

Reviving Ancient Wisdom: Integrating Vedic Mathematics into Modern Indian Education

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ABSTRACT

The Indian strategy continually aims for societal well-being and sustainability. Restoring the vast body of knowledge from our history and demonstrating to the world the "Indian manner" of doing business are imperative. Keeping in the mind about deep heritage of timeless Indian philosophy and knowledge Vedic Mathematics is regarded as a guiding concept in the NEP 2020. On June 13, 2023, guidelines for adding Indian knowledge to the curriculum of higher education were made public.

Vedic mathematics, which has its roots in ancient Indian texts, offers a number of special and effective methods for resolving mathematical issues. The emphasis on skill-based and competency-driven learning in contemporary education is making it more and more necessary to revisit old knowledge systems that have both cultural significance and real-world applications. In this regard, Vedic mathematics shows up as a useful and effective addition to traditional mathematical instruction, especially during the early school years.

The purpose of this research is to understand the importance of Vedic Mathematics better and to incorporate it into the curriculum beginning with primary education. A thorough analysis of thirty research papers has been conducted that support the state of Vedic mathematics today and demonstrate how it helps students' memory and personalities in general.

Keywords- Vedic mathematics, NEP, Indian Knowledge System.

INTRODUCTION

Vedic Mathematics is established by Shankaracharya Bhartye Krishna Tirth in 1911 and disseminated through the publication of the book "Vedic Mathematics." Vedic Mathematics has 16 Sutras and 13 sub-sutras applicable to issues in arithmetic, algebra, geometry, calculus, and various other disciplines. It is beneficial for competitive examinations and can enhance mathematical proficiency.

Numerous children still struggle with mathematics, which frequently results in anxiety, dread, and a general lack of enthusiasm. Vedic Mathematics, on the other hand, provides a simple and interesting approach to learning mathematical ideas. The system was developed and codified in the early 20th century by Bharati Krishna Tirthaji and consists of sixteen sutras (principles) and thirteen sub-sutras which ease addition, subtraction, multiplication, division, squaring, square roots and algebra. These strategies (Urdhva Tiryak Sutra vertically and horizontally) enable students to become confident and fluent problem solvers in numbers and they can do mental calculations quickly and accurately.

Vedic mathematics has various applications in the present day educational set-up. First of all, it increases the speed and accuracy of mathematical calculations which is an important skill for competitive examinations and

college studies. Second, it gives students alternative and often simpler methods for solving problems, so that they feel less anxious about mathematics. Thirdly, it stimulates mental calculation and pattern recognition, which are key factors in improving cognitive and logical reasoning skills. The incorporation of Vedic Mathematics in the syllabus is also in conformity with the objectives of National Education Policy (NEP) 2020, which advocates for the integration of Indian Knowledge Systems (IKS) into the main stream of education. By preserving cultural heritage, students also learn to feel pride and belonging.

It has been shown through research and case studies that the outcomes are positive when Vedic Mathematics is taught in schools. Students have seen their performance improve and their attitude towards the topic become more positive, and teachers have observed increased interest and participation in math lessons. Interviews with teachers and children of metropolitan and semi urban schools showed that almost 80% of the children said their confidence and motivation in mathematics increased after being introduced to Vedic methodologies. Teachers noted that Vedic methods are simple and easy to grasp, leading to improvement among children who struggled with basic calculation.

There are some hurdles to be crossed for proper inclusion of Vedic mathematics in elementary education. These are early doubts regarding its applicability in modern education, a lack of qualified teachers, and no standardized textbooks. To overcome these barriers, it is essential to establish teacher training programs, develop curriculum-appropriate educational resources, and offer Vedic Mathematics as an elective or enrichment program in middle school (grades 5-8).

In nutshell Vedic mathematics has lot of potential to enhance the caliber and efficacy of mathematics teaching at classroom level. It provides a blend of speed, accuracy and mental agility along with encouraging learning with a cultural foundation. With India's move towards a more holistic and inclusive educational system, the integration of Vedic Mathematics into school curricula can be a significant step towards blending traditional knowledge with modern educational objectives.

