**A Study on Effectiveness of FLN Workbooks Developed by SCERT, Odisha, India**

**Abstract**

Foundational literacy and numeracy (FLN) in early primary years are globally recognized as prerequisites for lifelong learning, and are a central priority of India’s NEP 2020 and the NIPUN Bharat Mission. This study assesses teachers’ perceptions of the effectiveness of SCERT Odisha’s FLN workbooks and examines whether these perceptions vary by gender and years of teaching experience. A descriptive survey design was used with 60 teachers selected through multi-stage sampling. Data were collected via bilingual printed questionnaires and analysed using descriptive and non-parametric statistical techniques. Hence, the research approach was quantitative. The study found that female teachers consistently rated the FLN workbooks more positively than male teachers across all foundational literacy and numeracy skills. Similarly, mid-career teachers (10 – 30 years) were more positive about the FLN workbooks while teachers with 0 -10 years of experience and more than 30 years of experience were more conservative in their evaluations. However, upon statistical treatment, the differences were not found to be significant for most FLN skills. This study concludes that SCERT Odisha’s FLN workbooks are effective tools for developing foundational literacy and numeracy. Findings suggest that differentiated, gender-responsive, and experience-sensitive teacher training may enhance the impact of FLN workbooks, contributing to the broader goals of the NIPUN Bharat mission.

**Keywords:** Foundational Literacy, Foundational Numeracy, FLN Workbooks, Teacher Perception, SCERT Odisha, NIPUN Bharat

**INTRODUCTION**

Foundational literacy and numeracy (FLN) have become urgent educational priorities on a global scale. It has been reported that over 70% of children in low and middle income countries are unable to read and comprehend a simple text by the age of 10. (World Bank & UNESCO, 2022, p8). This crisis has been further exacerbated by school closures that has occurred during the COVID-19 pandemic. (UNICEF, 2021; Baze, 2023)

Under the National Education Policy (NEP) 2020, the Government of India initiated the NIPUN Bharat Mission (National Initiative for Proficiency of reading with Understanding and Numeracy) in response to this learning crisis. The mission's primary objective is to achieve FLN by the conclusion of Grade 3. The policy emphasises that “The rest of this policy will become relevant for our students only if this most basic learning requirement (i.e., reading, writing, and arithmetic at the foundational level) is first achieved.” (NEP, 2020, p8).

Beginning in 2021–22, the State Council of Educational Research and Training (SCERT), Odisha, implemented FLN workbooks for Classes 1 to 3 in government institutions as part of this initiative. The primary objective of these workbooks is to ensure that every child in Odisha achieves the necessary reading, writing, and arithmetic skills by the end of Class III. The content of the workbooks include identifying attributes of the objects, spatial relations, shapes, pre-counting, mathematization, number sense, measurement & geometry, etc. They also include activities for improving language competencies like phonemic awareness, vocabulary building, reading comprehension and writing skills, etc. There are also activities to improve the critical thinking skills among learners and exercises to enhance the aspect of socio-emotional learning. Nevertheless, the effectiveness of these materials is contingent upon their implementation and perception by teachers, in addition to their design.

This study examines the effectiveness of the FLN workbooks developed by SCERT Odisha, from the primary school teachers’ perceptions. It also investigates whether these perceptions differ based on gender and years of teaching experience, providing valuable insights into the dynamics of implementation at the grassroots level.

**CONCEPTUAL FRAMEWORK**

The National Education Policy (NEP) 2020 identifies the attainment of FLN skills as the highest priority in primary education. In alignment with this directive and the learning goals articulated in the NIPUN Bharat Mission, this study adopts a domain-based framework to conceptualise and measure the effectiveness of FLN interventions.

Accordingly, FLN is operationalised across two key domains – Foundational Literacy and Foundational Numeracy – each further delineated into specific skill areas that represent essential developmental milestones. These also reflect key competencies outlined in NIPUN Bharat’s learning outcomes framework.

