



<https://doi.org/10.53032/tvcr/2025.v7n4.34>

---

## Developing Number Sense and Problem-solving Skills in Children

---

**Dr. Shashi Shekhar Kumar Singh**

Dept. of Mathematics,  
T.P.S. College Patna, Bihar.

### Abstract

The development of number sense and problem-solving skills in children is crucial for their overall mathematical understanding and success in life. Number sense refers to the ability to understand and work with numbers. It includes recognizing number relationships, understanding numerical operations, and the capacity to reason and make sense of quantitative information in everyday situations. Problem-solving skills encompass a broader range of abilities, including logical reasoning, critical thinking, and the application of knowledge to tackle unfamiliar challenges. Together, these skills support children's mathematical development and academic success.

**Keywords:** Developing number sense, Mathematical, Children's, Education.

### Introduction

Developing number sense and problem-solving skills is important for children's academic success and everyday life. Number sense, which is the natural understanding of numbers and their connections, is essential for doing math well. It includes abilities like estimating, comparing amounts, understanding how numbers fit together, and seeing patterns in numbers. This basic understanding helps children tackle math problems with flexibility and confidence instead of just memorizing steps. Overall, having strong number sense and problem-solving skills prepares children for both school challenges and real-world situations.<sup>1</sup>

Number sense is important for children's mathematical growth and their understanding of numbers. It includes connecting numerical symbols to quantities, understanding number values in relation to each other, using numbers in different calculations, and developing ways to count, measure, and estimate. A child's number sense often starts at home, where they learn to attach meaning to numbers through everyday situations. For instance, when a parent tells a child to grab two biscuits, the child begins to grasp what the number two means. By the time children reach three years old, they can usually tell the difference between a box with more

# *The Voice of Creative Research*

Vol. 7 & Issue 4 (October 2025)

chocolates and one with fewer. This early understanding of number sense is essential for developing more advanced math skills later on. Number sense supports children's ability to work with numbers in flexible ways, helping them apply what they learn in various mathematical tasks.

Parents and caregivers play a key role in nurturing number sense by engaging children in activities that involve counting and comparing quantities. Such interactions help children develop a foundation for future math learning. Understanding number sense not only helps children with basic math but also prepares them for problem-solving and critical thinking in all areas of math. As children's education continues, number sense becomes even more vital. Learning mathematical concepts like addition, subtraction, and more complex operations relies on a strong foundation in number sense. By regularly practicing counting, doing simple calculations, and using numbers in real-life situations, children enhance their ability to think about and understand numbers.

Number sense is an essential part of early math education that begins at home. By recognizing quantities and making number connections through everyday experiences, children can build a strong math foundation. This foundation will aid them in their later academic pursuits, helping them approach math with confidence and skill.

## **Developing Number Sense**

The development of number sense is linked to changes in mathematics education over time. In the past, many schools taught students through rote memorization of arithmetic facts. However, educators realized that understanding the concepts behind numbers is more important than just memorizing procedures. This change in thinking led to more modern teaching methods that focus on building number sense. The emphasis is now on helping students grasp the meaning of numbers and how they work together. This shift has helped educators create better learning experiences that foster deeper comprehension rather than just quick recall of facts. The development of number sense has become a key part of mathematics education, moving away from traditional methods to more concept-oriented approaches. The history of number sense reflects a growing awareness of the need for a solid understanding of mathematics, which is essential for improving students' overall math skills. Schools are now more focused on helping students connect with numbers in meaningful ways, promoting a stronger foundation in mathematics for future learning.<sup>2</sup> The important points related to numerical understanding are following –

### **Number recognition**

Number recognition is the ability to identify numbers and understand their meaning. This skill is vital for basic math and daily tasks, as it aids in counting, calculations, and solving problems. It is essential in early education and supports cognitive growth. Recognizing numbers helps children learn necessary math skills and apply them in real-life situations. Understanding numbers lays a foundation for more advanced mathematical concepts later on. Overall, number recognition is crucial for both academic success and everyday functioning.