MATERIALS AND METHODS

This study is a systematic literature review within the context of qualitative research. The aim of this paper is to consolidate the existing literature on Vedic Mathematics and the broader Indian Knowledge System (IKS) by examining their philosophical underpinnings, mathematical methods, educational significance and potential incorporation in contemporary education.

Study Objectives

- a. To Study the inter-play of Indian Knowledge System and Vedic Mathematics.
- b. To assess the role and application of Vedic Mathematics in the area of modern education.
- c. To identify gaps in the literature and suggest future research.

DISCUSSION AND RESULTS

Over the years many perspectives have been adopted to examine the impact of Vedic education and Vedic mathematics on society and pedagogy. In his early studies, Rather (2015) observed that Vedic literature is not only a cultural legacy but a practical guide for the day to day living. He thought that teaching the Vedic knowledge in schools would help the students to develop morally good and socially useful qualities like self-control, liberty, equality and unity. This antiquated perspective has exerted a lot of influence on education and character formation and we still see its effects in modern-day conversations. Many scholars have also correlated Vedic education with contemporary issues. Antony et al. (2025) explained the importance of IKS in the education system and emphasized Vedic mathematics and predicted that it would be a way for upcoming generations. IKS has a rich mathematical lineage which can be traced back to the prehistoric Vedic scriptures and famous mathematicians like "Aryabhata and Brahmagupta" (Sinha, 2025). Vedic Mathematics, as a part of the IKS, exemplifies the inventive and cerebral heritage of early India. Its approaches are not only accurate and faster in calculations but also align with modern

educational ideas like adaptive thinking, multidisciplinary education, and mental versatility (Sharma, 2025). In the same line, Minikumari and Pratibha (2025) analysed the prospects for incorporation of the Vedic Mathematics in formal education, technologies, research and international outreach. They emphasized the significance of Vedic mathematics in examining the pedagogical value and students' cognitive abilities. In addition, Rawan (2025) described the importance of Vedic mathematics and astronomy in IKS and their role in developing modern education.

Sinha et al. (2022) states that the Vedic frameworks can help the modern systems to teach in a way that is sustainable and culturally relevant. Timane and Wandhe (2024) likewise underscored the deep impact of the Indian Knowledge System on astronomy, philosophy, and mathematics, reminding us of the enduring importance of ancient texts. In particular, Gurinder Kaur (2024) emphasized the significance of incorporating Indian Knowledge Systems in mathematics education, fostering interdisciplinary learning, critical thinking, and problem-solving skills, ultimately achieving harmony between tradition and innovation.

Vedic mathematics has been applied in practice in colleges and universities for a long time. Samrudh et al. show how the curriculum of Madhya Pradesh, Uttar Pradesh and ICSE boards mainstream Vedic techniques. Sujata et al. (2019) conducted a controlled study on 200 students in Nagpur and found that students taught by Vedic methods performed better than the students taught by traditional methods. They emphasized the effectiveness of Vedic methods in relieving anxiety and improving comprehension. According to Dhar et al. (2017), the growing popularity of Vedic mathematics was driven by national educational policy and political interest at the highest levels. Sharma et al. (2024) directly linked this to NEP 2020, which propagates holistic and multidisciplinary approaches and provides a way forward to include traditional knowledge in curricula without explicitly mentioning Vedic mathematics.

The depth of vedic mathematics is known for many years. In their research, Tirtha and Agarwala (1992) also stressed the importance of traditional methods and Western mathematics. More recent researchers such as Pathak and Kumari (2023) have recommended the integration of traditional techniques with modern frameworks in upper secondary schools. Kumar and Joshith (2024) traced the diffusion of many sutras into technology and engineering fields and showed their adaptation. For example, Urdhvatiryakbhyam and Nikhilam Navatascaramana Dasastah sutras. Similarly, Raikhola (2024) had also underlined the efficiency and computational usefulness of sutras in algebra, arithmetic and calculus in modern sense.

