



**Attainment of basic arithmetic skills
in primary school students of Pathanamthitta district of Kerala, India**

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Abstract

One of the basic aims of teaching mathematics in schools is to inculcate the skill of quantification of experiences around the learners. Mathematics helps in the process of decision making through its application to real life situations in familiar as well as non-familiar situations. It is a compulsory subject in school education. The purpose of the study is to identify the attainment of basic arithmetic skills among primary school students in Kerala. The researcher used survey methods for collecting the data related to this. The study revealed that there is difference between expected and actual learning.

Keywords:

Attainment,
Arithmetic,
Mathematics skills,
Basic arithmetic skills,
Primary school students

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1. Introduction

Education is a powerful instrument of a social transformation. It is deemed essential that desirable changes are brought about on both micro and macro levels. Hence its role in character building stands very important and effective.

Education is a wide-ranging term. It covers the scope of an infinite horizon of knowledge comprising all kinds of wisdom, intellect, learning and knowing. Knowledge is the soul of human life and the process of acquiring it as well as the acquired and attained one is called education. For knowledge we have a parallel expression that is Gyan. The totality of Indian heritage, culture and spirituality longs for only one thing that is Gyan. Gyan is the third eye of human being.

Education in true sense is the completion of human life. It is education that distinguishes a man from the other creatures. Education endows conscience; it blesses with kindness, sympathy, service and humanity in order to impart humaneness to a man. It contributes to form and repair the mental, intellectual and emotional part of human life. It is education which makes a man superior to all other beings created by God. It is also the process of modification and purification. Education is a medium, it is a means, it is a machine, it is a tool or equipment meant for the purpose to acquire knowledge not only to understand oneself but also the world outside.

Knowledge is the light of life. The world is full of darkness in the absence of sun. Similarly, life full is of ignorance and folly in absence of knowledge. Knowledge is the

inner eye. It is the insight visibility. It is the illuminating object dwelling in mind. The attainment of knowledge needs a channel which is fulfilled by education.

Education endows conscience; it blesses with kindness, sympathy, service and humanity in order to impart humaneness to a man. It contributes to form and repair the mental, intellectual and emotional part of human life. The education of a human being should begin at his very birth and continue throughout his life.

A. Nature and scope of the study

In the present scenario of education there are many agencies. Among them formal education is mostly utilized. It gives grave importance to subjects like language, science and mathematics.

Mathematics helps children make sense of their world outside of school and helps them to construct a solid foundation for success in school. Once out of school, all adults need a broad range of basic mathematical understanding to make informal decisions in their jobs, households, communities, and civic life. Throughout the early years of life, children notice and explore mathematical dimensions of their world. They compare quantities, find patterns, navigate in space, and grapple with real problems such as balancing a tall block building or shaping play materials fairly with a playmate. Every day as children play they use mathematics without even realizing it.

Mathematics is an indispensable tool of precision in measure involving quantity and time. A fundamental knowledge of basic mathematics concepts is valuable even for a layman. A knowledge of elementary mathematical concepts such as interest rate, banking, percentage, discount, ratio and proportion are very essential to lead a fruitful life in the society.

Besides ensuring a sound mathematical foundation for all members of our society, the nation also needs to prepare increasing number of young people for work that require a higher proficiency level.

Children must understand the cumulative nature of mathematics; the fact that every mathematical skill learned is built on another skill, that multiplication cannot be mastered without addition, and that fractions are based upon the concepts learned on division. Memorization is one of the most important skill to develop in a child to increase his success in mathematics. Accomplishment in mathematics depends heavily on an individual's ability to memorize basic rules and formulas, ideas that can be called upon with little or no trouble. By connecting children with important basic mathematics concepts and skills at a young age and challenging them with interesting games and discussions, one can prepare them for both their academic and adult life.

Arithmetic is a branch of mathematics. Arithmetic is a science pertaining to carrying out calculations that involve numbers. So, it is very concrete in nature. It is the mapping out of language into symbols. Arithmetic requires linear learning i.e., material learnt one day is used the next day, next month and next year. If the student misunderstands the first concept taught or if there are gaps and holes in their basic knowledge then they cannot follow the rest of the lessons.

Arithmetic is the helping hand on all occasions with or without our consciousness. Numeral, the digits, logical rules and concepts, addition, subtraction, multiplication and division are some of the basic components of this great subject. Modern science and its achievements have a great contribution from arithmetic. Mathematics has its sound basic in arithmetic and can be used as a tool to critically examine and assess both physical and abstract things.