* The Foundational Literacy domain comprises eight skill areas: oral language development, phonological awareness, decoding, vocabulary, reading comprehension, reading fluency, concept of print, and writing.
* The Foundational Numeracy domain includes five skill areas: pre-number concepts, operations on numbers, measurement, shapes and spatial understanding, and patterns.

These domains informed the development of the teacher perception tool used in this study. Teachers were asked to evaluate the effectiveness of the SCERT Odisha FLN workbooks in promoting each skill area, using a five-point ordinal scale. The framework thus, serves to guide the data collection, analysis, and interpretation of results in alignment with national policy goals.

**REVIEW OF LITERATURE**

FLN serve as the bedrock for all future learning and significantly influence academic success and life outcomes. A substantial body of research highlights the need for early and systematic instruction in key areas of literacy and numeracy, supported by culturally responsive pedagogy and inclusive educational practices. Effective development of these skills also relies on consistent reinforcement at home and in school.

Early literacy development involves essential skills like oral language and phonological awareness, which are key to reading and writing. Scholars such as Abrorovna (2022), Yekple et al. (2022) and Kayser et al. (2025), stress culturally sustaining oral literacy instruction. Phonological awareness, crucial for decoding and word recognition, is highlighted by Siregar et al. (2023), Almeida (2024) and Nkurunziza (2024), and as vital for fluent reading and should be systematically integrated into early childhood education.

Decoding—the ability to sound out printed words—is a key skill that directly affects reading fluency and comprehension. Researchers like Crawford et al. (2024) and Abernathy (2024) highlight its connection to vocabulary growth and language development. Vocabulary, in turn, supports both oral and written communication and is vital for academic success. Studies by Miolo et al. (2023), Corpuz et al. (2024) and Green and McLachlan (2024) stress its role in helping children shift from learning to read to reading to learn. Reading comprehension is essential for critical thinking, multiple literacies, and lifelong learning, as emphasised by Nguyen and Do (2022), Antić and Stevanović (2024) and Apiles (2025). Finally, reading fluency, the bridge between decoding and comprehension, greatly influences academic performance, warranting systematic instruction (Begeny et al., 2023; Bessie & Rahayu, 2023; Vaidya et al., 2024).

Print awareness, or the concept of print, is an early literacy skill that reflects a child’s understanding of how text works. Khosa (2025) and Lara-Gonzalez et al. (2023) recognise its role as a predictor of later reading success. Writing forms the culminating skill in foundational literacy. Barnett et al. (2020) , Hodges et al. (2021), and Farrow et al. (2024), argue that writing supports academic achievement and must be cultivated from the early years.

Early numeracy development includes both conceptual and procedural knowledge. Pre-number concepts such as matching, comparing, and pattern recognition lay the groundwork for number sense. Idris and Jamil (2024) and Cheung et al. (2024) highlight the link between these early skills and followed by arithmetic proficiency. Number operations are central to developing mathematical thinking. Jordan et al. (2022), and Lyons and Ansari (2015) explore how symbolic and non-symbolic number processing influence cognitive and academic growth.

Measurement skills integrate both cognitive and psychomotor abilities, essential for scientific inquiry. Research by Saffrina and Baidullah (2024) and Maral et al. (2012) support the need for early and ongoing assessment of measurement competencies. Shapes and spatial understanding are crucial for problem-solving and STEM-related learning. Thom and Hallenbeck (2021) and Wen (2024) argue for the inclusion of visual and spatial reasoning in early numeracy curricula. Pattern recognition helps children understand and apply abstract mathematical concepts. Burgoyne et al. (2017) and Winn and Keuskamp (2007) emphasise its importance in contextual learning and general mathematical reasoning.

In India, various challenges and strategies have been identified for improving FLN outcomes. Shahane (2024) highlights the role of school libraries in promoting literacy in under-resourced areas, while Sthapak and Sawlani (2024) stress the need for inclusive approaches. Chandra (2024) explores systemic barriers and proposes mitigation strategies. Kumar and Behera (2022) show how home environment—particularly parental education and engagement—directly influence FLN development.