Research has also indicated that Vedic mathematics can enhance learning among students. Its beneficial effects on mental growth, speed and comprehension of schoolchildren have been confirmed by Yogeshwari and Indu (2012), Katgeri (2017) and Kantilal & Pandey (2021). The experimental interventions, like Halder (2014) and Trivedi & Ghughuskar (2022), showed significant improvements in students' confidence, accuracy and motivation at primary and secondary levels, and Day-ongao and Tan (2022) verified its success in maintaining the motivation of students using mixed-method approaches.

The literature also demonstrates cross-disciplinary and global outreach. Singh, Rastogi and Yadav (2014) studied the uses of numerical squares and its relation with numerology. Linkage of Vedic mathematics with the consciousness based science was discussed by Chand and Das (2022). Handa (2018) contextualized it within international mathematical traditions and Solanki (2021) traced its agricultural roots. Outside India, scholarly interest on math anxiety in elementary schools (Mitchell and George, 2022) and outcomes of Vedic lecture series (Resic & Lemo, 2015) indicate a broader level of academic interest.

Debates have been initiated in the context of NEP 2020. The Vedic education provides transformative and transdisciplinary pathways in line with the goal of NEP, says Tanu & Mittal (2024). Sharma, Kumar & Baliya (2024) also pointed out that the inclusion of Vedic techniques in the curriculum can help develop the analytical skills of primary pupils. Chaudhary (2023) studied the use of Vedic sutras in solving concepts like HCF and proved that they provide more simplified and efficient solutions than traditional approaches.

Vedic education and mathematics have always been relevant, whether it be in the philosophical underpinnings (Rather, 2015), empirical validations (Sujata et al., 2019; Sharma et al., 2024) or policy implications (Tanu & Mittal, 2024). The entire body of work paints a vivid picture. The literature supports the view that Vedic Knowledge

is still a living tradition with major implications for the education of the future, be it in terms of computational efficiency, pedagogical innovation or heritage preservation.

The table summary is supported by 20 Vedic Mathematics papers including classroom experiments, perception studies, conceptual reviews and application focused analyzes (Khubnani et al., 2025; Albina, 2025; Alabat and Salazar, 2025; Kumar and Joshith, 2026). A number of review-style papers tend to focus on broader pedagogical or technological relevance rather than testing controlled outcomes, while most empirical studies report faster calculation, better accuracy, or greater engagement with Vedic methods (Yasir et al., 2026; Saxena, 2024; Kumar and Rai, 2026; Glover and Williams, 2017).

#	Paper	Study Type	Sample / Context	Main Focus	Main Finding
1	Khubnani et al., 2025	Pre-post workshop study	25 first-year college students	Multiplication speed and accuracy	Post-workshop scores improved in speed and accuracy (Khubnani et al., 2025)
2	Albina, 2025	Quasi-experimental comparison	School learners	Speed, conceptual understanding, anxiety	Vedic instruction produced faster problem-solving and lower anxiety (Albina, 2025)
3	Yasir et al., 2026	Experimental study	146 undergraduates	Performance and attitudes	VM training improved speed, accuracy, interest, and reduced phobia (Yasir et al., 2026)
4	Pimpalkar, 2026	Action research, quasi-experimental	52 eighth-grade students	Achievement and problem-solving	Experimental group showed higher numerical and problem-solving scores (Pimpalkar, 2026)
5	Mahajan, 2023	Quasi-experimental pedagogical study	60 high school students	Arithmetic performance and integration	Vedic methods improved accuracy and engagement, as a supplementary tool (Mahajan, 2023)
6	Saxena, 2024	Experimental pre-post comparison	200 students	Arithmetic operations	Vedic method was faster and more accurate across tasks (Saxena, 2024)
7	Shukla et al., 2017	Experimental control-group study	60 class VIII students	Mathematics achievement	Post-test achievement favored Vedic teaching, with large effect size (Shukla et al., 2017)
8	Dangar & Gajwani, 2025	Worksheet performance study	Teacher trainees	Efficiency and perceptions	More participants finished under 5 minutes and reached perfect accuracy (Dangar and Gajwani, 2025)
9	Goplani & Jha, 2024	Survey comparison	500 students	Mathematical attitude	Mean attitude scores were comparable across Vedic and traditional methods (Goplani and Jha, 2024)
10	Kumar, 2026	Analytical review	Modern computation and education	Educational and computational relevance	Concludes Vedic Mathematics is pedagogically and technologically applicable (Kumar, 2026)
11	Kumar et al., 2025	Comparative student study	60 students	Algebraic problem solving	Vedic techniques improved speed, precision, and lowered mental tension (Kumar, Miyan and Padiyar, 2025)
12	Kumar & Rai, 2026	Comparative conceptual analysis	Conic sections	Traditional vs Vedic frameworks	Vedic methods work best as complementary tools in conics (Kumar and Rai, 2026)

