The International Journal of Indian Psychology
ISSN 2348-5396 (Online) | ISSN: 2349-3429 (Print)
Volume 14, Issue 2, April- June, 2026
DIP: 18.01.209.20261402, DOI: 10.25215/1402.209
https://www.ijip.in

Research Paper

Enhancing Foundational Learning Through Activity-Based Approaches: A Qualitative Study

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ABSTRACT

In accordance with Jean Piaget's Cognitive Development Theory, children undergo four universal chronological stages in which they actively develop knowledge through interactions with their environment. The study emphasises creating joyful, engaging and learner-oriented environments that support Foundational Literacy and Numeracy (FLN) as proposed by National Education Policy (NEP) 2020. Observations were carried out for three activities: Pattern Making, Sensory Walk and 'A' Family Words by the investigator at Chitkara International School, Panchkula, Haryana, India, involving a sample size of 21 students of the foundational stage (age 5 only). The Process involved formal interventions in the form of activities. The activities resulted in an improvement of student participation and engagement. The study promoted innovative and child-friendly approaches to teaching that foster early literacy, numeracy and cognitive skill development.

Keywords: *Foundational Literacy and Numeracy (FLN), Sustainable Development Goals (SDGs), Motor Skills, Socio-emotional Development, Experiential Learning*

Cognitive development in early childhood (ages 3-8) is a major time in which children actively construct knowledge through interactions in their environment. Piaget's Cognitive Development Theory (1952), describes early childhood as the transition between sensorimotor thought to early concrete operational thought which brings on symbolic thinking, basic language development and logical reasoning. India's NEP 2020 so accurately recognizes this time; it has implemented the Foundational Stage (ages 3-8) questionnaire in its 5+3+3+4 curriculum with a strong focus on children's play and activity-based learning for foundational literacy and numeracy (FLN), socio-emotional growth and development and motor skills. Foundational Stage pedagogy is child-centric, and its approach recognizes the importance of continuous assessments, which align in many ways with Piaget's view as a constructivist. Piaget (1972), emphasized children as active learners, and recognized that this process involves active learning through doing new tasks and constructing new meanings by

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Received: April 13, 2026; Revision Received: June 11, 2026; Accepted: June 15, 2026

assimilating and accommodating. Indah's (2024), studies changes to vocabulary, memory and symbolic thinking of 4–6-year-old children in an educational storytelling setting with hand puppets as the lead characters. Many other studies (Indian) have found that play-based preschool curricula enables and strengthens literacy and numeracy outcomes while keeping in line with the SDG 4 (quality education) and SDG 3 (child, health and well-being). The current study is taking place at Chitkara International School, Panchkula with 21 students (ages 3-8) in settings such as reading, free play, outdoor school games and experiential activities, including puppetry stories, cooperative group tasks, skills-based activities, visual behaviour schedules (to facilitate positive reinforcement) in a free play setting. The current research project grounded in Piaget's theory and NEP 2020 is expecting to observe group engagement, communication (communication skills), motor coordination, self-regulation and an increase in positive behaviour.

Theoretical Framework

This is based on Piaget's Cognitive Development Theory, and it's relation to the preoperational stage (2-7 years), where they develop symbolic representation, intuitive logic and imaginative play (Piaget, 1952). Each area contributes to language and cognitive, creative and motor function, and social and emotional development, and activities which include phonetics, symbols and patterns, and sense perception, contribute to the development of symbolic thought and incremental progress towards rational thought, and their coordination and creativity. Corresponding to these areas of development, research places activity-based instruction in the Piagetian constructivist tradition, and aligns with the child-centered reforms of India's NEP 2020 foundational phase.