This body of literature clearly establishes the centrality of foundational literacy and numeracy for lifelong learning and holistic development. Effective FLN instruction requires early exposure, contextually relevant materials, and consistent reinforcement across home and school. However, limited empirical research has examined the effectiveness of FLN workbooks developed by SCERT Odisha from the perspective of teachers – those responsible for actual classroom implementation. This study seeks to address that gap by assessing teacher perceptions of the FLN workbooks’ effectiveness across literacy and numeracy domains.

**RESEARCH OBJECTIVES**

The objectives of the study are as follows:

1. To assess the teachers’ perception of effectiveness of FLN workbooks developed by SCERT Odisha in developing FLN skills
2. To compare teachers’ perception of effectiveness FLN workbooks developed by SCERT Odisha **in developing FLN skills** based on gender and years of teaching experience

**METHODOLOGY**

***Research Design:*** The study employed descriptive survey research design to quantitatively assess perceptions of primary school teachers, regarding effectiveness of FLN workbooks, developed by SCERT Odisha. This design enabled the researcher to systematically gather data from defined group of teachers and analyse their responses to understand trends and variations in their experiences with the workbooks.

***Population, Sampling Technique, and Sample Description:*** The population for this study comprised all teachers who used FLN workbooks to equip students of Classes 1 to 3 with FLN skills in government schools within Padmapur block of Rayagada district, Odisha.A multi-stage sampling technique was adopted. In the first stage, 5 clusters within the block were selected using simple random sampling. In the second stage, 28 schools within the selected clusters were chosen through convenience sampling. Finally, 60 teachers (27 females & 33 males) from these schools participated in the study and formed the sample. The size and composition of the sample were determined by practical considerations, such as time, accessibility, school cooperation and logistical feasibility.

***Tool Description:*** The researcher developed a structured, bilingual (English and Odia) questionnaire to assess teacher perceptions of the effectiveness of the FLN workbooks. The tool comprised three sections. Section I included an informed consent form emphasizing voluntary participation, confidentiality, and the right to withdraw, with space for participant signatures to seek their consent. Section II gathered demographic details such as name, gender, age, qualification, teaching experience, school name, and type, enabling subgroup analysis. Section III assessed perceptions of workbook effectiveness in two domains—foundational literacy and foundational numeracy—using a five-point ordinal scale: 1 = Not Effective to 5 = Highly Effective. The content of the tool was aligned with NEP 2020, NIPUN Bharat learning outcomes, and existing literature. Domain experts reviewed the items to ensure content and face validity. The scale demonstrated high reliability, with a Cronbach’s Alpha of 0.987.

***Data Collection and Analysis Procedure:*** Permission for data collection was secured from the Block Education Officer. Finalized questionnaires were personally distributed to teachers in selected schools, with clear instructions and sufficient time for completion. Completed forms were authenticated with signatures, school stamps, and dates, then digitized via Google Forms and compiled in Google Sheets. Data cleaning, tabulation, and analysis were conducted using Microsoft Excel and JAMOVI.

Frequency distributions were analysed through percentage analysis and visualised using heatmaps to highlight perception intensity across foundational literacy and numeracy domains. Descriptive statistics—including mean, median, mode, range, minimum, maximum, skewness (–0.588 to 0.130 for all items), and kurtosis (–1.08 to 0.804 for all items)—summarised data characteristics. The Shapiro–Wilk test confirmed non-normal score distributions (W < 0.8, p < 0.001 for all items). Consequently, non-parametric tests were employed: the Mann–Whitney U test to assess gender differences and the Kruskal–Wallis H test to examine variations based on teaching experience.