13	Thakkar et al., 2025	Comparative classroom experiment	90 eighth-grade students	Linear equations	Vedic approach led to faster solving and stronger student interest (Thakkar, Shaikh and Satia, 2025)
14	Joshi et al., 2025	Action research	Fourth-grade government school students	Multiplication teaching	Vedic multiplication improved speed, motivation, and classroom utility (Joshi et al., 2025)
15	Yadav et al., 2024	Comparative review	Vedic vs contemporary mathematics	Time reduction and math fear	Vedic methods appear to reduce solving time and math fear (Yadav et al., 2024)
16	Alabat & Salazar, 2025	Qualitative perception study	6 teachers and 10 learners	Cauchy-Vedic classroom integration	Reported numeracy benefits, but also training and curriculum barriers (Alabat and Salazar, 2025)
17	Raikhola, 2024	Historical and comparative review	Algebra, arithmetic, calculus literature	Applications and efficiency	Review finds efficient, intuitive methods but notes higher-math research gaps (Raikhola, 2024)
18	Awasthi et al., 2023	Historical-pedagogical comparison	Vedic and modern teaching traditions	Teaching approaches	Both traditions emphasize problem-solving, but pedagogy differs (Awasthi et al., 2023)
19	Kumar & Joshith, 2026	Instructional design paper	Science classrooms	VM for 21st-century teaching	Proposes Vedic strategies to strengthen analytical problem-solving and confidence (Kumar and Joshith, 2026)
20	Glover & Williams	Pedagogical paper	General mathematics education	VM as teaching tool	Emphasizes speed, creativity, flexibility, and enjoyment in learning (Glover and Williams, 2017)

