**JETIR.ORG IETIR** 



## ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue JOURNAL OF EMERGING TECHNOLOGIES AND **INNOVATIVE RESEARCH (JETIR)**

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

# **Indian knowledge system and Mathematics as per NEP 2020**

Mrs. Gurinder Kaur Asstt. Prof. in PG Deptt. of Mathematics **RR** Bawa DAV College for Girls, Batala

#### ABSTRACT

According to the New Education Policy (NEP), the Indian Knowledge System (IKS) includes the following aspects of mathematics:

- \* Mathematics and astronomy
- Great mathematicians and their contributions  $\div$
- •:• Arithmetic operations
- \* **Emphasis on Vedic mathematics**
- $\dot{\cdot}$ The simultaneous development of mathematical tools and their application in various subjects

The NEP also aims to integrate the Indian Knowledge System into the curriculum at all levels of education.

#### **INTRODUCTION**

Indian Knowledge System (IKS):

Refers to the traditional Indian systems of knowledge and practices

Includes mathematics as an integral part of Indian heritage

Emphasizes holistic learning, mental calculations, and problem-solving skills

Examples: Vedic Mathematics, Aryabhata's astronomical calculations National Education Policy (NEP):

Aims to integrate IKS into the education system

Emphasizes the importance of mathematics in Indian heritage and culture

Seeks to promote mathematical skills, critical thinking, and problem-solving abilities

Encourages interdisciplinary approaches, connecting mathematics to science, technology, and other subjects

In context to mathematics, IKS and NEP aim to:

Revive and promote traditional Indian mathematical techniques

Integrate Vedic Mathematics and other IKS approaches into the curriculum Develop innovative, interactive, and inclusive learning methods

Foster a deeper understanding of mathematical concepts and their applications

Prepare students to excel in mathematics and contribute to India's growth and development.

By combining IKS and NEP, mathematics education in India aims to become more holistic, inclusive, and globally relevant.

#### Mathematics and Astronomy

According to the New Education Policy (NEP), mathematics and astronomy are deeply connected and have been integral parts of Indian heritage and culture. Some key aspects include:

- •Ancient Indian mathematicians like Aryabhata, Bhaskara, and Brahmagupta made significant contributions to astronomy and mathematics.
- •The concept of zero and the decimal system were developed in India.
- •Indian astronomers like Aryabhata and Bhaskara accurately predicted celestial events and developed models of the solar system.
- •The NEP aims to integrate this rich heritage into education, highlighting the contributions of Indian mathematicians and astronomers.
- •Emphasis will be on hands-on learning, simulations, and experiments to develop a deeper understanding of mathematica.

#### \* Great Mathematicians and their Contributions

- •Here are some famous Indian mathematicians and their contributions
- •Brahmagupta: He introduced the concept of zero and developed the decimal system.
- •Aryabhata: He wrote the treatise "Aryabhatiya" and was the first to give an approximation of the value of pi.
- •Bhaskara: He developed formulas related to squaring and multiplication of numbers.
- •Srinivasa Ramanujan: He worked on elliptic functions, the analytical theory of numbers, and the properties of the partition function.
- •P.C. Mahalanobis: He is known as the Father of Indian Statistics and founded the Indian Institute of Statistical Science.
- •C.R. Rao: He contributed to estimation theory, biometry, statistical inference, and functional equations.
- •Ashutosh Mukherjee: He discovered the talents of other individuals like C.V. Raman and S. Radhakrishnan and published scholarly papers on mathematics and physics.
- •Raj Chandra Bose: His contributions to statistics are still highly valued.
- •K.R. Parthsarthy: He was a pioneer of quantum stochastic calculus.
- •Phoolan Prasad: He made significant contributions to the concepts of differential equations and fluid mechanics.

#### \* Arithmetic Operations

According to the New Education Policy (NEP), arithmetic operations include:

Vedic Mathematics: Emphasis on mental calculations, estimation, and problemsolving using Vedic techniques.

- •Basic Operations: Proficiency in addition, subtraction, multiplication, and division, including fractions, decimals, and percentages.
- •Algebraic Thinking: Introduction to variables, expressions, and equations, fostering problem-solving skills.
- •Number Systems: Understanding properties of numbers, including whole numbers, integers, rational and irrational numbers.
- •. Estimation and Approximation: Developing skills to estimate quantities and approximate solutions.
- •Mental Mathematics: Encouraging mental calculations and mathematical reasoning.

•Mathematical Games and Activities: Incorporating engaging games, puzzles, and activities to build mathematical skills.

The NEP aims to develop arithmetic skills through a combination of traditional and modern approaches, emphasizing conceptual understanding, problem-solving, and critical thinking.

#### \* Emphasis on Vedic Mathematics

The New Education Policy (NEP) emphasizes Vedic Mathematics as a valuable part of India's mathematical heritage, aiming to:

- •Promote mental calculations and problem-solving skills.
- •Develop innovative and creative thinking.
- •Enhance mathematical understanding and application.
- •Foster a connection to India's rich cultural legacy.
- •Encourage Vedic Mathematics as a tool for problem-solving in various subjects.
- •Integrate Vedic Mathematics into the curriculum, starting from elementary school.
- •Provide teachers with training and resources to effectively teach Vedic Mathematics.
- •Encourage research and development of Vedic Mathematics content, pedagogy, and assessments.

By emphasizing Vedic Mathematics, the NEP seeks to equip students with a unique problemsolving approach, enhancing their mathematical skills and cultural understanding.

# The simultaneous development of mathematical tools and their application in various subjects

The New Education Policy (NEP) emphasizes the simultaneous development of mathematical tools and their applications in various subjects, including:

- •Science: Physics, Chemistry, Biology, and Environmental Science
- •Technology: Computer Science, Information Technology, and Engineering
- •Economics: Understanding economic systems, markets, and data analysis
- •Finance: Managing personal finance, understanding banking and investments
- •Data Analysis: Interpreting and visualizing data to inform decisions
- •Artificial Intelligence: Building intelligent systems and machine learning models
- •Environmental Sustainability: Modeling and understanding environmental systems
- •Health and Medicine: Understanding epidemiology, medical research, and health data analysis

### Conclusion

By integrating mathematical tools with their applications, the NEP aims to:

- ✓ Develop problem-solving skills
- ✓ Enhance interdisciplinary connections
- ✓ Foster critical thinking and analytical skills
- ✓ Prepare students for real-world challenges
- ✓ Encourage innovation and entrepreneurship

 $\checkmark$  This approach will help students see the relevance and importance of mathematics in various aspects of life, making learning more meaningful and engaging.

#### REFERENCES

- 1. https://www.researchgate.net/publication/356748233\_A\_Note\_on-
- National\_Education\_Policy\_2020\_With\_Special\_Reference\_of\_School\_Education
- 2. https://en.wikipedia.org/wiki/National\_Education\_Policy\_2020
- 3. <u>https://ijcrt.org/?gad\_source=1&gclid=Cj0KCQjw7Z00BhDYARIsAFttkCiUXp6Xt7GALvauf5y</u>

#### 7ORLyOJqBdJzbU4R7uQ7EIwj68pgQrUD6StMaAsHGEALw wcB

- 4. <u>https://www.education.gov.in/sites/upload\_files/mhrd/files/NEP\_Final\_English\_0.pdf</u>
- 5. <u>https://www.education.gov.in/sites/upload\_files/mhrd/files/nep\_achievement.pdf</u>