LITERATURE REVIEW

Activity-Based Learning and Early Childhood Development

Educational experiences that embrace responsive and productive modalities such as active play, social participation and hands-on explorations are perhaps most in line with the mindset of Piaget. The research has shown that when educational content can be matched with children’s developmental readiness, young learners tend to engage with deeper learning and internalize the concepts better (Lefa, 2014). Activity-Based Learning (ABL) as an approach has received widespread acceptance as an effective learning approach in early childhood learning contexts, using play, movement, stories and the world around them to engage children meaningfully, cognitively, physically, and emotionally. In India, the National Education Policy (NEP) 2020, supports joyful, experiential, playful and learner-centred processes for foundational learning that align with the goals of the FLN initiative and the tenets of Piagetian theory. Nandhini and Sharda's (2021) research on the impact of music, storytelling, and role-play (on children’s language acquisition and emotional expression) showed positive developments for children engaging in ABL activities. Similarly, Chauhan’s (2019) study reported significant improvements in preschool children’s attention span, which supported deeper comprehension, through kinesthetic learning in preschool classrooms. Indah’s (2024) study using hand puppet-based storytelling with children aged 4-6 reported significant improvements with symbolic thinking, vocabulary retention and improvements in social interaction. This is consistent with Piaget’s social constructivist view that imaginative play and symbolic manipulation underpin children's learning at this stage of development. Initiatives like the National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN) Bharat seek to operationalize these practices through.

Data and variables

Sample:
The study was conducted in the kindergarten section of Chitkara International School, Panchkula, Haryana, India. Twenty-one students were observed doing their regular classroom activities.

Operational definitions of variables

- **Cognitive and language abilities:** Cognitive and language abilities were operationally defined as a child's independence in performing tasks, peer assistance, or teachers' scaffolding during classwork (Vygotsky, 1978).
- **Creativity and motor abilities:** Creativity and motor ability were operationally defined as a child's reproduction or creation of tasks, paintings, or movements during classwork (Guilford, 1967).
- **Social-emotional learning:** Social and emotional development was operationally defined as a child's ability to cooperate and manage feelings individually, in pairs, or in groups (Denham, 2006).

Research Questions

- **RQ1:** What is the extent of activities like 'a' Family Words in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students?
- **RQ2:** What is the extent of activities like 'Pattern Making' in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students?
- **RQ3:** What is the extent of activities like 'Sensory Walk' in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students?

Research Objectives

- **Objective 1:** To study the extent of activities like 'a' Family Words in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students.
- **Objective 2** To study the extent of activities like 'Pattern Making' in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students.
- **Objective 3:** To study the extent of activities like 'Sensory Walk' in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students.

METHODOLOGY

Conceptual Framework

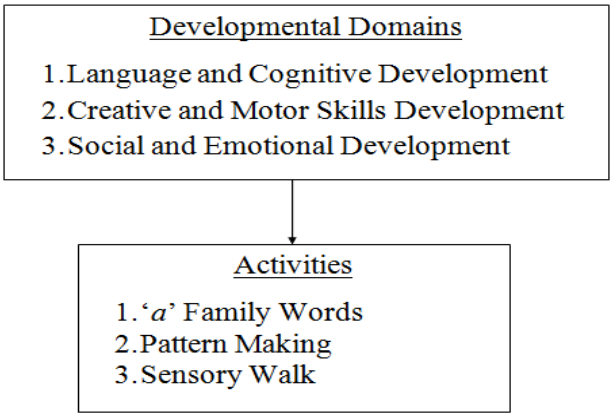

Figure 1: Conceptual Framework
(Source: Author's compilation)

The conceptual framework for this study will be organized around three main developmental domains: language and cognition development, creative and motor skills and social and emotional learning. To inform these domains, pattern making, sensory walks, and 'A' family word games were implemented into the classroom. Together, these activities provided an integrative approach to the developmental domains identified.

Observation: As a qualitative research method, observation captures authentic and immediate views of participants' natural inclinations and behaviours without interfering with their setting (Creswell & Creswell, 2018). The researcher recorded children's daily behaviours including documented learning behaviours and interaction behaviours with teachers and peers.

Empirical Results (Qualitative Analysis)

The three activities, their description, observation and analysis, are reported as follows in a qualitative analysis of the three activities:

Activity 1: 'a' Family Words

***Description*:** The '*a*' Family Words activity was created to help develop children's phonic awareness, word knowledge and confidence in a fun and engaging way. A group of 21 students participated in the activity where each student rolled a coloured dice and then identified a concept word card on the chart corresponding to the colour of the dice they rolled. The matched concept word was an 'a family' word (for example an or at words) and asked the students to read aloud the word. The activity aimed to develop the students' language and cognitive development by developing phonic awareness, word recognition and pronunciation. The domain-wise observation analysis answers the RQ 1: What is the extent of activities like 'a' Family Words in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students?