Table 1 : Table summary of some important Vedic Mathematics papers

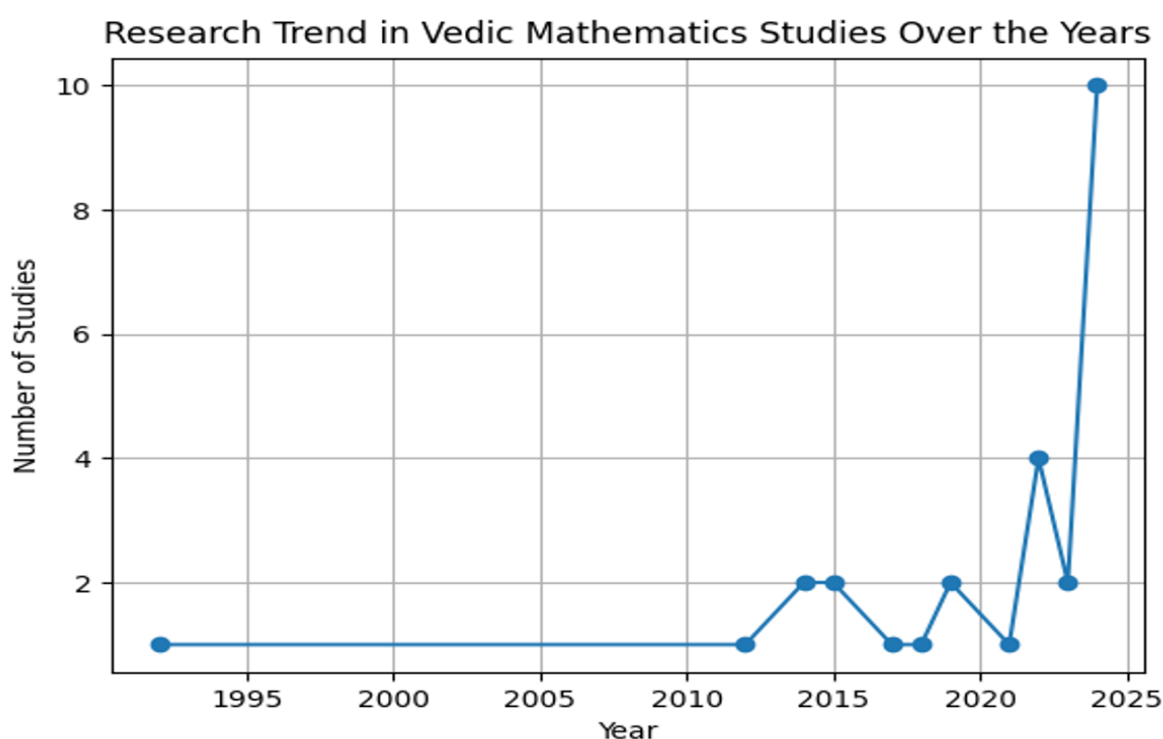


Figure 1. Trend for the research of Vedic Mathematics in the past years

According to the graph, it can be seen that in the early 90s there is no study for Vedic mathematics, and after 2010 there is a little fluctuation of study for the vedic mathematics till 2017 approximately, and from 2020 to 2023 there is a hike in the study for Vedic mathematics; that means the scholars are more interested in Vedic mathematics. In 2025, there is a drastic change in demand for Vedic mathematics.

Distribution of Research Focus Areas in Vedic Mathematics Studies

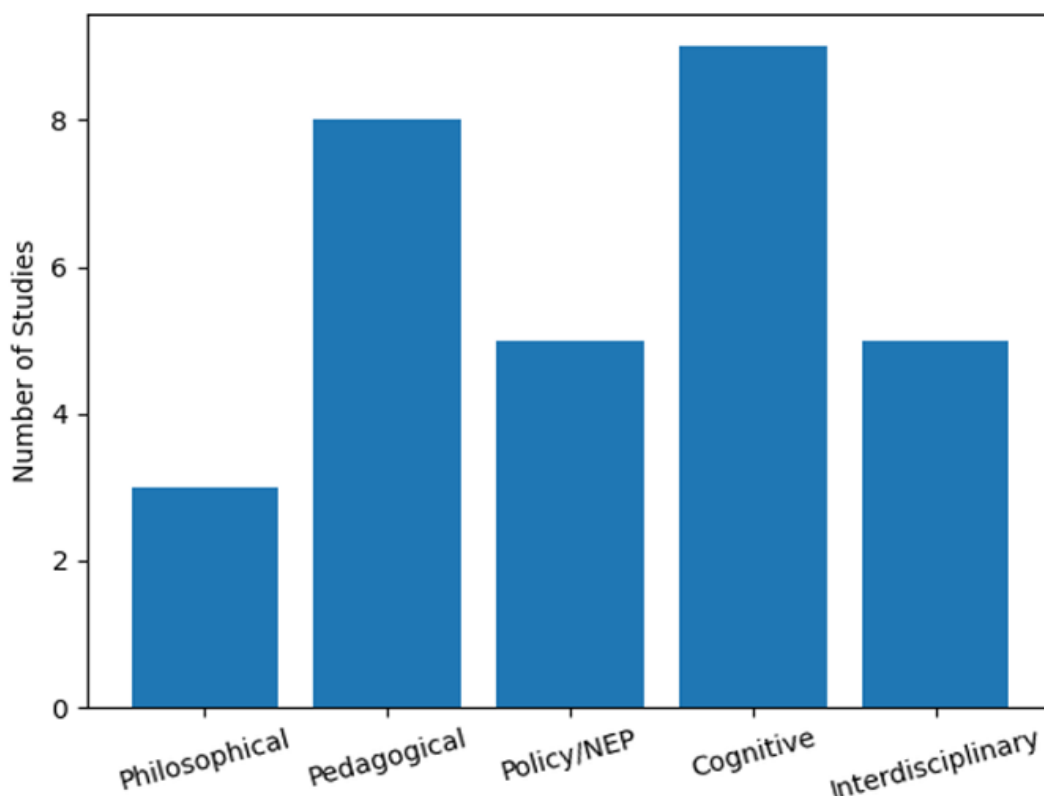


Figure 2. Distribution of Research Focus Areas in Vedic Mathematics Studies

Vedic mathematics not only broadens its focus area to a single dimension; its focus area can be seen in different areas like psychology, policy making, cognitive, and interdisciplinary studies. Most of the study has been done in the field of psychology and cognitive. According to the graph, it can be said that future research can be done for making the policy and in the philosophical area.

