



From Rote Learning to Meaningful Learning: Strengthening Foundational Literacy and Numeracy through Activity-Based Pedagogy in Primary Schools

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Abstract

Foundational literacy and numeracy (FLN) constitute the essential foundation upon which children's subsequent educational development is built. In primary schools, however, classroom learning can still become dominated by textbook completion, memorisation, repetitive written exercises, and examination-oriented practices. Such approaches may provide short-term familiarity with content but do not necessarily ensure that children can apply literacy and numeracy skills in meaningful situations. The National Education Policy (NEP) 2020 and the NIPUN Bharat Mission have consequently placed foundational learning at the centre of school education in India. NIPUN Bharat seeks to ensure that children acquire foundational competencies in reading, writing and numeracy by the end of Grade 3.

The present paper examines how activity-based, play-based, experiential and context-sensitive pedagogies can strengthen foundational literacy and numeracy among primary school children. The study adopts a conceptual research approach based on analysis of policy documents, educational frameworks and relevant literature concerning foundational learning and primary education. The paper argues that meaningful learning requires a shift from teacher-dominated transmission to child-centred classroom experiences involving stories, games, manipulatives, local contexts, peer interaction, questioning, observation and formative assessment. It further proposes a practical classroom framework integrating literacy, numeracy, assessment and local resources. The paper concludes that activity-based pedagogy can make primary education more engaging and conceptually meaningful when supported by teacher preparation, appropriate assessment, locally relevant learning materials and systematic monitoring of individual learning progress.

Keywords: *foundational literacy, foundational numeracy, primary education, activity-based learning, experiential learning, NIPUN Bharat, classroom pedagogy, formative assessment*

Introduction

Primary education is one of the most important stages of a child's educational journey. The experiences children receive during the early years influence their confidence, learning habits, language development, mathematical thinking and ability to participate successfully in later stages of schooling. If children fail to develop basic reading, writing and numeracy competencies during the foundational years, they may experience increasing difficulty as the curriculum becomes more complex. The importance of foundational learning has been strongly recognised in India's contemporary educational policy. The National Education Policy 2020 identifies foundational literacy and numeracy as an urgent priority and emphasises that children should acquire basic competencies before progressing to increasingly complex curriculum demands. The NIPUN Bharat Mission was subsequently launched to strengthen foundational literacy and numeracy, with the goal of enabling children to achieve foundational competencies by the end of Grade 3 during the 2026–27 target period. The issue, therefore, is not simply whether children attend primary school. The more important question is whether children are actually learning to read with understanding, communicate ideas, write meaningfully, recognise numbers, reason mathematically and apply basic mathematical concepts in everyday situations.

Traditional classroom practices sometimes place excessive emphasis on copying, memorising definitions, completing worksheets and reproducing textbook answers. These practices may be convenient for classroom management and examination preparation, but primary learners require opportunities to interact with objects, language, people and their surrounding environment. The National Curriculum Framework for the Foundational Stage emphasises flexible, play-based, activity-based and inquiry-based learning. It also recognises children as active participants who learn through observation, collaboration, concrete experiences and interaction with their environment. Activity-based pedagogy



provides an important pathway for translating these principles into classroom practice. A child can learn counting by handling objects, addition by combining groups of locally available materials, vocabulary through storytelling, sentence formation through conversation, and reading comprehension through meaningful stories. Such experiences connect abstract concepts with children's existing knowledge. The present paper therefore explores the role of activity-based pedagogy in strengthening foundational literacy and numeracy in primary schools and proposes a practical classroom framework that teachers can adapt according to local conditions.

Statement of the Problem

Despite substantial policy attention to foundational learning, achieving meaningful literacy and numeracy outcomes remains a major pedagogical challenge. Primary classrooms contain children with different levels of school readiness, language exposure, learning pace and family support. A single teaching strategy may consequently fail to meet the needs of every learner. Children who already possess basic competencies may become disengaged, while children who require additional support may remain silent or dependent on memorisation. The central problem addressed in this paper is:

How can activity-based and experiential classroom practices be systematically used to strengthen foundational literacy and numeracy among primary school children?

Objectives of the Study

The study has the following objectives:

1. To examine the importance of foundational literacy and numeracy in primary education.
2. To analyse the role of activity-based pedagogy in developing foundational competencies.
3. To identify classroom practices that can support reading, writing and numeracy development.
4. To examine the importance of contextual and locally available learning resources.
5. To develop a practical classroom framework for integrating activity-based learning with formative assessment.

Research Questions

The paper addresses the following research questions:

1. Why are foundational literacy and numeracy essential for primary school learning?
2. How can activity-based pedagogy support children's literacy development?
3. How can activity-based experiences strengthen foundational numeracy?