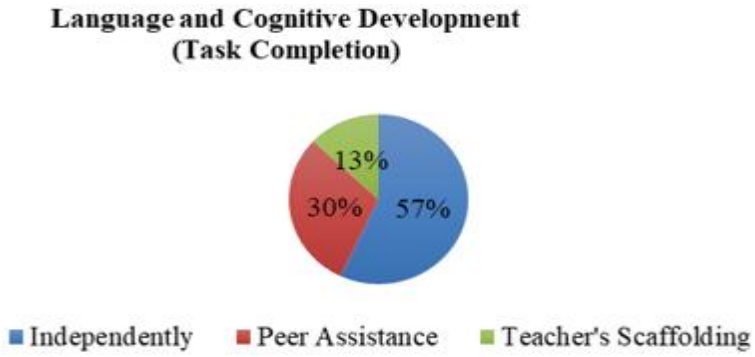

Figure 2.1
(Source: Author's compilation)

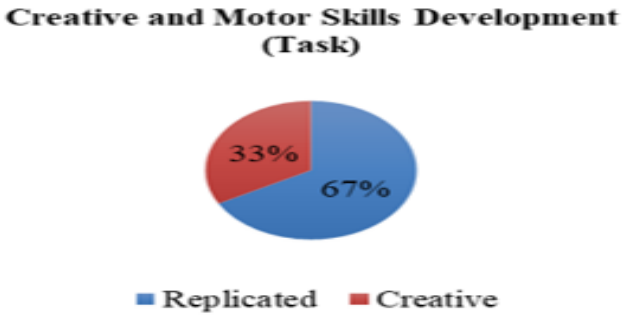

Figure 2.2
(Source: Author's compilation)

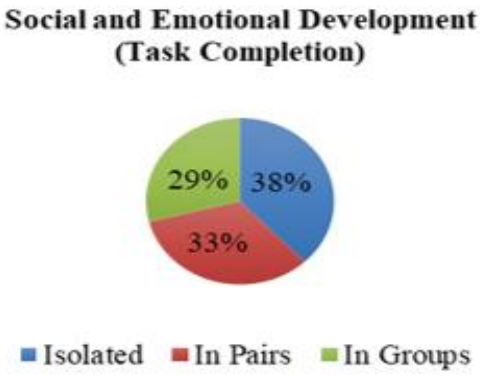

Figure 2.3
(Source: Author's compilation)

***Observation and Analysis*:**
Language and Cognitive Development: Data in Figure 2.1 clearly indicated that 57% of students could exhibit independent phonics awareness, 30% could read words in peer collaboration, representing language and cognitive gains. However, 13% of students required teachers' scaffolding in the pronunciation aspect, representing a continuing need for practicing and guiding in the independent reading of words. In efforts to enhance skill-building improvements, teaching approaches in the future might also include systematic work in phonics, practicing phonics in multisets as well as multisensory teaching approaches like phonics games, rhymes and visual supports.

Creative and Motor Skills Development: Graphic outcomes from Figure 2.2 illustrated that 38 % of children exhibited mastery in manipulating dice, i.e., development in motor skills. In addition, 29 % of children exhibited color matching of dice to chart sheets, i.e., combination of cognitive and motor skills. Finally, 33 % of children constructed new words through word families, i.e., 'an' and 'at', signifying their creativity and language and cognitive development.

Social and Emotional Development: As illustrated by the Figure 2.3 graph, 38% of learners worked alone, which involved listening and following the direction of their teachers' providing indications of self-regulation and social learning. Also, 33% of the learners worked in pairs (cooperative and turn taking), providing indication of some improvement in social/emotional behaviour. In addition, 29% of learners worked in groups, reading words with some level of confidence, providing indications of improvement in social/emotional behaviour and improvements in language.

Activity 2: Pattern Making

Description*: The 'Pattern Making'* activity had students creating alternating patterns in coloured boxes. The activity demonstrated the student's thinking process in designing and recognizing patterns, but also their ability to collaborate with partners, and using precise motor movements. The observation analysis domain-wise answers the RQ 2: What is the extent of activities such as '*Pattern Making'* in developing language and cognitive, creative and motor and social-emotional skills in kindergarten children?