**ANALYSIS AND RESULTS**

**Table 1.** *Descriptive Statistics of FLN Scores*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No. | Skills | Mean (µ) | Median | Standard Deviation (σ) | Min | Max | Range |
| Foundational Literacy skills | |  |  |  |  |  |  |
| 1. | Oral Language Development | 18.3 | 18.5 | 3.6 | 10 | 25 | 15 |
| 2. | Phonological Awareness | 10.9 | 12 | 2.1 | 6 | 15 | 9 |
| 3. | Decoding | 14.4 | 15 | 3.0 | 8 | 20 | 12 |
| 4. | Vocabulary | 6.9 | 7 | 1.6 | 4 | 10 | 6 |
| 5. | Reading Comprehension | 13.4 | 13 | 3.6 | 6 | 20 | 14 |
| 6. | Reading Fluency | 14.3 | 14 | 3.5 | 6 | 20 | 14 |
| 7. | Concept of Print | 6.9 | 7 | 1.5 | 3 | 10 | 7 |
| 8. | Writing | 10.2 | 11 | 3.0 | 3 | 15 | 12 |
| Foundational Numeracy skills | |  |  |  |  |  |  |
| 1. | Pre-Number Concept | 11.3 | 12 | 2.1 | 6 | 15 | 9 |
| 2. | Operation on Numbers | 30.3 | 30 | 6.1 | 16 | 40 | 24 |
| 3. | Measurement | 14.5 | 15 | 3.7 | 5 | 20 | 16 |
| 4. | Shapes and Spatial Understanding | 17.3 | 17.5 | 4.3 | 6 | 25 | 19 |
| 5. | Patterns | 17.3 | 17.5 | 4.4 | 7 | 25 | 18 |

Table 1 presents descriptive statistics for eight foundational literacy skills and five foundational numeracy skills. The mean scores indicate moderate to high perceived effectiveness across most domains, with "Operation on Numbers" (µ = 30.3, σ = 6.1) and "Oral Language Development" (µ = 18.3, σ = 3.6) showing the highest means in their respective categories. Skills like "Vocabulary" and "Concept of Print" had lower mean scores (both µ = 6.9), suggesting relatively lower perceived effectiveness. The range of scores reflects notable variability in responses, and the standard deviations indicate moderate dispersion, suggesting differences in teacher perceptions across various skills.

**Table 2.** *Norm Table*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl. No. | Skills | Score Range | | |
| Foundational Literacy skills | | **Negative**  **(MinPS to 0.6 MaxPS)** | **Neutral**  **(0.6 MaxPS -0.75 MaxPS)** | **Positive**  **(0.75 MaxPS to MaxPS)** |
| 1. | Oral Language Development | 5 – 15 | 15 – 18.75 | 18.75 – 25 |
| 2. | Phonological Awareness | 3 – 9 | 9 – 11.25 | 11.25 – 15 |
| 3. | Decoding | 4 – 12 | 12 – 15 | 15 – 20 |
| 4. | Vocabulary | 2 – 6 | 6 – 7.5 | 7.5 – 10 |
| 5. | Reading Comprehension | 4 – 12 | 12 – 15 | 15 – 20 |
| 6. | Reading Fluency | 4 – 12 | 12 – 15 | 15 – 20 |
| 7. | Concept of Print | 2 – 6 | 6 – 7.5 | 7.5 – 10 |
| 8. | Writing | 3 – 9 | 9 – 11.25 | 11.25 – 15 |
| Foundational Numeracy skills | |  |  |  |
| 1. | Pre-Number Concept | 3 – 9 | 9 – 11.25 | 11.25 – 15 |
| 2. | Operation on Numbers | 8 – 24 | 24 – 30 | 30 – 40 |
| 3. | Measurement | 4 – 12 | 12 – 15 | 15 – 20 |
| 4. | Shapes and Spatial Understanding | 5 – 15 | 15 – 18.75 | 18.75 – 25 |
| 5. | Patterns | 5 – 15 | 15 – 18.75 | 18.75 – 25 |

*Note:* MinPS – Minimum Possible Score, MaxPS – Maximum Possible Score

Table 2 presents a norm table that categorizes teachers' perception scores into three levels: *Negative* (from minimum possible score to 0.6 of the maximum possible score), *Neutral* (0.6 to 0.75 of the maximum possible score), and *Positive* (0.75 to maximum possible score). This classification reflects the structure of the 5-point rating scale used in the tool—ranging from *Not Effective* to *Highly Effective*. The thresholds were chosen to align with the semantic weight of the scale, where responses below 60% suggest dissatisfaction, 60–75% indicate ambivalence or neutrality, and above 75% reflect clearly favourable perceptions of the FLN workbooks. The norm table serves as a reference framework for identifying the overall intensity of perceived effectiveness, allowing the researcher to interpret raw scores meaningfully and compare trends across different demographic groups within the sample.