One of the basic aims of teaching mathematics in schools is to inculcate the skill of quantification of experiences around the learners. Mathematics helps in the process of

decision making through its application to real life situations in familiar as well as non-familiar situations. It is a compulsory subject in school education.

It is observed that most of the students fear mathematics and are not interested in learning mathematics. This problem is very intensive in high school classes. If we observe or analyze the situation, we can realize that most of the students did not master the basic mathematical skills. The cause of the problem arises in the elementary level i.e., in the primary level of education.

The study of mathematics is a linear in nature that is the learner use yesterday's knowledge today and today's knowledge for future. If a student misunderstands the first concept taught or if there are gaps and holes in their basic knowledge then the student cannot follow the rest of the lessons.

As mathematics is a compulsory subject in primary stage, access to quality mathematics education is the right of every child. But it is experienced that the students did not attain the expected outcome.

Analysis of the literature revealed that a very few studies have been conducted in arithmetic skills of primary school students. But no studies have been conducted in the particular area. It is presumed that a study of this type will be helpful in identifying the gap between expected outcomes and attained outcomes. This will be useful in identify gaps and to plan suitable strategies to close the gap and enhance the expected educational outcomes and attainment level of Mathematics skills by the learner at primary level.

B. Statement of the problem

The area selected for study is aimed to identify the attainment of basic arithmetic skill in primary school children. Hence the problem is entitled as 'ATTAINMENT OF BASIC ARITHMETIC SKILLS IN PRIMARY SCHOOL STUDENTS'.

2. Research Method

The survey method was adopted for the study and a sample of 80 primary school students were selected for the study.

The non-standardized tool used for the study was Basic Arithmetic Skill Assessment Inventory consisting of questions related to arithmetic skills for primary school students. Percentage was used to identify the attainment level of basic arithmetic skills in total sample of primary school children.

Research objectives

To identify the attainment of arithmetic skills of IVth standard students in the following areas:

- i. Counting of numbers up to 10000
- ii. Backward counting of numbers form 10000
- iii. Formation of numbers according to place value
- iv. Splitting of numbers according to place value
- v. Addition
- vi. Subtraction
- vii. Multiplication of numbers with 2 to 10
- viii. Multiplication
- ix. Division
- x. Formation of sequence

3. Results and Analysis

- 81.25% of students have attained the skill of forward counting of two-digit numbers. It is followed by counting of 3-digit numbers (57.5%), counting of 4-digit numbers (55%). 56.25% of students have attained the skill of backward counting of 2-digit numbers followed by backward counting of 3-digit numbers (55%), backward counting of 4-digit numbers (52.5%).
- 92.52% of students have attained the skill of formation of numbers using ones. It is followed by formation of numbers using tens & ones (81.25%), formation of numbers using hundreds, tens and ones (77.5%), formation of numbers using hundreds (71.25%), formation of numbers using thousands, tens & ones (70%) Formation of numbers using thousands & tens (57.5%), formation of numbers using thousands & ones (56.25%) and formation of numbers using thousands, hundreds & ones (53.75%).
- 80% of students have attained the skill of Splitting of numbers containing ones. It is followed by splitting of numbers containing tens & ones (70%), splitting of numbers containing hundreds, tens & ones (63.75%), splitting of numbers containing thousands, hundreds, tens & ones (62.5%), splitting of numbers containing hundreds & ones (60%), splitting of numbers containing thousands & tens (60%) and splitting of numbers containing tens (56.25%).
- 95% of students have attained the skill of addition of two 1-digit numbers (without carrying). It is followed by addition of two 2digit numbers (without carrying) (86.25%), addition of 2 digit & 1-digit numbers (with carrying) (81.25%), addition of two 2-digit numbers (with carrying) (80%), addition of two 3-digit numbers (with carrying) (77.5%) and addition of 4 digit & 3-digit numbers (with carrying) (77.5%), addition of 3 digit & 2digit numbers with carrying at unit and tens place (71.25%) and Addition of two 4-digit number with carrying (65%).
- 86.25% of students have attained the skill of Subtraction of two 1-digit numbers. It is followed by subtraction of two 2-digit numbers (80%), subtraction of two 3-digit number (71.25%), subtraction of two 2-digit numbers (with carrying) (63.75%), subtraction of 2-digit number from 3-digit number (contains zero at tens place of large number) (46.25%), subtraction of two 4-digit numbers (42.5%) subtraction of 3-digit number from 4-digit number (with carrying in 2 places) (35%) and subtraction of 3-digit number from 4-digit number (with carrying in 3 places) (27.5%).
- Students have high attainment in the skill of multiplication. 95 % of students have attained the skill of multiplication of 10. It is followed by multiplication of 5 (92.5%), multiplication of 2 (91.25%), multiplication of 4 (85%), multiplication of 3 (83.75%), multiplication of 9 (80%), multiplication of 6 (77.5%), multiplication of 7 (73.75%), multiplication of 8 (71.25%).
- 82.5% students have attained the skill of multiplication of 2 digit by 1 digit. It is followed by multiplication of 2 digit by 2 digits (61.25%), multiplication of 2 digit by 2 digits (with carrying) (50%), multiplication of 3 digit by 2 digits (zero in different places) (42.5%), multiplication of 3 digit by 2 digits (38.75%), and multiplication of 3 digit by 2 digits (with carrying) (30%)
- 62.5% of students have attained the skill of division of 2-digit numbers by 1-digit numbers (zero remainder). It is followed by division of 2-digit numbers by 1 digit (quotient 2 digit) (50%), division of 2-digit numbers by 1-digit numbers (with remainder) (45%), division of 2-digit numbers by 1digit numbers (zero in dividend) (43.75%), division of 2-digit numbers by 1 digit number (quotient 2 digit, with