Cognitive Impact of Vedic Mathematics (Literature Findings)

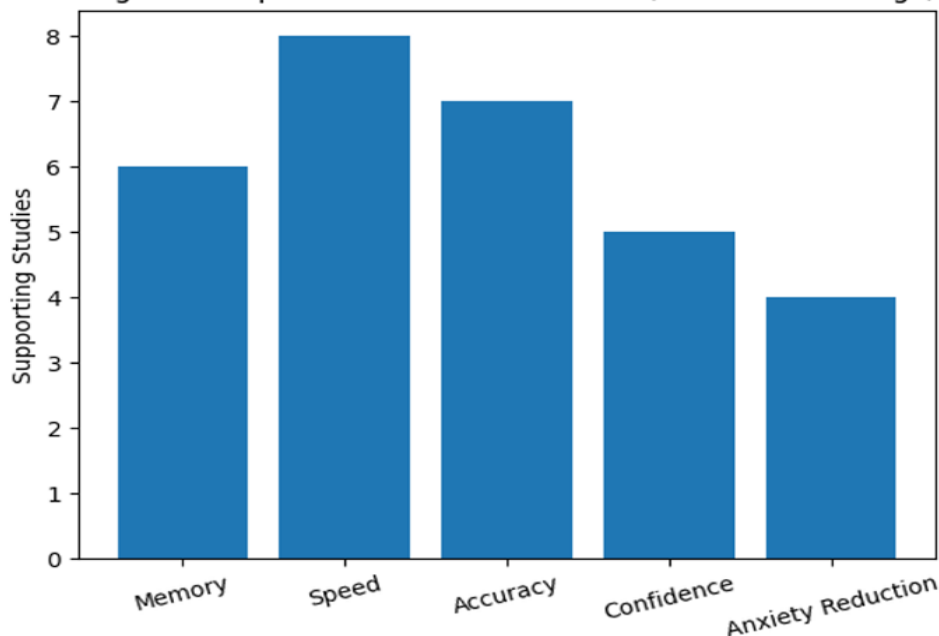


Figure 3. Cognitive Impact of Vedic Mathematics

The literature mostly concentrates on increasing processing speed and accuracy, with memory enhancement coming in second. But the affective aspects such as confidence strengthening and anxiety decrease are still under-researched.

This suggests a dependency on quantitative performance metrics at the expense of psychological and socio-emotional results. Future research should leverage interdisciplinary techniques that include educational psychology, longitudinal assessment designs, and established psychometric instruments to assess math anxiety and learner confidence.