**Table 3.** *Comparison of FLN scores based on gender*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Skills** | **Gender** | **-** | **o** | **+** | **‘U’** | **‘p’** | **Decision on null hypothesis** |
| **statistic** | **value** |
| **Foundational Literacy skills** | |  |  |  |  |  |  |  |
| **1** | Oral Language Development | Male | 15 | 36 | 48 | 436 | 0.887 | Accept |
| Female | 19 | 30 | 52 |
| **2** | Phonological Awareness | Male | 15 | 42 | 42 | 368 | 0.238 | Accept |
| Female | 19 | 19 | 63 |
| **3** | Decoding | Male | 18 | 42 | 39 | 362 | 0.209 | Accept |
| Female | 11 | 30 | 59 |
| **4** | Vocabulary | Male | 18 | 52 | 30 | 333 | 0.086 | Accept |
| Female | 15 | 30 | 56 |
| **5** | Reading Comprehension | Male | 24 | 52 | 24 | 371 | 0.268 | Accept |
| Female | 22 | 30 | 48 |
| **6** | Reading Fluency | Male | 21 | 45 | 33 | 372 | 0.272 | Accept |
| Female | 22 | 26 | 52 |
| **7** | Concept of Print | Male | 12 | 58 | 30 | 409 | 0.583 | Accept |
| Female | 15 | 41 | 44 |
| **8** | Writing | Male | 27 | 36 | 36 | 428 | 0.799 | Accept |
| Female | 30 | 26 | 44 |
| **Foundational Numeracy skills** | |  |  |  |  |  |  |  |
| **1** | Pre-Number Concept | Male | 9 | 48 | 42 | 354 | 0.162 | Accept |
| Female | 4 | 26 | 70 |
| **2** | Operation on Numbers | Male | 12 | 52 | 36 | 365 | 0.232 | Accept |
| Female | 4 | 44 | 52 |
| **3** | Measurement | Male | 18 | 45 | 36 | 361 | 0.204 | Accept |
| Female | 15 | 44 | 41 |
| **4** | Shapes and Spatial Understanding | Male | 24 | 30 | 45 | 393 | 0.433 | Accept |
| Female | 15 | 37 | 48 |
| **5** | Patterns | Male | 58 | 42 | 0 | 336 | 0.101 | Accept |
| Female | 48 | 52 | 0 |

*Note:* ‘-’ negative perception, ‘o’ neutral perception, ‘+’ positive perception

Table 3 displays the frequency and percentage of teacher responses on the effectiveness of FLN workbooks across various skill areas. Most responses are in the "Effective" and "Highly Effective" categories, reflecting overall positive perceptions. However, lower ratings in areas like “concept of print” and “patterns” suggest room for improvement. The accompanying heatmap highlights these patterns—green indicates higher frequencies, red lower ones—clearly showing strengths, gaps and differences in perception. Additionally, the “U” statistics and p-values (all > 0.05) reveal no significant gender-based differences in perceptions of workbook effectiveness for developing FLN skills.