### **Systematic counting**

# *The Voice of Creative Research*

Vol. 7 & Issue 4 (October 2025)

Systematic counting involves understanding the basic principles of counting, which includes both ordinal and cardinal numbers. It is important to be able to count forwards and backwards. Each number has a specific place in the sequence of all numbers, which is crucial for grasping the concept of counting. Recognizing that numbers occupy fixed positions helps in understanding their order and value. This knowledge is foundational for further mathematical learning and everyday applications. It is essential to practice counting in both directions to develop a strong sense of number sequence and relationships. Learning systematic counting is key for building a solid mathematical foundation. It can be useful in various situations, from simple everyday tasks to more complex problem-solving scenarios. The ability to count systematically helps with understanding larger numbers and making connections between them.

## **Awareness of the relationship between number and quantity**

Awareness of the connection between number and quantity involves understanding how a number's name corresponds to the amount it represents. This idea is about identifying the one-to-one connection between numbers and the quantities they indicate. Knowing this relationship is important for learning basic counting and math concepts.

When someone is aware of how numbers correspond to quantities, it enhances their ability to grasp mathematical ideas. This awareness allows individuals to better understand counting, which is fundamental for further mathematical learning. The recognition of this connection is a crucial first step in developing strong math skills, as it serves as the foundation for more complex calculations and concepts. Being aware of the relationship between numbers and their corresponding quantities lays the groundwork for building confidence and competence in mathematics. It is vital for ensuring that learners can move forward successfully in their mathematical education. Understanding these basic principles helps in making sense of how numbers function in everyday life and in more advanced mathematical applications.

## **Quantity discrimination**

Quantity discrimination is the ability to recognize and compare different amounts or sizes. It involves understanding the concept of magnitude, which means knowing how big or small something is. People use language like "bigger than" or "smaller than" to express these comparisons. The skill of quantity discrimination is important in many everyday situations, helping individuals make decisions based on size or amount. The concept can be applied in contexts such as shopping, cooking, and measuring. For example, you might need to determine if one item is larger than another or if there is more of one ingredient than another. Developing this ability enables better judgment and problem-solving skills. Practicing quantity discrimination can enhance overall cognitive abilities, as it encourages critical thinking and assessment of numbers and sizes in various scenarios. It can also improve communication, as people learn to articulate their thoughts about quantity clearly. Overall, being aware of and able to compare magnitudes supports everyday decision-making and communication.<sup>3</sup>

## **Estimation**

# *The Voice of Creative Research*

Vol. 7 & Issue 4 (October 2025)

The importance of being able to make educated guesses or estimates about the size of a set or an object. It emphasizes that this skill is valuable in understanding and assessing quantities or dimensions in various situations. The ability to estimate helps in decision-making and problem-solving when precise measurements are not available. Overall, the focus is on the significance of estimating sizes accurately to improve comprehension and practical application in everyday life.

## **Simple arithmetic competence**

Simple arithmetic competence is the ability to carry out basic math tasks like addition and subtraction using small groups of numbers. This skill is important for everyday activities and helps in understanding more complex math later on. It involves a clear grasp of how to combine numbers or take them away from each other accurately. Being able to perform these operations with ease is a key part of basic math learning and is foundational for further education in mathematics. Understanding simple arithmetic enables individuals to solve practical problems in daily life, like managing money or measuring items. Overall, simple arithmetic competence lays the groundwork for developing stronger math skills.