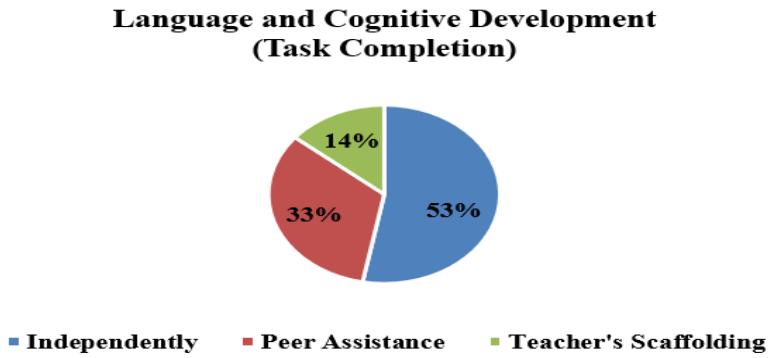

Figure 3.1
(Source: Author's compilation)

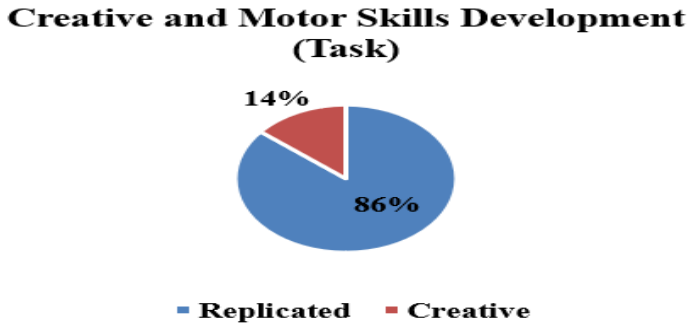

Figure 3.2
(Source: Author's compilation)

***Observation and Analysis*:**

Language and Cognitive Development: As indicated in Figure 3.1, nearly 52% of students completed the activities by themselves (i.e., simply increased their knowledge) and this pre-

existing cognitive result is not a great contributor to language increase. In other words, for that 52 percent of children, they simply engaged in cognitive increase but it had little to no impact on improvement of language. The 33% of students that co-operated with each other, (i.e., contributed to both cognitive and language increase via co-operation). In addition, there were 14% of students that needed teacher intervention. The teachers either spoke to such students or used their body language, so that students could be properly engaged in either the cognitive or language aspects of the activities.

Creative and Motor Skills Development: Figure 3.2 shows the data indicates only 14% of students created innovative patterns and 86% copied patterns shown by the teacher. The data suggests students mainly followed rules rather than generating their own ideas. The data suggests that teaching to this point has a deficit, because teaching is largely deductive when a predetermined model is shown and asked to replicate.

Social and Emotional Development: Referring back to Figure 3.1 for this domain, it was shown how pattern-making activities supported social interaction, cooperation and emotional regulation for kindergarten children. The results reported different levels of social engagement: 52% of children worked alone, which suggested that while they were able to focus and self-regulate their emotions, there was little opportunity for social skills practice. In contrast, children who worked together as pairs or groups received support for turn-taking and shared ideas, subsequently fostering social interaction and assisting them in regulating emotions when working collaboratively.

Activity 3: Sensory Walk

Description*:* The Sensory Walk activity was an opportunity to stimulate children's senses and promote expressive learning through being able to walk barefoot and feel different materials underfoot or taste sugar/salt. This activity allowed children to identify their experiences with descriptive words including cold, soft, rough, hard, sweet, and salty. It was intended to enrich students' vocabulary words and language expressiveness, motor coordination, social engagement, and emotional expression. The domain-wise observation analysis answers the RQ 3: What is the extent of activities like *'Sensory Walk'* in the development of language and cognitive, creative and motor and social-emotional skills among kindergarten students?