Major Research Themes in Vedic Mathematics Literature

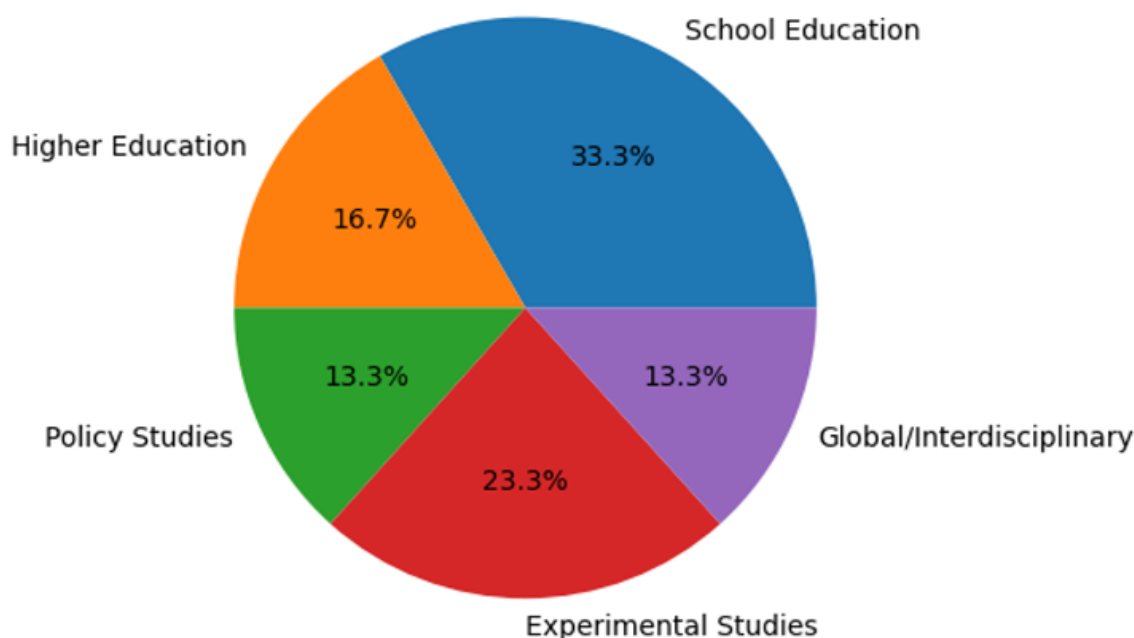


Figure 3. Major Research themes in Vedic Mathematics Literature

The majority of the research is concentrated at the level of school education and is underrepresented at the level of higher education, in policy studies and global interdisciplinary views.

Major research prospects stem from the limited incorporation in quantitative university subjects and cross-disciplinary computational fields. Future work should include higher education curriculum integration, validation studies across cultures and computational modeling and algorithmic thinking applications.

CONCLUSION

As the world moves towards algorithmic correctness and artificial intelligence, India must not underestimate the intuitive sophistication of its mathematical inheritance. Vedic mathematics is not just an old relic but provides students with a timeless foundation for developing clarity, inventiveness and confidence. It is a cultural responsibility, and an educational imperative, to include it in the national curriculum. A central planning, a meticulously executed roadmap based on the ideas of NEP 2020, can connect traditional knowledge with contemporary teaching techniques. This program has the power to turn classrooms into spaces of togetherness rather than division and curiosity rather than fear. It can empower teachers, democratize numeracy and lay the foundation for a generation of thinkers who are mathematically proficient and deeply connected.”

Future Road Map

Vedic mathematics must be incorporated into India's traditional curriculum due to the country's existing academic and cultural circumstances. As India advances towards a more integrative and competency-based approach under the National Education Policy (NEP) 2020, there is an intriguing case for constructing an organized and centrally controlled roadmap for the expansion and integration of Vedic Mathematics at the fundamental level. Not only would this save the purity of a precious system of ancient knowledge, but also utilize its potential to handle modern-day educational difficulties such as math anxiety, over-reliance on rote learning and inequality in learning outcomes across states. Even with such a plan, the country faces the risk of losing its mathematical legacy and perpetuating structural inequities in education that might effect students' academic performance and intellectual development negatively. Therefore, a comprehensive, inclusive, and uniform future roadmap for Vedic mathematics must be developed and put into action through central government structures. Getting Vedic mathematics accepted as a formal topic and included to the national curriculum at the policy level is the first stage in this plan. By encouraging the incorporation of Indian Knowledge Systems into standard education, NEP 2020 offers a solid foundation. In order for this to occur, regulations authorizing the use of Vedic mathematics in primary and preparatory school (Grades 3–8) must be released by the Ministry of school. The Central Board of Secondary Education (CBSE), state education boards and the National Council of Educational Research and Training (NCERT), should work to produce a standard curriculum and learning objectives that complement the existing math syllabi. Because of this convergence, students nationwide will receive an education that is both culturally and mathematically sound.