Methodology

Research Design

The present study follows a **conceptual and qualitative review-based research design**. It does not claim to report primary survey data or experimental results. Instead, it synthesises educational policy documents, foundational-learning frameworks and relevant pedagogical literature to develop a classroom-oriented framework.

Sources of Information

- National Education Policy 2020-related educational directions;
- NIPUN Bharat guidelines and official foundational-learning resources;
- NCERT's National Curriculum Framework for the Foundational Stage;

- Foundational Learning Study-related information;
- Government and educational resources concerning foundational literacy and numeracy;
- Relevant conceptual literature concerning activity-based, play-based and experiential learning.

The official NIPUN Bharat resources describe foundational learning as involving competencies in reading, writing and numeracy and provide national-level guidance for achieving these outcomes.

Analytical Approach

The sources were analysed thematically around five dimensions:

1. foundational literacy;
2. foundational numeracy;
3. activity-based pedagogy;
4. formative assessment; and
5. Teacher and classroom conditions.

The resulting themes were used to construct a practical framework for primary classroom implementation.

Conceptual Understanding of Foundational Literacy and Numeracy

Foundational literacy refers to the development of basic language and reading-writing competencies that enable children to understand and communicate meaning. It extends beyond recognising letters. Children need to develop oral language, vocabulary, phonological awareness, decoding, reading fluency, comprehension and the ability to express themselves in writing. Similarly, foundational numeracy extends beyond memorising numbers. Children need to develop number sense, quantity understanding, comparison, basic operations, patterns, measurement, spatial understanding and the ability to use mathematical reasoning in simple everyday contexts.

The Government of India's Foundational Learning Study assessed several literacy dimensions, including oral language comprehension, phonological awareness, decoding, reading comprehension and oral reading fluency. Its numeracy component included number identification and comparison, operations, multiplication and division facts, measurement, fractions, patterns and data handling. Approximately 86,000 Grade 3 students from 10,000 schools were covered in the study. This broader understanding is important because a child may correctly pronounce words without understanding their meaning or may perform a memorised mathematical procedure without understanding the underlying concept.

Therefore, foundational learning should be viewed as **understanding plus application**, rather than memorisation alone.

Limitations of Rote-Oriented Primary Learning

Rote learning is not inherently useless. Memorisation has a legitimate role in learning basic facts such as number combinations, vocabulary and multiplication facts. However, excessive dependence on rote methods can create several problems.

Limited Conceptual Understanding

When children repeatedly copy solutions without understanding them, they may be unable to apply knowledge to a new situation.

For example, a child may memorise:

$$7 + 5 = 12$$



but struggle when asked:

"Riya has 7 pencils and receives 5 more. How many pencils does she have altogether?"

The second question requires conceptual understanding and transfer.

Passive Classroom Participation

When the teacher speaks for most of the lesson and children mainly listen and copy, opportunities for questioning, discussion and exploration become limited.

Difficulty Supporting Diverse Learners

Children enter primary school with different experiences. Some may have attended preschool, while others may have had limited early learning opportunities. NCERT's Vidya Pravesh module recognises this diversity and promotes play-based school preparation for Grade I.

Fear of Mistakes

If classroom success is associated primarily with correct written answers, children may become reluctant to experiment or answer questions. Activity-based learning can create opportunities in which mistakes become part of the learning process.

Proposed Classroom Framework

The study proposes the following **ACT-Learn Framework** for primary classrooms.

A – Activate Prior Knowledge

Begin with what children already know.

C – Concrete Experience

Allow children to handle objects, observe, discuss, play and explore.

T – Think and Talk

Encourage children to explain their thinking to teachers and peers.

L – Link to Symbols

Connect concrete experiences with letters, words, numbers, signs and written representations.

E – Explore Further

Provide new examples and slightly more challenging situations.

A – Assess Continuously

Observe children's performance throughout the activity rather than relying only on end-of-unit examinations.

R – Reinforce Individually

Provide additional practice to children who have not yet achieved the expected competency.

N – New Application

Ask children to apply the learning in a different context.

The framework can be represented as:

Prior Knowledge → Activity → Discussion → Representation → Practice → Assessment → Remediation → Application

This sequence provides a bridge between experience and formal academic learning.

Formative Assessment in Primary Classrooms

A simple teacher record can classify performance as:

Level	Description
Emerging	Requires substantial support
Developing	Performs with some assistance
Achieved	Performs independently
Advanced	Applies the competency in unfamiliar situations

Such assessment can help teachers identify learning gaps early. The Foundational Learning Study itself demonstrates the importance of systematic assessment of foundational competencies, including reading and numeracy.