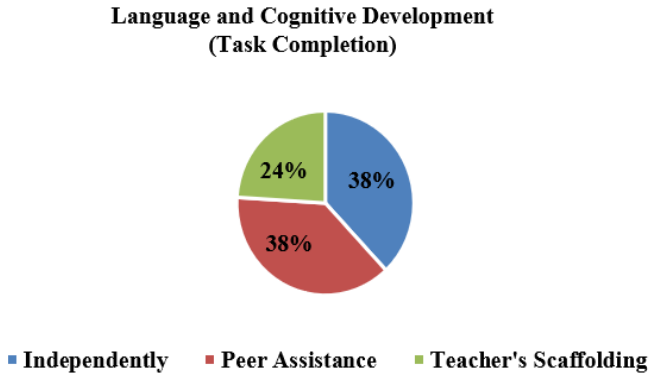

Figure 4.1

(Source: Author's compilation)

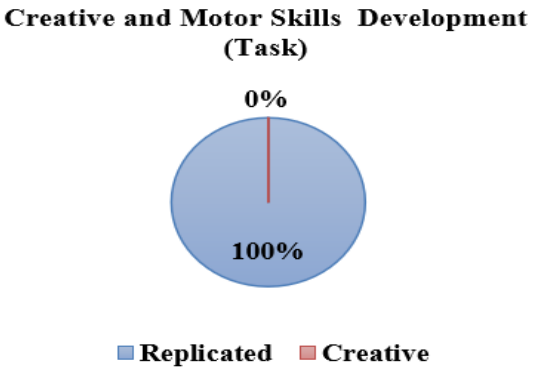

Figure 4.2
(Source: Author's compilation)

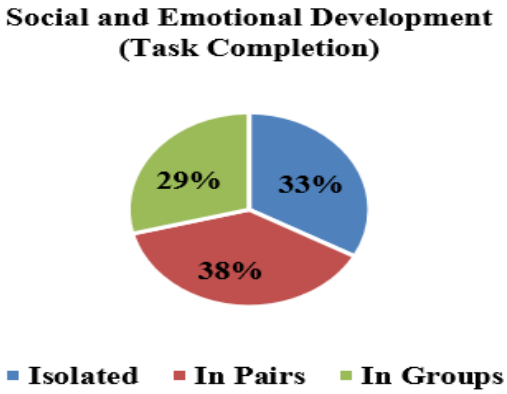

Figure 4.3
(Source: Author's compilation)

Language and Cognitive Development: As displayed in Figure 4.1, 38% of students identified being able to express feelings on their own during walks across a variety of textures and surfaces, which indicates clear developments in their language and cognitive skills. 38% reported it was through their peers' support to express themselves, which suggests they are a little less able and require a peer stimulus to express themselves. There were 24% of students who required teachers' scaffolding, indicating they are dependent on formal direction to achieve and develop their language and cognitive outcomes. Overall, these results demonstrate that in addition to most children in a position of healthy wellbeing, other children require a little nudge and even some formal support.

Creative and Motor skills Development: Figure 4.2 suggests that 43% of the children exhibited proficient balancing skills, indicating significant progress in developing motor skills. Additionally, 38% independently ventured to support contrasting textures as part of their sensory walk and described how they felt, indicating development in language and cognition. Further, 19% developed skills differentiating characteristics, developing their version of an activity, e.g., tiptoe walks, while others attempted to repeat a demonstrated skill, indicating children were integrating creativity into developing their motor skills. These results indicate that children are making progress in multiple skill areas, i.e., motor, language, cognition and creativity.

Social and Emotional Development: As depicted in Figure 4.3, it shows that 38 % of students collaborated with another student, which shows growth and levels of social and emotional

development. Meanwhile, 33% of the students chose to work alone; therefore, they had significantly limited experiences with social interaction and limited opportunities for language development. Moreover, 29% of the students were grouped; their ability to work together suggests their effective use of social skills.

DISCUSSION AND CONCLUSION

Play and experiential learning activities worked well to assist students with early language learning, and they also assisted in cognitive, motor and social development. Storytelling, creating patterns and sensory walks are just a few of the activities that inspired children to be innovative, express themselves and work together on a project idea. Structured opportunities for individual and group tasks allowed for equitable growth and inclusion. Teachers should provide access to balanced learning opportunities, which prompt conversation, autonomy and social and emotional growth, with the idea that these experiences will help students build a solid foundation for lifelong learning.

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Acknowledgment

I want to thank all the Chitkara International School administration and staff for their help, support and contributions to this study. Their willingness to share their thoughts and experiences has been very helpful in finishing this research.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Kaur, H., Joel, A., Guleria, J., Parmar, S. & Pant, S. (2026). Enhancing Foundational Learning Through Activity-Based Approaches: A Qualitative Study. *International Journal of Indian Psychology*, *14*(2), 2290-2298. DIP:18.01.209.20261402, DOI:10.25215/1402.209