The federal government needs to spend in generating workbooks, textbooks, and electronic materials suited for the grade level in order to properly implement this strategy. For there to be a guarantee of geographical availability and inclusion, those materials must be accessible in a number of Indian languages. Online services like DIKSHA, SWAYAM, and PM eVIDYA can be utilized to provide Vedic Math instructional materials widely, fairly, and without regard to geography. Further, the utilization of multimedia and interactive tools such as games, graphics and real world problem solving situations could be used to increase learning and understanding and particularly for younger pupils for whom traditional arithmetic may seem scary or esoteric. Equally crucial is the training of instructors to teach Vedic mathematics with confidence and clarity. The incorporation of Vedic Mathematics courses in all current teacher training platforms, such as NISHTHA and DIKSHA, should be the first step in the roadmap's robust teacher education strategy. In order to create master trainers who can then instruct students at the school level, the federal government should set up provincial training facilities and employ an iterative process. Additionally, the creation of a government-approved program for teachers of Vedic mathematics will support educators' professional growth and aid in standardizing the caliber of instruction. Future generations of educators will have this knowledge from the start if Vedic Math is included in pre-service teacher education and in teacher eligibility exams at the federal and state levels (CTET/STET).

In order to give empirical support for the roadmap and modify strategies based on data, the national government should fund research programs and work with institutions like the NCERT, the Indian Council of Social Science Research (ICSSR), and universities with education departments. To evaluate the effects of Vedic mathematics on numeracy, logical reasoning, and problem-solving abilities, pilot programs can be initiated in Kendriya Vidyalayas, Navodaya Vidyalayas, and a few state-run schools. Both qualitative and quantitative indicators, such as improved math competency, reduced anxiety, and enhanced student engagement, should be used to thoroughly assess these pilots. The results of these pilots can direct the program's national scope and suggest policy modifications.

Another significant feature of this plan is to heighten public awareness and to engage the public. The national government should begin a countrywide effort to educate the populace, educators and parents about the benefits of Vedic mathematics. Webinars, short films, school seminars, and media collaborations might all be part of the project to honor the legacy of ancient Indian mathematics and its applicability in the modern era. Popular quiz competitions and talent exams may incorporate Vedic mathematical topics. To spread the practice and pique students' interest, national tournaments like the Vedic Math Olympiads might be held. This would help promote the acceptance of traditional knowledge systems before the formal policy directives come into force and to foster the creation of a common cultural sensibility for the relevance of traditional knowledge systems.

To guarantee the plan's success, the approach should also incorporate the creation of a unique "Vedic Mathematics Cell" within NCERT. The organization will be in charge of developing a curriculum, working with state education departments, planning training courses, keeping an eye on research, and reaching out to foreign nations. It can serve as a national resource center and think tank for the continuous creation of creative teaching methods and for enhancing the relevance of Vedic mathematics in higher education, as well as in the context of data science, computational logic, and artificial intelligence. With its origins in ancient India, Vedic math may also be seen as a global innovation, and India's involvement in the international cultural exchange programs operated by ICCR and ITEC could strengthen its educational diplomacy.

There could be several long-term consequences if such a centrally coordinated effort is not made. Since there is no plan for integrating Vedic mathematics, it will be implemented sporadically in some states or private schools and not at all in others. This disparity will increase the education gap between and within regions, undermining the NEP 2020's core goal of equal education. Additionally, pupils in places where Vedic mathematics is not taught may continue to rely on memory and lose out on the chance to acquire mental math abilities and problem-solving skills at a young age. The loss of culture is as crucial. A knowledge system that is not exclusive to us may disappear if Vedic mathematics is not institutionalized.

Lastly, it is not only desirable but also essential to have a well-thought-out and methodically implemented roadmap for the integration of Vedic mathematics. It can support national integration in curriculum delivery, bridge the gap between traditional knowledge and modern education, close basic numerical disparities, lessen math fear, and establish India as a global leader in ethnically infused pedagogy. The chance to revitalize and reconstruct Vedic mathematics as a crucial teaching tool may disappear if we do nothing, which will simply increase the already existent gaps. Therefore, the plan should be bold, inclusive, data-driven and above all focused towards the same purpose of creating India self-reliant, ethnically assured and mathematically adept.

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