Use of Low-Cost and Local Learning Resources

Activity-based learning does not necessarily require expensive smart classrooms or sophisticated educational technology.

A teacher can create useful learning materials from locally available resources.

Resource	Possible Learning Use
Seeds	Counting, grouping, patterns
Sticks	Shapes, measurement, counting
Bottle caps	Addition, subtraction, sorting
Newspapers	Reading, vocabulary
Leaves	Classification, counting
Local maps	Direction, spatial understanding
Market bills	Numbers, addition, subtraction
Story cards	Language and sequencing
Classroom objects	Measurement and geometry

This approach is especially useful where schools have limited financial or technological resources. The NIPUN Bharat framework explicitly recognises the importance of diversified student and teacher resources and attention to local circumstances and diversity.

Discussion

The analysis suggests that foundational learning is most effectively supported when children are treated as active participants rather than passive recipients of information. The emphasis on play, activity, inquiry and concrete experience in India's foundational-stage framework provides a strong conceptual basis for such an approach. Activity-based pedagogy can contribute to learning through several mechanisms. First, it makes abstract ideas more concrete. Children can physically manipulate objects before learning mathematical symbols. Second, it creates opportunities for language use. Children explain, question, predict and communicate during activities. Third, it allows teachers to observe children's thinking. A written answer may indicate whether an answer is correct, but an activity often reveals why a child arrived at that answer. Fourth, activities can accommodate differences among learners. A child who struggles with written work may demonstrate understanding orally or through objects and pictures. Fifth, activity-based learning can increase learner engagement. Government educational resources associated with NIPUN Bharat emphasise joyful,



engaging and experiential learning at the foundational stage. However, activity-based learning should not be interpreted as unstructured play without educational purpose. Effective classroom activities require clear learning objectives, appropriate materials, teacher questioning and assessment. The central principle should therefore be:

Activity is a means of achieving learning, not an alternative to learning.

Educational Implications

The findings of the conceptual analysis have implications for several stakeholders.

For Teachers

Teachers should design short, purposeful activities connected directly with learning competencies.

For School Leaders

Schools should provide time for teachers to collaborate, develop teaching-learning materials and discuss children's learning progress.

For Teacher Education Institutions

Teacher preparation programmes should include practical training in activity design, formative assessment and differentiated instruction.

For Parents

Parents can support foundational learning through storytelling, conversation, counting household objects, reading together and everyday problem-solving rather than relying exclusively on homework.

For Educational Administrators

Monitoring should focus not only on enrolment and textbook completion but also on whether children are acquiring expected foundational competencies.

Recommendations

Based on the analysis, the following recommendations are proposed:

1. Every primary classroom should include regular activity-based literacy and numeracy experiences.
2. Teachers should use locally available low-cost materials wherever possible.
3. Schools should conduct regular formative assessments of foundational competencies.
4. Learning gaps should be identified early and addressed through targeted support.
5. Storytelling, games, conversation and collaborative activities should become regular components of literacy instruction.

Limitations of the Study

The present paper is conceptual and review-based. It does not report primary data collected from a specific sample of schools or students. Consequently, the proposed ACT-Learn Framework should be tested through empirical classroom research. Future studies could employ:

- experimental designs;
- quasi-experimental designs;



- action research;
- teacher interviews;
- Mixed-method research.

Future empirical studies should also examine differences across rural and urban schools, multilingual settings, government and private schools, and different socioeconomic contexts.

Scope for Future Research

Several research directions emerge from the present study. First, researchers can investigate whether a structured activity-based intervention produces measurable improvements in Grade 1–3 literacy and numeracy. Second, future research can compare conventional instruction with activity-based instruction using pre-test and post-test designs. Third, researchers can examine the effectiveness of locally developed teaching-learning materials. Fourth, research can explore the role of parents in supporting foundational learning at home.

Conclusion

Foundational literacy and numeracy represent much more than the ability to memorise letters, words, numbers and mathematical procedures. They involve the development of understanding, communication, reasoning and the ability to apply knowledge to meaningful situations. The educational priorities reflected in NEP 2020, NIPUN Bharat and the National Curriculum Framework for the Foundational Stage provide a strong basis for moving primary education towards joyful, engaging, activity-based and child-centred learning. The present paper proposes that activity-based pedagogy can serve as an effective bridge between children's everyday experiences and formal academic learning. Stories can develop comprehension; games can strengthen number sense; local materials can make mathematical concepts concrete; group discussions can develop language; and formative assessment can help teachers respond to individual learning needs. Nevertheless, successful implementation requires more than simply adding games to lessons. Activities must be purposeful, developmentally appropriate, connected with learning outcomes and accompanied by systematic assessment.

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