remainder) (40%), division of 3-digit numbers by 1-digit numbers (21.25%), 3-digit numbers by 1-digit numbers (zero in remainder) (10%)

- 80% of students attained the skill of formation of sequences by adding 2. It is followed by formation of sequences by subtracting 5 (71.25%), formation of sequences by subtracting 100 (70%), formation of sequences by adding 5 (66.5%), formation of sequences by adding 25 (66.25%), formation of sequences by adding 50 (60%) and formation of sequences by multiplying 2 (45%).
- 86.25% of students have attained the skill of formation of 2-digit numbers with given digits. It is followed by formation of 3-digit numbers with given digits (76.25%), formation of 4-digit numbers with given digits (61.25%).
- 76.25% of students have attained the skill of arranging 2-digit numbers in ascending order followed by arranging 3-digit numbers in ascending order (53.75%), arranging 4-digit numbers in ascending order (36.25%) and arrange fractions with numerator 1 in ascending order (23.75%).

Findings and Interpretation

- i. The analysis of the attainment of counting skill revealed that students show difficulty in backward counting than forward counting. The attainment of forward counting skill is significantly higher than attainment of backward counting skill.
- ii. The analysis of the attainment of number formation skill revealed that it is easy to them if all place values are given than formation of numbers which contain zeros in some places.
- iii. The analysis of attainment of number splitting skill revealed that it is more easy to split the numbers if all the place value are non-zero integers.
- iv. The analysis of attainment of addition skill revealed it is difficult to do the problems with carrying.
- v. The analysis of attainment of subtraction skill revealed that students have difficulty in subtraction of numbers with carrying in more than one places.
- vi. The analysis of attainment of skill of memorizing multiplication tables revealed that majority of the students attained the skill.
- vii. The analysis of attainment of multiplication skill revealed that students have difficulty in multiplication of 3-digit numbers.
- viii. The analysis of attainment of division skill revealed that it is the most difficult fundamental operation for the majority of IVth standard students.
- ix. The analysis of attainment of sequence formation skill revealed that it is difficult for the students to form sequences with addition of two-digit numbers and by multiplication of numbers.
- x. The attainment of formation of numbers with the given digits revealed that most of the students corrected it, but most of the students have difficulty in arrange the number in the ascending order.

Limitation of the study

Since the time for the study was very limited

- i) Study was confined to only four schools in Pathanamthitta district
- ii) The survey was limited to 80 students.
- iii) The study was confined to 4th standard students.
- iv) The study was limited to only one district
- v) The study was confined to only Malayalam medium

4. Conclusion

The study was intended to identify the attainment of basic arithmetic skills in IVth standard students. The investigator prepared and administered basic arithmetic skill assessment inventory. The attainment level was identified using survey method.

It is expected that the study would contribute towards development of new strategy of teaching mathematics at primary level. The study would help the primary school teacher to understand the level of attainment in mathematics of the students. The findings of the study will be much useful in educational planning and would also be helpful for educators and curriculum planner to plan remedial measures for enhancing the attainment of the children.

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