## **Awareness of number patterns**

Awareness of number patterns means being able to recognize and identify patterns in numbers, including finding missing numbers in a sequence. This understanding is crucial for developing skills in mathematics. Recognizing these patterns helps solve problems and grasp more complex math concepts. The focus is on making connections and seeing patterns in numerical information. Being skilled in identifying number patterns can improve learning and enhance problem-solving abilities in math. This awareness is not just about knowing numbers but also about understanding relationships between them and how they fit into larger mathematical ideas. Developing an awareness of number patterns is key to success in math, as it allows individuals to approach problems with a better understanding and a more analytical mindset. Those who can see these connections will likely perform better in various mathematical tasks and concepts.<sup>4</sup>

Developing foundational number sense skills helps children understand numbers, their relationships, and how to solve math problems. This understanding is crucial for their overall development in mathematics. There are various strategies to foster number sense. One effective method is using rhymes, where children can engage in math talk. They can also use number words that correspond with items they are counting. Counting out loud is important as it aids in learning that the last number counted represents the total. Additionally, teachers can create opportunities for children to count different sets of objects, which helps them understand cardinality—the concept of quantity. By nurturing these foundational skills, children can deepen their understanding of mathematics. This preparation sets a strong base for further learning in math and contributes to their overall mathematical growth. Focusing on number sense and monitoring children's progress can lead to better outcomes in their mathematics achievement over the years.

# *The Voice of Creative Research*

Vol. 7 & Issue 4 (October 2025)

Implementing these strategies can be fun and engaging for children while providing significant benefits to their number sense development. Encourage them to explore numbers and their relationships through interactive activities and supportive discussions. Engaging in math-related conversations helps children relate numbers to real-world situations, making learning more relevant and enjoyable. The emphasis on number sense is important not only for immediate learning but also for establishing a lifelong appreciation for mathematics. Understanding basic mathematical principles can empower children as they progress through their education, unlocking further opportunities in more complex mathematical concepts. Nurturing number sense skills from an early age is essential for children's mathematical development. Employing various strategies like rhymes, counting aloud, and hands-on activities creates an enriching learning environment that fosters deeper understanding and application of math. Support their growth in this area to help them succeed in their future math-related academic endeavors.

## **Developing Problem-solving Skills**

Developing problem-solving skills is crucial for children's cognitive growth, especially in mathematics. To help children improve these skills, it's effective to use open-ended problems that spark creative thinking and allow for multiple solutions. Activities like puzzles and games help enhance critical thinking and spatial reasoning. Additionally, collaborative tasks promote teamwork and communication among children. Another important strategy is breaking down complex problems into simpler parts, which assists children in organizing their thoughts and creating step-by-step strategies. Relating problem-solving to real-life situations makes it more relevant and practical for children. It helps them see how these skills apply beyond just math problems. Moreover, teaching perseverance and resilience is vital, as these traits help children grow into confident and independent thinkers. With these skills, they can tackle both math concepts and everyday challenges effectively.

## **Conclusion**

In conclusion, Developing number sense and problem-solving skills is vital for children's success in school and daily life. Number sense involves understanding numbers, estimating, comparing amounts, and recognizing patterns. It helps children feel confident in solving math problems instead of just memorizing steps. Developing number sense and problem-solving skills in children is crucial for their mathematical literacy and overall cognitive development. By fostering these competencies through innovative teaching methods, active learning environments, and the effective use of technology, educators can prepare children for complex mathematical challenges in the future. Understanding the historical context and influential educational thinkers can help shape better instructional strategies. As we move forward, research and collaboration among educators, policymakers, and communities will be imperative in creating a robust framework that supports children's mathematical growth.

# *The Voice of Creative Research*

Vol. 7 & Issue 4 (October 2025)

## **References**

1. Skemp, R. R. (1976). Relational Understanding and Instrumental Understanding. *Mathematics Teaching*, 77, 20-26.
2. National Research Council. (2001). *Adding It Up: Helping Children Learn Mathematics*. National Academies Press.
3. Common Core State Standards Initiative. (2010). *Common Core State Standards for Mathematics*. Retrieved from <http://www.corestandards.org>
4. Boaler, J. (2015). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching*. Jossey-Bass.