**Table 4.** *Comparison of Foundational Literacy scores based on years of teaching experience (YOE)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Skills** | **YOE** | **-** | **o** | **+** | **‘H’** | **‘p’** | **Decision on null hypothesis** |
| **statistic** | **value** |
| **Foundational Literacy skills** | |  |  |  |  |  |  |  |
| **1** | Oral Language Development | 0-10 | 20 | 50 | 30 | 3.87 | 0.276 | Accept |
| 10-20 | 17 | 33 | 50 |
| 20-30 | 13 | 25 | 63 |
| 30+ | 25 | 38 | 38 |
| **2** | Phonological Awareness | 0-10 | 40 | 30 | 30 | **9.21** | **0.027** | **Reject** |
| 10-20 | 11 | 33 | 56 |
| 20-30 | 8 | 25 | 67 |
| 30+ | 25 | 50 | 25 |
| **3** | Decoding | 0-10 | 20 | 50 | 30 | 5.75 | 0.125 | Accept |
| 10-20 | 11 | 33 | 56 |
| 20-30 | 13 | 25 | 63 |
| 30+ | 25 | 63 | 13 |
| **4** | Vocabulary | 0-10 | 30 | 30 | 40 | **7.93** | **0.048** | **Reject** |
| 10-20 | 17 | 39 | 44 |
| 20-30 | 8 | 38 | 54 |
| 30+ | 25 | 75 | 0 |
| **5** | Reading Comprehension | 0-10 | 30 | 40 | 30 | 1.97 | 0.578 | Accept |
| 10-20 | 28 | 33 | 39 |
| 20-30 | 17 | 46 | 38 |
| 30+ | 25 | 50 | 25 |
| **6** | Reading Fluency | 0-10 | 30 | 40 | 30 | 3.53 | 0.317 | Accept |
| 10-20 | 22 | 28 | 50 |
| 20-30 | 17 | 38 | 46 |
| 30+ | 25 | 50 | 25 |
| **7** | Concept of Print | 0-10 | 30 | 50 | 20 | 7.58 | 0.056 | Accept |
| 10-20 | 6 | 50 | 44 |
| 20-30 | 8 | 46 | 46 |
| 30+ | 25 | 63 | 13 |
| **8** | Writing | 0-10 | 50 | 30 | 20 | 6.03 | 0.11 | Accept |
| 10-20 | 22 | 28 | 50 |
| 20-30 | 21 | 29 | 50 |
| 30+ | 38 | 50 | 13 |

Table 4 explores how teachers’ perceptions of foundational literacy skills differ by experience levels (0–10, 10–20, 20–30, and 30+ years). Significant differences appear in Phonological Awareness (p=0.027) and Vocabulary (p=0.048). Mid-career teachers (10–30 years) show more positive views, with 56% and 67% favouring Phonological Awareness, compared to 30% (early-career) and 25% (late-career). A similar trend is seen in Vocabulary, with no positive ratings from teachers with 30+ years’ experience. Perceptions of other skills remain consistent (p>0.05). The heatmap visually illustrates these patterns, highlighting mid-career optimism and the more critical views of early and late-career teachers.

**Table 5.** *Comparison of Foundational Numeracy scores based on years of experience (YOE)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Skills** | **YOE** | **-** | **o** | **+** | **‘H’** | **‘p’** | **Decision on null hypothesis** |
| **statistic** | **value** |
| **Foundational Numeracy skills** | |  |  |  |  |  |  |  |
| **1** | Pre-Number Concept | 0-10 | 10 | 60 | 30 | **8.14** | **0.043** | **Reject** |
| 10-20 | 11 | 28 | 61 |
| 20-30 | 0 | 29 | 71 |
| 30+ | 13 | 63 | 25 |
| **2** | Operation on Numbers | 0-10 | 20 | 40 | 40 | 3.28 | 0.351 | Accept |
| 10-20 | 11 | 39 | 50 |
| 20-30 | 0 | 54 | 46 |
| 30+ | 13 | 63 | 25 |
| **3** | Measurement | 0-10 | 50 | 30 | 20 | **9.43** | **0.024** | **Reject** |
| 10-20 | 11 | 39 | 50 |
| 20-30 | 4 | 50 | 46 |
| 30+ | 25 | 63 | 13 |
| **4** | Shapes and Spatial Understanding | 0-10 | 40 | 30 | 30 | **9.43** | **0.024** | **Reject** |
| 10-20 | 22 | 28 | 50 |
| 20-30 | 4 | 38 | 58 |
| 30+ | 38 | 38 | 25 |
| **5** | Patterns | 0-10 | 60 | 40 | 0 | 6.54 | 0.088 | Accept |
| 10-20 | 56 | 44 | 0 |
| 20-30 | 38 | 63 | 0 |
| 30+ | 88 | 13 | 0 |

