and teacher competency development. International Journal of Creative Research Thoughts (IJCRT), 11(8), b940–b949.
[3]. Gupta, R. (2013). Problem solving ability and academic achievement among the students belonging to scheduled tribe and scheduled caste categories. International Journal of Research Pedagogy and Technology in Education and Movement Sciences, 1(3), 95–108.
[4]. Kalaivani, J., & Amutha Sree, N. (2024). Influence of problem solving ability, learning style and home environment upon achievement in Mathematics of high school students. Journal of Emerging Technologies and Innovative Research (JETIR), 11(9), d565–d570.
[5]. Kumar, A. (2014). Study of academic achievement in relation to problem solving ability. International Journal of Research in Social Sciences and Humanities, 4(3), 41–47.
[6]. Kumar, A. (2021). Problem solving ability of high school students in relation to their gender, area and type of school. International Journal of Advanced Research in Science, Communication and Technology, 7(2), 87–95. https://doi.org/10.48175/568
[7]. Ministry of Education, Government of India. (2020). National Education Policy 2020. MHRD.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26aug482

[8]. National Council of Educational Research and Training. (2005). National Curriculum Framework 2005. NCERT.
[9]. National Council of Educational Research and Training. (2006). Position paper: National focus group on teaching of mathematics. NCERT. https://ncert.nic.in/pdf/focus-group/math.pdf
[10]. Pathak, N. (2015). A study of problem solving ability in relation to academic achievement of pupil teachers. Voice of Research, 4(2), 7–9.
[11]. Polya, G. (1945). How to solve it: A new aspect of mathematical method. Princeton University Press.
[12]. Pradeepkumar, H. K., & Sheela, G. (2024). Effectiveness of Ganitha Kalika Andolana (G.K.A) on teachers' attitude towards Ganitha Kalika Andolana and mathematics achievement of primary school students. Journal of Emerging Technologies and Innovative Research (JETIR), 11(6), j460–j467.
[13]. Rani, B., & Rani, S. (2024). Mathematics achievement of secondary school students in relation to mathematical anxiety: Analysis and suggestions. International Journal of Indian Psychology, 12(1), 895–900. https://doi.org/10.25215/1201.083
[14]. Siddiq, S., & Kumar, A. K. (2023). ICT mediated multiple intelligence based teaching and achievement in mathematics at secondary level. International Journal of Creative Research Thoughts (IJCRT), 11(10), e235–e244.
[15]. Yogita. (2021). Current utility of ancient mathematics. Journal of Emerging Technologies and Innovative Research (JETIR), 8(6), b619–b624.