Table 5 outlines teachers’ perceptions of foundational numeracy skills across varying experience levels, revealing significant differences in three areas: Pre-Number Concept (p=0.043), Measurement (p=0.024), and Shapes and Spatial Understanding (p=0.024). Teachers with 20–30 years of experience report the highest positive perceptions for Pre-Number Concept (71%), while those with 30+ years show the lowest (25%). Similarly, for Measurement, mid-career teachers (10–20 and 20–30 years) express more favourable views (50% and 46%) than early-career (20%) and late-career teachers (13%). A similar trend appears in Shapes and Spatial Understanding, where mid-career responses are notably higher (50% and 58%). Patterns received no positive ratings across any group and showed no significant difference. The heatmap illustrates these perception intensities, suggesting mid-career teachers view numeracy workbooks more favourably, possibly due to evolving pedagogical training or career-stage expectations.

**DISCUSSION**

The evaluation of the FLN workbook developed by SCERT Odisha highlights gender-based differences in teacher perceptions, with female teachers rating the workbook more positively than males across foundational skill areas. This may stem from interactive, student-centred teaching styles that align with the workbook’s design (Xiong, 2025), as well as a stronger emphasis on practicality and adaptability by female educators (El-Emadi et al., 2019). Socio-cultural and experiential factors further influence how instructional materials are assessed (Almy & Sanatullova-Allison, 2016).

Trends across teaching experience also reveal that mid-career teachers (6–15 years) tend to rate the workbook more favourably than novice or senior teachers. This may be due to their active engagement with current pedagogical reforms and greater adaptability to new instructional resources. These insights suggest the need for gender- and experience-responsive training to ensure equitable adoption. Areas with lower ratings call for refinement in clarity and contextual relevance, along with targeted pedagogical guidance.

While the study offers valuable insights, some methodological limitations must be acknowledged. The sample size and geographic concentration may limit the generalisability of findings. Future research should aim to include a larger and more diverse sample. Additionally, since the data relies on self-reported teacher evaluations, there is a possibility of biasness. Incorporating objective measures such as classroom observations and student performance data could strengthen future assessments. Lastly, expanding the geographic scope of such evaluations would help determine whether these trends hold true across different educational contexts.

**CONCLUSION**

This study assessed the effectiveness of FLN workbooks developed by SCERT Odisha in developing FLN skills among students, with a focus on gender and teaching experience. The workbooks were generally seen as effective, especially due to their structured approach. Female teachers rated them more positively across all skill areas, suggesting better alignment with their pedagogical preferences. Mid-career teachers (10–30 years of experience) also gave favourable evaluations, while those with over 30 years showed more conservative ratings, indicating a need for additional support or professional development. Certain skill areas, like spatial reasoning, revealed variations in effectiveness perceptions, pointing to areas for improvement. The findings offer recommendations for policymakers, curriculum developers, and teacher training institutions, emphasising the need for gender-responsive, differentiated training. Future research should explore gender differences, long-term outcomes, and classroom-based insights to better understand the workbooks' impact and improve their effectiveness.

**Ethical Approval:**

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

**Consent**

As per international standards or university standards, Participants’ written consent has been collected and preserved by the author(s).

**Disclaimer (Artificial intelligence)**

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts.

The Large Language Model used was ChatGPT 4.0 and following are the usage details and associated input prompts.

**1.For improving the language quality of the paper** – Prompt (Can you help me in improving the language of the text without altering the ideas inherent in it? Also ensure to maintain its consistency, flow and coherence. Note that I want to submit the paper to a reputed international journal.)

**2.For brainstorming of how to make the representation of data catchy and attractive** – Prompt (Can you suggest me some ideas of how the data in the table can be made catchy and attractive for the readers?)

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